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PATENT OFFICE NOTICES

United States District Court for the District of Columbia

RIPPLE TWIST MILLS, INC., Plaintiff
v.
INDUSTRIAL KNITTING CORPORATION, Defendant

Civil Action No. 791—72

ORDER OF PUBLICATION ON ABSENT DEFENDANT IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

The object of this suit under the Patent Laws of The United States is to secure (1) an adjudication of invalidity of United States Letters Patent 3,513,668 granted May 26, 1970, (2) preliminary and permanent injunction against Defendant, its agents, servants, employees and attorneys enjoining them and each of them from asserting or threatening to assert the aforesaid Letters Patent against customers or potential customers of Plaintiff and restraining them and each of them from filing or prosecuting any civil action or action against Plaintiff and/or its customers for infringement of said Letters Patent, (3) costs and attorneys fees, and (4) such other and further relief as may to this Court appear to be just and equitable.

On motion of the Plaintiff, it is this 27th day of April 1972, ordered that the Defendant, INDUSTRIAL KNITTING CORPORATION, a Canadian corporation having a principal place of business at 500 Sauve Street W, Montreal, Quebec, Canada, cause its appearance to be entered herein on or before the fortieth day exclusive of Sundays and legal holidays, occurring after the day of the first publication of this order; otherwise the cause will be proceeded with as in case of default.

WILLIAM B. BRYANT,
Judge.

DEPARTMENT OF COMMERCE
Patent Office

[37 CFR Part 1]

EVIDENCE OF PATENTABILITY OR PRIORITY

Proposed Special Statement in Affidavit or Declaration When Relying Upon Facts, Data, Test Results or Other Evidence

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) the Patent Office proposes to amend Title 37, Code of Federal Regulations, by adding a new § 1.69.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed new section, to the Commissioner of Patents, Washington, D.C. 20221, on or before June 27, 1972, on which date a hearing will be held at 9 a.m. in Room 8C06, Building 2, Crystal Plaza, 2011 Jefferson Davis Highway, Arlington, Va. 22202. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

New § 1.69 seeks to guard against the omission from facts, data, test results, or other evidence presented in connection with patentability or priority of invention, of known evidence which is inconsistent with that presented or which would convey a different impression. The purpose is to insure presentation to the Patent Office of the evidence needed to make an informed decision on patentability or priority of invention. The section thus requires a verified statement that no such inconsistent evidence is known to the person making the statement, if such is the fact.

The text of the proposed new § 1.69 is as follows:

§ 1.69 *Special statement in affidavit or declaration when relying upon facts, data, test results, or other evidence.*

(a) An affidavit or declaration filed during the prosecution of an application presenting evidence urged as bearing on patentability or priority of invention will be considered only if the applicant or other person making the affidavit or declaration states therein that no evidence is known to him which is inconsistent with that relied on in the affidavit or declaration, or which would tend to give an impression different from that conveyed by the affidavit or declaration.

(b) If, during the prosecution, the applicant, to establish patentability, relies on representations as to facts, data, or test results set forth in the specification, such representations will be considered for that purpose only if applicant files an affidavit or declaration attesting as to the truth of the representations and asserting that no facts, data, or test results are known to him which are inconsistent with those set forth in the specification, or which would tend to give an impression different from that conveyed by the specification.

Dated: April 28, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: May 1, 1972.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-6925 Filed 5-5-72; 8:49 a.m.]

Published in 37 F.R. 9225, May 6, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,699,054, L. H. Conover, TETRACYCLINE, filed July 7, 1966, D.C., E.D.N.Y. (Brooklyn), Doc. 66C640, *Chas. Pfizer & Co., Inc.* v. *Generic Formulae Inc. et ano.* Transferred to U.S.D.C., S.D.N.Y., Mar. 11, 1969.

2,733,226, B. A. Hunter, TRIARYL PHOSPHITE STABILIZERS FOR SYNTHETIC RUBBERS, filed Dec. 21, 1967, D.C., N.D. Ohio (Cleveland), Doc. C-67-933, *Uniroyal Incorporated* v. *Firestone Tire and Rubber Co.* Stipulation and order, action dismissed without prejudice, Jan. 12, 1972.

2,737,420, J. C. Wilborn, MEANS FOR BALANCING WHEELS; **3,314,726,** Rehnborg and Wilborn, WHEEL BALANCE CORRECTION DEVICE, filed Feb. 4, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-78-C, *John C. Wilborn et al.* v. *Virgil H. Salathiel, Motion Products, Inc.*

2,742,378, T. A. Te Grotenhuis, FILLERS HAVING VINYL SILOXANE GROUPS BONDED TO THE SURFACE THEREOF AND COPOLYMERS THEREOF WITH ETHYLENICALLY UNSATURATED POLYMERIZABLE MONOMERS; **2,841,566,** same, HIGH POLYMERS WITH CHEMICALLY BONDED REINFORCING AND METHOD OF MAKING SAME, filed June 10, 1963, U.S. Ct. of App., 6th Cir., Ohio (Cincinnati), App. No. 20845, *Westwood Chemical, Inc.* v. *Owens-Corning Fiberglas Corporation.* The judgment of the District Court is modified by restricting the determination of invalidity to the claims in issue, i.e., claims 1, 2, 4, 6, 7, 8, 11, 14, 15-19, 21, 23-26 and 28 of Patent '378 and claim 8 of Patent '566 and as so modified the judgment is affirmed, decided and filed Aug. 24, 1971.

2,777,926, M. E. Bourns, VARIABLE RESISTOR, filed Aug. 11, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1992, *Bourns, Inc. and Marian E. Bourns* v. *Allen-Bradley Co. et al.* On motion of the defendants for summary judgment, it is ordered that defendants' motion for summary judgment is granted and judgment is entered on the complaint in favor of the defendants, Feb. 7, 1972.

2,841,566. (See 2,742,378.)

2,843,513, R. Stricklen, MIXTURE AND METHOD FOR IMPARTING A CORROSION-RESISTANT SURFACE TO ALUMINUM, ALUMINUM ALLOYS, AND SILVER; **2,851,386,** H. J. Hartman, METHOD FOR COATING ZINC AND ZINC ALLOY SHEETS, filed Mar. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c621, *Allied Research Products, Inc.* v. *J. M. Eltzroth & Associates, Inc.* On stipulation of the parties pursuant to F.R.C.P. Rule 41(a) the above action is dismissed, Jan. 5, 1972.

2,851,386. (See 2,843,513.)

3,007,702, R. R. Eby, PHONOGRAPH RECORD STORAGE MEANS, filed Dec. 2, 1969, D.C., S.D.N.Y., Doc. 69-5315, *Richard R. Eby* v. *F. W. Woolworth Company.* Stipulation and order, complaint dismissed with prejudice and without costs, Jan. 26, 1972.

3,021,871, F. J. Rodgers, HOSE FOR PORTABLE PNEUMATIC EQUIPMENT, filed Feb. 2, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72-116, *Samuel Moore & Company* v. *Parker Hannifin Corporation.*

3,178,821, P. C. Kesling, ORTHODONTIC APPLIANCE, filed Feb. 4, 1972, D.C., S.D.N.Y., Doc. 72-C-532, *TP Laboratories, Inc. et al.* v. *Betta Orthodontic Supplies, Inc.*

3,190,912, R. E. Robinson, PROCESS FOR PREPARING ESTERS, filed Nov. 7, 1969, D.C., S.D. Tex (Houston), Doc. 69-H-1096, *National Distillers & Chemical Corporation* v. *Celanese Corporation.* Stipulation and order of dismissal, Feb. 4, 1972, Same, filed Mar. 23, 1970, D.C., S.D. Tex. (Houston), Doc. 70-H-261, *National Distillers and Chemical Corporation* v. *Celanese Corporation.* Stipulation and order of dismissal, Feb. 4, 1972. (Dismissed with prejudice.)

3,195,803, T. E. Ford, FOOD WRAPPER, filed Feb. 4, 1972, D.C. Mass. (Boston), Doc. CA-72, *Trans World Services, Inc.* v. *S. S. Kresge Company.*

3,220,857, Hollis and Borders, PROCESS FOR PREPARING DEHYDRATED POTATOES, filed Nov. 28, 1969, D.C. Del. (Wilmington), Doc. 3813, *American Potato Company* v. *General Foods Corporation.* Stipulation of dismissal with prejudice as to all claims and counterclaims, Oct. 20, 1971.

3,275,316, G. V. Cleary, INSERT FOR NEWSPAPERS, filed Jan. 18, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c134, *Free Standing Stuffer, Inc.* v. *Parent's Magazine Enterprises.* By stipulation, motion for dismissal of the complaint under Rule 41(a)(1)(ii), is granted, Feb. 3, 1972.

3,314,726. (See 2,737,420.)

3,322,288, A. Mayer, CLOTHING DISPLAY RACK ASSEMBLY, filed Nov. 9, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-2675-FW, *Capitol Hardware Manufacturing Company, Inc.* v. *Reeve Company.*

3,325,799, R. L. Farris, MATTRESS ALARM, filed Feb. 3, 1972, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-1899, *Robert L. Farris and Edwin G. Cohen* v. *Electronic Monitors Inc. and Harris Hospital.*

3,387,809, R. S. Soloff, SONICS, filed Oct. 13, 1970, D.C. Conn. (New Haven), Doc. 14081, *Branson Instruments, Incorporated* v. *Sonics and Materials, Inc., Robert S. Soloff.* Consent judgment, defendants enjoined, Nov. 26, 1971.

3,390,480, L. S. Turner, ARROW-HELICOPTER TOY; **D. 212,699,** same, AERIAL TOY; **Reg. No. 841,173** (ARROW-COPTER), Basic Products Development Company, filed Feb. 5, 1969, D.C.N.J. (Newark), Doc. 132-69, *Basic Products Development Co., Inc.* v. *Plawner Toy Mfg. Co., Inc., Felix Plawner and Karl Plawner.* Order dismissing complaint, Oct. 20, 1971.

3,409,916, Billig and Schleeweiss, OVAL SWIMMING POOL, filed June 3, 1971, D.C., E.D.N.Y. (Brooklyn), Doc. 71-C-677, *Bilnor Corp.* v. *Atreo Mfg. Co., Inc.* Case dismissed, Jan. 31, 1972.

3,452,966, L. Smolski, LIQUID TREATMENT APPARATUS AND METHOD, filed Feb. 3, 1972, D.C. Mass. (Boston), Doc. 72-433-J, *Polcon Corporation* v. *Kenics Corporation.*

3,481,065, M. L. Whaley, PURSE RING STRIPPER AND METHOD OF USING SAME, filed June 14, 1971, D.C., S.D. Calif. (San Diego), Doc. No. 71-191-N, *Morris L. Whaley* v. *Campbell Machine, Inc.*

3,488,770, W. T. Atkinson, MEAT-LIKE PROTEIN FOOD PRODUCT, filed Aug. 18, 1971, D.C., S.D. Ill. (Peoria), Doc. P-3278, *Archer Daniels Midland Company* v. *Ralston Purina Company and Swift and Company.*

3,545,014, E. Davis, SANITIZERS, filed Feb. 2, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-241-AAH, *Elbert Davis* v. *Days-Ease Home Products Corp.*

D. 212,699. (See 3,390,480.)

Reg. No. 841,173. (See 3,390,480.)

Dedication

Re. 26,759.—*Frederick J. Melges,* Battle Creek, Mich. GYNECOLOGY OR LITHOTOMY DRAPE. Patent dated Jan. 6, 1970. Dedication filed Apr. 14, 1972, by the inventor.

Hereby dedicates to and for the free use of the Public all of the claims of said patent.

Certificates of Correction for the Week of June 6, 1972

Re. 27,085	3,609,678	3,623,434	3,630,706
3,383,443	3,609,730	3,623,560	3,630,717
3,456,286	3,610,361	3,623,753	3,630,727
3,462,794	3,610,825	3,623,832	3,630,796
3,488,701	3,612,053	3,623,940	3,630,863
3,489,592	3,612,055	3,623,955	3,631,042
3,522,674	3,612,311	3,623,988	3,631,057
3,534,063	3,612,396	3,624,076	3,631,071
3,545,892	3,612,723	3,624,079	3,631,090
3,546,123	3,612,902	3,624,166	3,631,173
3,546,270	3,613,105	3,624,250	3,631,176
3,551,427	3,613,273	3,624,260	3,631,182
3,556,310	3,614,060	3,624,370	3,631,318
3,558,933	3,614,618	3,624,395	3,631,321
3,563,330	3,615,223	3,624,538	3,631,357
3,570,018	3,615,320	3,624,568	3,631,481
3,574,827	3,615,429	3,624,970	3,631,503
3,575,991	3,615,435	3,625,352	3,631,563
3,577,237	3,615,639	3,625,492	3,631,571
3,578,852	3,615,762	3,625,501	3,631,858
3,578,843	3,615,788	3,625,584	3,631,959
3,580,919	3,616,360	3,625,877	3,632,046
3,583,075	3,616,444	3,625,978	3,632,058
3,583,352	3,616,784	3,625,993	3,632,060
3,584,740	3,617,070	3,626,048	3,632,154
3,584,941	3,617,368	3,626,149	3,632,157
3,586,152	3,617,478	3,626,258	3,632,261
3,588,779	3,617,479	3,626,261	3,632,871
3,590,035	3,617,489	3,626,266	3,632,401
3,590,559	3,617,490	3,626,382	3,632,427
3,590,902	3,617,672	3,626,733	3,632,461
3,591,110	3,617,747	3,627,016	3,632,475
3,592,373	3,617,751	3,627,163	3,632,599
3,592,626	3,618,003	3,627,260	3,632,631
3,594,762	3,618,073	3,627,318	3,632,865
3,595,256	3,618,331	3,627,376	3,632,902
3,595,908	3,618,746	3,627,386	3,632,991
3,596,675	3,619,173	3,627,429	3,633,112
3,597,437	3,619,183	3,627,536	3,633,163
3,598,344	3,619,195	3,627,552	3,633,210
3,598,868	3,619,210	3,627,554	3,633,327
3,599,022	3,619,480	3,627,566	3,633,400
3,599,053	3,619,605	3,627,677	3,633,431
3,599,265	3,619,938	3,627,689	3,633,628
3,600,456	3,620,266	3,627,776	3,633,823
3,600,953	3,620,302	3,628,037	3,633,950
3,601,585	3,620,374	3,628,072	3,633,981
3,601,963	3,620,620	3,628,129	3,634,134
3,602,282	3,620,665	3,628,313	3,634,325
3,602,470	3,620,677	3,628,533	3,634,452
3,602,689	3,620,693	3,628,658	3,634,550
3,603,235	3,620,714	3,628,714	3,634,659
3,603,265	3,620,746	3,628,910	3,634,741
3,603,463	3,620,867	3,628,914	3,635,147
3,603,585	3,620,961	3,628,942	3,635,269
3,603,738	3,621,019	3,628,953	3,635,371
3,603,981	3,621,082	3,628,957	3,635,457
3,604,320	3,621,091	3,628,963	3,635,669
3,605,854	3,621,146	3,628,973	3,635,731
3,607,334	3,621,164	3,628,994	3,635,776
3,607,692	3,621,402	3,629,013	3,635,932
3,607,797	3,621,485	3,629,064	3,635,955
3,607,876	3,621,842	3,629,209	3,636,022
3,608,557	3,622,084	3,629,227	3,636,023
3,608,572	3,622,166	3,629,233	3,636,170
3,608,646	3,622,461	3,629,443	3,636,246
3,609,075	3,622,517	3,629,444	3,636,335
3,609,282	3,622,522	3,629,525	3,636,421
3,609,415	3,622,977	3,629,683	3,636,521
3,609,511	3,623,015	3,629,895	3,636,545
3,609,658	3,623,285	3,630,639	3,637,588
3,637,773	3,639,512	3,642,238	3,645,942
3,637,905	3,639,738	3,642,434	3,646,468
3,638,302	3,640,158	3,642,439	3,646,663
3,638,399	3,640,889	3,643,738	3,647,241
3,638,538	3,641,182	3,643,739	
3,639,335	3,641,842	3,644,018	
3,639,352	3,642,067	3,644,194	

Disclaimers

3,310,559.—*Sterling Beckwith,* Libertyville Township, Ill. MULTIPLE JET CONDITIONING CABINET. Patent dated Apr. 28, 1964. Disclaimer filed Apr. 10, 1972, by the assignee, *Kysor Industrial Corporation.*

Hereby enters this disclaimer to claims 1, 2, 5 and 6 of said patent.

3,602,287.—*Martin Eversdyk,* Bedford Heights, Ohio. APPARATUS FOR FORMING A MEMBER FROM A SLURRY OF MATERIAL. Patent dated Aug. 31, 1971. Disclaimer filed Mar. 23, 1972, by the assignee, *Opieboy Norton Company.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

Patents Withdrawn From Register

RCA Corporation withdraws the following patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available, in the OFFICIAL GAZETTE as indicated below:

3,273,476. PHOTOCOMPOSING SYSTEM, Feb. 14, 1967.

3,281,738. SUPERCONDUCTING SOLENOID, Mar. 28, 1967.

3,302,168. TRAFFIC CONTROL SYSTEM, July 18, 1967.

3,302,901. FLUID DRIVE SYSTEM FOR FILM TAKE-UP AND REWIND MECHANISM, July 18, 1967.

3,344,527. SUBSTANTIALLY LINEAR OUTPUT GAG DEVICE, Jan. 2, 1968.

3,351,938. VEHICLE IDENTIFICATION APPARATUS, Jan. 30, 1968.

3,355,618. ELECTRON GUN FOR USE IN A CATHODE RAY TUBE EXHIBITING ENHANCED ELECTRON EMISSION, Jan. 30, 1968.

3,363,961. CATHODE ARRANGEMENT OF AN ELECTRON MICROSCOPE FOR REDUCING THE OCCURENCE OF VIRTUAL CATHODES, Mar. 14, 1968.

3,393,847. FILM THREADING ARRANGEMENT. Sept. 24, 1968.

3,399,405. VEHICLE IDENTIFIER SYSTEM, Oct. 22, 1968.

3,405,264. SPECIMEN INJECTOR FOR ELECTRON MICROSCOPES WITH ROTATABLE SPECIMEN HOLDER, Jan. 14, 1969.

3,452,241. ELECTRON GUN SUITABLE FOR ELECTRON MICROSCOPE, Sept. 9, 1969.

3,479,934. PHOTOCOMPOSING APPARATUS SUPPORT STRUCTURE, Jan. 27, 1970.

3,487,909. ARTICLE HANDLING APPARATUS, July 21, 1970.

3,500,310. TRUE PRESENCE VEHICLE DETECTOR INCLUDING MEANS TO DISTINGUISH BETWEEN SLOW AMBIENT CHANGES AND CHANGES TO THE PRESENCE OF A VEHICLE, July 21, 1970.

3,509,803. PHOTOCOMPOSING APPARATUS, Aug. 25, 1970.

3,517,119. DEVICE FOR PRODUCING LINE HALFTONE IMAGES SIMILAR TO THE IMAGES PRODUCED BY THE WOODCUT TYPE METHOD OF PRINTING, Aug. 3, 1971.

3,528,018. BILEVEL VIDEO SIGNAL RECONSTRUCTION CIRCUIT, Aug. 3, 1971.

3,546,681. PROGRAMMED METHOD FOR MANIPULATING ELECTRONIC FONTS IN ELECTRONIC PHOTOCOMPOSING SYSTEMS, Aug. 3, 1971.

3,553,676. ELECTRO-OPTICAL COMPOSITION SYSTEM, Aug. 3, 1971.

3,568,178. ELECTRONIC PHOTOCOMPOSITION SYSTEM, Dec. 7, 1971.

3,573,786. COMPENSATION CIRCUIT FOR ELECTRONIC PHOTOCOMPOSITION SYSTEM, Dec. 7, 1971.

3,614,767. ELECTRONIC PHOTOCOMPOSING SYSTEM THAT FORMS CHARACTERS OF DIFFERENT POINT SIZES, Dec. 21, 1971.

3,643,019. VARIABLE LENGTH CODING METHOD AND APPARATUS, May 2, 1972.

Patents Available for Licensing or Sale

D. 223,093. LIGHTENING INSULATOR PAD FOR CAMPERS. John B. Cato, 206 Combs St., Milton, Fla., 32570.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court, E., Syosset, N.Y., 11791.

3,225,761. FATIGUE SUPPORT. Robert Swenson, 120 Poinciana Drive, Martinez, Ga., 30907.

3,525,099. HAND GUIDED WALK-BEHIND SELF-PROPELLED MATERIAL CONVEYING CART. John Fuhrmann. Correspondence to: Robert C. Weber, 1022 Ellicott Square, Buffalo, N.Y., 14203.

3,528,670. ASTRONOMICAL TELEOBJECTIVE. Lawrence Monari, 1458 83rd St., Brooklyn, N.Y., 11228.

3,625,664. PROCESS FOR THE PRODUCTION OF RICH FUEL TO REPLACE NATURAL GAS BY MEANS OF CATALYTIC HYDROGASIFICATION UNDER PRESSURE OF FLUID HYDROCARBONS. Carlo Padovani. Correspondence to: Murphy & Dobyns, 2001 Jefferson Davis Highway, Suite 307, Arlington, Va., 22202.

3,645,530. RANDOMLY BALL AND GAME APPARATUS. Edward A. Hernandez, et al., 1500 Elevado St., Los Angeles, Calif., 90026.

3,651,623. APPARATUS AND METHOD FOR MOWING STEEP EMBANKMENTS. Rutherford B. Harley, 4300 Bishop Lake Rd., Marietta, Ga., 30060.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION. Donald L. Segur, et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corp., Research Center, High St., North Billerica, Mass., 01862.

The following 2 patents are offered by Louis Schacher, et al., 4910 15th Ave., Brooklyn, N.Y., 11219.

D. 191,069. BOTTLE.

D. 191,770. BOTTLE.

General Electric Company is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms to domestic manufacturers.

Applications for licenses may be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,629,596. FREE PISTON GENERATOR.

3,647,925. VARIABLE IMPEDANCE GENERATOR.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 3 patents upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors, Building, 3044 West Grand Blvd., Detroit, Mich., 48202.

3,471,127. TURBOMACHINE ROTOR.

3,477,647. FUEL SPRAY.

3,478,816. REGENERATOR MATRIX.

The Department of Health, Education, and Welfare is offering the following 13 patents for licensing as provided by Title 45 C.F.R. Section 6.3.

Applications for license should be addressed to: Mr. Norman J. Latker, Chief, Patent Branch, % National Institutes of Health, Room 5A03, Westwood Building, Bethesda, Md., 20014.

3,642,953. SELECTIVELY SULFONATED BLOCK COPOLYMERS AND PROCESS FOR THEIR PREPARATION.

3,644,647. TREATMENT OF GLAUCOMA EMPLOYING 5-(3-METHYLAMINOPROPYL) 5H-DIBENZO (a,d) CYCLOHEPTENE.

3,646,594. PROCESS FOR REMOVAL OF ACIDIC MATERIALS FROM FLUIDS.

3,651,864. COMPACT ROOM SIZE ENVIRONMENTAL CONTROL UNIT.

3,652,580. ANTIHEMOPHILIC FACTOR PREPARED FROM BLOOD PLASMA USING POLYETHYLENE GLYCOL.

3,654,257. DIAZO DERIVATIVES OF IMIDAZOLE CARBOXYLIC ACID ESTERS.

3,651,212. ATTENUATED LIVE RUBELLA VIRUS VACCINE AND METHOD OF PRODUCTION.

3,649,613. TRIAZENO COMPOUNDS.

3,655,815. THROMBORESISTANT ARTICLES CONTAINING EPOXY RESINS AND POLYETHYLENE-OXIDE POLYPROPYLENE OXIDE BLOCK COPOLYMERS.

3,655,123. CONTINUOUS FLOW BLOOD SEPARATOR.

3,663,659. PROCESS FOR THE PREPARATION OF HYDROXYLATED BLOCK POLYMERS.

3,666,187. LABORATORY HOMOGENIZER.

3,665,762. CALORIMETER.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 42 patents.

Inquiries respecting licenses under these patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

3,653,411. CABLE HARNESS ASSEMBLY BOARD AND METHOD OF MAKING THE SAME.

3,653,498. STATIC CHARGE PROTECTIVE PACKAGES FOR ELECTRON DEVICES.

3,653,608. WEB CARTRIDGE.

3,653,745. CIRCUITS FOR DRIVING LOADS SUCH AS LIQUID CRYSTAL DISPLAYS.

3,653,883. METHOD OF FABRICATING A POROUS TUNGSTEN BODY FOR A DISPENSER CATHODE.

3,653,901. COLOR KINESCOPE PRODUCTION WITH A TEMPORARY MASK.

3,653,941. SLURRY PROCESS FOR COATING PARTICULATE MATERIAL UPON A SURFACE.

3,653,989. ZN DIFFUSION INTO GAP.

3,654,387. VIDEO TAPE RECORDER SYNCHRONIZING SYSTEM.

3,654,398. DEVICE TO KEEP A CAPSTAN IN PHASE WHEN SWITCHING MODES.

3,654,400. WEB HANDLING APPARATUS.

3,654,440. COUNTER.

3,654,441. FOUR-PHASE HIGH SPEED COUNTER.

3,654,556. MICROWAVE HYBRID COMPRISING TROUGH WAVEGUIDE AND BALANCED MIXER UTILIZING SAME.

3,654,572. WAVEGUIDE STRUCTURE.

3,654,606. ALTERNATING VOLTAGE EXCITATION OF LIQUID CRYSTAL DISPLAY MATRIX.

3,655,126. MOTION TRANSFER MECHANISM.

3,655,269. LIQUID CRYSTAL DISPLAY ASSEMBLY HAVING INDEPENDENT CONTRAST AND SPEED OF RESPONSE CONTROLS.

3,655,912. CORONA GENERATING CIRCUITS FOR ELECTROPHOTOGRAPHIC PRINTERS COOPERATIVELY OPERATING WITH TELEVISION RECEIVERS.

3,656,011. CHARGE COUPLED DEVICE.

3,656,030. SEMICONDUCTOR DEVICE WITH PLURALITY OF SMALL AREA CONTACTS.

3,656,062. LIGHTNING PROTECTION SYSTEM.

3,656,071. WIDE BAND BALUN.

3,656,121. ELECTRICALLY AND OPTICALLY ACCESSIBLE MEMORY.

3,657,138. VISIBLE-EMITTING CERIUM-ACTIVATED CALCIUM ALUMINUM OXIDE PHOSPHOR.

3,657,674. COIL SUSPENSION ARRANGEMENT FOR A CATHODE RAY TUBE.

3,657,735. ELECTRON BEAM EXCITED LASER.

3,658,125. INTERNAL CONFIGURATION FOR A RADIAL HEAT PIPE.

3,658,400. METHOD OF MAKING A MULTIALKALI PHOTOCATHODE WITH IMPROVED SENSITIVITY TO INFRARED LIGHT AND A PHOTOCATHODE MADE THEREBY.

3,658,401. METHOD OF MANUFACTURE OF CATHODE RAY TUBES HAVING FRIT-SEALED ENVELOPE ASSEMBLIES.

3,658,403. HIGH FIDELITY READOUT OF A HOLOGRAM PERFORMING THE FUNCTION OF A COMPLEX WAVE MODIFYING STRUCTURE.

3,658,404. COMPLEX WAVE MODIFYING STRUCTURE HOLOGRAPHIC SYSTEM.

3,658,586. EPITAXIAL SILICON ON HYDROGEN MAGNESIUM ALUMINATE SPINEL SINGLE CRYSTALS.

3,658,672. METHOD OF DETECTING THE COMPLETION OF PLASMA ANODIZATION OF A METAL ON A SEMICONDUCTOR BODY.

3,659,035. SEMICONDUCTOR DEVICE PACKAGE.

3,659,044. TEST SYSTEM FOR ELECTRICAL APPARATUS.

3,659,118. DECODER CIRCUIT EMPLOYING SWITCHES SUCH AS FIELD EFFECT DEVICES.

3,659,164. INTERNAL CONSTRUCTION FOR PLASTIC SEMICONDUCTOR PACKAGES.

3,659,222. HIGH EFFICIENCY MODE AVALANCHE DIODE OSCILLATOR.

3,659,223. MICROWAVE OSCILLATOR WITH TWO OR MORE PARALLELED SEMICONDUCTIVE DEVICES.

3,659,228. STRIP-TYPE DIRECTIONAL COUPLER HAVING ELONGATED APERTURE IN GROUND PLANE OPPOSITE COUPLING REGION.

3,659,232. TRANSMISSION LINE FILTER.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 16, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-09-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	3-01-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-19-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	5-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972 except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151:

Patents..... Numbers 2,709,808 to 2,712,130, inclusive
Plant Patents..... Numbers 1,396 to 1,403, inclusive

PATENTS

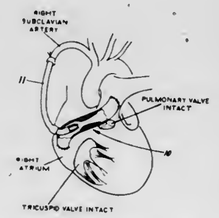
GRANTED JUNE 6, 1972

GENERAL AND MECHANICAL

3,667,069
JET PUMP CARDIAC REPLACEMENT AND ASSIST DEVICE AND METHOD OF AT LEAST PARTIALLY REPLACING A DISABLED RIGHT HEART

Perry L. Blackshear, Mahtomedi; Richard J. Forstrom; Frank D. Dorman, both of St. Paul, and Demetre M. Nicoloff, Minneapolis, all of Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Mar. 27, 1970, Ser. No. 23,388
Int. Cl. A61f *1/24*; F04f *5/00, 5/36, 5/44*
U.S. Cl. 3—1 12 Claims

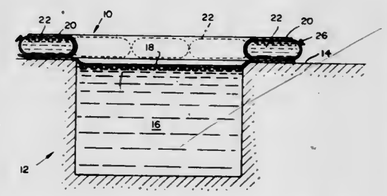


An implantable jet pump cardiac replacement device and method for replacing or assisting the right heart. The jet pump device is an elongated tubular structure including an upstream driving nozzle from which a driving flow of arterial blood under pressure is ejected into a suction nozzle creating a zone of reduced pressure to cause venous blood to be sucked into and admixed with the driving flow for distribution to the pulmonary circulation system. The pump may be powered by blood pumped by the left heart or an artificial replacement for the left heart.

3,667,070
POOL COVER

Joseph J. Pitti, Wantagh, and George A. Tassone, Brooklyn, both of N.Y., assignors to Atreo Manufacturing Co., Inc., Brooklyn, N.Y.

Filed July 22, 1970, Ser. No. 57,279
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 7 Claims



a pool cover for keeping soot and other particles out of a pool and for preventing unwanted usage of the pool. The pool cover is made of a flexible, durable material and has a central cover portion adapted to rest on the surface of the pool. A border region is secured to the outer edge of the central cover portion including a plurality of separate and independent liquid containers capable of being filled with a suitable liquid, such as water. The border region of the pool cover rests on the peripheral edge of the pool and is too heavy to be removed by a child of tender years. If one of the liquid containers inadvertently ruptures, the others will not be affected and the pool cover will be maintained in place.

3,667,071
SWIMMING POOL LINER HANGER ASSEMBLY

Monroe P. Hoch, Wapwallopen, Pa., and Joseph Barrera, Long Beach, N.Y., assignors to Wilkes Pool Corporation, Berwick, Pa.

Original application Dec. 12, 1967, Ser. No. 689,886, now Patent No. 3,546,720. Divided and this application Aug. 5, 1970, Ser. No. 61,408
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.21 3 Claims



A hanger assembly for securing a pool liner to the deck of a swimming pool including a rigid hook secured to the pool deck, a second hook adapted to be secured to the pool liner engaging the rigid hook, and a coping means substantially covering both hooks and aiding in retaining the hook engagement is disclosed. The assembly, when the coping means is in place, presents a relatively smooth rounded exterior transition surface between the pool deck and pool liner.

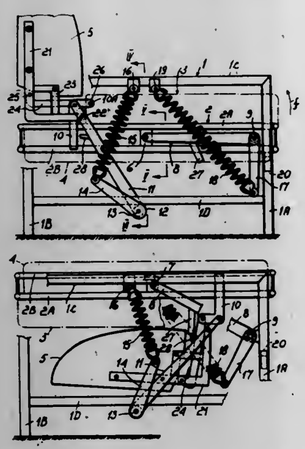
3,667,072
DIVAN-BED

Enzo Bellini, Via della Liberta 37, Quarrata, Italy

Filed Nov. 2, 1970, Ser. No. 86,137
Claims priority, application Italy, Nov. 5, 1969, 4847 A/69
Int. Cl. A47c *17/22, 17/36*
U.S. Cl. 5—24 4 Claims

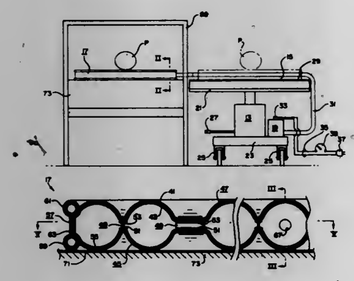
A divan bed, including a fixed supporting structure, a frame tiltable in two positions displaying for use in one of the

positions seat cushions and in the other a mattress. It further comprises a back that in the bed arrangement is admitted



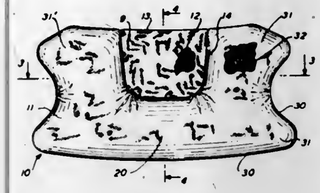
under the frame to sustain the cushions and is articulated to said frame.

3,667,073
PATIENT TRANSPORTER
Hiram H. Renfroe, 505 Burns, West Memphis, Ark.
Filed Dec. 18, 1970, Ser. No. 99,400
Int. Cl. A61g 7/10
U.S. Cl. 5—81 11 Claims



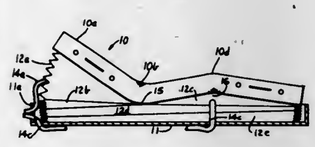
An apparatus which provides for effortless moving of a non-ambulatory patient from his bed or operating table to a cart, e.g., recovery room stretcher or the like and from the cart to other non-porous surfaces, e.g., X-ray tables, etc. The major component comprises an inflatable mattress having a constant flow of air pressure communicating therewith and a plurality of nozzles over one side thereof to direct air jets outwardly therefrom. The mattress normally is positioned with the air jets directed downwardly to provide an air cushion or caster for effortless sliding from one horizontal surface to another. However, the mattress may be positioned with the air jets directed upwardly for floatably supporting a patient, having sores, e.g., decubitus ulcers, on a cushion of pressurized gas a distance above the mattress.

3,667,074
STUFFED CONTOURED PILLOWS
William M. Emery, New Providence, N.J., assignor to William W. Emery, Township of Berkeley Heights, Union County, N.J.
Filed Aug. 26, 1969, Ser. No. 853,104
Int. Cl. A47c 23/06
U.S. Cl. 5—337 4 Claims



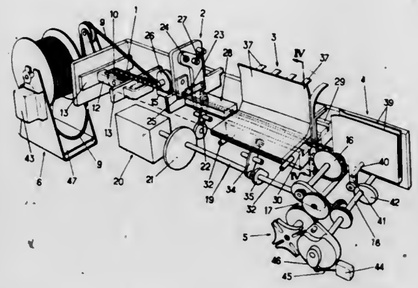
A head pillow having a pre-shaped head cradle padded permanently with a sheet of foam, a neck roll adjustably padded with a roll of sheet foam and side wings adjustably padded with shreaded foam or fiber and zippered means to provide access to vary the heighth of said adjustable padding according to the user's individual requirements.

3,667,075
MATTRESS SPRING BELLOWS ASSEMBLY AS FOR HOSPITALS, AND THE LIKE
Wesley D. Ballard, c/o S. M. Tucker, 1011 North 15th Street, and John H. Staley, 4512 Timbercrest Lane, both of Waco, Tex.
Filed Feb. 24, 1970, Ser. No. 13,601
Int. Cl. A47c 27/08
U.S. Cl. 5—348 7 Claims



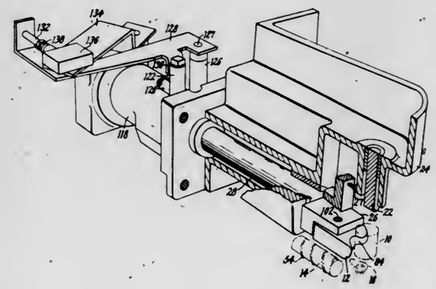
The invention discloses a mattress, as for a hospital bed, an assembly of inflatable bellows spring segments being interposed between the under side of the mattress and a support box therefor which may be said to correspond to the conventional bed spring supporting slats under the springs of conventional mattresses. All of the adjustments offered by conventional hospital bed frames, and more, may be made for the mattress of this invention by virtue of the shapes into which the combinations of spring bellows segments may be inflated. The invention, in effect, employs a careful selection of bellows spring segment shapes, not only to provide a wide range of positional adjustments of the mattress, but these segments may serve, cooperatively, to provide the springs of the mattress, also with the degree of spring or cushioning effect being infinitely adjustable by virtue of the selective inflation of bellows segments, and the selectivity provided as to degree of inflation of the respective bellows.

3,667,076
BINDING MACHINE
Jacques Agiaghanian, 12 Residence les Quinconces, 19 Gif-sur-Yvette, and Jean Drevet, 30 Avenue du Bois de la Marche, 92 Vaucresson, both of France
Filed Nov. 20, 1970, Ser. No. 91,317
Claims priority, application France, Nov. 20, 1969, 6939991
Int. Cl. B42c 5/12
U.S. Cl. 11—1 A 6 Claims



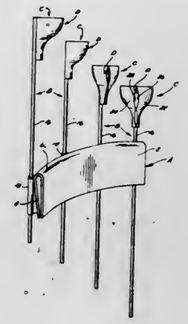
Semi-automatic machine for attaching to perforated bundles of leaves a continuous metallic binding comprising a succession of originally open rings. The machine comprises a reel for delivering the binding, and a chain along which the binding is advanced from a cutting station to a pressing station at which the rings are closed through the perforations in the bundle.

3,667,077
SHOE LASTING MACHINES
Richard A. Steane, Leicester, England, assignor to USM Corporation, Boston, Mass.
Filed Jan. 18, 1971, Ser. No. 107,179
Claims priority, application Great Britain, Jan. 17, 1970, 2,380/70
Int. Cl. A43d 21/00
U.S. Cl. 12—8.3 7 Claims



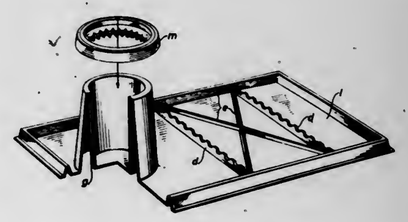
A shoe lasting machine having a block yieldably pressing the margin of a shoe upper against a drive roll for tensioning the upper heightwise of a last and for feeding the upper margin lengthwise, the block being yieldingly pivotable to increase the entering space between the block and the periphery of the roll to accommodate increased thickness of the upper margin fed into the bite between the roll and block.

3,667,078
GOLF CLUB HOLDER
Joseph R. Distasio, 710 Shore Road, Spring Lake Heights, N.J.
Filed Feb. 19, 1971, Ser. No. 116,974
Int. Cl. A63b 57/00
U.S. Cl. 15—104.92 20 Claims



A golf club holder is adapted to be secured to or made a part of a golf bag and to carry a plurality of side-opening receptacles which face the interior of the bag and into which the heads of selected golf clubs can be inserted by means of a substantially lateral movement in the opposite direction. The receptacles are maintained in appropriate operative position by means of rods which extend up from a support and which are preferably adjustably vertically positionable, thereby to adapt individual receptacles to receive the heads of different specific golf clubs.

3,667,079
DEVICE FOR SCRAPING OFF AND COLLECTION OF MEDICAL REFUSE AND FOR PREVENTION OF ITS SPREAD
John Martin Hagglund, Valhallavagen 45A, Ornskoldsvik, Sweden
Filed Sept. 4, 1970, Ser. No. 69,832
Claims priority, application Sweden, Sept. 9, 1969, 12408/69
Int. Cl. A61g 15/00; B65f 7/00
U.S. Cl. 15—105 14 Claims



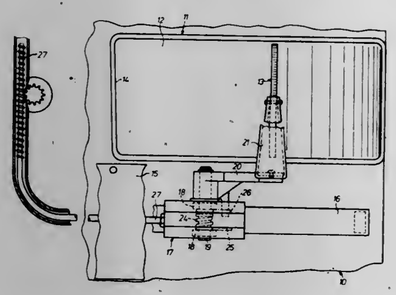
A scraping off and collecting device for medical refuse consisting of a collar with scraping means for scraping the refuse off medical instruments, and a throw-away beaker for collection of the refuse, the collar being made with stiffening projections at an angle to the plane of the collar. The bottom of the collar is punched out so that scraping teeth are formed.

3,667,080
FLUTE CLEANER FOR TWIST DRILLS
Henry Persson, 224 Glenwood Avenue, Bloomfield, N.J.
Filed Mar. 29, 1971, Ser. No. 128,740
Int. Cl. B23b *51/00*
U.S. Cl. 15—236 6 Claims



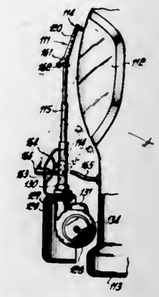
A hand-held flute cleaner for twist drills includes an arm member upon which is mounted a pair of cleaning discs which are freely rotatable around axles carried in the arm. The cleaning discs are preferably made of soft metal such as aluminum or may be of plastic. In the periphery of these discs are spaced cutouts disposed to enter and engage a sharp edge of the flute of the twist drill to scrape the accumulated material from the drill.

3,667,081
WINDOW-CLEANING ARRANGEMENT
Karl-Heinz Burger, Buehl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Oct. 29, 1970, Ser. No. 85,146
Claims priority, application Germany, Nov. 3, 1969, P 19 55 127.0
Int. Cl. B60s *1/20*
U.S. Cl. 15—250.24 10 Claims



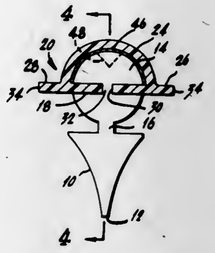
An arrangement for cleaning light-emitting and light-admitting windows, particularly of motor vehicles. The window to be cleaned has a general plane, two transversely spaced first marginal portions and a second marginal portion which connects the first marginal portions. A carriage is mounted for movement along the second marginal portion between the first marginal portion and carries a wiper arm assembly which moves with it and which is pivotably mounted on it for turning movement about an axis paralleling the general plane of the window. A wiper blade is mounted on the assembly and extends in at least substantial parallelism with the first marginal portions but is offset laterally with respect to the axis. Biasing means biases the assembly pivotably about the axis to maintain the wiper blade in contact with the window.

3,667,082
LIGHT FOR AUTOMOTIVE VEHICLES AND WIPER THEREFOR
Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Original application Aug. 13, 1968, Ser. No. 752,204, now abandoned. Divided and this application Feb. 16, 1971, Ser. No. 115,785
Claims priority, application Germany, Sept. 2, 1967, B 94281; Oct. 19, 1967, B 95035
Int. Cl. B60s *1/06, 1/14, 1/20*
U.S. Cl. 15—250.02 10 Claims



The headlights of an automotive vehicle are provided with wipers having elongated flexible wiping elements which are reciprocable along the outer sides of the respective lenses toward and away from a parking position in which they are concealed behind the moulding rings of the headlights. Sprinklers are provided to spray water onto the lenses, at least during a portion of reciprocatory movement of the wiping elements. The operation of the drives for the wiping elements and of pumps for the sprinklers is regulated by electric programming circuits.

3,667,083
WINDSHIELD WIPER ASSEMBLY
Roy E. Linker, Nursery Road, Titusville, N.J.
Filed Aug. 28, 1970, Ser. No. 67,916
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.42 13 Claims



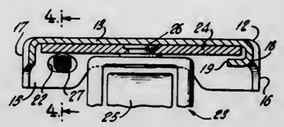
A windshield wiper assembly is provided with a wiper blade and a backing strip together with a blade retaining clip engaging the backing strip and connected to the blade to prevent movement of the blade with respect to the backing strip. For this purpose the clip preferably has a portion thereof located between the backing strip and blade and has prongs thereon which project into the material of which the blade is formed. The backing strip and/or the blade or both may b formed of extruded plastic material and in an alternative embodiment of the invention, the wiper blade has an electrical heating element carried thereby, whereas blade supporting members which are detachably connected to the backing strip form part of an electrical circuit including the heating element and blade retaining clip.

3,667,084
LIGHTWEIGHT VACUUM CLEANER
Bruno M. Valbona, Avon; Robert J. Emmons, Manchester, and Maurice P. Samuelian, West Hartford, all of Conn., assignors to Dynamics Corporation of America, New York, N.Y.
Filed Oct. 23, 1970, Ser. No. 83,300
Int. Cl. A47l *9/00*
U.S. Cl. 15—323 13 Claims



A portable lightweight vacuum cleaner having an extendable nozzle intake conduit rigidly supported by an easily adjustable resilient seal losing the lower end of a filter bag compartment into which the intake conduit projects to vary the distance between a fixed operating handle and the nozzle without changing the manageability and nozzle-floor orientation with users of different statures.

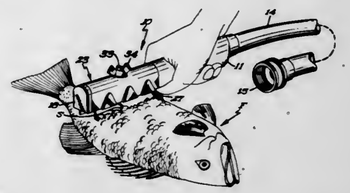
3,667,085
CASTER PAD
Charles Cumella, Bronx, and Joseph Cutrone, North Merick, both of N.Y., assignors to Federal Casters Corporation, Copiague, N.Y.
Filed May 21, 1970, Ser. No. 39,361
Int. Cl. B60b *33/00*
U.S. Cl. 16—30 8 Claims



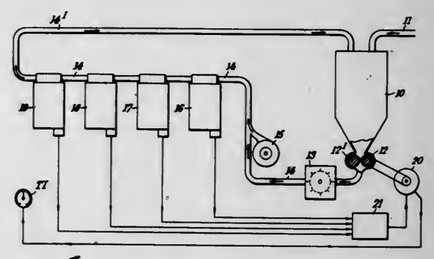
A caster pad for mounting a caster or roller assembly to a container or receptacle or the like wherein the caster pad is provided at opposite ends thereof with means for removably supporting the caster assembly relative to the pad without the need for separate fasteners and the like.

3,667,086
HAND TYPE FISH SCALING DEVICE
Paul A. Sexton, 235 Exeter Place, St. Paul, Minn.
Filed Jan. 18, 1971, Ser. No. 107,238
Int. Cl. A22c *25/02*
U.S. Cl. 17—66 8 Claims

A hand type fish scaling device is comprised of an elongate handle having a mounting member projecting from the forward end of the handle. The handle is hollow and is connected to one end of a flexible conduit, and the conduit is adapted to be connected to a faucet. A channel-shaped scaling blade and a channel-shaped hood are mounted on the mounting member so that a pair of passages are provided, through which water passes. Internal and external outlet ports are provided along the blade elements of the scaling blade so that the scaling blade is constantly washed during the scaling operation.



3,667,087
FEEDING OF FIBROUS MATERIALS TO TEXTILE CARDS
John Dakin, Rossendale, and John George Campbell, Baxenden, Accrington, both of England, assignors to T. M. M. (Research) Limited, Oldham, Lancashire, England
Filed Oct. 28, 1969, Ser. No. 871,859
Int. Cl. D01g *15/40*
U.S. Cl. 19—105 8 Claims

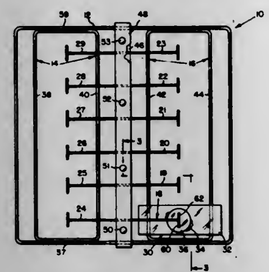


In a method of feeding fibrous material to a plurality of textile cards, the rate of feed of the fibrous material from a common feed means is automatically changed in response to a change in the production rate of one or more of the cards by an amount equal to or substantially equal to the change in production rate of the one or more cards. The automatic changing of the rate of feed of the fibrous material is controlled by control means responsive to the stopping or reduction in speed of a card and to the bringing of the card from the stopped or slow speed condition to normal operating speed.

3,667,088
SLIDE HOLDER METHOD AND APPARATUS
Frank David Kurtz, 398 Five Points Road, Honeoye Falls, N.Y.
Filed Oct. 29, 1970, Ser. No. 85,000
Int. Cl. A44b *21/00*; G02b *21/34*
U.S. Cl. 24—81 PC 1 Claim

A method and apparatus for holding together a slide assembly composed of a slide, a slide preparation on a top surface thereof, and a cover slip overlying the slide preparation. The preferred slide holder of the present invention employs a base, a slide support mounted thereon, and a plurality of spring arms mounted on the base and biased toward the slide support. In operation, a spring arm is manually lifted up, a

slide assembly is placed between the raised spring arm and the sling support, and then the spring arm is allowed to come



down on top of the cover slip, firmly holding the slide assembly together.

3,667,089
SLIDE FASTENER

Hans Porepp, Am Rebberg, Wangen/Bodensee, Germany

Original application Oct. 27, 1966, Ser. No. 590,080, now Patent No. 3,461,486, dated Aug. 19, 1969. Divided and this application Feb. 10, 1969, Ser. No. 813,360
Claims priority, application Germany, Nov. 4, 1965, P 12 80 609.6
Int. Cl. A44b *19/12*
U.S. Cl. 24—205.13 C 2 Claims

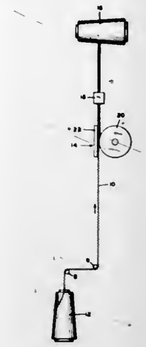
Each half of a slide fastener having two halves adapted to be sewn onto a carrier ribbon has a plastic thread formed into a series of helical loops defining convolution portions. Each convolution portion is flattened only in a limited region of each loop that overlaps a loop in the other half of the slide fastener and to a width substantially twice the diameter of the thread. These flattened regions form coupling surfaces which serve to inter-engage with the coupling surfaces formed in the other half of the slide fastener. The flattened regions are sharply kinked and the convolution portions adjacent the flattened regions only are disposed in superposed relation contacting each other and merged opposite to the flattened surfaces into oppositely directed, exposed, smooth return bend portions.

3,667,090
APPARATUS FOR DEPHASING TEXTURED YARN

Charles P. Mazzone, Dover, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 57,737, July 23, 1970, Original application Mar. 27, 1968, Ser. No. 716,533, now Patent No. 3,546,744, dated Dec. 15, 1970. Divided and this application Sept. 9, 1970, Ser. No. 70,776
Int. Cl. D01b *3/04*
U.S. Cl. 28—1 CF 7 Claims

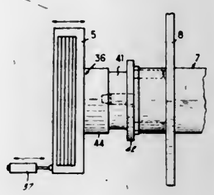
This invention relates to dephasing multifilament single end crimped yarn. The dephasing is carried out in an apparatus wherein the crimped yarn is passed between a plate and a rotatable roll which are mounted so as to exert a substantially constant pressure on said yarn regardless of variations in yarn thickness.



3,667,091
TEXTILE WARPING DEVICES

Robert Leger, Tourcoing, France, assignor to Societe Anonyme Dite Etablissements Cornard & Cie, Tourcoing, France

Filed Apr. 29, 1970, Ser. No. 32,935
Int. Cl. D02h *5/00*
U.S. Cl. 28—32 9 Claims



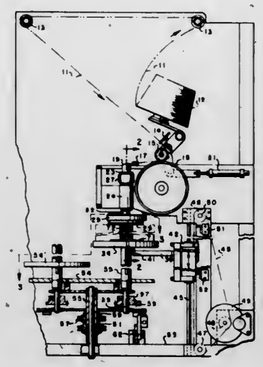
The invention relates to textile warping devices for winding yarns on to warp beams, suitable for use on weaving looms or on dyeing equipment in which the warp beam is driven by means of flexible drive means such as V-belts of rubber or the like, and in which the necessary movements are imparted to the mechanism exclusively by means of pneumatic devices which may be used for causing engagement of slide head members with the warp beam, the control of a presser roller, the control of a braking means and the operation of a comb. A warp beam may be fitted into the warping device by causing it to run up a ramp to bring spindles on the warp beam nearly into alignment with apertures in the slide head members which are then moved towards one another giving a slight further lift to the warp beam and bringing it clear of the ramps.

3,667,092
YARN PACKAGE WINDER

Walter Engels, Tryon, N.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed June 22, 1970, Ser. No. 48,039
Int. Cl. B65h *54/00, 54/76*
U.S. Cl. 28—21 11 Claims

Yarn winding apparatus including a yarn supply, rotatable yarn delivery means, means for conveying yarn from the supply to the delivery means, rotatable yarn collecting means including a supporting base and a central core, the yarn

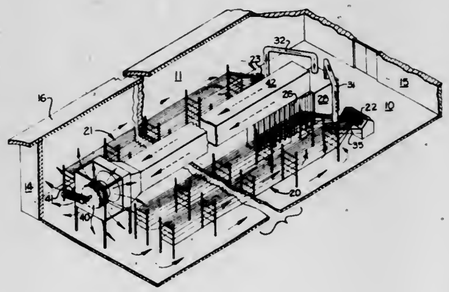


delivery means including a reference surface against which the core bears at the beginning of the winding cycle.

3,667,093
METHOD AND APPARATUS FOR CLEANING A TEXTILE CREEL AND WINDING APPARATUS

Clifford Culpepper, Jr., 1401 Ferncliff Road, Charlotte, N.C.

Filed Jan. 2, 1970, Ser. No. 161
Int. Cl. D02j *7/00*; B65h *49/00*
U.S. Cl. 28—55.3 16 Claims

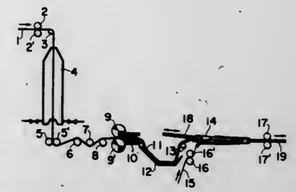


An apparatus and method for removing waste material, such as lint and the like, from textile apparatus such as a yarn package supporting creel and a beam winding means spaced from the creel, which waste material is generated by the unwinding of a plurality of ends of yarn from packages in the creel, advancing of the yarn to the winding apparatus and rewinding of the yarn into a composite package and is normally moved toward the winding apparatus by the advancement of yarn, and wherein air is induced to flow about the textile apparatus and through a waste material collecting means with the air being directed to pass through the creel toward the winding means to impart additional impetus to the waste material being moved by advancement of the yarn and thereby ensure continued conveyance of waste material to the collecting means.

3,667,094
METHOD FOR HEAT-SETTING OF CRIMPS OF ARTIFICIAL FILAMENT TOWS

Masahide Yazawa, Toyko, Japan, assignor to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed May 27, 1970, Ser. No. 40,795
Int. Cl. D02g *1/12*
U.S. Cl. 28—72.14 5 Claims

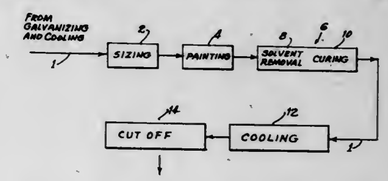


The present invention provides a method of producing excellent crimped fibers, in which artificial fibers are subjected to mechanical crimping, enveloped in a crimped state in a wrapping under tension, and are passed through a high temperature pressurized saturated steam chamber at the annealing temperature of the fibers. The crimps are permanently fixed by the effect of moisture and heat under a lateral pressure. The resulting fibers, when made into an end product, have a high degree of crimp recovery upon reheating in the finishing process, even if the crimps have been straightened by processing in air before finishing operation.

3,667,095
APPARATUS FOR COATING SURFACES AND CURING THE SAME AT HIGH SPEEDS

Arthur E. Ostrowski, Alsip, and Raffaele Basile, Chicago, both of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Dec. 17, 1969, Ser. No. 885,824
Int. Cl. B23p *35/00*; B23k *31/02*
U.S. Cl. 29—33 D 5 Claims



A machine for galvanizing and coating of steel tubing operating continuously to achieve high rates of production is provided with means for applying a protective film to a tube formed from strip steel and coated with zinc and includes means for removing the solvent from the film material and curing the material after the coating has been applied. The means includes a multistage heating apparatus to sequentially remove the solvent and cure the material.

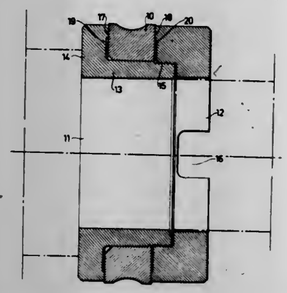
3,667,096
ROLL DEVICE

Kurt G. Edsmar, Huddinge, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Continuation of application Ser. No. 760,459, Sept. 18, 1968, now abandoned. This application Nov. 4, 1970, Ser. No. 87,008
Claims priority, application Sweden, Sept. 18, 1967, 12795/67
Int. Cl. B21b *31/08*
U.S. Cl. 29—125 5 Claims

A roll, for rolling metals or for grinding, comprises (1) a roll ring formed of a metal carbide, on (2) a metallic holder

or support means, which latter means consists essentially in a flanged sleeve, on which the roll ring is disposed, with one side face of the same abutting against a peripheral part of the flange of the sleeve, and a co-operating flanged muff threaded onto the sleeve and having a peripheral part



abutting against the other side face of the roll ring. Said flanges are so profiled as to leave annular slits on either side of the roll ring, in which slits there is provided a suitable adhesive substance "glueing" the roll ring to the flanges of the support means.

3,667,097

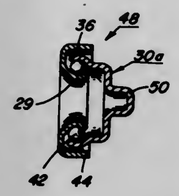
METHOD FOR MAKING A BALL BEARING

Albert G. Germann, North Caldwell, N.J., assignor to G & H Mechanical Laboratory, Inc., Township of Wayne, Passaic County, N.J.

Original application Nov. 4, 1970, Ser. No. 86,772, now Patent No. 3,633,982, dated Jan. 11, 1972. Divided and this application Nov. 9, 1971, Ser. No. 197,085

Int. Cl. B23p *11/00*; F16c *19/02*

U.S. Cl. 29—148.4 A **9 Claims**



There is disclosed a method for manufacturing a ball bearing in which the inner race members are made of sheet metal so as to provide a precision bearing of very low cost. The sheet metal ball bearing of this invention is contemplated to be made with three different styles of internal inner race members disposed to be attached to or used with office furniture, home appliances, conveyors, automotive devices and the like by three different means. Attachment of the bearings may be by spot welding, staking, spinning, bolting, riveting, in press fit seats and other conventional means. These ball bearings are commonly designated as unground cageless bearings wherein the balls are arranged in the raceway with the balls in substantially tangential circumferential engagement with each other so as to provide a bearing having a determined amount of play after the bearing is assembled. The manufacture of the ball bearings is with an "in line" assembly system or by a rotary table system. In either system the bearing components are carrier through several stations for assembly to a determined configuration. These bearings are contemplated as having an outer flange drawn to a determined diameter which is merely a matter of selection. Size change of this diameter is accomplished by changing of the dies for the production of an outer blank diameter and for drawing the flange to a determined outer diameter. These bearings have inner and outer members which are of sheet metal and after assembly the bearings may be case hardened.

3,667,098

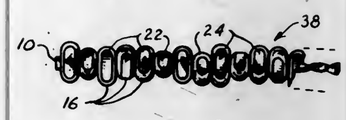
METHOD OF MANUFACTURING ORNAMENTAL ELEMENT

Eliezer Levy, Bay Shore, N.Y., assignor to Filigree Arts Inc., New York, N.Y.

Filed July 24, 1969, Ser. No. 844,518

Int. Cl. B21f *43/00*; B23p *13/00*

U.S. Cl. 29—160.6 **16 Claims**



An ornamental element for use as a decorative addition to jewelry comprises a strip of material having a plurality of parts integrally formed from the material, each of the parts having a surface exposed at the periphery of the strip. The surface of each part is characterized by a first portion of a given configuration and a second portion of different configuration. The second portions of the parts are randomly positioned about the axis of the integral strip to effect an irregular but attractive profile. The method of manufacturing the element comprises providing a strip of material having a plurality of parts proximately and adjacently arranged along the axis of the strip, compressing the parts to alter the configuration thereof and twisting the strip to rotatably position the altered portions randomly at different locations about the axis of the strip. In the most preferred embodiment, a plurality of strands of metallic material such as gold are combined so as to provide a spirally wound strand extending axially on a core strand. The strip is then flattened, as by passing it between a pair of rollers. The flattened strip is then twisted until the flattened portions are randomly positioned about the axis of the strip.

3,667,099

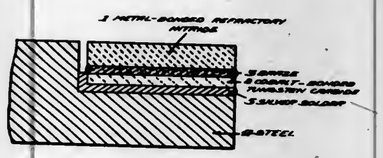
METHOD OF SECURING DENSE, METAL-BONDED REFRACTORY NITRIDE BODIES TO STEEL AND PRODUCT

Alan B. Palmer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Mar. 5, 1968, Ser. No. 710,620. Divided and this application July 31, 1970, Ser. No. 64,937

Int. Cl. B23p *3/20, 3/26*

U.S. Cl. 29—191 **13 Claims**



Dense, metal-bonded refractory nitride elements such as cutting edges are secured to metal supports such as steel tool shanks by metallurgically bonding between the two materials a dense, cobalt-bonded tungsten carbide connecting element having an expansion coefficient approximating that of the nitride element.

3,667,100

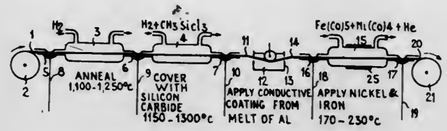
METHOD OF MANUFACTURING COMPOSITE WIRE PRODUCTS HAVING A TUNGSTEN CORE AND A MAGNETIC COVERING

Michel Marchal, Palaiseau, and Jean Bouygues, Fontenay-Aux-Roses, both of France, assignors to Compagnie Francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Filed Mar. 25, 1969, Ser. No. 811,281

Int. Cl. G11b *5/66*; B44d *1/16, 1/06*; C23c *11/08, 11/02*

U.S. Cl. 29—195 **10 Claims**



A tungsten wire core is covered with a sheath of silicon carbide, over which a conductive metal coating is applied such as aluminum, nickel or the like which wets, but does not chemically react with the silicon carbide; a magnetic nickel-iron compound is then applied over the metal coating, the metal coating providing a good conductive surface beneath the magnetic cover. The resultant composite wire core has an average tensile strength of 220 kg/mm² and a modulus of elasticity of 40,000 kg/mm².

3,667,101

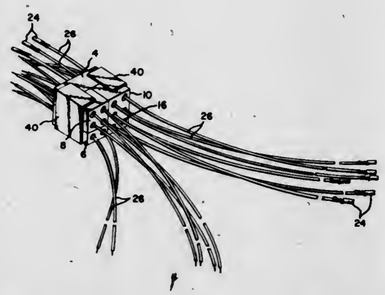
IMPROVED CONNECTORS AND GUIDE MEANS FOR ELECTRICAL HARNESS MAKING

James Albert Kloth, St. Petersburg, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 13, 1970, Ser. No. 27,585

Int. Cl. H01r

U.S. Cl. 29—203 HC **8 Claims**



Electrical harness is manufactured by positioning connector housings in back-to-back relationship, inserting wires through the aligned cavities in the housings until the housings are on an intermediate portion of the wires, applying electrical terminals to the ends of the wires, and moving the housings axially along the wires until the terminals are contained in the cavities. In accordance with alternative embodiment, the wires are inserted through cavities in a separate guide member prior to application of terminals and insertion of terminals into housing cavities. Guide is removed from wires after insertion of wires into housing cavities.

3,667,102

APPARATUS FOR APPLYING INSULATING HOUSINGS TO ELECTRICAL CONNECTORS

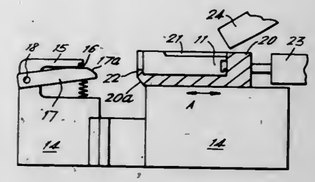
Gilbert Auguste Guillemette, and Michel Jean Dolorme, both of Val D'Oise, France, assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 7, 1970, Ser. No. 52,907

Claims priority, application France, July 11, 1969, 6923903

Int. Cl. H05k *13/00*

U.S. Cl. 29—203 **6 Claims**



An apparatus for applying insulating housings to electrical connectors comprises first means for releasably retaining an insulating housing; second means for releasably retaining an electrical connector for insertion and retention in the housing; and third means for effecting relative reciprocal movement between the first means and the second means towards and away from each other, the connector being inserted into the housing as the first means and the second means move towards each other, and being retained in the housing and released from the second means as the first means and the second means move away from each other.

3,667,103

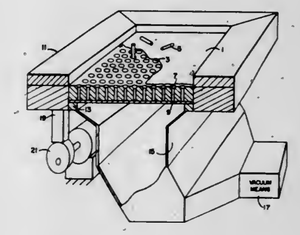
APPARATUS FOR INSERTING TERMINALS IN AN APERTURED PLATE

Edwyn H. Petree, Burlington, N.C., assignor to The United States of America as represented by the Secretary of the Army

Filed July 21, 1970, Ser. No. 56,867

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 V **2 Claims**

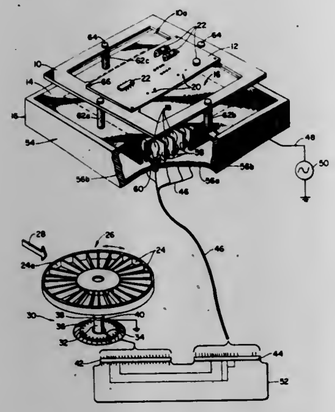


An apparatus for inserting terminals into a logic plate having a grid of apertures to enclose the terminals including a screen adjacent the lower side of the plate to prevent the terminals from falling through the plate. The plate and screen are supported on a frame that is connected to a means for vibrating the frame. A means is connected beneath the screen for causing a greater atmospheric pressure above the plate than below it. As the frame is rapidly vibrated with sufficient amplitude to cause the terminals to stand on their ends, a vacuum means is applied beneath the plate to assist in drawing the terminals into the apertures.

3,667,104
POSITION LOCATING APPARATUS EMPLOYING MULTIPLE PROJECTING LAMPS

George W. Chamillard, East Bridgewater, and David M. Winsor, North Attelboro, both of Mass., assignors to Teradyne, Inc., Boston, Mass.

Filed July 2, 1970, Ser. No. 51,842
Int. Cl. H05k *13/04*; B23q *17/00*
U.S. Cl. 29—203 B 6 Claims

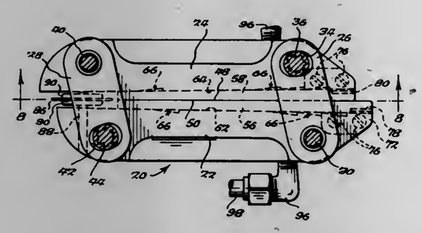


Position-locating apparatus projects light from an array of lamp devices onto one or more selected locations on a support member to indicate automatically that a correspondingly-selected device is to be positioned at each illuminated location, typically for assembly onto the support member. The designation of the selected device lights a selected lamp element of the array for illuminating each position through an optical mask. Each lamp projects light over an area on the support member that partially overlaps the area which one or more other lamp elements can illuminate, but only a single lamp illuminates windows in a single unique portion of the mask.

3,667,105
STRIP INSERTING APPARATUS

James F. Sharpe, Buffalo, N.Y., assignor to Acme Highway Products Corporation, Buffalo, N.Y.

Filed May 26, 1970, Ser. No. 40,570
Int. Cl. B23p *19/02*; E01c *23/02*
U.S. Cl. 29—235 16 Claims

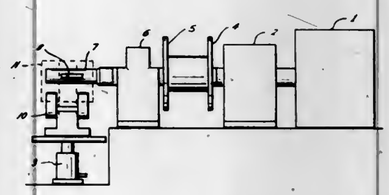


A strip inserting apparatus comprising a pair of elongated jaw members extending in a side-by-side relation and connected together for relative axial movement by a pair of links pivotably mounted adjacent opposite ends of the jaw members to form a parallelogram linkage. A longitudinally and downwardly tapered groove is provided in the apparatus for progressively inserting a strip of material into a slot. The groove is defined by laterally spaced gripping surfaces on the jaw members, which surfaces are tapered rearwardly of the apparatus in a converging relation and a pair of downwardly inclined surfaces extending inwardly of the respective gripping surfaces. Anti-friction rollers can be provided on the jaw members to facilitate relative movement between the jaw members and the strip. At least one insert wheel is journaled on the rearward portion of the apparatus to insert the strip to the desired depth. An actuator connected to the jaw members moves the jaw members alternately in an axial direction along the strip. A vibrator is mounted on the jaw members below the actuator for facilitating insertion of the strip. Passages formed in the jaw members direct a lubricant-adhesive to the sides of the strip prior to insertion thereof.

3,667,106
COLLAR SALVAGING DEVICE

George L. Hill, 717 Carby, Houston, Tex.

Filed July 30, 1969, Ser. No. 856,229
Int. Cl. B23p *19/04*
U.S. Cl. 29—240 3 Claims

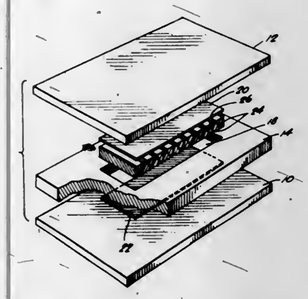


A tool for salvaging collars from pipe having means for gripping the collar and rotating the pipe within the collar to break the connection and effect removal of the collar therefrom, including the novel process of cooling the collar while blocks are welded within the pipe and adapting the device employed for rotating the pipe to the various sizes of pipe.

3,667,107
FILLER FOR ROLL-WELD STRUCTURES

Raymond H. Anderson, Jr., Santa Ana; Richard A. Rawe, and Bennett V. Whiteson, both of Granada Hills, all of Calif., assignors to McDonnell Douglas Corporation

Filed Oct. 1, 1968, Ser. No. 764,064
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 2 Claims

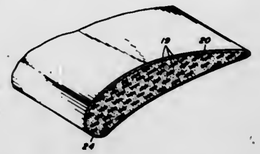


A roll-welding process for fabricating beryllium roll-welded panels where the filler material is an austenitic manganese or Hadfield steel which can be chemically or mechanically removed from the structure that has been diffusion bonded by the process.

3,667,108
METHOD OF MAKING A BERYLLIUM TITANIUM COMPOSITE

Richard Schmidt, McLean, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 17, 1970, Ser. No. 29,597
Int. Cl. B23k *31/02*
U.S. Cl. 29—480 5 Claims

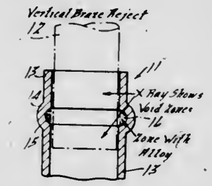


A method of making a beryllium reinforced titanium turbine blade. The method utilizes a preform composed of beryllium rods within a titanium structure. The preform is formed into intricate blading shapes by isothermal forging techniques.

3,667,109
VERTICAL BRAZING SYSTEM

James E. Alcenius, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Apr. 20, 1970, Ser. No. 29,909
Int. Cl. B23k *31/02*
U.S. Cl. 29—490 7 Claims



A system for brazing together a fitting and tube while in a vertical position. A portion of the interior of the brazing alloy reservoir in the fitting is contaminated with a film of material such as aluminum before the brazing alloy ring is inserted in the reservoir. At the site, the tube is inserted in the fitting to which heat is then applied. Since the contaminant prevents the melted brazing alloy from adhering to a portion of the reservoir interior, the alloy is forced upwardly and downwardly into the annular gaps between the tube and fitting, into which it continues to be drawn by capillary action.

3,667,110
BONDING METALS WITHOUT BRAZING ALLOYS

Childress B. Gwyn, Jr., Wethersfield, Conn., assignor to Contacts Incorporated, Wethersfield, Conn.

Filed Nov. 3, 1969, Ser. No. 873,721
Int. Cl. B23k *31/02*, *35/38*
U.S. Cl. 29—494 18 Claims

Excellent bonds between usually-brazed metals are obtained, without brazing or soldering alloys, by initially oxidizing the surfaces to be bonded and then bonding in a reducing atmosphere at a temperature below the melting point of either metal. If the metals form a eutectic, bonding will be carried out above the eutectic temperature. It is believed that the oxidation-reduction cycle produces a perfectly clean or nascent surface which facilitates bonding. Yields are improved by initially providing a very thin plated coating of silver, copper or nickel, or combinations thereof, on one workpiece.

3,667,111
PROCESS FOR FLUXING AND BRAZING PARTS MADE OF ALUMINIUM OR ALUMINIUM ALLOY

Andre Chartet, Meudon, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Mar. 2, 1970, Ser. No. 15,601
Claims priority, application France, Mar. 5, 1969, 6906108; Sept. 12, 1969, 6931230
Int. Cl. B23k *31/02*, *35/36*
U.S. Cl. 29—495 6 Claims

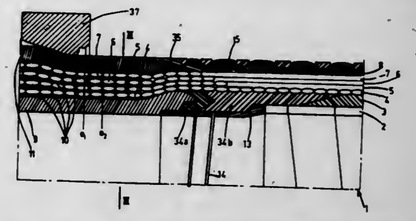


The process is characterized in that one proceeds to prepare a fluxing compound, in that a thin coat of this compound is deposited on at least those of portions of parts requiring to be assembled, then that after partly melting the compound the parts are heated up to brazing temperature.

3,667,112
PROCESS FOR MAKING COUPLINGS OF REDUCED SIZE AND CAPABLE OF TRANSMITTING HIGH MECHANICAL STRESSES BETWEEN AN ARMORED FLEXIBLE MEMBER AND A RIGID ELEMENT

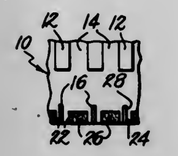
Andre Chevalier, Pantin; Pierre Grolet, Viroflay, and Remi Reynard, Montesson, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil Malmaison (Hauts de Seine), France

Filed Apr. 2, 1970, Ser. No. 25,118
Claims priority, application France, Apr. 3, 1969, 6910365
Int. Cl. B21d *39/00*; B23p *11/02*
U.S. Cl. 29—508 5 Claims



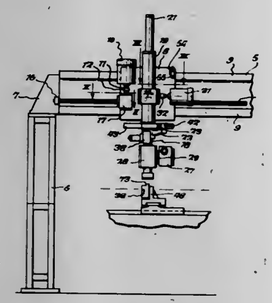
A process for making a connecting element, made of a hard material and provided with a jagged external wall, integral with one end of a flexible member having at least one armoring consisting of metallic wires, comprising the steps of covering said connecting element with an anchoring sleeve made of a material of lower hardness than that of the material constituting the armoring and said element, laying the armoring onto said anchoring ring, covering the armoring with a compression sleeve of lower hardness than that of the armoring and drawing the assembly of the connecting element, the armoring and said compression ring through a die, thereby producing through a great reduction in the diameter of said compression ring, a penetration of said armoring into said anchoring ring and into said compression ring and at the same time an inlaying of the material forming said anchoring ring between the jags of said jagged external wall of the connecting element.

3,667,113
KNITTING MACHINE NEEDLE BED
Morris Philip, 2519 Grand Avenue, Bronx, N.Y.
Filed Apr. 17, 1970, Ser. No. 29,472
Int. Cl. B23p 25/00
U.S. Cl. 29—527.6 13 Claims



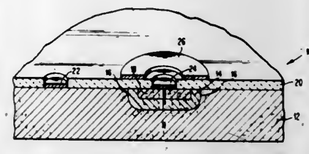
A knitting machine needle bed is provided with a hard wear surface by removing metal in the areas subjected to heavy wear, introducing hard material in such areas, and grinding the hardened material down to the proper level. The hard material is deposited in particulate, liquid or vapor form and becomes substantially integral with the base. If combining teeth are to be inserted, the hard material is ground away in the appropriate areas, which are then slotted for the insertion of the combining teeth.

3,667,114
TOOL CHANGING AND TRANSFER MECHANISM
Edwin R. Smith, Seneca Falls, and Constantine F. Cafolla, Waterloo, both of N.Y., assignors to SFM Corporation, Union, N.J.
Filed Oct. 2, 1969, Ser. No. 863,234
Int. Cl. B23q 3/155
U.S. Cl. 29—568 10 Claims



A tool changing and transfer mechanism for use with a machine having a tool holding member. A tool storage magazine is arranged in spaced relation to the tool holding member and adapted to store a plurality of tools in a plurality of storage positions. The mechanism includes a tool changer comprising a carrier having plural tool engaging devices for simultaneously carrying a used tool being returned and a new tool to be used. The changer is moved between the storage magazine and machine tool holder by controlled drive means, and the carrier is moved through a path adjacent the magazine storage positions by drive means controlled by sensing means movable with the carrier and engageable with locating stops associated with the storage positions and selectively actuated by a control circuit including a stepping relay and selector switches. The carrier is extended and retracted along a first axis for insertion and removal of a tool, rotated about a second axis intersecting the first axis for alternative positioning of the tool engaging devices, and rotated about a third to orient it one way for removing and replacing tools relative to the magazine and another way for removing and inserting tools relative to the machine tool holding member.

3,667,115
FABRICATION OF SEMICONDUCTOR DEVICES WITH CUP-SHAPED REGIONS
Fred Berson, Wappingers Falls, and Herbert S. Lehman, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Original application Jan. 30, 1965, Ser. No. 468,235, now Patent No. 3,461,360. Divided and this application May 12, 1969, Ser. No. 823,876
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 8 Claims



A method for forming a semiconductor device having a substantially cup-shaped region of one conductivity type between two regions of opposite conductivity type to preferably form a field effect transistor device. The region may be formed through one opening in an insulating layer located upon the surface of the device. Two successive diffusion operations of opposite conductivity types made through this same opening in the insulating layer forms the cup-shaped region to the desired thickness.

3,667,116
METHOD OF MANUFACTURING ZENER DIODES HAVING IMPROVED CHARACTERISTICS
Avio Di Felice, 43 Mount Hood Terrace, Melrose, Mass.
Continuation-in-part of application Ser. No. 539,753, Apr. 4, 1966, now abandoned. This application May 15, 1969, Ser. No. 825,025
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—574 3 Claims

A method of manufacturing zener diodes comprising the steps of sequentially forming and packaging a plurality of diodes, thereafter measuring the knee impedances of the diodes and irradiating those which have knee impedances exceeding a specified value with a high energy electron beam approximating the energy levels of beta radiation.

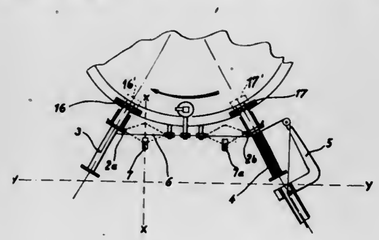
3,667,117
ELECTROLUMINESCENT DIODE CONFIGURATION AND METHOD OF FORMING THE SAME
Hans J. Kunz, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.
Filed Feb. 28, 1969, Ser. No. 803,216
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—576 7 Claims



An electroluminescent diode which includes an electromagnetic radiation emitting PN junction formed by diffusing, into both surfaces of a semiconductor slice of a first conductivity, a dopant material of opposite type conductivity. Contact metallizations are mounted within windows in an insulating barrier which covers said diode so as to form electrical contacts engaging both the N and P type areas of the diode. An annular reflector metallization pad is mounted on the surface of the device over the PN junction and spaced

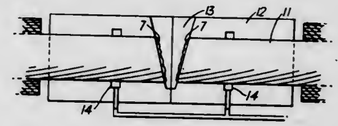
from one surface of the semiconductor material by the insulating coating so as to reflect light out through the surface opposite to that on which an anti-reflection coating has been placed.

3,667,118
METHOD AND APPARATUS FOR FINISHING ELECTRIC COILS
Giuseppe Camardella, Via E, Biondi 1, 20154 Milan, Italy
Filed Apr. 20, 1970, Ser. No. 29,798
Claims priority, application Italy, Apr. 26, 1969, 16088 A/69
Int. Cl. H01f 7/06
U.S. Cl. 29—605 9 Claims



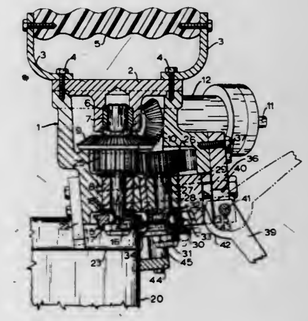
In a method and apparatus for winding and finishing electric coils in which the coils are intermittently advanced by a turret through a plurality of working stations including at least one winding station and in which the coils remain interconnected by a length of wire extending from the winding station to the next station or to all the other working stations, the improvement wherein the wire is wrapped around the terminal lug of the spool in the winding station, and preferably simultaneously also in the subsequent station, by engaging the mentioned length of wire and rotating same to cause it to describe a conical surface which embraces the lug and has its apex at the base of the lug.

3,667,119
METHOD OF JOINTING AND TERMINATING ELECTRIC CABLES
John Stephen Cleaver, Faversham; Peter Guilford, Erith; Frederick James Kimpton, Bexleyheath, Kent; Thomas John Page, Beckenham, Kent, and Norman Richard Steinberg, Dolphin Square, South Wales, all of England, assignors to British Insulated Callender's Cables Limited, London, England
Filed Apr. 4, 1969, Ser. No. 813,621
Claims priority, application Great Britain, Apr. 11, 1968, 17,484/68; June 10, 1968, 27,499/68; 27,500/68; Nov. 11, 1968, 53,371/68; 53,372/68
Int. Cl. H01r 43/00
U.S. Cl. 29—628 R 20 Claims



Electric cables having at least one conductor in the form of a strand through the interstices of which liquid impregnant for the cable dielectric can pass are jointed or terminated by forming a heat sink surrounding the end of the stranded conductor and bonding the stranded conductor to a terminal or to another conductor by the application in the molten state of an adherent body of metal to substantially the whole of the cut end face of the stranded conductor or between the cut end face of the stranded conductor and the end of the terminal or of the other conductor. During bonding, liquid impregnant is removed from the interstices between the wires of the stranded conductor in the region of a cut end thereof by applying vacuum to the stranded conductor. The bonding process is preferably a welding process, suitably MIG welding, comprising a first stage in which the end of the stranded conductor is sealed by a layer of weld metal and a second stage in which the connection is completed.

3,667,120
APPARATUS FOR REMOVING THE TOPS OF CONTAINERS
William F. Krist, N106 W20997 Park Hill Lane, Germantown, Wis.
Filed Feb. 10, 1970, Ser. No. 10,259
Int. Cl. B67b 7/32, 7/38
U.S. Cl. 30—15.5 7 Claims

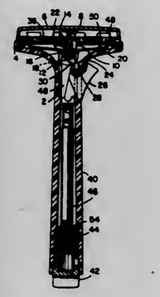


An apparatus for opening metal containers including a casing to be supported on the container. A drive shaft, driven either through a manual crank or an electric motor, is journalled within the casing and carries a drive roller that rides against the inner edge of the chime on the container. A slide is mounted for lateral movement with respect to the casing and a second shaft is journalled within the slide and carries a cutter adapted to engage the outer edge of the chime. The second shaft is driven from the first shaft through a gear drive. The slide is moved toward the casing to bring the cutter into engagement with the chime by a lever arm which is pivoted to the casing and acts against the outer end of the slide.

3,667,121
SAFETY RAZOR
Francis W. Dorion, Jr., Hingham; Warren I. Nissen, Topsfield, and Roger L. Perry, Lynnefield Center, all of Mass., assignors to The Gillette Company, Boston, Mass.
Filed July 10, 1970, Ser. No. 53,880
Int. Cl. B26b 21/32
U.S. Cl. 30—60 4 Claims

A safety razor including a head portion having a cap member mounted thereon and adapted to pivot upon one end of the razor head, the cap being held and released by a

hook latch means disposed in the razor head. The razor further includes a handle portion in which are mounted

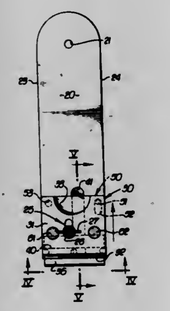


means for adjusting the exposure of the cutting edge of a razor blade retained by the head portion.

3,667,122
SAFETY RAZOR BLADE HOLDER

Leonard J. Black, Arcadia, Calif., assignor to Pacific Handy Cutter, Incorporated, El Monte, Calif.

Continuation of application Ser. No. 815,300, Apr. 11, 1969, now abandoned. This application May 12, 1971, Ser. No. 142,792
Int. Cl. B26b 29/02
U.S. Cl. 30—286 9 Claims



A safety razor blade holder comprising a longitudinally extending handle, a threaded stud carried by the handle, a guard member slidably mounted on the stud, a lock nut for clamping the guard member and handle together, a safety razor blade, and means for permitting the guard member to be positioned relative to the safety razor blade when such blade is in an operative position so as to expose or temporarily shield the edge of such blade and preventing movement of the guard member, even when the lock nut is slightly loosened, from allowing the edge of the blade to be exposed when such blade is in a second position.

3,667,123
DENTURE AND METHOD

Elbert P. Huey, Scottsdale, Artz., assignor to Comfo-Dent Corporation

Filed July 31, 1970, Ser. No. 59,922
Int. Cl. A61c 13/00
U.S. Cl. 32—2 2 Claims

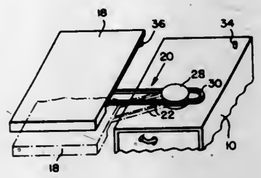


A prosthetic denture and method of manufacture and self-fitting comprising a rigid U-shaped frame bonded into notches in bases of a set of artificial teeth; a deformable metal mesh forming a plate structure for said set of teeth; a soft elastomeric material encapsulating said mesh and bonding it to said set of teeth to form a deformable plate structure, whereby a self-fitting method for installing said set of teeth comprises the coating of said plate structure with uncured elastomeric material, then placing said prosthetic denture in a persons oral cavity and deflecting said deformable plate structure into a set accurately conforming condition with an edentulus ridge in said cavity and allowing said last-mentioned elastomeric material to cure in said accurately conforming condition.

3,667,124
DENTAL TRAY AND SUPPORT

Walter P. La Force, Penfield, and Glen A. Woodhams, Rochester, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 84,975
Int. Cl. A61c 11/00
U.S. Cl. 32—22 2 Claims



Disclosed is a dental tray support mounted on a single link member which can be rotated or translated in a horizontal plane, the tray support, when not in use, fitting flush with the top of an existing dental cabinet so that the tray support appears to be the top of the cabinet.

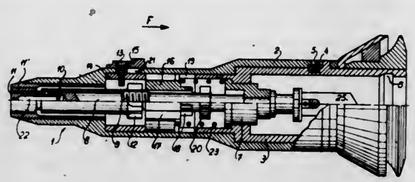
3,667,125
DENTAL HANDPIECE

Michel Seigneurin, Besancon, France, assignor to Micro-Mega S.A., Besancon, France

Filed Aug. 29, 1969, Ser. No. 854,140
Claims priority, application France, Sept. 19, 1968, 166708
Int. Cl. A61c 1/08
U.S. Cl. 32—26 9 Claims

An improved micromotor-driven dental handpiece consists of a cylindrical body which includes an inner sleeve and an outer sleeve slidingly fitting over the inner sleeve, the two sleeves being maintained axially relative to each other.

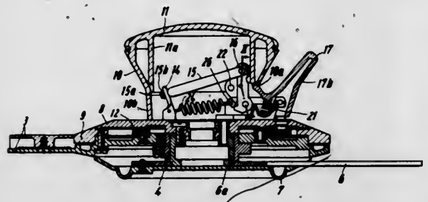
A detent slidingly mounted on the outer sleeve releasably interconnects it with a gripper-locking sleeve and concurrently actuates a mechanism by means of which the shaft of the handpiece may be intercoupled with the inner sleeve, whereupon the locking or releasing of the cutting tool is effected by turning the outer and inner sleeve relatively to each other.



3,667,126
DEVICE FOR LOCKING A ROTATABLE DRAWING HEAD

Otto Wackerfuss, Wilhelmshaven, Germany, assignor to Franz Kuhlmann KG, Prazisionsmechanik und Maschinenbau, Wilhelmshaven, Germany

Filed Nov. 28, 1969, Ser. No. 880,686
Claims priority, application Germany, Nov. 29, 1968, P 18 11 805.3
Int. Cl. B43l 13/08
U.S. Cl. 33—79 R 8 Claims

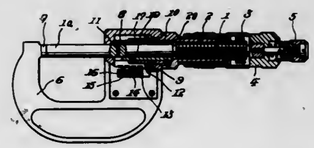


A single operating lever control for locking and unlocking a rotatable head on a drafting machine wherein a lock pawl is released from engagement with the teeth of a ratchet disc. A thumb operated lever extends along the side of the conventional hand knob and may be operated in one of two ways. Upon direct inward movement, the pawl is released only so long as the thumb lever is held. In the other mode of operation, the thumb lever is locked so that the lock pawl is retained out of ratchet disc engagement.

3,667,127
DIGITAL MICROMETER CALIPER

Taisuke Tsugami, 1-415 Shimoochiai, Shinjuku-ku, Tokyo, Japan

Filed June 4, 1970, Ser. No. 43,478
Int. Cl. G01b 3/18
U.S. Cl. 33—164 R 4 Claims

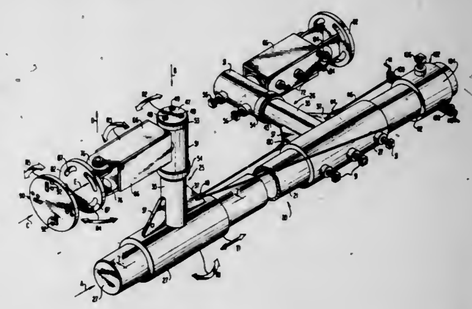


Improvements in structure of micrometer calipers of the digital type, designed to prevent ingress of any foreign matter into the interior mechanism of the caliper and to enable the digital counter incorporated to be readily zero-adjusted as required. The component parts of the caliper, particularly of the counter mechanism, can be assembled without particular skill and the caliper service life is substantially extended with reduced maintenance.

3,667,128
METHOD AND APPARATUS FOR CONNECTING PIPELINES

William A. Morgan, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed June 23, 1969, Ser. No. 835,647
Int. Cl. G01b 3/38
U.S. Cl. 33—180 R 17 Claims

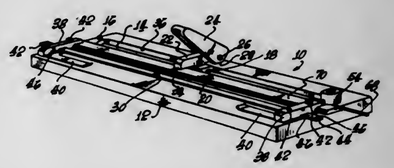


A method and apparatus for determining the spatial relationship between a pair of adjacent but separated conduit ends, re-establishing the spatial relationship thus determined at a remote environment, fashioning a conduit connecting segment at the remote environment and connecting the conduit thus fabricated to the spaced conduit ends.

3,667,129
ORTHODONTIST WIRE MARKING DEVICE

Thomas E. Aspel, P.O. Box 251, Bonsall, Calif.

Filed Jan. 28, 1970, Ser. No. 6,453
Int. Cl. A61c 7/00, 19/04
U.S. Cl. 33—189 3 Claims



This invention is a device for use by orthodontists to mark arch wires used in orthodontic work wherein the device employ a means for transcribing the measurements made by orthodontists onto a wire in a permanent fashion so that the orthodontist may then correctly shape and use the marks as guides for placement of specific bend, such as loops, or for placement of attachments such as hooks on the arch wire used in orthodontic work. The device includes a means for clamping the unformed wire in position and means for aligning measurements and impressing permanent markings upon the wire in such manner that they may be readily identified. A cam-like marking device and indicating needle are worked cooperatively for this purpose.

3,667,130

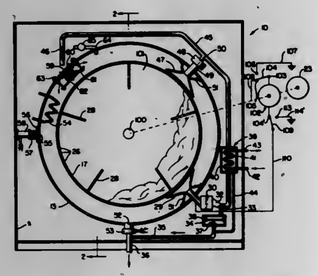
LIQUID REMOVING APPARATUS AND METHOD

Robert R. Candor, 5940 Munzer Road, Miami Township, Ohio, and James T. Candor, 5440 Cynthia Lane, Washington Township, Ohio

Continuation-in-part of application Ser. No. 696,639, Jan. 9, 1968, which is a continuation-in-part of application Ser. No. 639,354, May 18, 1967, now Patent No. 3,405,452, which is a continuation-in-part of application Ser. No. 532,266, Mar. 7, 1966, now Patent No. 3,330,136, which is a continuation-in-part of application Ser. No. 219,587, Aug. 27, 1962, now Patent No. 3,238,750, and a continuation-in-part of 748,298, July 29, 1968, and 769,155, Oct. 21, 1968, and 807,539, Mar. 17, 1969. This application July 7, 1969, Ser. No. 842,807. The portion of the term of the patent subsequent to Oct. 15, 1985, has been disclaimed.

Int. Cl. B01k 5/00

U.S. Cl. 34—1 22 Claims



This disclosure relates to a laundry apparatus, paper making apparatus or the like wherein the moisture or liquid in the wet laundry, food materials, paper slurry or the like, disposed therein is removed by an electrostatic means that provides a differential in the potential of the moisture in the laundry, food materials, paper slurry or the like and an electrode means for the moisture to tend to cause the moisture to leave the laundry, food materials, paper slurry or the like and move toward the electrode means. Such electrode means can comprise a suction nozzle which tends to draw a large volume of air through the laundry, food materials, paper slurry or the like adjacent thereto to also tend to direct the moisture from the laundry, food materials, paper slurry or the like toward the electrode means.

3,667,131

FLUID ENERGY DRYING MILL

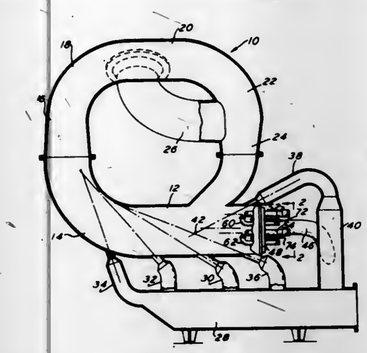
Nicholas N. Stephanoff, Haverford, Pa., assignor to Fluid Energy Processing & Equipment Company, Hatfield, Pa.

Filed June 8, 1970, Ser. No. 44,152

Int. Cl. F26b 3/08

U.S. Cl. 34—10 4 Claims

A fluid energy drying mill wherein the material to be dried is a liquid slurry of solid particles or of solids in solution. The slurry, upon being fed into the mill is immediately atomized and flash-dried, the atomization being accomplished by high pressure, high velocity gaseous fluid jets, while the flash-drying is effected by very hot, low pressure, gaseous fluid jets. The hot gaseous fluid jets comprise a plurality of gaseous fluid streams which enter from at least four different sides surrounding the feed inlet and converge at a focal point downstream of the inlet whereby the hot gaseous fluid both encompasses the fed material and concentrates its heat energy in the path of the fed material. The flash-dried particles are then centrifugally passed through the curved portion of the mill and centrifugally exhausted from the mill during their passage. Optionally, by-pass ducts may be provided between the downstack portion of the mill and the inlet chamber where atomization and flash-drying takes place whereby vapors from the downstack are used to break any



vacuum in the inlet chamber and may also be used as a tempering means to avoid case hardening of the particles.

3,667,132

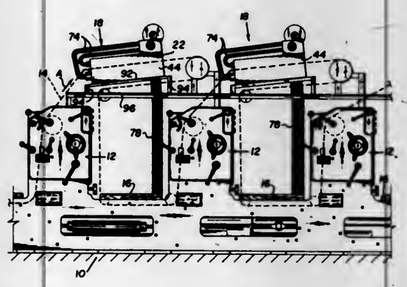
WEB DRIER AND METHOD OF TREATING A WEB IN CONTINUOUS SHEET PRINTING MACHINES

William C. Herbert, Jr., Mill Neck, N.Y., assignor to Herbert Products, Inc., Westbury, N.Y.

Filed July 13, 1970, Ser. No. 54,451

Int. Cl. F26b 7/00; F27b 9/28

U.S. Cl. 34—18 15 Claims



A web drier positionable between either the upper or lower runs of the relatively spaced web treating units of continuous sheet printing machines with the web drier having web heaters to dry the web and air appliers to break solvent laden fumes free of the web while air withdrawal means withdraw the applied air, and a method of treating the web to dry the same.

3,667,133

METHOD AND APPARATUS FOR COOLING CEMENT CLINKER

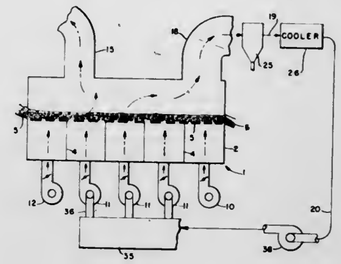
Roland L. Lincoln, Macungie, Pa., assignor to Fuller Company

Filed Apr. 9, 1970, Ser. No. 26,958

Int. Cl. F26b 5/00

U.S. Cl. 34—20 11 Claims

A method and apparatus for cooling cement clinker which includes a conventional clinker cooler wherein clinker to be cooled is supported on a grate and moved from a kiln through the cooler and cooling air is blown through and around the clinker. The air is heated and entrains solids from the hot clinker. Some of the hot air is returned to the kiln and the rest of it is directed to a dust collector and then to an air cooler. From the air cooler, the air is recirculated to be blown through a new supply of hot clinker. The cooler is a tank having a plurality of gas tubes therethrough with water



filling the tank and surrounding the tubes. The disclosure also sets forth that hot air may leave the clinker cooler, go directly to the air cooler and then to a conventional bag filter where clean air is exhausted to atmosphere. In this instance, ambient air is blown through the hot clinker.

3,667,134

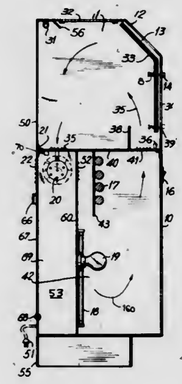
STERILIZING HAND DRYER

Thomas Rockson, 1920 Railroad Avenue, Holbrook, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,985

Int. Cl. F26b 19/00

U.S. Cl. 34—60 9 Claims



An electrical hand dryer apparatus for sterilizing the user's hands, having a closed compartment and including a blower for recirculating a volume of air past a chamber in which the user inserts his hands. The drying apparatus includes germicidal lamps for sterilizing the air and a means for heating the air while it is being recirculated. The apparatus also includes moisture absorbing rods for drying the air.

3,667,135

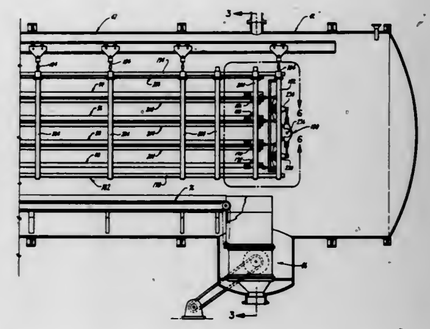
VIBRATORY CONVEYOR SYSTEM

Lorne A. Rowell, Lachine, Quebec, Canada, assignor to John T. Horton, Hinsdale, Ill.

Continuation-in-part of application Ser. No. 9,102, Feb. 9, 1970, which is a continuation of application Ser. No. 772,944, Nov. 24, 1968, now abandoned. This application Dec. 24, 1970, Ser. No. 101,343

Int. Cl. F26b 13/10

U.S. Cl. 34—92 7 Claims



A vibratory conveyor system for use in the treatment of material as it is being conveyed (e.g., freeze dried), such system being in the form of a frame composed of conduit means for heat exchange medium and superposed vibratory conveying decks having conduit means for the heat exchange fluid below the surface thereof. In a specific system, four superposed conveying decks are mounted on springs and driven from a common drive shaft via eccentrics and rockers so that the vertical and horizontal forces cancel each other, the decks having coils to conduct cooling (or heating) fluid and the longitudinal members of the supporting frame being tubular to receive the same fluid so that they will change lengths as the decks change length in response to temperature changes.

3,667,136

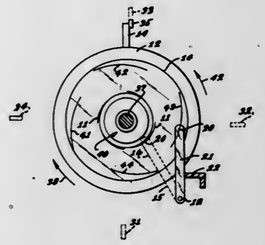
SOUND REPRODUCING EDUCATIONAL TOY BANK

Karen B. Goodkind, Los Angeles; Byrett B. Hamilton, Calabasas; Ake L. Larsson, Redondo Beach, and Jimmie L. Whittington, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Continuation-in-part of application Ser. No. 783,952, Dec. 16, 1968. This application Mar. 8, 1971, Ser. No. 122,069

Int. Cl. G09b 19/00

U.S. Cl. 35—8 A 10 Claims



A toy bank capable of responding to the insertion of a coin of any one of four denominations, including 1¢, 5¢, 10¢ and 25¢ in any one of four coin slots to reproduce any one
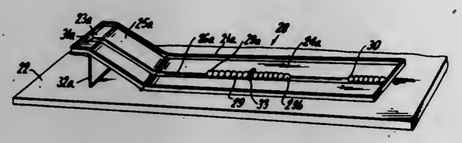
of 16 unique sayings which is a function of the slot in which the coin is inserted and the coin's denomination. A 17th saying is reproducible whenever a coin is not inserted in any of the slots.

3,667,137

APPARATUS FOR TEACHING ELECTRICAL CONCEPTS

Frank J. Muhlfeld, 300 North Street, Greenwich, Conn.

Filed Apr. 6, 1970, Ser. No. 25,734
Int. Cl. G09b 23/18
U.S. Cl. 35—19 A 5 Claims



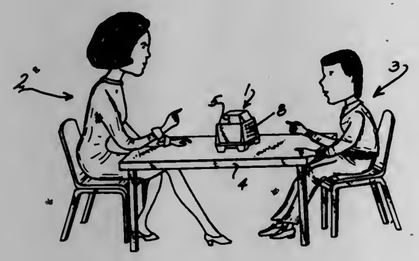
A method of teaching electrical concepts such as voltage, current and resistance by the use of an analogous mechanical model is disclosed in which potential is simulated by releasing a ball from an elevated position, and electron conduction is simulated by the arrangement of a plurality of abutting balls on a track that are contacted by the released ball.

3,667,138

SPEECH TRAINING APPARATUS AND METHOD OF TEACHING THEREWITH

Ronald S. Cohen, Milwaukee, Wis., assignor to Behavioral Controls, Inc., Milwaukee, Wis.

Filed June 29, 1970, Ser. No. 50,747
Int. Cl. G09b 5/04
U.S. Cl. 35—35 C 14 Claims



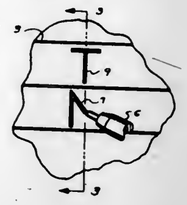
A housing has an upper dome illuminated by a lamp. A pair of permanent magnet cone speakers are mounted in the opposite sidewalls of the housing and connected in series across the input to a preamplifier. An amplifier connects the sound related output signal to the input of a power transistor connected in series with the lamp to a regulated DC supply. The speakers, housing and amplifier establish a response range from 250 to 4,000 Hertz to reject voiceless sounds. A potentiometer connects the supply directly to the input of the power transistor for preheating of the lamp and controlling the response. A delay switch connects and disconnects a resistor in the base circuit of the transistor to vary the timing and cutoff of the lamp.

3,667,139

METHOD OF WRITING FOR COMMUNICATING WITH THE VISUALLY HANDICAPPED AND PAPER THEREFOR

Ruth L. Barr, 53 Webster Acres, Webster Groves, Mo.

Filed Sept. 14, 1970, Ser. No. 71,830
Int. Cl. G09b 21/00
U.S. Cl. 35—38 16 Claims



Marking a polyethylene paper overlaying a hard surface with an ordinary extra size ball point pen or dull pencil embosses characters on the upper side of the paper. These raised characters may be read tactually by the visually handicapped, including the blind. The characters can also be read visually. The embossing effect is enhanced by rubbing a finger over the area marked. A paper embossed with equally spaced parallel lines facilitates the method.

3,667,140

PROTECTIVE FOOTGEAR FOR KARATE PARTICIPANTS

Roy E. Hunderford, 120 Christiansen, Houston, Tex.

Filed Sept. 29, 1970, Ser. No. 76,559
Int. Cl. A43b 1/10; A61f 5/00
U.S. Cl. 36—4 6 Claims



As a representative embodiment of the invention disclosed here, a boot or shoe is provided with protective pads around and under the heel, under the toe, and on the outward side of the shoe. Another pad is placed over the instep and adapted to extend upwardly therefrom to protect the shin of the wearer.

3,667,141

SHOE CLEAT

Samuel H. White, 20137 Sherwood Avenue, Detroit, Mich.

Filed Oct. 16, 1970, Ser. No. 81,278
Int. Cl. A43c 15/00
U.S. Cl. 36—67 B 9 Claims

An inexpensive sheet metal cleat for golf shoes or the like is formed by stamping from a strip of metal, such as aluminum, and has a body section with a roughened or toothed surface that is attached to the bottom of a shoe and cleats integral with the body section extending in a direction opposite to the roughened surface.

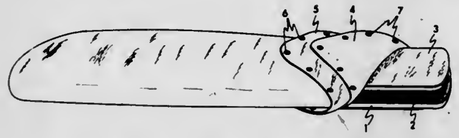


3,667,142

COMPRESSION PAD OF KNITTED ELASTIC

Alfred M. Goodloe, deceased, late of Westfield, N.J., and by Edith Jamison Goodloe, executrix, 105 Duncan Hill Road, Westfield, N.J.

Filed Feb. 27, 1970, Ser. No. 15,030
Int. Cl. D06f 71/36
U.S. Cl. 38—66 26 Claims



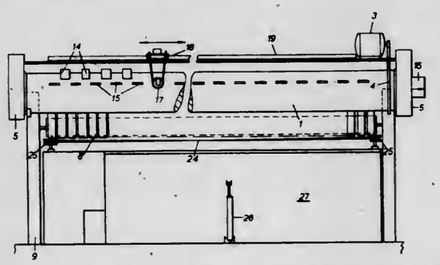
A resilient body for use under compressive conditions comprising knitted material knit from rubber (or other elastic material) thread-like strands, the said body being of sufficient thickness to permit considerable travel of compressing objects into the resilient body. The said resilient body is used as a laundry pad on commercial presses in laundry and cleaning establishments; as a shock mount, vibration damper, vibration isolator, or a cushion or packaging pad, and as a component of automobile or other tires.

3,667,143

FEEDING OF MACHINES

Roger Smith Hall, Thirsk, England, assignor to Baker Perkins Jaxons Limited, Glasgow, Scotland

Filed May 26, 1970, Ser. No. 40,602
Int. Cl. D06f 67/04
U.S. Cl. 38—143 7 Claims



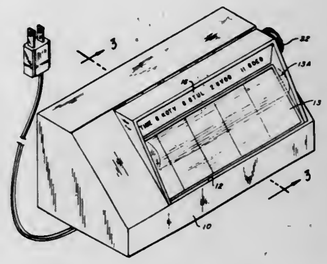
The invention comprises a method of, and apparatus for, feeding sheets to a machine. A sheet has one edge secured temporarily to a cylinder after such edge has been placed under tension and such edge is carried down by the cylinder and released onto an endless conveyor which feeds the sheet to the machine. The sheet edge is preferably secured by suction through openings in the cylinder wall and tensioned by at least one gripping means adapted to have linear movement parallel with the cylinder axis.

3,667,144

SCHEDULE DISPLAY DEVICE

Edward E. Drake, Tulsa, Okla., assignor to LVO Cable, Inc., Tulsa, Okla.

Filed Dec. 15, 1969, Ser. No. 884,915
Int. Cl. G09f 11/29
U.S. Cl. 40—82 3 Claims



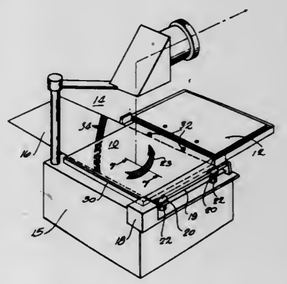
This invention relates to a schedule display device. More particularly, the invention relates to a device for displaying a schedule, such as a television program schedule, printed on a strip of rolled paper, the device including a housing having a window, means within the housing for rotatably supporting the roll of paper, a horizontal drive roller supported in the housing adjacent the window, means of rotating the drive roller, and means of contacting the paper with the drive roller for advancing the paper past the window.

3,667,145

COLOR AND MOTION ANIMATIONS FOR TRANSPARENCIES

John S. Wright, 6115 North Lake Drive Court, Milwaukee, Wis.

Filed Sept. 23, 1969, Ser. No. 860,356
Int. Cl. G09f 13/34
U.S. Cl. 40—106.53 13 Claims



For use on an overhead projector to give an illusion of motion, a transparency sheet bearing art work in the form of a grid is superposed on a relatively movable transparency sheet or web bearing a second or control grid. The lines or groups of lines of the art work grid and the second grid are parallel and both are at an angle to the direction of relative motion. On either sheet the lines may be of any appropriate color and may be made up of rows of dots. Dots of differing color in rows at different angles may be used. On either sheet, but not both, the lines are desirably arcuate and drawn on like radii about centers successively offset on a line parallel to the direction of relative movement, such arcuate lines being tan-

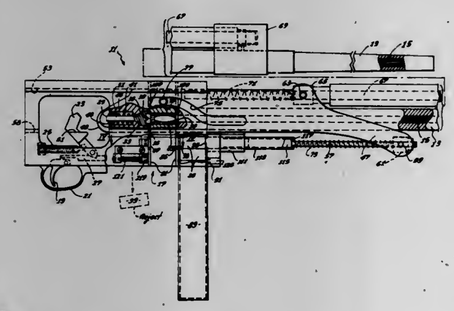
gent to a construction line at the desired 45° angle to the direction of motion. On both sheets, the width or apparent width of respective lines is substantially identical with the width or apparent width of intervening spaces between the lines.

3,667,146
DEVICE FOR RAPIDLY LOADING A REMOVABLE CYLINDER
Jean Dupouy, 258, Rue de Stalingrad 93, Drancy, France
Filed May 18, 1970, Ser. No. 38,055
Claims priority, application France, May 21, 1969, 6916476
Int. Cl. F42b *39/04*
U.S. Cl. 42—89 5 Claims



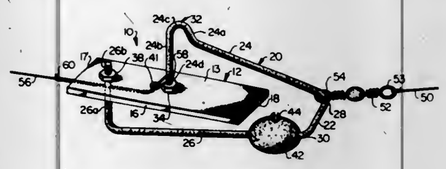
A device for rapidly loading part of a revolver cylinder, the loading speed being the result of a natural combination of a thrusting motion whereby rounds of ammunition carried by said device are inserted into the cartridge chambers of the cylinder, and a sideway motion whereby the device is disengaged. The loading device comprises a substantially flat support having a concave edge and shaped as a circular sector matching a portion of the revolver cylinder, and cartridge case securing elements located on the support in positions registering with the cylinder cartridge chambers, said elements opening out on the same side as the concave edge of the support.

3,667,147
RISING BLOCK RIFLE AND FEED MECHANISM THEREFOR
Morris Goldin, Orange, and Leonard W. Price, Marina Del Rey, both of Calif., assignors to The United States of America as represented by the Secretary of the Army
Filed Jan. 22, 1970, Ser. No. 5,002
Int. Cl. F41c *13/00*, *11/04*; F41d *9/00*
U.S. Cl. 42—15 11 Claims



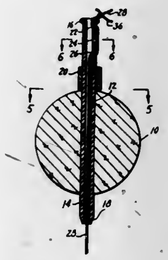
A rifle for use in either full automatic or semiautomatic mode in which a cam system is reciprocated in a direction parallel to the rifle axis either manually or by a gas driven system. The cam system cocks the firing hammer and vertically reciprocates a rifle breech block containing the firing chamber. In the uppermost position, the firing chamber is aligned with a firing pin, which detonates the primer charge in a cartridge, actuated by the hammer when a sear is released by the rifle trigger. When the breech block is in a lowered position the firing chamber is aligned with apertures in a magazine through which a rammer is driven by the cam system for movement of cartridges into the chamber. A spring-biased gate closes the rear end of the firing chamber when the block is in the lowered position, but opens to allow ejection of a round which has not been fired when the next cartridge is driven into or an ejector tube is driven through, the chamber.

3,667,148
FISHING LINE SUBMERGING DEVICE
Donald J. Dawson, Route 4, P.O. Box 124-A, Salem, Oreg.
Filed Sept. 17, 1969, Ser. No. 858,788
Int. Cl. A01k *85/00*
U.S. Cl. 43—43.13 4 Claims



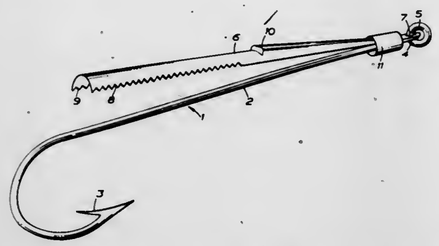
A device for connection to a fishing troll line to force the tail line and its connected flashers and natural bait or artificial lures to a desired depth in water being fished, and including means automatically operated by a fish when striking the bait or lure for setting the fish hook.

3,667,149
ALL-PURPOSE FISHING FLOAT
Jules O. Daigle, P.O. Box 515, Welsh, La.
Filed Oct. 24, 1969, Ser. No. 869,110
Int. Cl. A01k *93/00*
U.S. Cl. 43—43.15 2 Claims



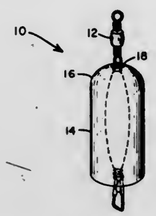
A rigid plastic tube is inserted through the central opening of a conventional float and retained therein by friction or any other suitable means and the portion of the tube above the float is provided with a plurality of radial openings, preferably vertically aligned. A fishing line is inserted through the top of the tube, then outwardly through the uppermost of the openings, thence inwardly through another opening, thence downwardly through the tube and provided therebeneath with a leader, sinker and hook or lure. A sleeve, slidably mounted on the tube above the float, may occupy a neutral position below the radial openings for the relatively free sliding of the fishing line upwardly or downwardly, and, the sleeve may be put in an operative position over the portion of the line lying outwardly of the tube to gently impede the free movement of the line axially to the tube.

3,667,150
HOOKS FOR USE IN FISHING
Ian Keith Hearne, Wayside Langtoft, near Driffield, England
Filed June 9, 1970, Ser. No. 44,812
Claims priority, application Great Britain, Mar. 3, 1970, 10,035/70
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.6 3 Claims



A fishing hook having a shank and a hook end, and a gripping member positioned alongside the shank with the adjacent ends of the hook and gripping member attached to a ring. The free end of the gripping member is movable to and from a position adjacent the shank and at rest projects away from the shank. A separate member is slidable over the gripping member and shank to force them toward each other so that bait can be clamped therebetween.

3,667,151
ANTIFOULING FISHING SINKER
John H. Lamb, 1617 Maryland Avenue South, Minneapolis, Minn.
Filed Mar. 12, 1970, Ser. No. 19,053
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.97 1 Claim

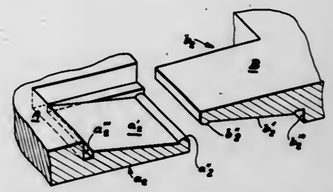


A shroud adapted to surround a fishing line sinker to reduce the tendency of said sinker from becoming fouled on the lake or stream bottom, the shroud being formed from a deformable plastic material. The shroud is preferably in the shape of a cylinder having one end thereof formed into a hemispherical dome. An aperture is formed in the dome to permit a swivel or other connector to be forcibly passed therethrough for connection to a fish line.

3,667,152
FUEL COMPOSITION
George W. Eckert, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 827,142, May 23, 1969, now abandoned. This application Sept. 26, 1969, Ser. No. 861,469
Int. Cl. C10l *1/10*
U.S. Cl. 44—58 10 Claims

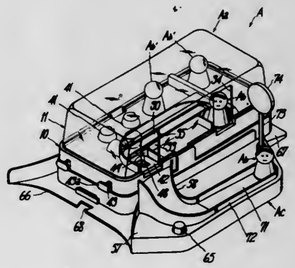
Turbine and diesel fuel composition comprising a hydrocarbon or a mixture of hydrocarbons in the middle distillate, kerosene or gasoline boiling ranges containing Tall Oil Fatty Acid in an amount effective to provide a fuel having a high level of anti-wear, water separation and thermal stability properties and a method for operating a turbine or diesel engine.

3,667,153
INTERLOCKING ARRANGEMENTS
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego A.G., Zug, Switzerland
Filed June 29, 1970, Ser. No. 50,384
Claims priority, application Denmark, July 3, 1969, 3611/69
Int. Cl. A63l *33/06*
U.S. Cl. 46—30 2 Claims



The coupling of two plate-shaped elements be means of an interlocking arrangement formed along the edges of the elements. The locking members of one element are in resilient engagement with identical locking members on the other element, the thickness of the individual locking members being half the thickness of the element and the members being staggered alternately to one side and the other of a plane through the center of the edge parallel to the side faces of the element.

3,667,154
TOY SCHOOL BUS AND STATION DEVICE THEREFOR
Masaru Aoki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Oct. 22, 1970, Ser. No. 82,998
Claims priority, application Japan, Oct. 24, 1969, 44/101079
Int. Cl. A63h *33/30*, *19/15*
U.S. Cl. 46—40 7 Claims



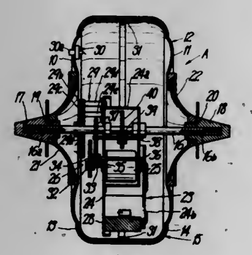
A toy which comprises, in combination, a vehicle, passenger-simulated models to be loaded on and unloaded from the vehicle and a station device having a track part and a platform part. The vehicle has therein conveyor means for the models. When the models are fed onto the conveyor means through an inlet, they are automatically conveyed to an exit and unloaded from the vehicle onto the platform part of the station device.

3,667,155
JACK-IN-THE BOX INCLUDING BOX WITH INTEGRAL INNER CYLINDRICAL WALL
Israel Robert Freelander, 344 Franklin Street, Worcester, Mass.
Filed Nov. 5, 1970, Ser. No. 87,307
Int. Cl. A63h *13/16*
U.S. Cl. 46—146 1 Claim



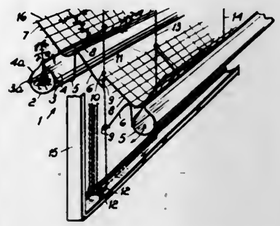
A one-shot molded plastic open-top container comprising a box-like member having an integrally molded central compartment with an open top, and an integrally molded cover for covering both the compartment and the box itself, said cover being hinged at one edge of the box and having a latch to hold it in closed condition of both box and compartment.

3,667,156
MOTOR-DRIVEN ROLLING TOY
Eijiro Tomiyama, Tokyo, Japan, and John H. Heim, Barrington, R.I., assignors to Tomy Kogyo Co., Ltd., Tokyo, Japan, by said Tomiyama
Filed Dec. 2, 1970, Ser. No. 94,314
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 M 6 Claims



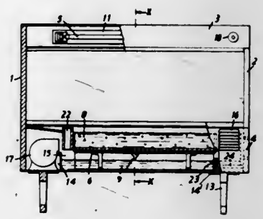
A rolling toy which comprises a substantially wheel-shaped housing and a motivating unit housed therein. The motivating unit is carried by a shaft extending axially along the central axis of the housing and is arranged to be rotated about the central axis. Also, the unit includes power means and other elements which are disposed in eccentric relation to the shaft, whereby when the unit is rotated by the power means, rolling movement is imparted to the housing to cause the same to roll along a surface. The toy can return to its rolling position automatically when overturned.

3,667,157
APPARATUS FOR THE HYDROPONIC CULTIVATION OF VEGETABLES
Fernando Longhini, Genzano, Italy, assignor to Aeroponica S.P.A., Rome Italy
Filed Apr. 23, 1970, Ser. No. 31,293
Claims priority, application Italy, Apr. 26, 1969, 36721 A/69; May 24, 1969, 37384 A/69
Int. Cl. A01g *31/02*
U.S. Cl. 47—1.2 5 Claims



Apparatus for the hydroponic cultivation of vegetables including substantially horizontal tubular structures for holding therein transplanted plants. The tubular structure is made of a trough-like member and lid members of elastically flexible material, yieldably closing the troughlike member and clamping the plant between contacting edges of the lids. The tubular structure is removable suspended on vertically movable vertical ropes guided by a system of pulleys.

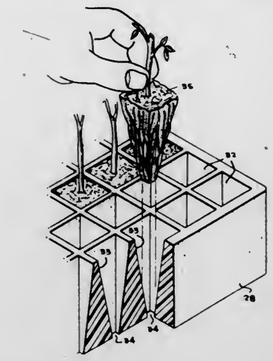
3,667,158
CULTIVATION RECEPTACLE
Peter Arthur Privett, 22 Bredon Road, Croydon, England
Filed Oct. 30, 1970, Ser. No. 85,470
Claims priority, application Great Britain, Oct. 31, 1969, 53,518/69
Int. Cl. A01g *9/14*
U.S. Cl. 47—17 2 Claims



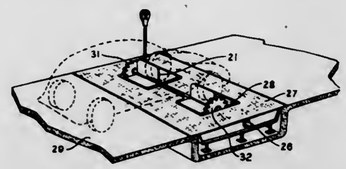
A combined humidifier and plant apparatus for humidifying the atmosphere and for growing and/or displaying of plants. For the growing of plants, a tray provided in the cabinet supports a layer of soil. The soil is moisturized by a water absorbent material that is partly immersed in a water trough. The humidifying means includes a fan mounted in the cabinet that drives air and water vapor out through an outlet to humidify the atmosphere.

3,667,159
SEEDLING FLAT
George K. Todd, 2019-74th Street Circle, Shaw's Point, Bradenton, Fla.
Filed Sept. 10, 1970, Ser. No. 71,011
Int. Cl. A01g *9/02*
U.S. Cl. 47—34.13 6 Claims

A seedling flat is provided in a first embodiment in the form of a unitary plastic member having downwardly extending square tapered soil receiving recesses in which individual seedlings are started with one embodiment employing a unitary polystyrene foamed plastic; a second embodiment is embodied in a construction formed of rigid plastic plate members connected together in a unitary manner.



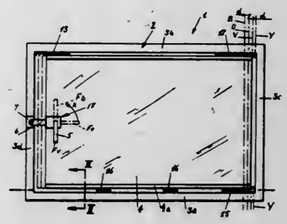
3,667,160
PARKING DEVICE
Charles R. Salloum, 120 Ellis Street, San Francisco, Calif.
Continuation-in-part of application Ser. No. 720,952, Apr. 12, 1968, now Patent No. 3,613,909, and 24,699, Apr. 11, 1970. This application Aug. 27, 1970, Ser. No. 67,429
Int. Cl. E01f *13/00*
U.S. Cl. 49—35 6 Claims



A device for use in a parking stall to retain a parked car therein until released by payment of a meter parking fee. Simple rotary or pivot mounted stops are mechanically actuated by an automobile engaging same upon entering a parking stall to lock the steps in position to block further wheel passage until released as by a coin operated timer.

3,667,161
SHUTTER OPERATING MECHANISM
John H. Sassano, Hollywood, Fla., assignor to Weather Control Shutters, Inc., Hollywood, Fla.
Filed Oct. 16, 1970, Ser. No. 81,467
Int. Cl. E06b *9/02*
U.S. Cl. 49—56 7 Claims

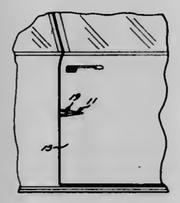
Operating mechanism adapted to be incorporated in a window closure installation including a shutter panel hingedly supported on a horizontal hinge axis and swingable toward and away from the plane of closure of a window opening. The shutter operating mechanism includes a speed reduction assembly including a worm and worm gear fixedly secured respectively on first and second shaft means perpendicularly arranged. A pair of arms is fixed in coplanar arrangement on the first shaft means and include distal end portions runningly engageable in track channel members coplanar supported on opposite edge margins of the shutter panel. The second shaft means extends through the building wall and is fitted with a hand crank member arranged in the building interior. Turnably manipulating the hand crank operates through the gear reduction means for lifting and lowering the pair of arms and respectively causing closing and opening movement of the shutter panel.



3,667,162
ROCKING-SWINGING WINDOW LEAF
Christian Lalague, Paris, France, assignor to Boussois Souchon Neuvesel, Paris, France
Filed Oct. 30, 1970, Ser. No. 85,509
Claims priority, application France, Nov. 19, 1971, 6939722
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 11 Claims

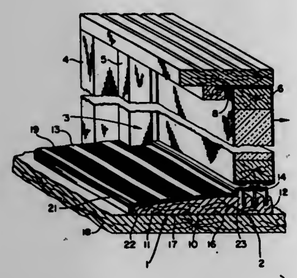
A window having a rocking-swinging leaf which can be displaced horizontally in its plane within the fixed window-casing by means of a control system and can be brought by translational motion from a so-called "rocking" position in which the leaf is opened in a bellows-type movement to a so-called "swinging" position in which the leaf is opened as a casement window. The control system comprises a rotatable operating handle which is mounted on the leaf and adapted to displace a sliding bolt which can be detachably secured to the fixed window-casing. The control system and ancillary devices for attaching the leaf to the casing are so arranged as to permit translational motion of the leaf in the plane of the casing between any one of three positions, namely the closed position, the "rocking" position and the "swinging" position. The centralized control of the leaf from a handle which is carried by this latter permits considerable simplification of the guiding means while the motion-transmission means are constituted in addition to the sliding bolt and ancillaries by the leaf itself.

3,667,163
AUTOMOBILE DOOR GUARD
Erick H. Bjorum, 640 Island View Drive, Seal Beach, Calif.; John G. Gibson, 18985 Santa Mardina, Fountain Valley, Calif., and Morgan C. Lindberg, North Hollywood, Calif.
Filed Oct. 8, 1970, Ser. No. 79,201
Int. Cl. B60j 5/04
U.S. Cl. 49—462 5 Claims



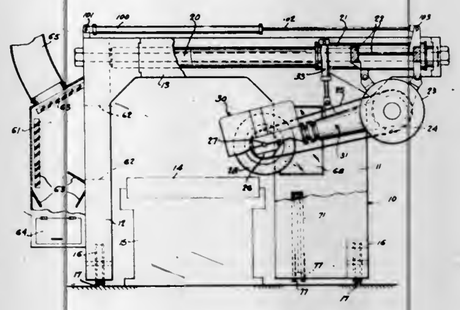
An automobile door guard including a mounting plate formed on one side with mounting surface for securement to the exterior of an automobile door. A protruding resilient bumper is mounted on the side of the mounting plate opposite the one side. Adhesive means is disposed on the mounting surface and is covered with a removable covering strip whereby such strip may be removed and the guard positioned on an automobile door with the adhesive means exposed for adhering such guard to the door.

3,667,164
DOOR SILL
Cray J. Coppins, 13700 Fairhill Road, Cleveland, Ohio
Filed June 19, 1969, Ser. No. 834,674
Int. Cl. E06b 1/70
U.S. Cl. 49—469 7 Claims



Door sill includes a substrate or base member of wood or other insulating material having a metal sill cover secured to the exterior projecting portion of the substrate and terminating adjacent the exterior side of the door when in the closed position, and having a rigid vinyl thermal barrier member connected to the substrate directly beneath the door when in the closed position as by means of downwardly projecting ribs which extend into grooves in the substrate. A sealing strip on the bottom of the door provides sealing contact with the rigid vinyl member when the door is in the closed position.

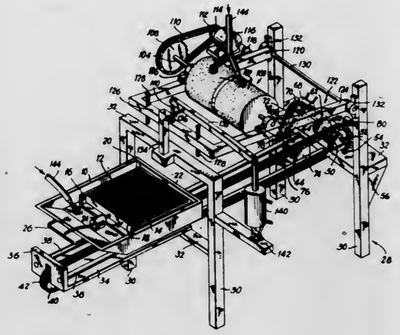
3,667,165
CONDITIONING GRINDER
Philip R. McDowell, and Charles W. Vekovious, both of Downsview, Ontario, Canada, assignors to G & B Automated Equipment Limited, Downsview, Ontario, Canada
Filed Feb. 16, 1971, Ser. No. 115,364
Int. Cl. B24b 7/02
U.S. Cl. 51—35 8 Claims



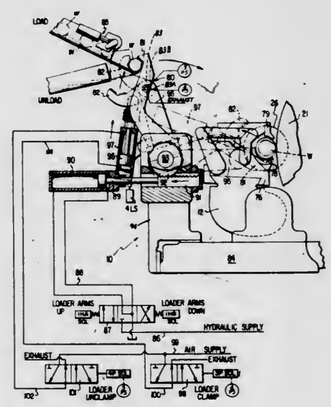
A travelling carriage carrying a motor driven grinding wheel at the end of a pivoted arm reciprocates back and forth along a steel slab workpiece. A hydraulic cylinder forces the wheel down against the workpiece, this downward movement being controlled in accordance with the power being supplied to the motor and the speed of reciprocating travel of the carriage. Control of the contact pressure of the wheel is thus based on the power being absorbed by the motor, which ensures a substantially constant rate of work output by the wheel. These conditions prevail during carriage travel at normal speed. When the carriage slows down to change direction at the ends of its reciprocal travel, a mechanism sensing the carriage speed reduces the rate of work output of the grinding wheel to obtain a more constant value for the work output per unit distance of travel, the result being more uniformity in the depth of cut. Provision is made for indexing the arm transversely of the workpiece at each end of carriage travel. The maximum magnitude of the acceleration and deceleration of the carriage at the travel ends is limited in order to increase the comfort of an operator seated on the carriage. The grinding wheel peripheral speed is kept constant by a radioactive source and detector system that measures wheel diameter and speeds up the motor as the wheel wears. To facilitate this speed control a D.C. motor is used. As an alternative to a moving carriage, the structure carrying the grinding wheel can be stationary, the workpiece holder then reciprocating, the same controls over the grinding wheel pressure being exercised.

3,667,166
APPARATUS FOR GRINDING GLASS SLIDES OR THE LIKE
James C. White, Rutherford, N.J., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,770
Int. Cl. B24b 7/00
U.S. Cl. 51—92 4 Claims

A grinding apparatus designed to grind articles such as glass slides. A work carriage is situated over a pair of guide bars and supported for free movement therealong by way of a bearing means operatively connected with the work carriage and having rolling contact with the guide bars. A rotary grinding unit is supported in a floating manner with respect to a frame of the apparatus so that the rotary grinding unit can, if necessary, yield when encountering extreme grinding stresses.

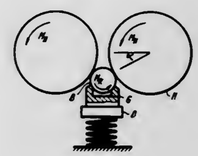


3,667,167
WORK DRIVING DEVICE FOR AUTOMATIC CAMSHAFT GRINDING MACHINE
William Emory Happel, Waynesboro, Pa., assignor to Landis Tool Company
Filed Jan. 26, 1971, Ser. No. 109,770
Int. Cl. B24b 47/02
U.S. Cl. 51—215 H 5 Claims



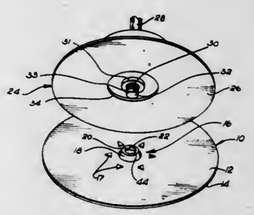
A work driving apparatus for a machine tool, such as a cam contour grinding machine, for applying a driving torque against two spaced angular points through end portion (57) and a carbide block (64), to rotate the workpiece with minimal radial displacement. A driving block (41) is hinged to a face plate (28) to enable the driving block (41) to compensate for size variations of the workpiece and to insure concentricity with the periphery of the workpiece (W), such as an automotive camshaft. Rotation of the work driving device (26) automatically angularly orients the workpiece relative, for example, to a master cam (19), as work rest pressure restrains rotation of the workpiece. This allows an automatic work loader to be used without any devices to regulate the angular position of the workpiece.

3,667,168
MANUFACTURE OF BEARING BALLS
Jaroslav Brany, Praha, Czechoslovakia, assignor to Vyzkumny ustav strojirenske technologie a ekonomiky, Praha, Czechoslovakia
Filed Feb. 26, 1970, Ser. No. 14,520
Claims priority, application Czechoslovakia, Feb. 28, 1969, 1503/69
Int. Cl. B24b 1/00
U.S. Cl. 51—289 9 Claims



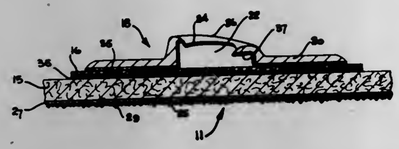
The method and apparatus for machining bearing balls comprising the steps of locating the balls between two opposed working surfaces rotating one of the bodies about an axis, and driving the other body in plane angular thereto and tangentially of the ball to create a rolling of the ball resulting from two independent component axes of force created by the interaction of the two bodies.

3,667,169
ABRASIVE FINISHING ARTICLE
Joseph H. MacKay, Jr., Woodland Hills, Calif., assignor to Norton Company
Filed Apr. 27, 1970, Ser. No. 32,295
Int. Cl. B24d 13/14, 13/20
U.S. Cl. 51—379 10 Claims



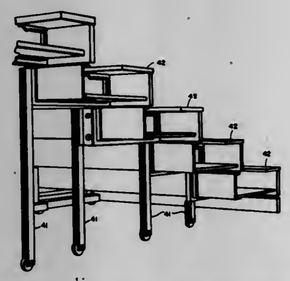
An abrasive finishing article in which an axially projecting drive member secures the article to a support pad. The drive member is formed with a hollow threaded boss, disposed through a centrally defined opening in the article, and an outwardly extending member at the base of the boss disposed on the opposite side of the article to press the article against the support pad. The outwardly extending member can be formed with a plurality of tabs which are pressed into engagement with backing material of the article whereby to secure the drive member in intimate integral connection with the article. The support pad includes a core-socket member and an axial stud whereby the drive member boss may be threadably retained in female-male engagement with the stud and core member, respectively, the core member being formed with internal and external abutment surfaces for close fitting engagement with the top surface of the drive member and surfaces of the finishing article laterally thereof, respectively.

3,667,170
FINISHING ARTICLE AND SUPPORT MEMBER THEREFOR
Joseph H. MacKay, Jr., Woodland Hills, Calif., assignor to Norton Company
Filed Mar. 11, 1969, Ser. No. 806,250
Int. Cl. B24d *17/00*
U.S. Cl. 51—389 9 Claims



A finishing article having a drive member permanently affixed on one side thereof. The drive member comprises a hollow boss open at its outer end and has an annular lip defining an internal screw thread. A support member is provided connectable with the drive member and can include an axial stud having an external screw thread, formed for insertion within the driving member boss, and a central socket disposed radially about the stud and close fit therewith for abutment against the driving member boss.

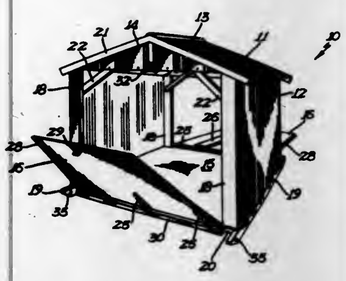
3,667,171
ROW FOLDING SEATING STRUCTURE
Robert G. McClelland, and David W. Raymond, both of Champaign, Ill., assignors to American Seating Company, Grand Rapids, Mich.
Filed Jan. 8, 1971, Ser. No. 104,917
Int. Cl. A47c *1/12*; E04h *3/12*
U.S. Cl. 52—9 15 Claims



In a row seating structure a series of telescoping rows are provided, each row having spaced vertical carriage-mounted columns, each having a cantilever arm adapted to rest upon the next adjacent column when the telescoping structure is extended and a transverse rear riser beam connecting the columns in the row and equipped with forwardly extending supporting arms anchored at their rear upon the riser, and a spectator tread or platform supported by the arms, the arms also providing a seat above the forward end of the tread panel or platform.

3,667,172
VEHICLE HUT
Alfver M. Erickson, P. O. Box 363, Elk River, Minn.
Filed June 24, 1970, Ser. No. 49,223
Int. Cl. E04h *1/12*
U.S. Cl. 52—64 9 Claims

A hut for housing a snowmobile or similarly sized vehicle having a pair of bottomly hinged doors for permitting the snowmobile to enter and exit while traveling in a forward



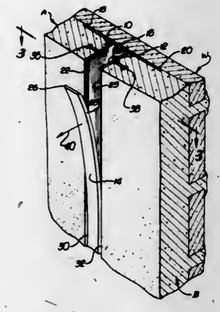
direction. The doors are each provided with a pair of guides for reinforcement and for directing the snowmobile.

3,667,173
HANGING ROOF STRUCTURE
Karl Lennart Billgren, grev Magnigatan 4, Stockholm, Sweden
Filed May 19, 1970, Ser. No. 38,829
Int. Cl. E04b *1/342*, *1/347*
U.S. Cl. 52—83 7 Claims



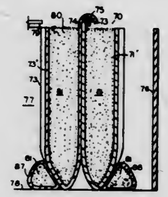
A hanging roof structure in which the roof covering is supported by a plurality of lines and tensile forces acting in the lines are taken up by an annular beam of lattice construction, thereby relieving supporting pillars from bending moments.

3,667,174
EXPANSIBLE REVEAL WITH FRONTAL TEAR STRIP FOR PLASTER WALLS
Robert W. Arnett, 1030 Stoneridge, Pasadena, Calif.
Filed Feb. 13, 1970, Ser. No. 11,206
Int. Cl. E04b *1/41*
U.S. Cl. 52—100 1 Claim



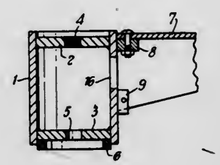
An extruded generally T-shaped separator or screed is tacked along the wall base with the center leg projecting outwardly. Plaster is applied to the wall base to interlock opposite sides of the screed leg. The screed leg is itself hollow, the frontal exposed side being a tear strip finally removed to form a reveal, and the rearward side being bowed or sinuous to form an expansion mechanism. As the plaster expands and contracts transversely to the screed leg, the reveal opens and closes correspondingly without any separation of the leg sides from the respective sections of the cast wall.

3,667,175
SOUND ABSORPTION STRUCTURES
Johan A. Bjorksten, Madison, Wis., assignor to Griffolyn Company, Inc., Houston, Tex.
Filed Feb. 16, 1970, Ser. No. 11,395
Int. Cl. E04b *1/82*
U.S. Cl. 52—144 7 Claims



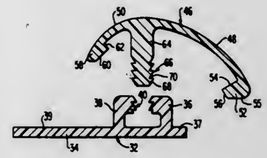
Sound absorption assemblies each comprising a plurality of units, each comprising a laterally extending series of vertically extending readily loaded flexible pockets, each holding a weighty particulate mass while permitting some relative motion therein, pockets of one unit complementing the pockets of the adjacent unit.

3,667,176
SPIRAL STAIRCASES
Donald R. H. MacKay, Britannia Works, East Road, Cambridge, England
Filed Feb. 18, 1970, Ser. No. 12,377
Claims priority, application Great Britain, Feb. 18, 1969, 8,696/69
Int. Cl. E04f *11/00*
U.S. Cl. 52—187 15 Claims



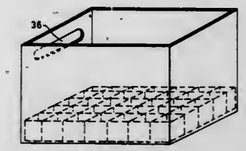
A spiral staircase is built up from modular fabricated step units superimposed upon one another without necessitating the use of an independent continuous central newel column. Each step unit essentially comprises a tubular newel boss having a vertical axis, attached to a tread which extends laterally and radially in a horizontal plane. The step units are secured to each other so that their bosses together constitute the central newel post of the staircase. The staircase can be erected from a base level, after the lowermost step unit has been firmly secured, and while it is being erected, the builders can use those units which have already been assembled for the purpose of carrying up further step units.

3,667,177
MOLDING JOINTS AND UNIVERSAL MOLDING MEMBERS THEREFOR
Elmer G. Biela, 2332 Rolling Hill, S.E., Grand Rapids, Mich.
Filed May 8, 1970, Ser. No. 35,676
Int. Cl. E04d *1/36*; E04c *1/39*
U.S. Cl. 52—278 11 Claims



A molding joint for thin wall paneling and molding members therefor. A retainer is positioned with a base flange behind a paneling member as it is being installed. The retainer has a receiving area formed from upstanding arms to receive and engage the tongue of a T-shaped molding cap which is applied after the work is completed. The two-piece molding combination can be used for all types of panel joints including inside and outside corners, butt joints, joints between walls and ceilings and walls and floors, and joints between the edge of paneling members and the wall surfaces to which they are attached. Tile-tub joints and tile-wall surface joints are also formed with the invention.

3,667,178
METHOD AND MEANS FOR BINDING OF GROUND SURFACES ON BEDDING WHICH IS UNEVEN OR HAS A TENDENCY TO GIVE WAY
Knut Borge Algers, Ehrenstrahlsvagen 40, Bromma, Sweden
Filed May 22, 1970, Ser. No. 39,770
Claims priority, application Sweden, May 28, 1969, 7494/69
Int. Cl. E02d *27/00*
U.S. Cl. 52—292 6 Claims



The present invention relates to a method and means for binding ground surfaces on bedding that is uneven or has a tendency to give way. A building and/or bedding are provided with a system of mutually connected vertical walls forming a grid, said walls forming or being provided with openings into which loose material is introduced to support the walls laterally and vertically after height adjustment or levelling of said wall system. The height adjustment or levelling is accomplished by means of jacks provided in or under the grid-work, and can be effected in one or more stages. The arrangement can be used to reinforce bedding irrespective of whether or not there is a building standing on it; modifications can be made to suit the purpose of the arrangement.

3,667,179

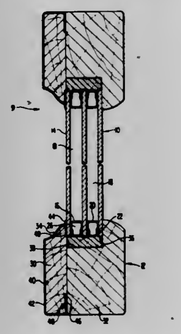
WOODEN WINDOW UNITS HAVING PROTECTIVE COVERINGS

Morris M. Eisenberg, Ste. Genevieve, Mo., assignor to Biltbest Corporation, Ste. Genevieve, Mo.

Continuation-in-part of application Ser. No. 856,630, Sept. 10, 1969, now Patent No. 3,553,913, dated Jan. 12, 1971, which is a continuation-in-part of application Ser. No. 687,748, Dec. 4, 1967, now abandoned. This application May 1, 1970, Ser. No. 33,809

Int. Cl. E04c 2/34; E06b 3/66

U.S. Cl. 52—302 6 Claims



A two-part laminated wooden sash having a groove along its inner face for receiving peripheral portions of a window pane and sealant material in the groove is provided. The external wooden sash part is provided with a dual plastic extrusion having a first portion forming a generally U-shaped sheath of semi-rigid material for receiving the first part prior to final assembly of the wooden unit. The second portion of the extrusion includes a flexible lip along the edge of the sheath for sealing against the window pane. In another form hereof, dual and triple panes of glass are employed to provide insulating panels with spacers between the panes, or a single pane of glass.

3,667,180

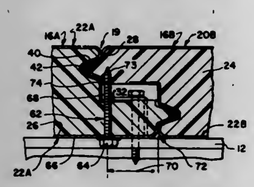
FASTENING MEANS FOR DOUBLE-SKIN FOAM CORE BUILDING CONSTRUCTION PANEL

Walter Tischuk, Richmond, Ind., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed Nov. 3, 1970, Ser. No. 86,427

Int. Cl. E04c 1/10, 2/20

U.S. Cl. 52—309 7 Claims



A double-skin building construction panel having a foam core and having its outer skin laterally offset from and spaced-apart from its inner skin — each panel presenting an overlapping edge portion along one side and an overlapped edge portion along its opposite side. The panels are adapted to be assembled in lapped relation without externally visible fasteners. Mating elements in the outer skin provide positive mechanical engagement of adjacent outer facing sheets when the panels are erected to the structural framework of a building. A clip and fastener arrangement is provided for securing the overlapped edge portion of each panel to the subgirts of a structural framework.

3,667,181

FURNACE WALL PARTICULARLY FOR OPEN-HEARTH FURNACES

Gunter Simon, Wiesbaden, Germany, assignor to Didier-Werke A.G., Wiesbaden, Germany

Filed Aug. 3, 1970, Ser. No. 60,688

Claims priority, application Germany, Sept. 16, 1969, P 19 46 800.9

Int. Cl. E04b 2/56

U.S. Cl. 52—496 3 Claims



A furnace wall particularly for the rear wall and the like of an industrial furnace having a furnace framing with wall posts. Horizontal carrier rails elevationally slidably mounted on the wall posts locate the wall-forming refractory bricks of each two consecutive courses of bricks. The bricks have complementary cooperating recesses to embrace the carrier rails. Fastening members are provided for the carrier rails and locking elements bearing against the wall posts releasably engage the fastening members. The fastening members are angle brackets projecting externally beyond the thickness of the wall posts with upwardly pointing free angle ends. The locking elements may be ladder-like locking elements having at least one stringer and a plurality of transverse rungs mounted on the sides of the wall posts facing away from the furnace interior so that the rungs interpose themselves between the wall posts and the free angle ends in a vertical row.

3,667,182

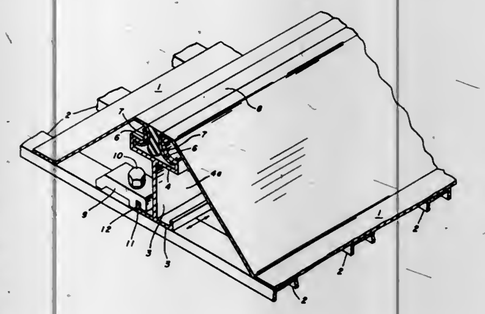
BUILDING STRUCTURES

Jay R. Stemler, Export, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 20, 1970, Ser. No. 30,106

Int. Cl. E04b 1/40

U.S. Cl. 52—497 2 Claims



Sheet panels are connected to building structural framing by attaching them to a spline which has a sliding fit with a clamp fastened to the framing, thus permitting movement of the panels relative to the framing.

3,667,183

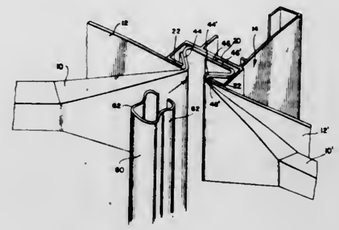
WALL PANELING SYSTEM

William C. Heirich, 2912 Wauhillah Drive, Muskogee, Okla.

Filed Nov. 19, 1969, Ser. No. 878,098

Int. Cl. E04c 2/32; E04b 1/40

U.S. Cl. 52—497 1 Claim



Aluminum wall paneling system featuring panels capable of being arranged in a variety of patterns and including deep contoured face panels which when used by themselves form a solar wall, back panels which when used with the face panels form a baffled flange arrangement permitting entrance of air and diffused light between the panels while presenting a solid front appearance, furring channels accepting the face and back panels and also roll form paneling of different design and lock channels for snapping within the furring channels securing various combinations of the aforementioned panels in place while permitting their removal, when desired.

3,667,184

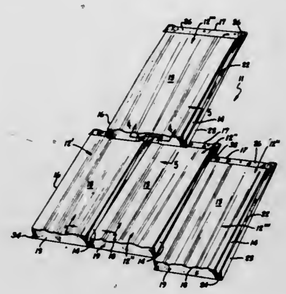
INTERLOCKING METAL SHINGLE CONSTRUCTION

Clifford C. Merrill, Ferndale, and Carl E. Strombeck, Loleta, both of Calif.

Continuation-in-part of application Ser. No. 804,424, Mar. 5, 1969, now abandoned. This application Feb. 24, 1970, Ser. No. 13,592

Int. Cl. E04d 1/00

U.S. Cl. 52—530 9 Claims



A metal shingle construction containing simulated shingles formed of sheet metal which present the appearance of wooden Hollywood shakes. The shingles of adjacent courses are in interlocking engagement as are adjacent shingles in each course so as to prevent a hard and driven rain from penetrating the joints between adjacent shingles, as well as to prevent flapping of the shingles in the wind. Nailing of the shingles to a roof substructure is only required at one end of each shingle, securance of the opposite end being provided by interlocking engagement with the shingles of an adjacent course. The nails, or other fastening means, are disposed in the shingle construction in completely sheltered position with respect to the weather without requirement of mastic or equivalent sealing means. The shingles are arranged such that prior to attachment of the shingles of each course the shingles therein may be shifted laterally and angled, or "skewed", relative to each other to adjust the length of the course to the dimensions of the roof and thereby prevent the course from overlapping the edge of the roof.

Special forms of shingles are provided for forming valleys, and another special form is provided for constructing hip roofs — both of which are necessary when two flat roof surfaces intersect to form a valley or a hip. Generally speaking, the construction of these special shingles is substantially the same as that outlined above for regular shingles, but differs in the one respect that one side of the shingle is formed at an angle to the other side. The shingles designed for use in valleys are narrow at the lower and thicker end and wider at the top and thin end, while the shingles designed for hips are wider at the lower end and narrow at the upper. These special shingles for both hips and valleys are necessarily constructed, sold and used in pairs as they must form a special joint where they abut at the hip or valley. Another difference between these special shingles for valleys and those for the regular flat roof structure lies in the fact that there is no flange or gutter where the two valley shingles of each pair abut each other.

3,667,185

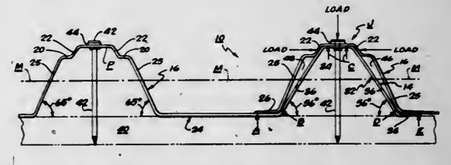
PANEL AND LAP JOINT MADE THEREFROM

Joseph M. Maurer, Concord, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Mar. 30, 1970, Ser. No. 23,743

Int. Cl. E04d 3/30

U.S. Cl. 52—537 10 Claims



An improved weatherproof joint formed from overlapping one panel of improved design with another panel wherein the opposing marginal side edges of the panels are provided in the joint area with improved interfitting and opposing corrugations which form a unique deep truss-like lap joint structure having improved load-bearing characteristics.

3,667,186

CONCRETE BLOCKS

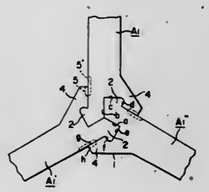
Shoji Kato, 1 Kitahata, Kobata, Uji, Japan

Filed Aug. 17, 1970, Ser. No. 64,263

Claims priority, application Japan, Aug. 16, 1969, 44/64910

Int. Cl. E04b 2/18, 2/26
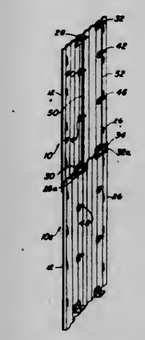
U.S. Cl. 52—594 10 Claims



An outwardly bent engaging projection and an engaging depression are formed at each end of a substantially flat-

shaped concrete block. The engaging depression receives an engaging projection of another concrete block, while the engaging projection of the first concrete block is received by an engaging depression of still another concrete block. Thus engaged with one another so as to be horizontally inseparable, a plurality of such concrete blocks form a honeycomblike framework which, supplemented with appropriately shaped other concrete blocks of the invention, is rendered into a desired substructure.

3,667,187
SELF-LOCKING PREFABRICATED PANELS
John Jerit, Oak Lawn, Ill., assignor to Brand Insulations, Inc., Chicago, Ill.
Continuation of application Ser. No. 766,450, Oct. 10, 1968. This application May 1, 1970, Ser. No. 33,767
Int. Cl. E04b 1/74, 2/08; E04c 2/32
U.S. Cl. 52—582 **7 Claims**

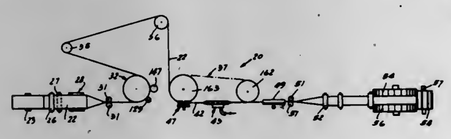


Self-locking panels having male clips and female slots in each panel for locking adjacent panels onto a storage tank or the like, and a series of spacer brackets to space the panels away from the area being covered to retain a layer of insulation, and interlocks between the panels lying in a vertical plane in end to end relationship.

ERRATUM

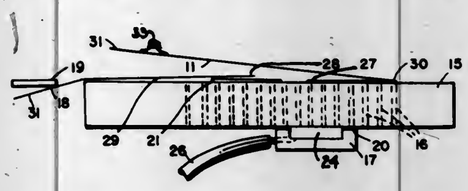
For Class 52—213 see:
Patent No. 3,667,192

3,667,188
METHOD AND APPARATUS FOR FORMING AND FILLING INDIVIDUAL POUCHES
Harold Thomas Benner, Jr., and Charles E. Cloud, both of Wilmette, Ill., assignors to Cloud Machine Corporation, Skokie, Ill.
Filed Feb. 25, 1970, Ser. No. 13,873
Int. Cl. B65b 43/04, 57/10
U.S. Cl. 53—29 **39 Claims**



A method of packaging including the steps of forming and sealing a continuous web of film material into a plurality of longitudinally spaced pouches separated by transversely sealed areas having opposed sidewalls opened along an upper edge portion and closed along a bottom edge is characterized as further comprising the steps of moving adjacent ones of the seals together while injecting air into the pouch and lifting the closed bottom edge to optimally open the pouches prior to filling the same. The open pouches are filled by introducing a nozzle into the pouch and communicating the nozzle with pressurized source of fluid, such as condiments, to be packaged for a set time interval to inject a measured quantity of the liquid into the pouch. Pouches severed from the web are counted and directed to a shipping container until a predetermined number of pouches necessary to fill the container are counted, at which time subsequently severed pouches are momentarily retained to permit replacement of the filled container with an empty one. Also a packaging apparatus has appropriate means for automatically performing the above described packaging method.

3,667,189
ENVELOPE WINDOW HOLDER FOR AN INSERTER AND METHOD
Frank M. Blossom, Glen Ellyn, Ill., assignor to The Reuben H. Donnelley Corporation, New York, N.Y.
Filed Nov. 19, 1970, Ser. No. 91,006
Int. Cl. B65b 43/30
U.S. Cl. 53—29 **3 Claims**

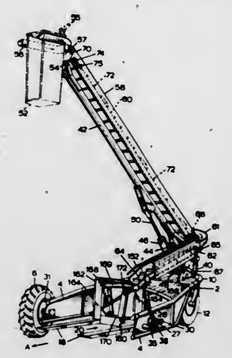


An envelope open window holder to facilitate the insertion of mailing pieces to be contained in an envelope having an open window for purposes of displaying the address, having an envelope table to support an envelope front side down and held in an open position by opener means to accept inserts, the table having a raised portion supporting the upper portion of the lip defining the window, and the table defining apertures providing substantially airtight communication from a vacuum means to the lower portion of the lip defining the envelope window such that the lower lip portion adheres to the envelope table at a level below the upper lip portion. A method for holding the lower lip portion at a level below the upper lip portion during the inserting operation by placing the envelope front side down on an envelope table, the envelope table having a raised portion supporting the upper lip portion, the envelope table also defining apertures under the lower lip portion which provides airtight communication with a vacuum means, opening the envelope by opener means to a position to accept inserts, and pulling the lower lip portion to the envelope table by providing suction through the apertures from a vacuum means.

3,667,190
ORCHARD MACHINE
Walter E. Thornton-Trump, 1544 Knareswood Drive, Port Credit, Ontario, Canada
Filed June 11, 1970, Ser. No. 45,295
Int. Cl. B65b 57/00; B65g 47/44
U.S. Cl. 53—59 **10 Claims**

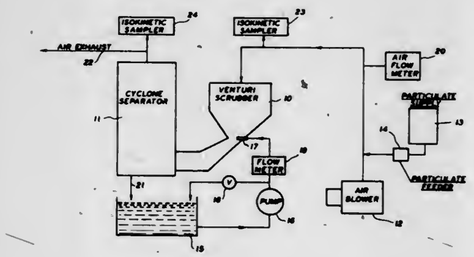
A three wheeled orchard machine having a boom which raises and lowers a picker's platform. The platform is levelled by a conveyor housing which acts both as a levelling rod and to convey picked fruit to a lower conveyor. The lower conveyor delivers the fruit to a bin filler mechanism, which is also levelled by a levelling rod. The bin filler mechanism has

a fixed bottom, and a rotating sidewall having apertures therein. As the sidewall rotates, the fruit is distributed evenly in a bin located below the bin filler mechanism. A



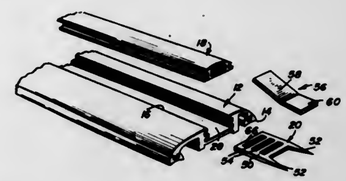
microswitch in the bottom of the rotating sidewall causes the bin filler mechanism to lift as the level of fruit in the bin increases. The bin filler mechanism and the upper and lower conveyors are all driven from one hydraulic motor.

3,667,191
REMOVAL OF PARTICULATE MATTER FROM GASEOUS WASTES BY WET COLLECTORS
Martin Prince, Wayne, N.J.; Hillard Blanck, Floral Park, N.Y., and Gregorio Tarancon, Elizabeth, N.J., assignors to Saleen Development Corp., New York, N.Y.
Filed Nov. 24, 1970, Ser. No. 92,410
Int. Cl. B01d 47/10
U.S. Cl. 55—87 **23 Claims**



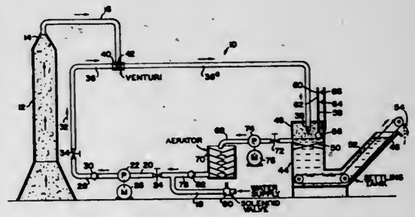
In the removal of particulate matter from gaseous wastes by wet collectors, such as venturi scrubbers, the liquid employed to achieve such removal is water with an additive dissolved therein to substantially improve the collection of the particulate matter thereby. The additive dissolved in the water has, as its essential constituent, a preferably reactive mixture of an alkyl or dialkyl-phenyl polyethoxy alcohol, an N-substituted acid amide and an ethoxylated fatty alcohol. The alkyl or dialkyl-phenyl polyethoxy alcohol and the N-substituted acid amide are preferably present in the additive mixture in approximately equal molar amounts and preferably each comprise at least 35 wt. % of the mixture, and the ethoxylated fatty alcohol may comprise from ½ to 40 wt. % of the mixture and preferably from 1 to 30 wt. % thereof.

3,667,192
DOOR THRESHOLD AND FASTENER ASSEMBLY
Curtis O. Sewell, Highway 43, Saraland, Ala.
Filed Feb. 25, 1970, Ser. No. 14,005
Int. Cl. E06b 3/00
U.S. Cl. 52—213 **6 Claims**



A base member is positioned against a floor and between bordering door jambs. The base member includes a groove therein for slidably retaining fasteners which are driven along the groove and into engagement with the jambs thereby clamping the threshold assembly against the floor of the door. The fasteners include slots therein which permit insertion of a tool so that upon application of withdrawing forces on the fasteners, they are easily disengaged from the jambs thus permitting removal of the threshold assembly.

3,667,193
SMOKE POLLUTION ELIMINATOR
William A. McKenzie, Route 5, 6950 Chatham Road, Medina, Ohio
Filed Apr. 24, 1969, Ser. No. 818,952
Int. Cl. B01d 47/10
U.S. Cl. 55—227 **6 Claims**

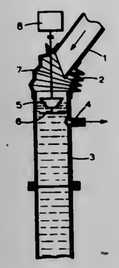


The pollution eliminator is adapted for connection to the outlet of a chimney and includes a pump having a water supply connected thereto and an outlet pipe receiving a substantially full line pressure flow of water from the pump. Smoke means connect to the outlet pipe for introduction of smoke into the water filled line, a settling tank is connected to the outlet pipe to receive a smoke-water mixture therefrom, and an aerator receives water from the upper portion of the settling tank for ultimate return of water to the pump for closed system water circulation purposes.

3,667,194
INSTALLATION FOR EXTRACTING GAS FROM GRANULES
Hendrik Waning, Heleen; Hubertus A. Mannens, Hoensbroek, and Arnoldus A. W. Schaapveld, Stein, all of Netherlands, assignors to Stamicarbon N.V., Hurlen, Netherlands
Filed Oct. 20, 1969, Ser. No. 867,769
Claims priority, application Netherlands, Oct. 19, 1968, 6815007
Int. Cl. B01d 45/02
U.S. Cl. 55—247 **5 Claims**

In order to dislodge our bubbles from particles e.g. cut cylindrical fibers, as they enter a confined liquid body

through a surface, a small portion of the liquid body near the surface is vibrated and the particles are funneled into the liquid body through the surface by means calculated to subject each particle to about the same amount of vibration. By preference this includes funneling the particles onto the central region of a submerged, perforated plate. The particles vibrate to the periphery of the plate and fall into the gap between the plate and the confining walls of the liquid body. In a counter current liquid extraction system, liquid may pass up through the plate perforations.

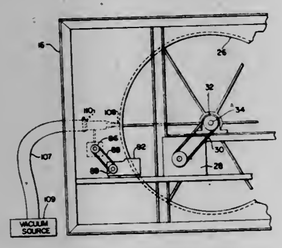


3,667,195

ROTARY AIR FILTER CLEANING APPARATUS

Fredrick Ernest Angilly, Jr., Cranston; George Lindol Miner, Warwick, and Lionel Anthony James Sousa, Coventry, all of R.I., assignors to Grinnell Corporation, Providence, R.I.

Filed Mar. 16, 1970, Ser. No. 19,731
Int. Cl. B01d *41/04*
U.S. Cl. 55—272 **5 Claims**



This specification discloses vacuum cleaning apparatus for a rotary drum filter in which a drive screw for moving the suction nozzle axially of the rotary drum is supported by two movable bearings in addition to end bearings. The movable bearings are positioned on guide members which extend parallel to the drive screw to support the drive screw against sagging at locations between the suction nozzle and the end bearings. The movable bearing are spaced by rigid connecting rods. As one movable bearing is pushed along the guide member by the advancing suction nozzle, the rods pull the other movable bearing along to support the drive screw.

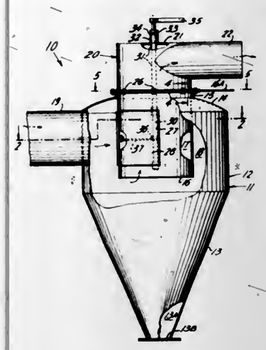
3,667,196

ADJUSTABLE CYCLONE SEPARATOR

William J. Koenecke, Glen Rock, N.J., assignor to Metal Improvement Company, Inc.

Filed Sept. 1, 1970, Ser. No. 68,697
Int. Cl. B04c *5/04*
U.S. Cl. 55—312 **7 Claims**

In a cyclone separator, a valve means adjustable to cause partial by-pass of gaseous fluid and solid particles entrained therein from the separation chamber to the gaseous fluid outlet. Also, means is provided for adjusting the location of the valve means relative to the separation chamber.

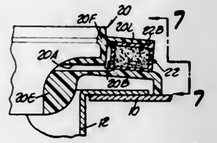


3,667,197

COMBINATION SEALING, VENTING, AND FILTERING MEANS

Carl E. Frahm, 1428 Oak Meadon Road, and Shirley E. Frahm, both of 1428 Oak Meadow Road, Arcadia, Calif.

Filed Mar. 23, 1970, Ser. No. 21,763
Int. Cl. B01d *46/10*
U.S. Cl. 55—502 **2 Claims**



A combination sealing, venting, and filter element for positioning between a replaceable water bottle and a dispensing stand includes an annular base member from which a resilient tapered flange extends upwardly to sealingly engage the bottle and from which a second L-shaped flange extends radially outwardly therefrom to sealingly contact said stand. A vent aperture extends through such element and through a chamber into which a replaceable filter element is positioned.

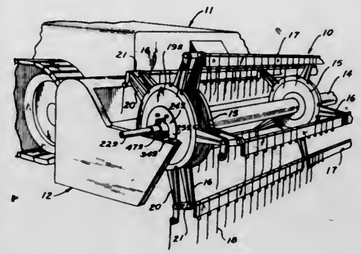
3,667,198

MOUNTING ADAPTOR FOR A REEL STRUCTURE

Charles M. Gibson, Stockton, Calif., assignor to Universal Harvester Co., Inc., Stockton, Calif.

Filed Sept. 25, 1970, Ser. No. 75,533
Int. Cl. A01d *57/02*
U.S. Cl. 56—227 **10 Claims**

A mounting adaptor for attaching a harvesting reel to a swather, combine, or like harvesting machine. A typifying harvesting reel is a pick-up reel having a plurality of axially extending angularly spaced bats or members each equipped with a group of pick-up fingers maintained in a predetermined orientation as the reel structure is rotated so as to enter and engage a crop being harvested at a particular disposition with respect thereto. The pick-up reel includes a control hub rotatable with the reel about an axis offset from the axis of rotation thereof and connected with the bats and groups of fingers carried thereby to enforce the desired orientation thereon. The control hub is supported for rotation by a control plate assembly having bearing structure rotatably supporting the axle of the reel structure and in turn being supported in the clamp collar of a mounting adaptor releasably and adjustably secured to the harvesting machine. The mounting adaptor accommodates dimensional differences in the reel support provided by any particular harvesting machine, and it enables the control plate assembly to be adjusted with facility to vary the disposition of the bats and pick-up fingers and thereby effect the most efficient coaction thereof with a crop to be harvested.



3,667,199

POWER-OPERATED LAWNMOWER WITH IMPROVED DISCHARGE MEANS

Leonard Bloom, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 26, 1970, Ser. No. 50,024
Int. Cl. A01d *35/26*
U.S. Cl. 56—320.2 **3 Claims**



A power-operated lawnmower has ground-engaging wheels supporting a deck housing. The deck housing encloses a plurality of rotary blades, preferably two in number. Each blade has a respective discharge channel formed within the deck housing. Each channel is preferably of the volute type and terminates in a respective lateral discharge opening. The discharge openings are formed along one side only of the deck housing, thereby providing improved safety and optimum removal of the grass cuttings.

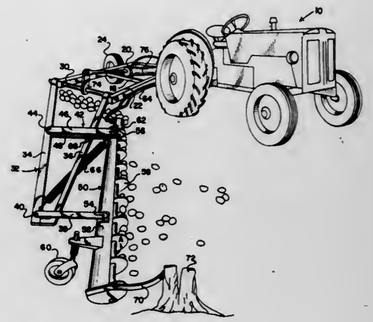
3,667,200

FRUIT AND NUT WINDROWER

Stuart D. Pool, Wheaton, and Harold G. Meltl, Clarendon Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 7, 1970, Ser. No. 61,963
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **1 Claim**

A fruit and nut windrower adapted for coupling behind a tractor and including an auger conveyor for gathering fruit or nuts on the ground and disposing the same into a windrow for subsequent pick-up. The conveyor is mounted for shifting movement laterally of the path of travel of the windrower in response to encountering ground obstructions. Means are provided for raising the conveyor from the ground to a transport position.

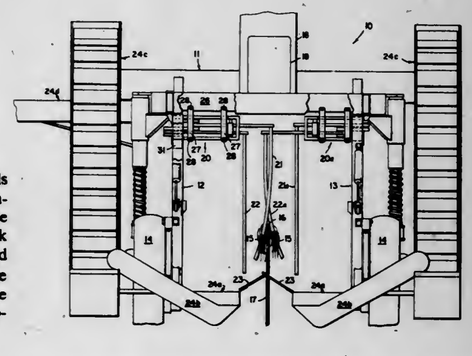


3,667,201

APPARATUS FOR HARVESTING FRUIT WITH AN ELLIPTICALLY MOVING STRIKER MEMBER

Gerald L. Claxton, and Darrell C. Horn, Lafayette, Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Continuation-in-part of application Ser. No. 73,450, Sept. 18, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 855,865, Sept. 8, 1969, now abandoned.
This application Dec. 28, 1970, Ser. No. 101,910
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **22 Claims**

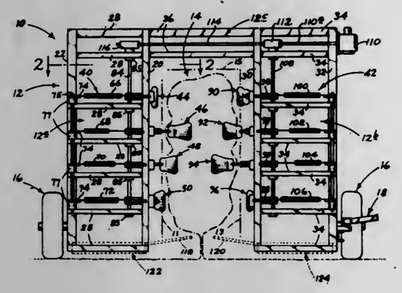


A harvesting machine for use in harvesting fruit, such as grapes which grow on a longitudinal row of vines, in which the vines are struck with striker members to dislodge the fruit therefrom. The striker members are each translated through a generally elliptical, horizontal path as the machine moves along the row so that the speed of the striker member, into an out of the vines, transverse to the row, is maximized, and at the same time the longitudinal movement of the striker members relative to the vines during engagement therewith is minimized to prevent vine or fruit damage.

3,667,202
BEATER MECHANISM FOR AGRICULTURAL ROW CROP HARVESTER

John P. Watts, Route 2, P.O. Box 249, Hillsboro, Oreg.

Filed Feb. 3, 1971, Ser. No. 112,241
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 12 Claims

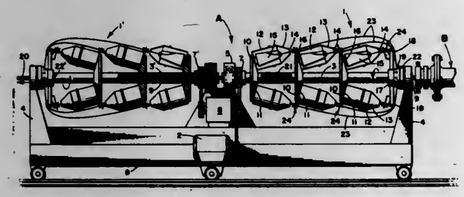


Beater mechanism for an agricultural row crop harvester. The mechanism includes a plurality of elongated beater members, each of which is pivoted for swinging, under power, into the path of plants (in a row), which plants move relative to the harvester as the latter travels over a field. The beater members have somewhat broom-like constructions, with each at its free end including a plurality of elongated side-by-side adjacent plant-engaging elements which strike stems in plants to dislodge produce.

3,667,203
WINDING MACHINE FOR COVERING A HOSE OF HIGH POLYMER WITH REINFORCING THREADS

Bruno Koschatzky; Attilio E. Angioletti, and Nino Madonini, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milano, Italy

Filed May 14, 1970, Ser. No. 37,171
Claims priority, application Italy, July 4, 1969, 19171 A/69
Int. Cl. B65h *81/00*
U.S. Cl. 57—15 13 Claims

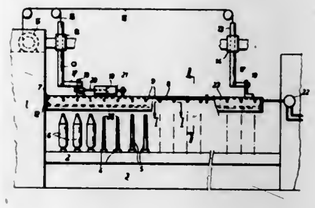


A thread winding machine having a rotation speed in excess of 600 r.p.m. consisting of a pair of axially aligned winding units oppositely rotatable by a single motor. Each unit has a rotatable hollow shaft through which a hose to be covered with the thread is passed and a group of containers for housing a fixed cone of thread which is disposed coaxially of the container and has a base spaced from the container wall, the containers being mounted and arranged around the hollow shaft, with their respective axes inclined relative to the shaft axis at an angle of from 10° to 20° and their bases disposed in close proximity to or in contact with one another. A conveying ring is mounted on the shaft at one end for guiding the threads which are paid out through openings in the containers to the hose. A guiding head is mounted on the shaft upstream of the conveying ring to operate the laying of the threads on the hose. Braking means is provided for each thread during its travel from a container opening to the conveying ring.

3,667,204
APPARATUS FOR CONJOINTLY DOFFING AND DONNING A PLURALITY OF BOBBINS OR TUBES PLACED ON SPINDLES OF RING SPINNING AND RING TWISTING MACHINES

Ulrich Burgermeister, Winterthur, and Carlo Gaggini, Elgg, both of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Dec. 4, 1970, Ser. No. 95,180
Claims priority, application Switzerland, Dec. 18, 1969, 18902
Int. Cl. D01h *9/08*
U.S. Cl. 57—52 16 Claims



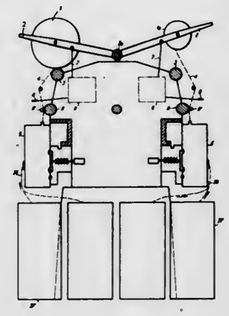
An apparatus for jointly doffing and donning a plurality of bobbins or tubes respectively, placed upon spindles of a ring spinning or ring twisting machine, which comprises a support member extending over a plurality of spindles, said support member being provided with stops arranged at a mutual distance from one another substantially corresponding to the spindle gauge. The stops protrude in the direction of the spindles. A hose member is supported on the side of the support member directed away from the stops, this hose member being deformable under the influence of a pressurized medium and serving to grip the bobbins or tubes brought between the hose member and the stops.

3,667,205
MECHANISM FOR WITHDRAWING AND WINDING YARN IN SPINNING UNITS

Ladislav Brazda, deceased, late of Cerveny Kostelec, Czechoslovakia (by Drahuska Brazdova and Dagmar Brazdova, heirs); Miloslav Prochazka, Nachod, Czechoslovakia; Vladimir Kuhn, Velke Svatonovice, Czechoslovakia, and Josef Ozdian, Cerveny Kostelec, Czechoslovakia, assignors to Elitex, Zavdy textilniho Strojirenstvi generalni reditelstui, Liberec, Czechoslovakia

Filed Mar. 9, 1970, Ser. No. 17,737
Claims priority, application Czechoslovakia, Mar. 7, 1969, PV 1695-69
Int. Cl. D01h *1/12, 7/00*; B65h *63/00*
U.S. Cl. 57—58.89 11 Claims

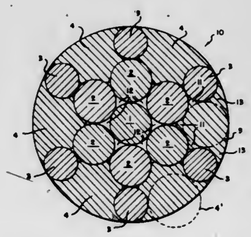
An open end spinning machine including a yarn winding apparatus having a driven rotatable drum, a bobbin mounting frame movable toward and away from the drum so that the bobbin may be selectively driven and undriven. In accordance with the invention there is provided means, shown as hand operated, for raising the bobbin from the drum, and means for adjustably retaining the frame and bobbin in elevated position, preferably with the surface of the bobbin spaced only a small distance above the peripheral surface of the drum. Means, here shown as foot operated, is provided for releasing the frame, when desired, whereby it is lowered so that the bobbin again rest upon and is driven by the drum.



3,667,206
INTERLOCKED MULTI-WIRE MEMBER

William J. Gilmore, Manitou Beach, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,765
Int. Cl. D07b *1/06*; D02g *3/36*; D07b *1/08*
U.S. Cl. 57—139 8 Claims



A multi-wire member in which the outer layer comprises alternate base and oversize wires wherein the oversize wires have been deformed into interlocking engagement with each other and with respect to the wires comprising the next underlying layer of the member to produce a smooth and substantially continuous outer surface.

3,667,207
CRIMPABLE COMPOSITE POLYAMIDE YARN

Victor Ralph Ben, Wilmington, Del., and Peter Steven Kay, Martinsville, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1970, Ser. No. 33,955
Int. Cl. D02g *3/02*
U.S. Cl. 57—140 BY 5 Claims

A crimpable bicomponent filament in which one component is a polyamide and the other a random copolyamide containing specified percentages of three polymeric units. The different units and their concentrations are 70–82 percent hexamethylene adipamide, 13–25 percent caproamide and 5–17 percent hexamethylene dodecanedioamide. Yarns of one or more such filaments are particularly useful in the manufacture of hosiery because of their high crimpability, high strength and low shrinkage in the fabric.

3,667,208
PROCESS FOR OBTAINING A SPONGE-TEXTURED THREAD FROM NATURAL SILK THREAD

Marcel Marius Adrien Hilaire, Albe-Ardeche, France, assignor to Societe Forezienne de Moulinage et Texturation, Loire, France

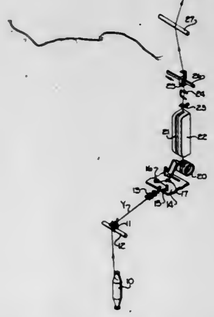
Filed Sept. 25, 1969, Ser. No. 861,188
Claims priority, application France, Sept. 25, 1968, 6850428
Int. Cl. D02g *3/04*; D03d *15/00*
U.S. Cl. 57—156 8 Claims

Sponge-textured thread is made from natural silk thread by subjecting the silk thread to conventional degumming operations, then to known operations of the conventional method of obtaining a sponge-textured thread; i.e., twisting, fixing by thermal or steam treatment and untwisting, and then placing the silk thread in a humid medium, which is preferably hot. If the humid treatment is effected after weaving or knitting, these must be very loose. After the degumming step the silk thread can be coupled to another thread of silk or other fiber.

3,667,209
METHOD OF FALSE-TWISTING MULTIFILAMENT YARN

Bobby Ray Fain, Burlington, N.C., assignor to Alamance Industries, Inc., Burlington, N.C.

Filed Oct. 16, 1970, Ser. No. 81,205
Int. Cl. D02g *1/02*
U.S. Cl. 57—157 TS 6 Claims



The multifilament yarn produced by this method has a highly crimped or curled configuration and very little torque. The yarn is threaded about the exit pin of a false-twist spindle by a slip-knot type of loop which prevents passage of the twist from one side to the other of the exit pin and permits a relatively high number of turns of false-twist to be inserted in the yarn, on the order of from about 150 to 185 turns per inch. Fabric knit of this yarn, such as ladies' sheer hosiery, panty hose, and the like, has a creped appearance when relaxed with a high degree of stretchability and recoverability.

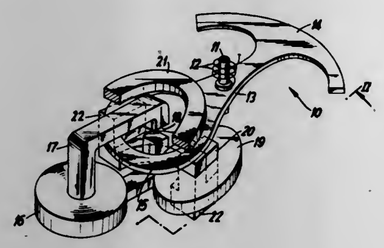
3,667,210
HOROLOGICAL INSTRUMENT

Heinz Meitinger, Pforzheim, Germany, assignor to Timex Corporation, Waterbury, Conn.

Filed July 6, 1970, Ser. No. 47,842
Int. Cl. G04c *3/04*; H02k *33/10*
U.S. Cl. 58—28 B 12 Claims

A horological instrument includes an oscillator such as a balance wheel. The oscillator carries a coil, which may consist of a single conductive ring. Current is induced in the

moving coil by mutual induction from a fixed coil. One or more fixed magnetic fields are positioned to drive the energized coil. A circuit is provided to energize the coil with current at the proper moment during its oscillation.

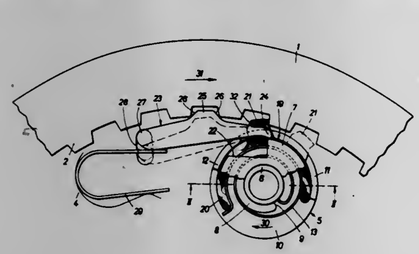


3,667,211

DRIVE MECHANISM FOR AN INDICATOR OF THE DAY OF THE MONTH IN A TIMEPIECE

Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et fils S.A., Le Locle Canton of Neuchatel, Switzerland

Filed Nov. 2, 1970, Ser. No. 85,992
Claims priority, application Switzerland, Nov. 3, 1969, 16355/69
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **17 Claims**



In a timepiece having a date indicator, the driving mechanism therefor is connected to the 24-hour wheel, which is driven by the movement, through a spiral spring which gradually stores energy from the rotation of the 24-hour wheel and imparts the stored energy to the driving mechanism to advance the date indicator when the blocking mechanism restraining improper movement of the date indicator is released.

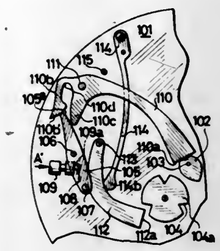
3,667,212

RESETTING-TO-ZERO MECHANISMS FOR SECONDS, MINUTE, AND HOUR HANDS

Katsuhiko Komiyama, and Yoshio Iinuma, both of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Apr. 19, 1971, Ser. No. 134,944
Claims priority, application Japan, Apr. 20, 1970, 45/32975; June 4, 1970, 45/55024; June 5, 1970, 45/55602
Int. Cl. G04f *7/04*
U.S. Cl. 58—74 **5 Claims**

In a timepiece wherein the second, minute and hour hands are rotated about a common axis, an externally operated hand position resetting arrangement is provided for shifting a second hand connection lever and a minute and hour hand correction lever into engagement with respective cams to accomplish the resetting of the hands to a zero position.

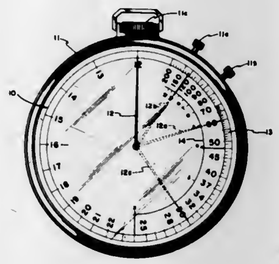


3,667,213

PULSE, RESPIRATION AND INTRAVENOUS RATE COUNTER

John D. Ensign, Brigham City, Utah, assignor to Measurement Science Corporation, Brigham City, Utah

Filed Dec. 11, 1970, Ser. No. 97,077
Int. Cl. G04b *19/00*
U.S. Cl. 58—126 R **1 Claim**



A rate counter consisting of scales scribed on a circular chart forms the dial face of a sweep second hand stop watch, a specified number of counts of a patients pulse beats or respiratory motions or a specified number of drops from an intravenous apparatus are observed, and the stop watch is operated to stop the second had. The stopped second hand is positioned directly opposite a scale providing a direct read out of the patients pulse or respiration rate per minute or the number of cubic centimeters per hour passing from an intravenous apparatus.

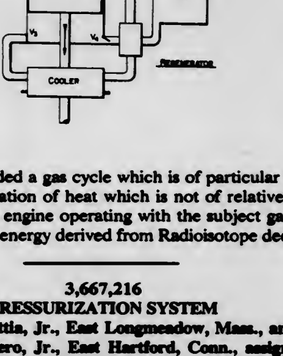
3,667,214

ENGINE TURBOSUPERCHARGER WITH VIBRATION REDUCING DRIVE

Albert N. Addie, La Grange Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 11, 1970, Ser. No. 18,523
Int. Cl. F02b *41/10*; F16d *3/12*
U.S. Cl. 60—13 **5 Claims**

A turbosupercharger for an internal combustion engine has a speed-increasing drive train to drive the compressor at a predetermined minimum multiple of engine speed and an overrunning clutch to permit the compressor to be driven at higher speeds by the engine exhaust gases. The turbosupercharger housing provides for the alternative use of two torsional vibration and shock-reducing means in the drive train, one such means comprising an internally mounted engine oil lubricated quill shaft drive and the other such means comprising the combination of an internally mounted engine oil lubricated quill shaft drive arranged in parallel with an externally mounted viscous damper utilizing a silicone damping fluid or the like.

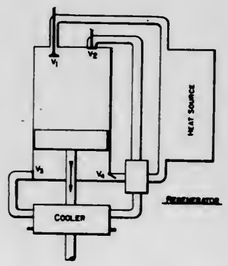


3,667,215

HEAT ENGINES

Venkataramanayya K. Rao, Bangalore, India, assignor to Atomic Energy of Canada Limited Commerical Products, Ottawa, Ontario, Canada

Filed Nov. 21, 1969, Ser. No. 878,817
Claims priority, application Canada, Feb. 14, 1969, 042,928
Int. Cl. F03g *7/06*
U.S. Cl. 60—24 **7 Claims**



There is provided a gas cycle which is of particular usefulness in the utilization of heat which is not of relatively high temperature. An engine operating with the subject gas cycle may use thermal energy derived from Radioisotope decay.

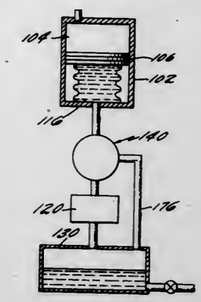
3,667,216

PRESSURIZATION SYSTEM

Victor A. De Mattia, Jr., East Longmeadow, Mass., and Vincent J. Sansevero, Jr., East Hartford, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 27, 1968, Ser. No. 763,221
Int. Cl. C06d *5/04*
U.S. Cl. 60—37 **3 Claims**

A pressurization system for supplying a constant pressure source including a liquid propellant source, a reaction chamber for disposing the liquid propellant into a gasified product, a storage tank for storing the gasified products and a feedback system for maintaining the output pressure from the storage tank.

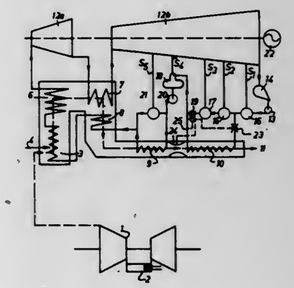


3,667,217

STEAM GAS TURBINE INCLUDING A GAS TURBINE AND A STEAM TURBINE WITH A STEAM GENERATOR AT THE DOWNSTREAM END

Jean Vidal, Ville D'Avray; Jean Pariaot, and Jacques Lemoine, both of Paris, all of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,816
Claims priority, application France, May 14, 1969, 6914168
Int. Cl. F01k *23/06*; F22d *1/12*
U.S. Cl. 60—39.02 **4 Claims**



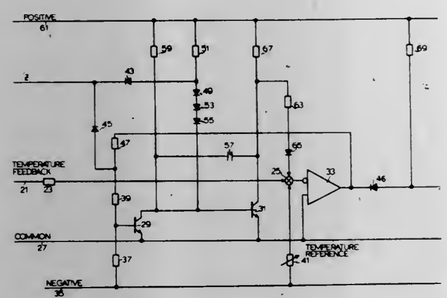
A steam gas plant including a gas turbine the exhaust gases of the gas turbine feed the burners of the steam generator which in turn feeds the steam turbine, a steam generator, and a steam turbine, in which the operation of the gas turbine continues under full load even for reduced loads on the steam turbine. The invention maintains under varying steam turbine loads the temperature at the input of a deaerator constant, the deaerator being fed in parallel by an economizer subjected to the heat of the flue gases of the steam generator and by water heaters fed with steam extracted from the turbine. To ensure constant temperature, one of the streams feeding the deaerator is controlled by a gate the extent of opening of which is defined by the ratio of the throughput of flue gases acting on the economizer and the flow of water in the economizer and possibly also by the modifications in the temperature at the output of the economizer.

3,667,218

GAS TURBINE TEMPERATURE ADAPTIVE CONTROL

Richard K. Davis, Roanoke, Va., assignor to General Electric Company

Filed Mar. 27, 1970, Ser. No. 23,372
Int. Cl. F02c 9/04
U.S. Cl. 60—39.28 T 5 Claims



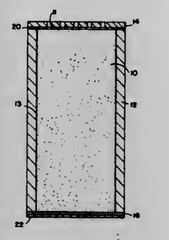
A temperature adaptive control system for controlling the rate of fuel flow to a gas turbine having sensors in the path of the exhaust gases which produce an electrical feedback signal proportional to temperature. Another signal, proportional to maximum allowable temperature, normally opposes the feedback signal at a summing junction. A third coacting signal forms an envelope and varies indirectly with the temperature of the turbine over a predetermined period of time at the end of which it is reduced to zero, causing the fuel flow to increase the maximum controlled rate without exceeding the temperature limits defined by the third signal.

3,667,219

GAS GENERATOR WITH LIQUID INITIATOR

James A. Murfree, Jr., Huntsville; Theodore N. Hubbuch, Florence; Henry A. Nappier, Lacey's Spring; William A. Duncan, Huntsville, and Billy J. Sandlin, Athens, all of Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed July 5, 1967, Ser. No. 651,327
Int. Cl. F02c 3/20; F02g 1/00
U.S. Cl. 60—39.46 10 Claims



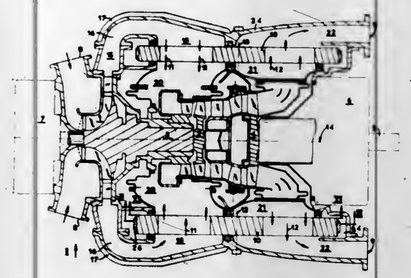
Porous support materials such as porous firebrick and unglazed clay plate having suspended therein a liquid initiator (oxidizing agent) for gas generators employing exothermally decomposing monopropellants.

3,667,220

GAS TURBINE WITH ROTARY HEAT EXCHANGERS

Lucien Dekeyser, Chelles, France, assignor to Bennes Marrel, Saint-Etienne (Loire), France

Filed Mar. 31, 1970, Ser. No. 24,253
Claims priority, application France, May 22, 1969, 6915549
Int. Cl. F02c 7/10; F28d 19/04
U.S. Cl. 60—39.51 H 7 Claims



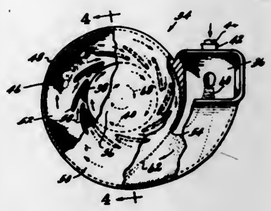
A gas turbine of the type having a pair of rotary heat exchanger discs mounted for rotation about a common axis transverse to the main axis of the turbine on opposite sides thereof is provided with a drive arrangement which will provide for expansion between the disc and an annular drive ring surrounding the disc. The annular drive ring is provided with a plurality of external teeth disposed in meshing engagement with a pinion drivingly connected to the main gear box of the turbine. A plurality of cylindrical rods are mounted in a plurality of equally spaced apart grooves in the circumference of each of the discs. Each cylindrical rod is formed with an arcuate groove in the external surface thereof for the reception of a key member having a convex surface which rests in the arcuate groove and two plain surfaces which define a dihedron, the edge of which is disposed adjacent the internal surface of the annular ring. A pair of wedge members are disposed in engagement with each of the surfaces of the key. The wedges are biased into engagement with the key by means of a spring extending between the wedge and a rib formed on the internal surface of the annular ring.

3,667,221

FUEL DELIVERY APPARATUS

Jack R. Taylor, Cincinnati, Ohio, assignor to General Electric Company

Filed Apr. 17, 1969, Ser. No. 816,985
Int. Cl. F02c 7/22
U.S. Cl. 60—39.74 R 2 Claims



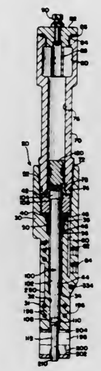
Apparatus is disclosed for premixing air and fuel or carbureting air prior to introduction thereof into the primary zone of a combustor, said apparatus including a housing defining a spin chamber therein; the spin chamber is adapted to receive air and fuel and vaporize and/or atomize said fuel and deliver said air and fuel into said combustor as a vortical flow.

3,667,222

POWER DEVICE

Oliver E. Saari, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed July 22, 1970, Ser. No. 57,245
Int. Cl. F15b 3/00
U.S. Cl. 60—51 5 Claims



A power device having a power reservoir in which a compressible fluid is maintained under pressure, an accumulator piston and a drive piston which are simultaneously movable to retracted or cocked positions by the introduction of a non-compressible power fluid into a cylinder in which the pistons are reciprocably movable, the power fluid acting on exposed areas of the drive piston to move it with the accumulator piston until it reaches its fully cocked position whereupon further movement of the accumulator piston exposes additional areas of the drive piston to the pressure of the power fluid whereby the compressible fluid, acting through the power fluid, imparts drive movement to the drive piston and multiple seal means on said accumulator piston, reservoir means in said accumulator piston to trap any power fluid which has by-passed one of said seals to thereby avoid intermixing of said compressible and non-compressible fluids.

3,667,223

HYDRAULIC SYSTEM HAVING MEANS FOR ISOLATING LEAKING BRANCH CIRCUITS

Charles T. Thurston, St. Charles, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Feb. 16, 1971, Ser. No. 115,256
Int. Cl. F15b 1/00
U.S. Cl. 60—51 11 Claims

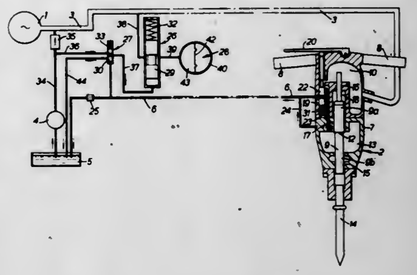
A hydraulic system has a reservoir which contains a hydraulic fluid and includes a piston which bears against that fluid. The system also has a pump which derives fluid from the reservoir and supplies high pressure fluid to a plurality of branch circuits, each having a hydraulic motor or some other hydraulically powered device or load. The branch circuits are connected to the reservoir so that fluid after passing through the hydraulic motors is returned to the reservoir at low pressure. An isolating apparatus is interposed between the pump and branch circuits and includes a main valve for isolating each branch circuit. Each main valve is normally open, and is controlled by a pilot valve which is in turn operated by a cam follower disposed in the path of a cam which is carried by and responsive to the position and movement of the reservoir piston. Should one of the branch circuits develop a leak, the volume of the fluid in the reservoir will decrease, causing the piston to move through the reservoir and carry its cam with it. The cam, by operating the pilot valves associated with the main valves, shuts off and opens the main valves sequentially until the main valve associated with the leaking branch is closed, at which time loss of reservoir fluid terminates and further movement of the piston is merely a function of normal system operating conditions and not leakage. Once operated by the cam the pilot valve for the leaking branch circuit is pressure loaded or mechanically held in a position to isolate the branch from the remainder of the system in which case the pilot valve is independent of cam position.

3,667,224

POWER TRANSMISSION SYSTEMS

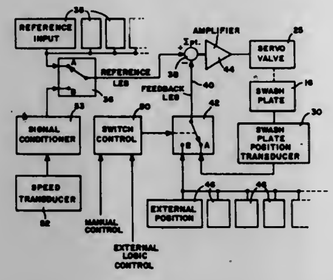
Keith Foster, Birmingham, England, assignor to A. F. Hydraulics Limited, c/o National Research Development Corporation, London, England

Filed Nov. 10, 1969, Ser. No. 875,098
Claims priority, application Great Britain, Nov. 11, 1968, 53,416/68
Int. Cl. F03c 1/00; F15b 1/02
U.S. Cl. 60—51 8 Claims



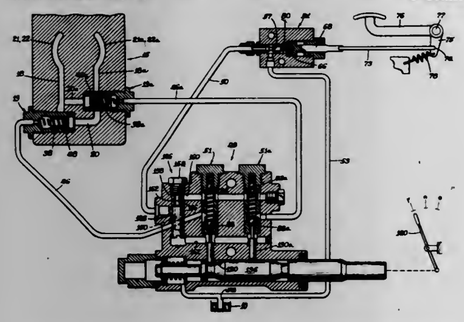
A so-called A.F. or "alternating flow" hydraulic system comprises a power line interconnecting a generator and a pressure chamber of a receiver, a return line, control valve means at the receiver end of the system and operative to interconnect said power and return lines whereby to produce a return hydraulic flow through the return line, and control means at the generator end of the system. The control means sense the change of flow conditions consequent upon operation of the valve means and substantially preventing pressure pulses from the generator reaching at least a major length of the power line connected to the receiver.

3,667,225
HYDROSTATIC DRIVE AND CONTROL SYSTEM THEREFOR
Lawrence P. Karman, Waynesville, Ohio, assignor to Scott Equipment Company, Dayton, Ohio
Filed Aug. 12, 1970, Ser. No. 63,218
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 VS 1 Claim



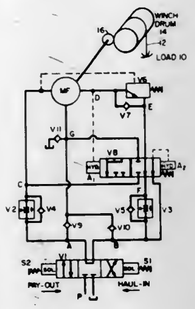
An electro-hydraulic system controls the position or movement of a fixed displacement hydraulic motor, such as a piston motor, in accordance with predetermined desired rates of movement or positions thereof, and employs a variable displacement drive pump having a movable swash plate. The position of the swash plate is controlled by an electrical control circuit including a series of inputs which represent either a desired position of the motor or a desired pump output. Means are provided for selecting between primary feedback indicative of the position of the swash plate or secondary feedback indicative of the position of the motor or device being controlled.

3,667,226
CONTROL FOR A HYDROSTATIC TRANSMISSION
Rodger W. Asmus, Downers Grove, and William R. Borghoff, Naperville, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 13,856, Feb. 24, 1970, abandoned, which is a continuation of application Ser. No. 731,590, May 23, 1968, now abandoned. This application Nov. 2, 1970, Ser. No. 86,375
Int. Cl. F16d *31/06*
U.S. Cl. 60—53 R 8 Claims



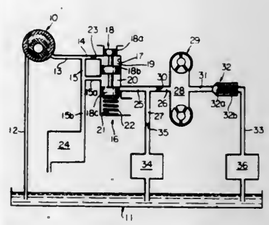
For a hydrostatic transmission having valving means which can be selectively positioned corresponding to forward, neutral, and reverse drive of the transmission and including means for dumping excess fluid pressure from the fluid pressure circuit in order to prevent damage to the transmission, and under certain conditions to prevent overspeeding of the transmission to further prevent damage; means are provided whereby fluid flow in a hydrostatic loop can be bypassed from its normal drive path in the transmission, through the valve means provided.

3,667,227
HYDRAULIC LOAD LIMITING SYSTEM
Jerome Bentkowsky, Los Altos, and W. Tait Beran, Palo Alto, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Mar. 5, 1971, Ser. No. 121,330
Int. Cl. F16d *31/06*
U.S. Cl. 60—53 WW 7 Claims



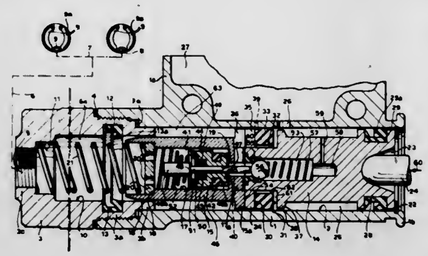
Apparatus for limiting the load on a hydraulic drive system, such as a winch. A feature of the disclosed arrangement is that limiting is maintained at a relatively constant value regardless of whether the load is being controlled by the hydraulic drive or is overpowering the drive.

3,667,228
LUBRICATING CIRCUIT OF AN AUTOMOTIVE POWER TRANSMISSION
Koichi Ohle, Tokyo, and Koji Enomoto, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 5, 1970, Ser. No. 87,072
Claims priority, application Japan, Nov. 12, 1969, 44/90672
Int. Cl. F16d *31/06*; F16h *41/02*
U.S. Cl. 60—54 3 Claims



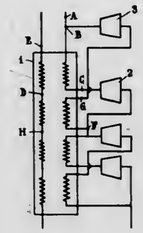
An automotive power transmission lubricating circuit which is supplied with a lubricating fluid from an oil pump delivering a pressurized fluid for operating the transmission, the lubricating fluid being drawn to the lubricating circuit from a passage upstream of a torque converter, whereby the lubricating circuit can be supplied with a lubricating fluid at any desired flow rate which is not influenced by the operation of the torque converter throughout different operations of the transmission.

3,667,229
DEVICE FOR SUPPLYING FLUID UNDER PRESSURE
Arturo Cresto, Turin, Italy, assignor to Ferruccio Manzini, Turin, Italy
Filed Dec. 15, 1969, Ser. No. 884,890
Claims priority, application Italy, Dec. 18, 1968, 54336 A/68
Int. Cl. F15b *7/00*, *7/08*
U.S. Cl. 60—54.6 A 12 Claims



A device for supplying fluid under pressure has a two-part cylinder, one part being of narrower diameter than the other, and a two-part piston slidable in the cylinder. Two pressure chambers are defined by the cylinders and the piston. Advance of the piston reduces the volume of both. One, the high pressure chamber feeds an external pressure system, and is itself fed by the other chamber through a valve system during an initial phase of the piston stroke. In a later phase the feed from the second in the first chamber ceases and instead the second chamber feeds the fluid reservoir through a control valve. Pressure-transmitting means such as a rod is arranged between the high pressure chamber and the control valve to open the control valve when the pressure in the high pressure chamber exceeds a predetermined value.

3,667,230
PROCESS FOR THE RATIONAL EXCHANGE OF HEAT IN COUNTER-CURRENT HEAT EXCHANGES WHERE THE EXCHANGES ARE UNBALANCED
Jacques Sterlini, Paris, France, assignor to Compagnie-Electro-Mecanique, Paris, France
Filed Jan. 26, 1971, Ser. No. 109,894
Int. Cl. F01d *13/02*
U.S. Cl. 60—65 7 Claims

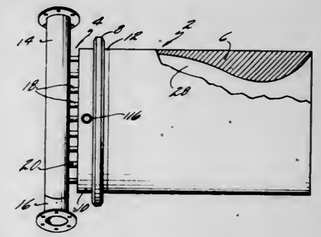


The coupling of quantities of heat by exchange between two fluids is obtained by dividing the hot fluid into two streams at the entrance of a heat exchanger; the first stream is introduced into the high temperature portion of the exchanger and is then passed to a turbine for reduction in pressure while producing work energy; the second stream being introduced into a turbine for reduction in pressure while producing work energy and is then passed to the heat exchanger at substantially the temperature at which the first stream leaves the heat exchanger. The excess heat which is available in the hot fluid and cannot be stored for reheating the other fluid is thus converted into work energy.

3,667,231
HYDRAZINE DECOMPOSITION PROCESS USING METAL PROMOTERS
Theodore N. Hubbuch, Florence; James A. Murfree, Jr.; William A. Duncan, both of Huntsville; Billy J. Sandlin, Athens, and Henry A. Nappier, Lacey's Spring, all of Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed July 5, 1967, Ser. No. 651,323
Int. Cl. C06d *5/04*, *5/10*
U.S. Cl. 60—218 5 Claims

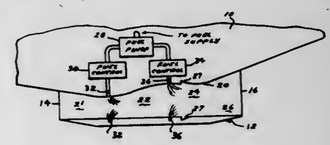
The use of metal powders as synergistic promoters for solid oxidizing agents (initiators) for gas generators.

3,667,232
DUAL ORIFICE IMPINGEMENT INJECTOR
James P. Mitchell, North Palm Beach, and Allan R. Cohen, Palm Beach Gardens, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation of application Ser. No. 426,711, Jan. 15, 1965. This application May 5, 1967, Ser. No. 636,551
Int. Cl. F02k *9/02*
U.S. Cl. 60—258 8 Claims



An injector head having nozzle assemblies with each assembly being formed with dual coaxial orifices. Streams formed by dual orifices of different propellants being directed to impinge at a point within a propellant mixing zone. Each nozzle assembly of dual orifices maintaining by a momentum exchange between the coaxial streams a single stream of its respective propellant. A plurality of dual orifices can be located about the face of an injector head and arranged to impinge, for example, in a triplicate pattern.

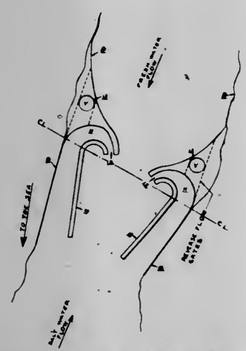
3,667,233
DUAL MODE SUPERSONIC COMBUSTION RAMJET ENGINE
Edward T. Curran, and Frank D. Stull, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 14, 1969, Ser. No. 870,545
Int. Cl. F02k *7/08*
U.S. Cl. 60—270 4 Claims



A supersonic ramjet engine having a fixed-geometry combustion chamber. The ramjet engine is operated in the sub-

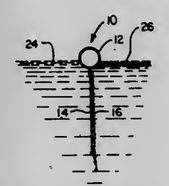
sonic mode by injecting fuel in fuel injectors located in a uniform cross-section portion of the combustion chamber and in the supersonic mode by injecting fuel in fuel injectors located upstream of the subsonic injectors in an adjacent expanding portion of the combustion chamber.

3,667,234
REDUCING AND RETARDING VOLUME AND VELOCITY OF A LIQUID FREE-FLOWING IN ONE DIRECTION
Gabriel V. De Lizaso-in, Boca Raton, Fla., assignor to Tecnico, Inc., Washington, D.C.
Filed Feb. 10, 1970, Ser. No. 10,205
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R **4 Claims**



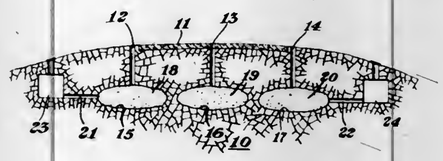
The volume and velocity of a free flowing body of water, such as a river or the like, moving in one direction past a control point are there reduced and retarded by diverting part of the volume of water, amplifying its velocity, linearizing its flow characteristics, and directing this modified flow back into the main body of liquid at such an angle as to create in the body of the stream, at the control point area, a zone of compound flows which through turbulence, drag, and other fluid phenomena materially obstruct and retard the flow through the control area.

3,667,235
CONVERTIBLE BARRIER FOR SUBSTANCES FLOATING ON WATER
Paul Preus, P.O. Box 1002, Toms River, N.J., and John J. Gallagher, 252 Burley Road, Annapolis, Md.
Filed Apr. 27, 1971, Ser. No. 137,799
Int. Cl. B63b *35/00*
U.S. Cl. 61—1 **6 Claims**



A barrier for substances floating on water having a flotation member and a liquid pervious and a liquid impervious skirt depending therefrom. The liquid impervious skirt is deflected at currents greater than about one knot and the oily substances are treated with a particulate oleophilic-hydrophobic substance less dense than water for retention by said liquid pervious skirt.

3,667,236
METHOD FOR TREATING SUBSURFACE SOILS
Robert B. Rosene, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 10, 1970, Ser. No. 45,035
Int. Cl. E02d *19/16, 27/16*
U.S. Cl. 61—11 **4 Claims**



A method is provided for increasing the stability of subsurface soils. A cavity in the subsoil is filled with a permeably consolidated aggregate and optionally clayey soils adjacent to the cavity are also treated with a clayey stabilizing chemical.

3,667,237
NOVEL CONSTRUCTIONS AND METHODS
Thomas P. Dougan, Corona Del Mar, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Aug. 5, 1970, Ser. No. 61,356
Int. Cl. E02d *3/00*
U.S. Cl. 61—36 **18 Claims**

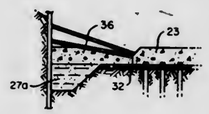


An improved construction is disclosed which utilizes a frozen surface as a support means. The improvement comprises a thermal barrier interposed between the base portion of the construction and the frozen surface. The thermal barrier functions to stabilize the frozen surface by prevention of its thawing, thus maintaining support capacity. The thermal barrier can be of rigid plastic foam materials, such as polyurethane foam or a composite of said rigid plastic foams with other thermal insulating materials. The advantages of the improved construction include ease of construction, lower cost, and production of a stable construction upon normally unstable surfaces.

3,667,238
STABILIZED CONSTRUCTION WALL IN UNSTABLE FOOTING
Ben C. Gerwick, Jr., Oakland, Calif., assignor to J. H. Pomeroy & Co., Inc., San Francisco, Calif.
Original application Mar. 28, 1969, Ser. No. 811,331, now Patent No. 3,563,044. Divided and this application May 15, 1970, Ser. No. 37,747
Int. Cl. E02d *3/12, 5/18, 27/04*
U.S. Cl. 61—39 **1 Claim**

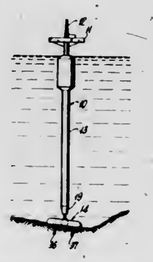
An arrangement for providing stabilization for a construction wall during construction in an unstable footing which includes the formation of a basin above the pre-existing surface level of a proposed construction zone or site. The basin is used to receive fluid therein to provide increased hydrostatic pressure, acting on the wall from inside the construction site

to provide pressure within the site to a degree approximating the counter-vailing pressures acting on the construction wall from outside the site. Then, while maintaining the hydrostatic pressure, the soil materials within the site are removed by excavating down to a predetermined level and replaced (while still maintaining the hydrostatic pressure) with a stabilizing fill material of greater strength than the unstable materia removed from the site. Thereafter, the hydrostatic pressure



can be relieved and preparation of the site continued. The wall structure formed will ultimately be characterized by an unstable footing material on one side of the wall at the lower end thereof, a mat of stable footing material on the other side of the wall, and a mat of concrete superimposed upon the mat of stabilized footing material so that the concrete mat can counteract laterally acting forces pressing against the outside of the wall.

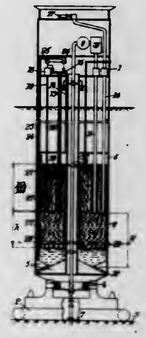
3,667,239
ANCHOR FOR BUOYANT MARINE STRUCTURES
George E. Mott, Metairie, La., assignor to Texaco Inc., New York, N.Y.
Filed Apr. 30, 1970, Ser. No. 33,395
Int. Cl. B63b *35/44, 21/50*
U.S. Cl. 61—46.5 **10 Claims**



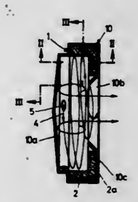
The invention relates to a buoyant marine platform for positioning in a deep water offshore location. The platform includes buoyancy control means whereby to regulate the attitude of the unit at the water's surface as well as when submerged. The platform lower end is provided with an anchoring member adapted to seat, and be partially imbedded into a sloping or contoured ocean floor. Said anchor member comprises separate, yet cooperating components which permit adjustment of the anchor's disposition while at the ocean floor, to operably engage and fixedly position the buoyant platform.

3,667,240
INSTALLATIONS FOR SUBMARINE WORK
Robert H. Vilain, Maisons-Alfort, France, assignor to Compagnie Francaise D'Entreprises Metalliques, Paris, France, a part interest
Filed Nov. 20, 1969, Ser. No. 878,458
Claims priority, application France, Nov. 21, 1968, 174812
Int. Cl. E02b *17/00;* **E21b** *15/02*
U.S. Cl. 61—46.5 **9 Claims**

An off-shore drilling platform for hydrocarbons has an oscillating column pivoted at its base and kept stable by upward hydrostatic pressure, with hydrocarbon storage in the column. The difference in the densities of water and hydrocarbons in the column is compensated whereby the forces acting on the base of the column and on the pivot remain substantially constant. The column has two compartments, a lower one filled with water, and an upper one forming a float. Compensating means are pumps and valves arranged so that when the hydrocarbon is introduced into the lower compartment it drives out water and corresponding mass of liquid is pumped into the upper compartment. The pumps and valves are servo-controlled to the levels of the two liquids. A gas pocket over the hydrocarbon is kept at constant pressure by a pumping system linked to the servo-control.



3,667,241
CONSTRUCTION OF A CHAMBER FOR COOLING HOT GASES
German Munding, Bad Friedrichshall, and Willi Zeh, Neuenstadt, Kocher, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany
Filed Mar. 3, 1970, Ser. No. 16,006
Claims priority, application Germany, Mar. 5, 1969, P 19 11 078.2; June 19, 1969, P 19 30 990.1
Int. Cl. F25b *9/02*
U.S. Cl. 62—5 **14 Claims**



A construction of a chamber for cooling hot gases such as fuel gases or combustion gases includes means for introducing the hot gases into the chamber in a whirling flow and into contact with a coolant which is preferably in solid form and is located within the chamber. The gases contact the coolant and cause the coolant to slowly dissolve while the gases are cooled down. The coolant is advantageously made of a L-shaped cross-sectional configuration and it includes a wall which surrounds the outlet to the chamber, and which forms, with the chamber wall, an over flow weir for the outflow of the gases after they have been cooled within the chamber. The coolant itself advantageously includes means such as longitudinally extending grooves for forming rotatable eddies

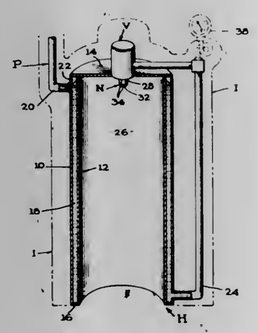
on the whirling gas flow which intensify the heat exchange between the relatively cooled boundary layer and the hotte: rotating layers of the whirling gas flow located further inside radially. In another embodiment the coolant chamber advantageously includes a front wall or closed wall located opposite the outlet which carries the coolant lining in a solid form.

3,667,242

APPARATUS FOR INTERMITTENTLY PRODUCING CARBON DIOXIDE SNOW BY MEANS OF LIQUID CARBON DIOXIDE

Robert William Kilburn, Lake Wales, Fla., assignor to RWK Development Co., Lake Wales, Fla.

Filed Sept. 15, 1969, Ser. No. 857,743
Int. Cl. F25j *1/00, 5/00*
U.S. Cl. 62—10 **12 Claims**



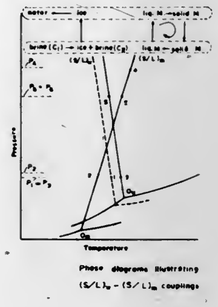
Apparatus particularly embodying an improved snow horn for producing carbon dioxide snow in a controlled intermittent manner upon demand. Liquid CO_2 is directed under predetermined conditions of pressure and temperature into an upper portion of a hollow double side walled cylindrical horn member provided with an open bottom and preferably a closed top, the latter having a solenoid actuated dispensing valve disposed adjacent thereto with an expansion nozzle connected thereto and projecting down into the horn. An annular area above the liquid CO_2 inlet in the horn is utilized within the hollow well or chamber to collect bubbles of CO_2 gas which may be introduced therewith. The liquid CO_2 is removed from the bottom of the annular chamber to assure exit therefrom only of the liquid CO_2 as by insulated pipe and introduced into the nozzle via the solenoid valve. The nozzle via minute holes therein preferably imparts a swirling tangential movement to the CO_2 snow formed by the sudden expansion of the liquid CO_2. The liquid CO_2 entering in the annular chamber is subcooled by the tangential swirl or vortex-like action of the mixture of snow and gas, to an extent to cause any bubbles in the liquid CO_2 to condense back into liquid form. The overall arrangement thereby assures that only liquid CO_2 enters the expansion nozzle to assure positive controlled formation of CO_2 snow at all times, even though the action of the solenoid dispensing valve is intermittant and/or off for considerable periods of time.

3,667,243

INDIRECT-FREEZING PROCESS WITH HEAT REUSE BY AN AUXILIARY WORKING MEDIUM

Chen-Yen Cheng, 2443 South Krameria Street, Denver, Colo., and Sing-Wang Cheng, 83, Section 1, Chang-an East Road, Taipei, China /Taiwan

Continuation-in-part of application Ser. No. 683,800, Nov. 17, 1967, which is a continuation-in-part of application Ser. No. 346,112, Feb. 20, 1964, now Patent No. 3,354,083, dated Nov. 21, 1967. This application July 10, 1968, Ser. No. 743,707
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **5 Claims**



The present invention is related to a separation process by which a substance can be separated in a more or less purified state from a solution containing it. In the process, the solution is partially solidified by an indirect contact cooling operation and the deposited solid is then melted in situ to yield the purified substance. High quality deposit is obtained by maintaining an appropriate flow of the solution over the surface of the deposited solid during the solidification operation and by growing the deposit at a low growth rate. Heat reuse in these operations is accomplished by the help of an auxiliary working medium which undergoes a cyclic change. The medium undergoes an endothermic transformation, such as melting, vaporization, etc., to absorb the heat liberated during the partial solidification operation and undergoes the corresponding reverse operation, which is exothermic, to supply the heat required in melting the deposited solid. Since the transformation temperatures of both the main system and the auxiliary system during the operations described above are functions of the respective applied pressures, the temperature differentials required in these heat exchange operations between the main and the auxiliary systems can be obtained by selecting a suitable working medium and by maintaining the pressure applied to these systems during the operations or appropriate values. Work is supplied to the process through the necessary pressurization operations.

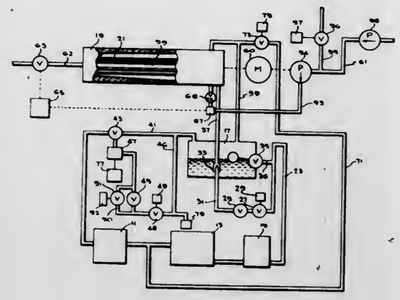
The working medium used may undergo a set of solid liquid transformations, a set of liquid vapor transformations, or any other reversible transformations. When a rigid wall is used to separate the medium from the main system, the pressures applied to them may be different at a given time. However, when a deformable vessel is used to separate the two systems. both systems are maintained substantially at the same pressure at any given time. The processes of the present invention are classified according to the nature of transformations of the working medium and the nature of the wall separating the two systems. The equipments which can be used in these processes are also described.

3,667,244

CONTROL SYSTEM FOR FREEZERS

Walter L. Hock, Skokie, Ill., and William E. Meyers, Monroe, N.C., assignors to Kraftco Corporation, New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,284
Int. Cl. F25c *7/14*
U.S. Cl. 62—136 **7 Claims**



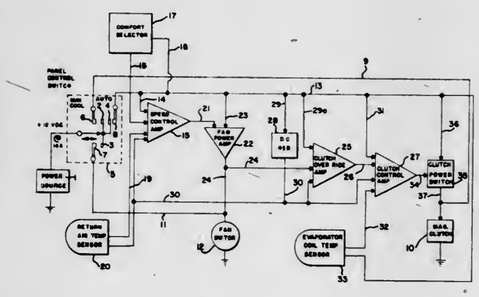
The present invention is directed to a freezing system of the hot gas type and a control system therefor. The freezing system is particularly directed to the type wherein a single motor is used to drive a dasher for a mix pump or pumps. The control system of the invention includes timing devices for controlling the start-up and shut-down of the freezing system in accordance with a predetermined sequence.

3,667,245

FAN AND CLUTCH CONTROL CIRCUIT FOR AN AIR CONDITIONER

James Peter Till, 341 Blacklatch Lane, Camp Hill, Pa., and William Jeffrey Hudson, Jr., R.D. #1, P.O. Box 115, Hummelstown, Pa.

Filed June 8, 1970, Ser. No. 44,493
Int. Cl. F25d *17/00*
U.S. Cl. 62—180 **9 Claims**



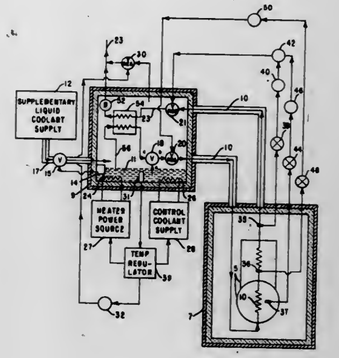
A fan and clutch control circuit controls the operation and speed of a fan of an air conditioner over a preselected temperature range and controls the operation of a magnetically operated clutch to drive a compressor of the air conditioner at selected temperatures.

3,667,246

METHOD AND APPARATUS FOR PRECISE TEMPERATURE CONTROL

Steven J. St. Lorant, San Mateo, Calif., and Phillip L. Dow, Geneva, Switzerland, assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 4, 1970, Ser. No. 95,237
Int. Cl. F25b *41/00*
U.S. Cl. 62—208 **7 Claims**



A temperature control system for maintaining a cryogenic load at a predetermined temperature by circulating a wet mixture of a coolant through tubing that is in heat-transfer relationship with the load while maintaining the coolant in a saturated condition throughout the tubing at a constant temperature that is slightly cooler than the predetermined load temperature. The system includes a preconditioning chamber from which liquid coolant is supplied to the tubing. The chamber is partially filled with liquid coolant, with the remainder of the chamber filled with vaporous coolant. Inlet and outlet metering valves for the tubing are mounted in the chamber and controls are provided for maintaining the entire interior environment of the chamber including the valves, interconnecting tubing and both the liquid and vaporous coolant in a state of thermodynamic equilibrium at a temperature that is a few tenths of a degree lower than the predetermined temperature of the load. Sensors are provided at the load and in the tubing for actuating controllers that manipulate the valves to regulate the coolant flow to be at a rate that maintains the coolant in its saturated wet-mixture condition in all sections of the tubing during heat transfer from the load to the coolant.

3,667,247

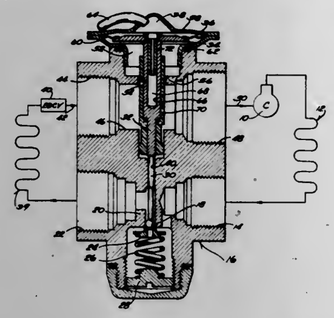
REFRIGERATION SYSTEM WITH EVAPORATOR OUTLET CONTROL VALVE

Robert H. Proctor, Richmond, Ind., assignor to Controls Company of America, Melrose Park, Ill.

Filed July 10, 1970, Ser. No. 53,861
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **8 Claims**

Refrigerant flows from the compressor and condenser to the evaporator by a thermostatic expansion valve having its pressure and temperature sensing points in the suction line downstream of the evaporator outlet control valve which regulates the evaporator pressure relatively independently of the suction line conditions. When the compressor capacity significantly exceeds evaporator capacity this system provides additional compressor cooling at low suction pressures.

The expansion valve may be the bulbless type or the externally equalized type. The outlet control valve may respond to



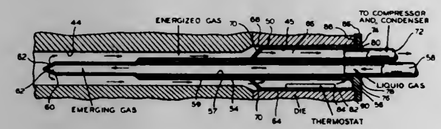
refrigerant temperature at the coil outlet, or to fin temperature, or may be an evaporator pressure regulator valve.

3,667,248

PROBE TYPE DIE COOLING ARRANGEMENT

Arthur H. Carlson, Route 1, P.O. Box 369, Sawyer, Mich.

Filed Sept. 8, 1970, Ser. No. 70,093
Int. Cl. B22d *27/04*; F25b *41/04*
U.S. Cl. 62—225 3 Claims



A cooling arrangement for cooling, with liquid carbon dioxide or the like, a die formed with a coolant receiving passage in which a probe structure is mounted in the passage in sealed relation thereto adjacent the outer end of the passage, with the probe comprising an elongate tubular member formed at one end to receive the coolant fluid and at the other end to discharge the fluid into the die passage, and an annular heated coolant receiving chamber formed about the tubular member adjacent its outer end and formed with a heated coolant discharge port adjacent the outer end of the passage and a heated coolant receiving port adjacent the other end thereof and short of the inner end of the tubular member. The coolant receiving end of the tubular member and the coolant discharge end of the chamber are connected into a closed circuit refrigeration system for supplying liquified gas to the probe and reliquifying the heated gas after it leaves the probe for resupply to the probe.

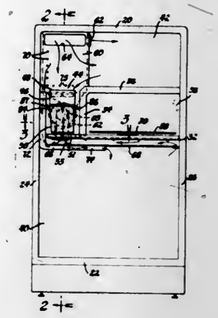
3,667,249

REFRIGERATOR WITH ICE MAKER AND HIGH HUMIDITY COMPARTMENT

Richard C. Brown, and Orson V. Saunders, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 23, 1970, Ser. No. 74,750
Int. Cl. F25c *5/18*
U.S. Cl. 62—312 5 Claims

A refrigerator has a high humidity compartment the bottom of which is formed by a pan carrying a film of ice water supplied by the melting of ice cubes in the storage bin of an ice maker. The storage bin has a perforated bottom which drains onto the pan. Refrigerated air in large quantities is used to maintain a below freezing temperature in the freezing compartment and in smaller quantities to maintain the low humidity compartment at above freezing temperatures. The



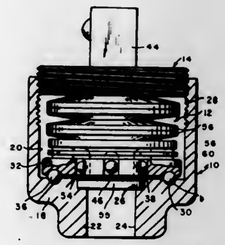
high humidity compartment is cooled through its walls to keep its temperature slightly above freezing.

3,667,250

TORQUE RELEASE ADAPTER FOR POWER-OPERATED TOOLS

Lawrence S. Schnepel, 250 Goodman Hill Road, Sudbury, Mass.

Filed Sept. 14, 1970, Ser. No. 71,805
Int. Cl. F16d *7/06*
U.S. Cl. 64—29 7 Claims



A torque release adapter comprising coaxially aligned shafts, opposed discs at the adjacent ends of the shafts having spaced parallel surfaces containing circumferentially spaced holes for receiving balls, an internally threaded receptacle integral with one shaft, said receptacle being concentric with the one shaft and an externally threaded cup nut nonrotatably mounted on the other shaft so as to be movable axially on said other shaft, said cap nut being threaded into the receptacle and, in conjunction therewith, providing a closed chamber of variable axial length and a plurality of opposed dished spring washers mounted on said other shaft in the chamber between the cap nut and the disc on said other shaft, said cap nut and receptacle being adapted by rotation of the shafts relative to each other to change the compression of the washers and hence the torque release limit.

3,667,251

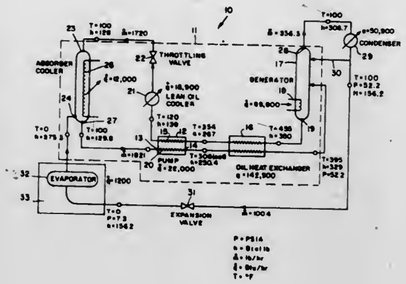
ABSORPTION REFRIGERATION SYSTEM

Gabor Miskolczy, Carlisle, and Robert Kaiser, Cambridge, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 9, 1970, Ser. No. 87,986
Int. Cl. F25b *15/00*
U.S. Cl. 62—476 9 Claims

The invention is directed to an absorption-type refrigeration system in which a magneto-caloric pump system is used

in combination with a compatible-ferrofluid refrigerant



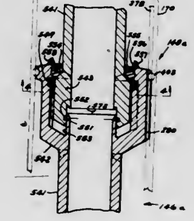
system to replace the percolator-type pump or other conventional pumps.

3,667,252

COUPLING FOR DRILL STRING

Arthur John Nelson, 3304 Shasta Drive, San Mateo, Calif.

Filed Nov. 2, 1970, Ser. No. 85,904
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.5 3 Claims



This dual engaging coupling connects equal segmental lengths of tubing in repeating sequence to form an integrated drill string that is suspended by a thrust bearing means from an immersed buoyant pontoon controlled to regulate the bearing pressure of the lower terminally connected bit upon the bottom of a hole being drilled in subaqueous strata. The primary engagement transmits torque, tension and fluid flow between adjacent ends of the two rigid members. The secondary engagement provides uninterrupted translation of the string through the torque imparting means and power transmission by said repeating sequence whereby a subsequent coupling becomes engaged prior to disengagement of a descending coupling departing from the torquing means. The coupling is adapted to rapid assembly and non-selective of mating ends to preserve axial alignment of the secondary engagement.

ERRATUM

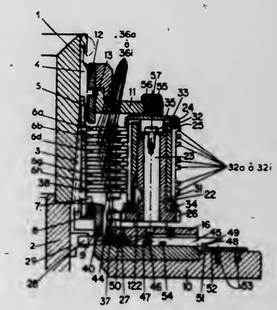
For Class 64—29 see:
Patent No. 3,667,250

3,667,253

NEEDLE SELECTOR FOR CIRCULAR KNITTING MACHINES

Norbert Paul Bourgeois, 7, place des Chartreux, Troyes, France

Filed Mar. 9, 1970, Ser. No. 17,656
Claims priority, application France, Mar. 10, 1969, 6906719
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B 9 Claims



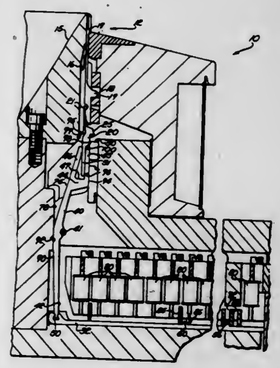
The invention relates to a selector device for needles or needle accessories of a circular knitting machine adapted to select the needles or accessories by means of a removable rotary pattern drum whose periphery may be equipped with removable projecting elements arranged according to a predetermined knitting pattern and adapted to operate on the needles or accessories through an assembly of linking elements arranged in a stepped pattern.

3,667,254

HORIZONTAL SELECTOR JACKS AND THEIR ACTUATION

Horst Paepke, Rottenburg am Neckar, Germany, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Apr. 6, 1970, Ser. No. 25,961
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 R 10 Claims



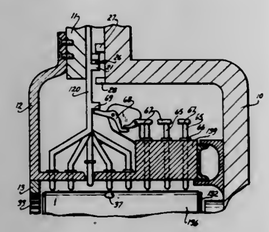
A circular knitting machine comprises a rotatable knitting needle cylinder which carries a plurality of knitting needles

through knitting stations. A needle-moving jack is pivotally connected with each of the knitting needles and is movable in a needle-raising stroke and a needle-lowering stroke to effect needle raising and lowering, respectively, Each of the needle-moving jacks has a butt thereon which is received in a cam track which operates to effect the raising and lowering of the needle-moving jacks. A mechanism is provided for controlling the operation of each knitting needle as it progresses through the stations. The mechanism specifically effects pivoting of the needle-moving jack so that the butt thereon is removed from the cam track to thereby prevent raising and lowering of the needle. The means which effects the pivoting movement of each needle-moving jack comprises a selector jack which is linearly movable in a direction substantially transverse to the axis of rotation of the needle cylinder and interconnecting means which operatively connect the selector jack and the needle moving jack so that movement of the selector jack effects the pivoting movement of the needle-moving jack. Electromagnetic means are provided to control the movement of each selector jack so that a selector jack is moved to effect the pivoting movement of the needle-moving jack so as to prevent raising and lowering of the needle or not moved to allow the needle-moving jack with which it is associated to remain with its butt in the cam track and effect movement of the needle.

3,667,255
NEEDLE SELECTION ARRANGEMENT FOR A CIRCULAR KNITTING MACHINE

Rudolph G. Basslat, Lancaster, Pa., assignor to Travis Mills Corp., a part interest

Filed Dec. 29, 1969, Ser. No. 888,697
Int. Cl. D04b *15/68, 15/74, 15/78*
U.S. Cl. 66—50 R 2 Claims



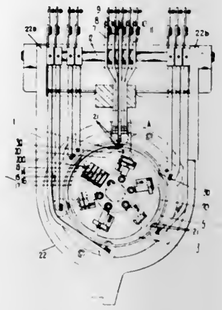
A flexible band carries jack actuation control means for determining when the machine jacks are moved so that their butts engage the lower cam race and cause lifting of the needles. The control means may be projections carried by the band, or holes in the band through which actuators can project, or light-transmitting regions in the band for controlling light-responsive jack actuators. The band may be endless, and trained about a drum. The jacks are moved vertically when actuated, and a magnet or spring is provided to hold the jacks down when not actuated.

3,667,256
MEANS FOR GUARDING NEEDLE LATCHES OF CIRCULAR KNITTING MACHINES

Keith Gerald Townsend, and David Arthur Harlow, both of Leicester, England, assignors to The Bentley Engineering Company Limited, Leicester, England

Filed Apr. 20, 1970, Ser. No. 30,177
Claims priority, application Great Britain, Apr. 23, 1969, 20,684/69
Int. Cl. D04b *15/08*
U.S. Cl. 66—111 6 Claims

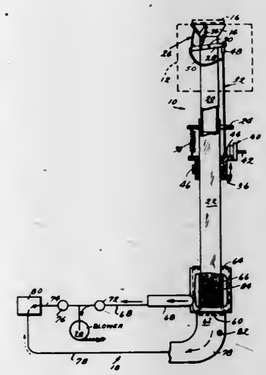
In a circular knitting machine there is provided a latch guard devoid of feeder receiving slots but formed instead at a knitting station or each of a plurality of knitting stations with a slot just wide enough to receive a yarn and permit two yarns to pass during a yarn change. Thereby the risk of the latches of latch needles becoming damaged by swinging into latch guard slots during operation of the machine is avoided.



3,667,257
SLITTING MECHANISM FOR USE WITH CIRCULAR KNITTING MACHINES

Vaughn H. Butler, Harriman, Tenn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 8, 1970, Ser. No. 1,531
Int. Cl. D04b *35/34*
U.S. Cl. 66—147 14 Claims

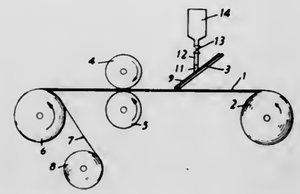


A slitting mechanism for a circular knitting machine is made up of a tubular assembly which can be fitted within the cylinder assembly of such a machine. The slit mechanism includes a heating element for contacting a fabric at a desired point for slitting the fabric, and mechanisms are provided for actuating the heating element in accordance with a controlled sequence of operation which is related to the knitting cycle of the knitting machine. The tubular assembly may optionally include a draw-off system at its lower end.

3,667,258
APPARATUS FOR PRODUCING STRIPED COLORATIONS ON DYEABLE SUBSTRATES IN CONTINUOUS FORM

Clifford Newton, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 6, 1970, Ser. No. 97,433
Claims priority, application Great Britain, Nov. 13, 1969, 55,608/69
Int. Cl. B05c *5/02*
U.S. Cl. 68—205 R 2 Claims

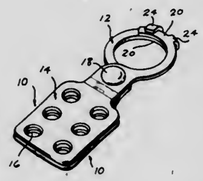


Striped colorations are produced on dyeable substrates in continuo us or sheet form by applying a plurality of dyestuff streams to the substrate at selected points across its width while the substrate is moved longitudinally relatively to the points of application, and then passing the substrate between nip rollers, the rate of application of the dyestuff streams being so controlled that on passage through the nip the dyestuffs are squeezed into the substrate to form non-overlapping longitudinal stripes of the desired widths.

3,667,259
SAFETY LOCK

Albert K. Reque, Warsaw, Ind., and Julius T. Peterson, Chicago, Ill., assignors to Engineering Development Co., Inc., Warsaw, Ind.

Filed Aug. 5, 1970, Ser. No. 61,246
Int. Cl. E05b *73/00*; G05g *5/00*
U.S. Cl. 70—14 3 Claims

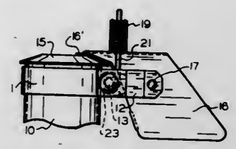


An improved safety lock which includes two pivotally connected members each having a shank portion with an aperture therein and a hook portion. The shank portions of the pivoted members are adapted to overlap with the apertures therein being placed in registry so as to receive the hasp of a padlock. With the shank portions of the members overlapping and the holes therein placed in registry, the free end parts of the hook portions overlap to define, in association with the remainder of the hook portions, a continuous lock ring which is adapted to extend through an anchoring aperture and around a lever or handle of a switch or valve in order to prevent the actuation of the switch or valve. The overlapping end parts of the lock's hook portions include components which cause the end parts to interlock so as to prevent the hook portions from being separated and disengaged from the switch or valve without the release of the padlock which extends through the shank portions of the safety lock and which normally prevents separating movement of the hook portions.

3,667,260
EXHAUST PIPE PROTECTOR LOCK

Daniel J. Foote, Milwaukee, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Jan. 25, 1971, Ser. No. 109,201
Int. Cl. E05b *65/12*; B60r *25/04*
U.S. Cl. 70—159 10 Claims

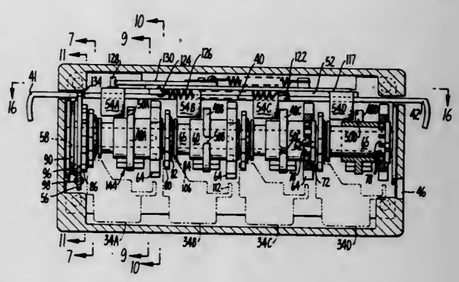


For the protection of the outer end portion of an internal combustion engine exhaust pipe, a protector is available which includes a collar secured to the outer end portion of the exhaust pipe hingedly carrying a protective cover formed with a weighted, radially outwardly projecting fin. The cover normally overlies and closes the open outer end of the exhaust pipe to which it is applied but will hingedly move to open position through exhaust gas pressure. This invention provides a lock for securing the cover in its closed position to prevent the undesired introduction of foreign material into the discharge end of the exhaust pipe when the engine is not being operated and the equipment or vehicle embodying the engine is idle and unattended.

3,667,261
PUSH BUTTON DOOR LOCK

Thomas K. McGourty, Aptos, Calif., assignor to Time Research Development Corporation

Filed Jan. 8, 1971, Ser. No. 104,871
Int. Cl. E05b *37/16*
U.S. Cl. 70—301 5 Claims



A compact push button lock is provided which can be used as a door lock, automobile lock or for various other purposes. The lock has a large number of permutations and permits the owner to set the lock to a new combination without disassembling the lock or the use of tools.

3,667,262
KEY OPERATED LOCK

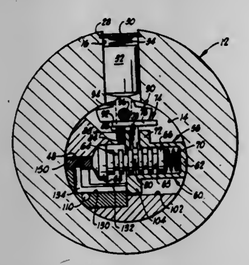
Lewis J. Hill, 4121 N.W. 61st Terrace, Oklahoma City, Okla.

Filed Jan. 11, 1971, Ser. No. 105,359
Int. Cl. E05b *27/02, 35/10*
U.S. Cl. 70—384 14 Claims

A lock including a body having a cylindrical bore therethrough in which a plug is rotatably mounted. Apertures in the body slidably receive drivers. The drivers are aligned, in one position of the lock, with tumbler assemblies movably mounted in the plug. The tumbler assemblies extend into a

key slot in the plug, and insertion of a key in this slot biases the several tumbler assemblies to a lock-opening position in which the tumbler assemblies contact the drivers along a shear line lying in the interface between the plug and the body. The tumbler assemblies are adjustable in their dimensions by the use of a change key so that they may be altered to permit a new key to be made operative for opening the lock.

One part of each tumbler assembly carries a projecting flange which projects through a radial slot in the plug into one of a plurality of L-shaped slots formed in a master key insert assembly. The master key insert assembly is positioned in a slot in the plug which extends substantially parallel to the key slot. The master key insert assembly includes an insert plate having a plurality of the described L-shaped slots formed therein which slidably accommodate L-shaped pins. One leg of each L-shaped pin projects into the key slot in a position for cooperation with the milled surface of a master key, so that when a master key correlated to the particular master key insert assembly in use is placed in the key slot,

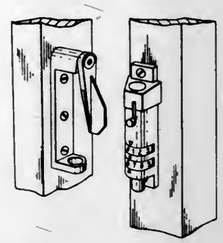


the L-shaped pins are biased by the milled surface of the master key to a lock-opening position. The second end of each of the L-shaped pins bears against the flange carried by one portion of each tumbler assembly so that displacement of the L-shaped pins by the master key moves the tumbler assemblies to a lock-opening position.

The master key insert assembly is slidably disposed in a slot formed in the plug, and is retained in the slot by cooperating retainer pins slidably positioned in the plug and in the master key insert plate. A removal tool passageway is provided in the insert plate in alignment with one end of the retainer pin slidably mounted in the insert plate, so that a removal tool may be used to bias this pin to a position in which the retainer pin in the insert plate meets the retainer pin slidably mounted in the plug along a shear line such that the master key insert assembly may be slidably removed from the plug. After removal of the master key insert assembly in the manner described, a new master key insert may be slidably inserted in the plug so that a new master key must be utilized to open the lock.

3,667,263
COMBINATION LOCK WINDOW LATCH
Edward Parry Rogers, The Briars, 81 Shelone Road, Briton Ferry, Neath, Wales
Filed June 25, 1970, Ser. No. 49,891
Claims priority, application Great Britain, June 26, 1969, 32,400/69
Int. Cl. E05b *37/02, 59/00, 65/06*
U.S. Cl. 70—89 **2 Claims**

The invention relates to a window latch with a lockable bolt axially slideably mounted in a housing. The locking means for the bolt is a keyless combination lock incorporating rotatable slotted annular locking collars located in the bolt housing and disposed coaxially around the bolt. The bolt in the locked position is received in bolt receiving means, there being a pivotable latch on the bolt receiving means which has a surface having a co-operative relation with a tapered surface on the housing so that when the bolt is in the



locked position the latch holds the bolt receiving means and housing securely together.

3,667,264
LOCK CORE
Walter E. Surko, Jr., Southington, and James W. Elliott, West Hartford, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Filed Feb. 10, 1970, Ser. No. 10,190
Int. Cl. E05b *27/00*
U.S. Cl. 70—369 **14 Claims**

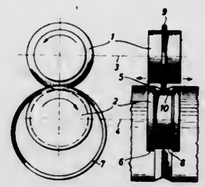


A removable or interchangeable figure-8 pin tumbler lock core adapted to be received and locked in a housing and for operating an associated lock mechanism. The core has a body supporting a key plug and a locking element arranged for limited angular movement relative to the body and the key plug to lock the core in or release it from the housing when a control key is inserted in the plug. The lock mechanism is operated by inserting an operating key to rotate the plug relative to the body without effecting movement of the locking element. A line of shear between the locking element and the body is formed by a planar surface of the body and an arcuate surface of the locking element generally tangent thereto. Lugs on the locking element cooperate with grooves in the body to prevent escape of pin tumblers from the locking element or the body when the locking element is rotated between its locking and releasing positions.

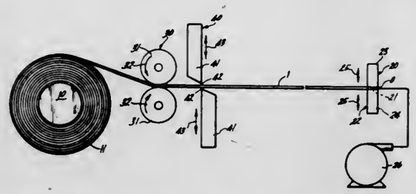
3,667,265
METHOD FOR THE FABRICATION OF STIFFENING CORRUGATIONS IN THIN-WALLED, HARD SHEETS, ESPECIALLY OF CIRCUMFERENTIAL CREASE
Gernot Zippe, Julich, Germany, assignor to Gesellschaft fur Kernverfahrenstechnik mbH, Julich, Germany
Filed Mar. 3, 1970, Ser. No. 16,229
Claims priority, application Austria, Mar. 3, 1969, A 2073/69
Int. Cl. B21d *17/04*
U.S. Cl. 72—84 **3 Claims**

Method of production of beads in thin-walled hard sheet, especially of circumferential creases in rotors of centrifuges, by means of a roller and a counter roller as the pressing tools which accomodate between them the material to be worked; the method includes pressing a roof-shaped groove into the

hard material within its limits of plastic deformation and then superimposing on the roller an oscillatory motion at right angles to the groove for broadening the groove at right angles to its direction of extension.



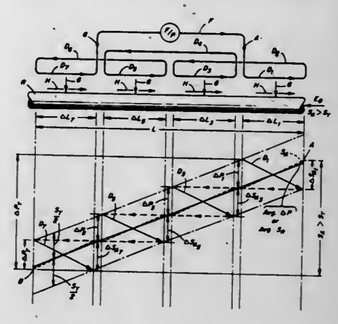
3,667,266
METHOD AND APPARATUS FOR INFLATING FLUID PASSAGEWAYS IN METAL STRIP
Norval A. Keith, East Alton, Ill., assignor to Olin Corporation
Filed May 13, 1970, Ser. No. 36,783
Int. Cl. B21d *53/02*
U.S. Cl. 72—55 **8 Claims**



A method and apparatus for inflating lengths of metal strip having at least one inflatable fluid passageway, and preferably, long lengths of such strip. The process employs a coil of the metal strip. The metal strip preferably is of a composite metal, wherein the inflatable fluid passageways correspond to patterns of weld inhibiting material. The strip is paid off from the coil and pinched to prevent subsequent inflation from reaching the coil itself. The other end of the strip is clamped in a suitable inflation device through which pressure is applied to inflate the fluid passageway or passageways. The inflation proceeds up to the pinched off portion of the strip. Thereafter, the strip is severed just ahead of the pinching means, yielding a long length of strip having at least one inflated passageway while leaving an open tube in the end of the coil ahead of the pinching means for insertion in the inflation fixture for inflation of a subsequent length of strip. The apparatus comprises means for holding a coil of the strip, pinching means receiving the strip from the coil, inflation means receiving the strip from the pinching means and severing means spaced between the pinching means and the inflation means for severing the strip from the coil after it has been inflated.

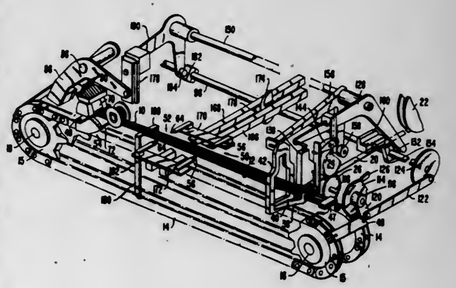
3,667,267
APPARATUS AND METHOD FOR CONTINUOUS MATERIAL FEEDING AND DEFORMATION
Francis J. Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 794,488, Jan. 28, 1969. This application Nov. 14, 1969, Ser. No. 876,940
Int. Cl. B21c *33/00, 1/20*
U.S. Cl. 72—60 **75 Claims**

Disclosed herein is a process in which flowing fluids are utilized to apply viscous drag forces to a rod of indefinite length and advance it continuously through an extrusion die, to produce a continuous product, for example, a wire. The flowing fluids also control the axial and radial stresses in the rod, sealing it into and out of a treating environment so that



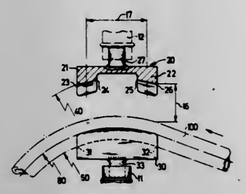
undesirable rod pinch-off, bulging, or tension failure is avoided. The temperature, and hence viscosity, of the flowing fluids may be adjusted to control viscous drag forces.

3,667,268
METHOD OF AND APPARATUS FOR CORRUGATING PLIABLE MATERIAL
Jakob Rech, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 17, 1969, Ser. No. 867,134
Int. Cl. B21d *13/00*
U.S. Cl. 72—133 **25 Claims**



Forming corrugations in pliable material, such as metallic sheet stock, including the steps of imparting an initial relatively widely spaced apart corrugations in a workpiece composed of this material, following which the workpiece is introduced between two sets of flexible rods or wires which are arranged to seat in the loops of the corrugations on opposite sides of the workpiece. Thereafter, each such workpiece is transported by sliding motion along the wires and at one or more stations therealong the workpiece is subjected to endwise compression causing contouring of the loops of the corrugations around the wires as mandrels to form a relatively densely corrugated article. The wires are capable of lateral displacement with respect to one another with the result that during endwise compression of the workpiece they will move closer together to accommodate the contraction of the workpiece and the reduced spacing of the convolutions.

3,667,269
APPARATUS FOR THE COLD-BENDING OF PIPES
Siegfried Bergner, Munich, Germany, assignor to Paweck AG, Chur, Switzerland
Filed Aug. 27, 1969, Ser. No. 853,243
Int. Cl. B21d 7/06, 31/06
U.S. Cl. 72—166 8 Claims

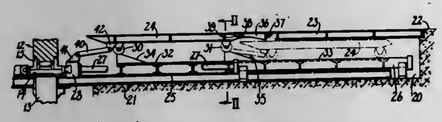


A pipe bending apparatus including an anvil of a desired radius and a hammer ram having spaced hammer elements spaced from one another to have a bending radius larger than the radius of the anvil. The pipe is adapted to be incrementally fed through the apparatus between hammering actions.

3,667,270
METHOD FOR SMOOTHING ROLLS FOR COLD ROLLING OR FINISHING COLD ROLLING OF BRIGHT METAL SHEET OR THE LIKE
Willem Hendrik Deurloo, Ijmuiden, Netherlands, assignor to Koninkijke Nederlandsche Hoogovens en Stall Fabrieken N.V., Ijmuiden, Netherlands
Filed Apr. 24, 1969, Ser. No. 819,528
Claims priority, application Netherlands, May 1, 1968, 6806154
Int. Cl. B21b 27/00
U.S. Cl. 72—236 3 Claims

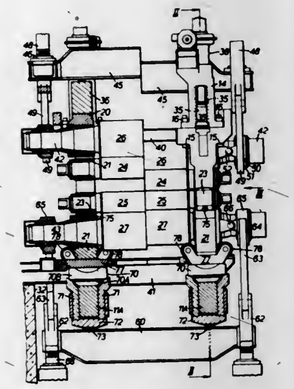
A considerable reduction of the polishing of rolls of a rolling mill for cold-rolling metals is obtained by periodically passing a blue annealed steel sheet through the rolls of the rolling mill while these exert a pressure on the sheet. The blue annealed sheet so used exerts a polishing action on the rolls, avoiding need for taking the rolls out of the stands to be polished. One blue annealed sheet can be used several times for this purpose.

3,667,271
ROLLING MILLS
Stanley Fereday, Nottingham, and William Harry Smelt, Yorkshire, both of England, assignors to Davy and United Engineering Company Limited, Sheffield, Yorkshire, England
Filed June 8, 1970, Ser. No. 44,489
Int. Cl. B21b 31/08
U.S. Cl. 72—238 4 Claims



A cover for a pit comprises two parts which when arranged in side-by-side relation are together of sufficient size and shape to cover the mouth of the pit. One part of the cover is secureable in the mouth of the pit and the second part is supported on inclined surfaces so that the second part can be displaced from the position where it is side-by-side with the first part with their upper surfaces coplanar to a position in which it is beneath the first part. The cover is particularly suitable for covering a pit adjacent a rolling mill. The movable part of the cover may be connected to a sledge in the mill and carrying the rolls so that on withdrawing the rolls the cover is automatically opened.

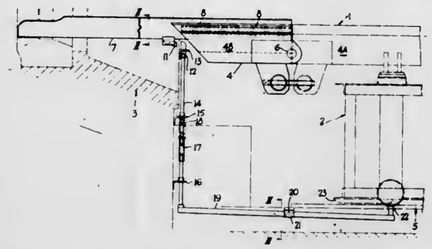
3,667,272
ROLLING MILLS
Jack Maltby, Todwick, Sheffield, England, assignor to Davy and United Engineering Company Limited, Sheffield, Yorkshire, England
Filed Jan. 8, 1970, Ser. No. 1,496
Claims priority, application Great Britain, Jan. 13, 1969, 1,827/69
Int. Cl. B21b 31/32
U.S. Cl. 72—245 11 Claims



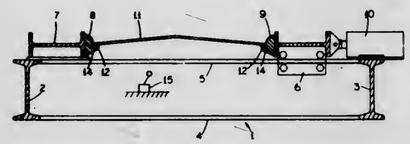
A rolling mill stand is constituted by two pairs of housing posts, the rolls extending between the pairs of posts, and the posts of each pair defining between them a window for the roll chocks. For each pair of posts, there is a strap bridging the posts and interposed between the chocks and roll gap adjusting means. A beam is carried by the two straps and extends parallel to the roll axes to bridge the pairs of posts. This beam extends, at each end, beyond the housing posts and carries means for bending one of the rolls of the mill.

3,667,273
RUN-OUT TROUGHS FOR EXTRUSION PRESSES
Oswald Kennedy, and John Ian Harrison, both of Newcastle upon Tyne, England, assignors to Vickers Limited, London, England
Filed Dec. 23, 1969, Ser. No. 887,641
Claims priority, application Great Britain, Dec. 23, 1968, 61,162/68
Int. Cl. B21c 35/00; B21d 45/00
U.S. Cl. 72—257 5 Claims

A run-out trough for an extrustion press, the trough having an extendable portion that can be moved from a retracted position to an extended position in which it effectively lengthens the extruded material supporting surface of the trough, the run-out trough being adapted for co-operation with an extrusion press such that upon movement of the run-out trough, with the extendable portion initially in its retracted position, to carry an extrusion away from the press, the extendable portion moves to its extended position thereby to support that end portion of the extrusion that is the last part of the extrusion to be extruded.

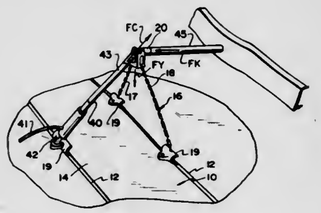


3,667,274
APPARATUS FOR BENDING PLATE
Richard Allan Gordon Cape, Lachine, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed Apr. 3, 1969, Ser. No. 813,092
Claims priority, application Canada, Mar. 4, 1969, 044,626
Int. Cl. B21d 11/20
U.S. Cl. 72—298 5 Claims



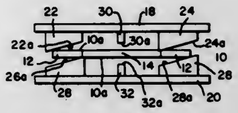
The method of forming trough members for use in the fabrication of orthotropic deck bridges which involves applying opposing forces to the edges of a flat plate to move the edges towards each other.

3,667,275
SELF-STABILIZING FORCE DISTRIBUTING APPARATUS
Wayne E. Hunnicutt, Big Bend, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Feb. 25, 1970, Ser. No. 13,928
Int. Cl. B21d 1/12
U.S. Cl. 72—302 10 Claims



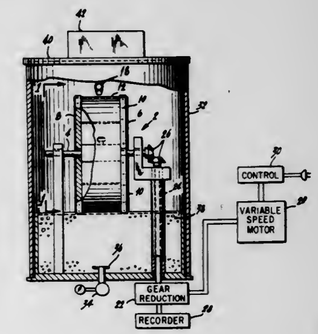
A freely positionable force transfer device for applying forces at selected directions and magnitudes to reform and straighten structures. The device is operative to receive a force producing power strut and reactive force members to direct the forces of each through a common axis to minimize internal moments and ensure stable operation in a plurality of geometrical arrangements within the operational range of the device.

3,667,276
SPIRAL ELEMENT AND METHOD FOR MAKING SAME
Roderick K. Moodey, Charleroi, Pa., assignor to Lee-Norse Company, Charleroi, Pa.
Filed July 14, 1970, Ser. No. 54,747
Int. Cl. B21d 11/06, 11/14
U.S. Cl. 72—371 9 Claims



A spiral element formed by a method which may comprise the steps of providing a generally arcuate blank of arcuate length not greater than about 180°, applying force to the ends of the blank to laterally twist such ends simultaneously in opposite directions, and during said twisting restraining the arcuate center of the blank from lateral twisting and maintaining the arcuate lengths of the blank between its arcuate center and its ends unsupported whereby the twisting forms the blank to spiral configuration.

3,667,277
APPARATUS FOR MEASUREMENT OF TEXTILE FLAMMABILITY PROPERTIES
Bernard Miller, Princeton; Harold Lambert, Pennington, both of N.J., and Charles H. Meiser, Jr., Yardley, Pa., assignors to Textile Research Institute, Princeton, N.J.
Filed Jan. 13, 1971, Ser. No. 106,115
Int. Cl. G01n 25/00
U.S. Cl. 73—15 R 18 Claims



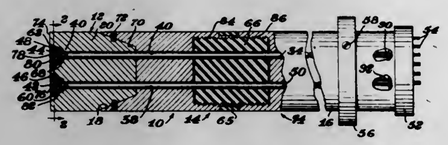
A method and equipment for use in determining the rate of flame propagation and other burning characteristics of sheet materials wherein a test strip of material is supported adjacent its opposite edges and after being ignited is advanced toward the burning zone at a rate sufficient to maintain said zone in a predetermined location. The speed at which the strip of material is moved toward the burning zone is observed and recorded whereby the rate of flame propagation in the material under the test conditions can be determined.

The equipment may be housed within an enclosure and the composition, pressure, humidity and other conditions of the atmosphere in which the burning of the material takes place can be varied and controlled so as to obtain consistent and accurate determinations as to the flammability and burning characteristics of the material under any predetermined conditions.

3,667,278
DIFFERENTIAL THERMAL ANALYSIS CELL ASSEMBLY

Horst G. Langer, Wayland, Mass.; Franklin J. Karle, Midland, and Earl D. Ayers, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 8, 1969, Ser. No. 864,657
Int. Cl. G01n 25/00
U.S. Cl. 73—15 B 10 Claims

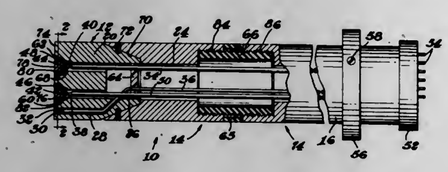


This invention relates to a thermal analysis cell which is capable of supplying meaningful data in a high vacuum and which is particularly useful for operations within a mass spectrometer or similar instrument which allows the heating of samples within the confinement of the mass spectrometer vacuum or adjacent to the ion source. The cell comprises a silver block to guarantee uniform heat throughout the cell. It is insulated against the push-through shaft by a section of boron nitride, which is an excellent thermal insulator, and by sapphire or alumina, for example. The silver cell is equipped with two equal temperature sensing wells containing sample and reference temperature sensing means. The sample itself is loaded into a metal cup which is usually secured to its well, and which contacts the temperature sensing means. A similar cup, usually containing non-reactive material, is inserted in the reference well and contacts its temperature sensing means, usually thermocouple. The cell assembly has a detachable temperature sensing head part. External means are provided for utilizing the output of the reference temperature sensing element for use in controlling the heating of the cell.

3,667,279
DIFFERENTIAL THERMAL ANALYSIS CELL ASSEMBLY

Horst G. Langer, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 848,231, Aug. 7, 1969, now abandoned. This application Oct. 8, 1969, Ser. No. 870,000
Int. Cl. G01n 25/00
U.S. Cl. 73—15 B 11 Claims

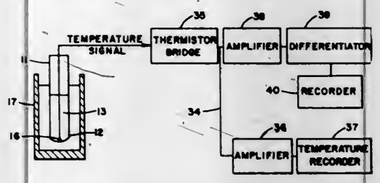


This invention relates to a thermal analysis cell which is capable of supplying meaningful data in a high vacuum and which is particularly useful for operations within a mass spectrometer or similar instrument which allows the heating of samples within the confinement of the mass spectrometer vacuum or adjacent to the ion source. The cell comprises a silver block to guarantee uniform heat throughout the cell. It is insulated against the push-through shaft by a section of boron nitride, which is an excellent thermal insulator, and by sapphire or alumina, for example. The silver cell is equipped with two equal temperature sensing wells containing sample and reference temperature sensing means. The sample itself is loaded into a metal cup which is secured to its well, and which contacts the temperature sensing means. A similar cup, usually containing non-reactive material, is inserted in the reference well and contacts its temperature sensing means, usually a thermocouple. The cell assembly has a detachable temperature sensing head part.

3,667,280
METHOD FOR DETERMINING THE FREEZING POINT OF A HYDROCARBON

Samuel W. Simpson, Florissant, Mo., assignor to Shell Oil Company, New York, N.Y.

Filed July 15, 1970, Ser. No. 54,976
Int. Cl. G01n 25/02
U.S. Cl. 73—17 R 4 Claims

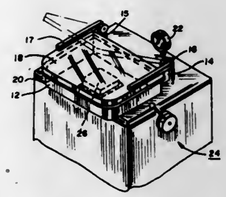


Method for detecting the freezing point of a hydrocarbon by placing a measured sample of the hydrocarbon in a container and placing a thermistor in the container into contact with the sample. The container is cooled until its temperature curve shows a noticeable plateau which is detected by the slope of the temperature curve which is being tracked by a first derivative circuit. The container is then insulated thus warming the sample and, as the last crystals in the sample melt, the slope of the curve momentarily accelerates causing the circuit to produce a voltage peak which is the freezing point of the sample.

3,667,281
VACUUM TESTER FOR PACKAGES WITH FLEXIBLE COVERS

Charles F. Pfeifer, 39 Parade Hill Lane, New Canaan, Conn.

Filed Nov. 4, 1970, Ser. No. 86,706
Int. Cl. G01m 3/12, 3/26
U.S. Cl. 73—37 7 Claims

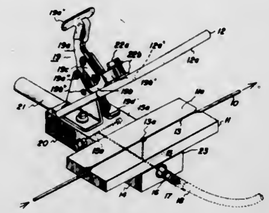


A vacuum tester for the non-destructive testing of vacuum packages, particularly those provided in the packaging of meat and heat-and-serve products wherein one of the packaging members is a flexible member such as film. This tester includes a viewing chamber having a selective control means disposed to bring the chamber to a reduced pressure such as 28 or 30 inches of mercury. The closed chamber is brought under vacuum which is gradually increased until the flexible member enclosing the product just starts to relax at which point the selective control means is manipulated to maintain this vacuum level and at this stabilized pressure a gauge is read to determine the degree of vacuum within the chamber which is also the vacuum within the package.

3,667,282
FLUIDIC GAGING SENSOR HEAD

Bert J. Czwakiel, and Donald F. Miller, both of Schenectady, both of, Schenectady, N.Y., assignors to General Electric Company

Filed Feb. 18, 1970, Ser. No. 12,289
Int. Cl. G01b 13/08
U.S. Cl. 73—37.7 5 Claims

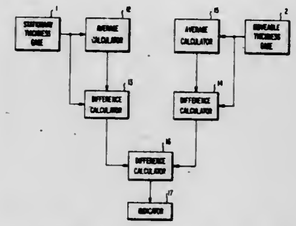


The sensor head component of an apparatus for monitoring a selected parameter of a continuous material such as yarn, metal rod, tubing and the like, includes a fluidic long, narrow channel for passage of the material therethrough. Pressurized fluid is supplied to the center of the channel formed by a cover plate member and slotted plate member. Passage of the monitored material through the channel varies the restriction thereof in proportion to the magnitude of the monitored parameter and develops a variable back pressure linearly proportional thereto. A toggle clamp provides alternate engagement with and separation of the plate members. A spring device connected to the cover plate member provides a means for loading and threading a yarn material in the sensor head without stopping the longitudinal motion of the yarn.

3,667,283
MEANS FOR MEASURING THICKNESS OF SHEET MATERIAL

Haruo Takenaka, Tokyo; Hiroshi Okuyama, Kanagawa; Noburo Hibino, Kanagawa, and Eiichi Ohta, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 1, 1970, Ser. No. 33,806
Int. Cl. G01b 13/06
U.S. Cl. 73—37.7 6 Claims

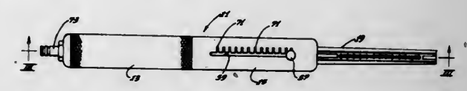


A stationary thickness gauge is combined with a movable thickness gauge to measure the true thickness in the lateral direction of a running web or sheet material. The movable thickness gauge is moved in a direction transverse to the running direction of the web or sheet.

3,667,284
TAPERED BORE PROBE

Ronald D. Amland, Los Angeles, and Robert L. Castle, El Segundo, both of Calif., assignors to Gar Honing Service, Inc., El Segundo, Calif.

Filed Apr. 27, 1970, Ser. No. 32,300
Int. Cl. G01b 13/18
U.S. Cl. 73—37.9 13 Claims

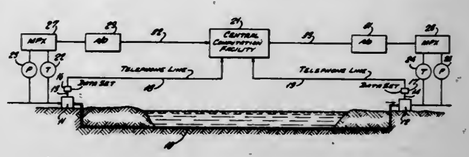


An instrument for verifying the taper angle of a tapered bore comprising a handle portion to which a tapered probe is fixed. The tapered probe is formed so as to have a proper diametral relationship throughout its length with the tapered bore to be verified and has a plurality of radial jets therein, each corresponding to a different bore position. Coaxial passages are formed in the handle portion and the probe and a connecting rod is movable by an operator in an axial direction therein. Air is passed through an axial bore in the connecting rod for delivery to a piston at the opposite end thereof through which it is radially expelled through one of the probe radial jets. The connecting rod may be moved to predetermined positions, each corresponding to one radial jet, so that the piston may be properly aligned therewith. As the air passes through the probe radial jets, it is directed against the surface of the bore, creating a back pressure in the air system. Proper diametral sizing of the respective jets will cause equal back pressure readings to be generated when air is selectively passed through each of the radial jets, if the bore is properly tapered. If the bore is not properly tapered, the back pressure readings will vary between different radial passages.

3,667,285
LEAK DETECTION SYSTEM

Edward L. Wright, Plainfield, and Eugene T. Meseck, Lincoln Park, both of N.J., assignors to Customline Control Products, Inc., Linden, N.J.

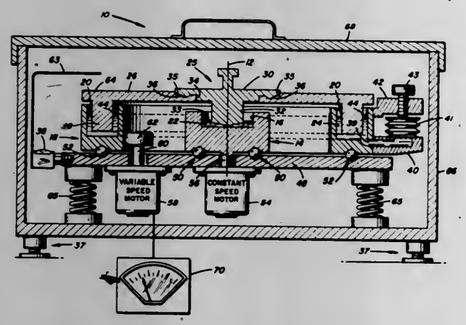
Filed Aug. 18, 1970, Ser. No. 64,736
Int. Cl. G01m 3/26, 3/16
U.S. Cl. 73—40.5 12 Claims



A system is disclosed for detecting relatively small leaks in partially inaccessible pipelines having high throughputs. To detect the leaks information from a flow meter and pressure and temperature transducers at each end of the pipeline are fed over telephone lines to a central computation facility. At the computation center the temperature and pressure information is employed along with information stored in the computer to generate set points for a pair of counters. The computer then gates the outputs from the flow meters into the counters over an interval until both of the counters reach

their set points. The computer than examines the numbers in the two counters to perform logical operations to determine if in fact, the pipeline is leaking. If a confirmed leak is detected a shut down procedure may be instituted.

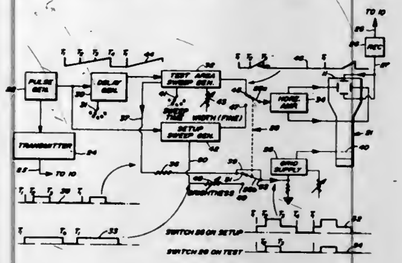
3,667,286
VISCOMETER
William M. Kaufman, Chevy Chase, and Harry P. Kling, Glenarm, both of Md., assignors to Hittman Associates, Inc., Columbia, Md.
Filed Apr. 21, 1970, Ser. No. 30,566
Int. Cl. G01n 11/10
U.S. Cl. 73—59 **12 Claims**



A viscometer, particularly suited for blood viscometry. The inventive viscometer is circularly symmetrical and comprises a cylindrical channel for housing an unknown fluid and a ring-shaped channel, concentric with the cylindrical channel, for housing a known Newtonian fluid. A floatable cover element is provided with a cylindrical projection adapted to associate with the cylindrical channel and the fluid housed therein, and is further provided with a ring-shaped projection adapted to associate with the ring-shaped channel and the Newtonian fluid housed therein. The cover element floats in the known Newtonian fluid with a fluid bearing action, the ring-shaped projection being coated with a material which is non-wettable, and the channel being coated with a material wettable by the known fluid. The block in which is defined the cylindrical channel and the block in which is defined the ring-shaped channel are rotated in opposite directions, and the relative velocity of rotation therebetween is adjusted until the floating cover element is stationary. The relative rotation between the cylindrical channel block and the ring-shaped channel block is proportional to the viscosity of the unknown sample.

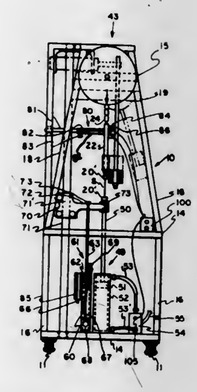
3,667,287
ULTRASONIC TESTING SYSTEM
Leon D. Furon, Woodland Hills, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation of application Ser. No. 843,060, July 18, 1969, now abandoned, which is a continuation of application Ser. No. 564,697, July 12, 1966, now abandoned. This application Nov. 30, 1970, Ser. No. 93,530
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 **1 Claim**

Electronic circuitry is described which provides two continuously available signals which include means for switching a desired one of the two displays on the cathode ray tube. A first sweep generator provides a full display of the signal. A second sweep generator provides an expanded display for showing only a desired test area. A switching circuit is provided to switch between the two sweep generators to display either the entire sweep signal or the test area. The unblanking signal provided to the cathode ray tube from the second



sweep generator is superimposed onto the unblanking signal of the first sweep generator to brighten the area of interest during full sweep.

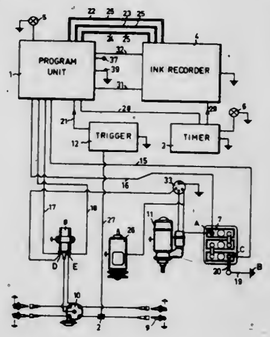
3,667,288
TENSILE TESTING MACHINE
John E. Hargreaves, 188 Woodbine Terrace, Spartanburg, S.C.
Filed Mar. 2, 1970, Ser. No. 15,367
Int. Cl. G01n 3/14, 3/10
U.S. Cl. 73—98 **13 Claims**



A machine for testing the strength of a filament, yarn, fabric, etc specimen by securing said specimen between two clamps and applying a controlled amount of force to one of said clamps while resisting said force with a pivotably mounted lever arm having a predetermined amount of weight positioned thereon. The machine of the present invention has a rotatably mounted shaft from which is suspended a weighted lever arm, said shaft being connected to a first specimen holding means by means of a chain that is secured to a drum mounted on the shaft. The shaft further has an anti-backlash gear mounted thereon, said gear being operatively associated with a second gear mounted on a second shaft. Said second shaft being journaled for rotation in one direction only, having a one way clutch associated therewith. Said second shaft has mounted to an outer end thereof a rotatable dial which is calibrated to indicate the amount of force applied to the specimen. The dial itself rotates while a pointer remains stationary. The controlled amount of force is applied to a second specimen holding means and is generated by a hydraulic cylinder or a combination hydraulic cylinder

and air cylinder. The weight lever arm has positioned proximate thereto an electromagnet which, before application of the controlled amount of force to the specimen, remains energized to prevent movement of the lever arm during securing of the specimen to the specimen holding means.

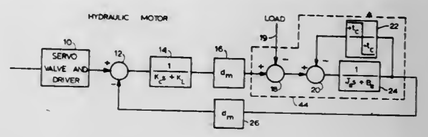
3,667,289
APPARATUS FOR TESTING AUTOMOBILES
Anders Yngve Back, Johanneshov, Sweden, assignor to Aktiebolaget Scania-Vabis, Sodertalje, Sweden
Filed Jan. 5, 1970, Ser. No. 1,070
Int. Cl. G01m 15/00
U.S. Cl. 73—117.3 **13 Claims**



A measuring and recording apparatus for testing of motor cars in accordance with a predetermined test program including a program unit having a plurality of measuring data inputs connected to different measuring points of a motor car, particularly points of the motor and electrical system thereof. Said inputs are successively switched through to the measuring system of a recording instrument, the successive switching actions being timed in synchronism with the rotation of the motor when disabled and rotated by the starter. During one revolution of the motor, the relative compressions of the cylinders are recorded by recording the starter current, during another revolution, the primary current of the ignition system is recorded, and further single or double measurements may be carried out during any subsequent revolution. Then, the successive switching actions are timed in dependence on time so that during a fixed period, for example, the motor is blocked and the starter is energized, the starter current being recorded during this measuring period. In this way, a test operation results in a series of successive records of magnitudes, essential for the performance of the motor car, are obtained.

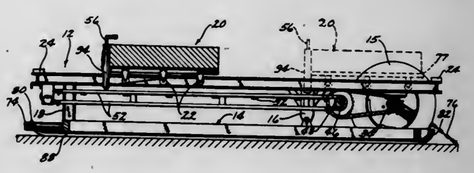
3,667,290
METHOD AND APPARATUS FOR ESTIMATING THE FORCE GENERATED BY A MOTOR AS A FUNCTION OF AN EXTERNAL LOAD IMPOSED THEREON
Richard E. Hohn, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 6, 1970, Ser. No. 61,702
Int. Cl. G01l 3/00
U.S. Cl. 73—133 **9 Claims**

A method and apparatus for estimating the force produced by a motor as a result of an external load imposed thereon. An apparatus is provided for measuring the total force produced by the motor and producing a first input signal as a function thereof. A transfer function circuit responsive to the input signal operates to subtract from said total force the dynamic and frictional forces in said motor. This result is integrated to produce an estimated motor velocity. A second input signal to the transfer function circuit is provided by an apparatus for measuring the actual velocity of the motor. The actual velocity is compared with the estimated velocity to produce a signal which is input to a feedback loop. The feed-



back loop provides a feedback signal which simultaneously is algebraically summed with the first input signal and produced by the transfer function circuit as a representation or estimation of an external load imposed on the motor.

3,667,291
TRACTOR PULL LOAD MEASURING DEVICE
Leonard R. Peak, Lacona, Iowa
Filed Nov. 16, 1970, Ser. No. 89,628
Int. Cl. G01l 5/13
U.S. Cl. 73—141 R **9 Claims**

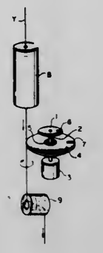


A device having an elongated frame supported at its rear end by ground engaging wheels and having a slid below the frame pivotally connected thereto forwardly of the wheels. The skid is adapted to engage the ground along its length during use or be raised above the ground for transport by a tongue being connected to the skid and the frame being pivoted upwardly about an axis through the wheels thereby lifting the rear of the skid. A ballast trolley is moveable from over the wheels on the frame to the front end as the wheels turn thereby increasing the drag due to the load being transferred to the skid engaging the ground. Measuring indicia along the frame is provided to indicate the pulling ability of the vehicle being tested in terms of how far the ballast trolley is moved forwardly.

3,667,292
DEVICE FOR CHECKING WHETHER EACH OF RUNNING YARNS IS TWISTED AT THE STANDARD TURNS PER MINUTE
Yukihiro Hada, Fujiyoshida, Japan, assignor to Unitika Ltd., Amagasaki-shi, Hyogo-ken and Fujikelki Kabushiki Kaisha, Fujiyoshida-shi, Yamanashi-ken, Japan
Filed June 1, 1970, Ser. No. 41,959
Claims priority, application Japan, June 3, 1969, 44/43387
Int. Cl. G01l 5/00; D01h 17/00
U.S. Cl. 73—160 **6 Claims**

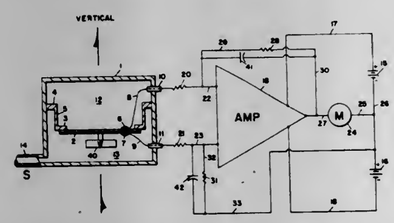
The device of the present invention is used for checking whether each of running yarns is twisted at the standard turns per minute. This device comprises a driving shaft, a motor provided with a variable speed means and a yarn contact means. The driving shaft is rotated at a rotating speed corresponding to the standard turns per minute, at which each of running yarns should be twisted. The yarn contact means is imparted a torque from the shaft and running yarn, which

is brought in contact with it. The shaft and the yarn contact means carry marks which can be viewed with a stroboscope



to determine whether the shaft and contact means are rotating at the same speed.

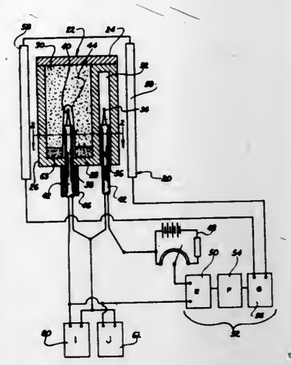
3,667,293
BIMORPH SENSOR FOR ELECTRICALLY MEASURING PRESSURE CHANGES
Alvin G. Moore, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.
Filed Apr. 16, 1970, Ser. No. 29,208
Int. Cl. G01c *21/10*
U.S. Cl. 73—179 2 Claims



A bimorph sensor for measuring pressure changes having a circular bimorph and a thin flexure comprising iron-nickel alloy supporting the circular bimorph at its circumference and said flexure having its outer extremity adapted to support said bimorph in a pressure cell comprising iron-nickel alloy, whereby a high electrical output is obtained from the said bimorph in response to pressure being applied thereto.

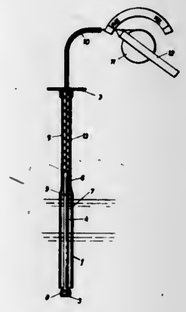
3,667,294
APPARATUS FOR THERMAL ANALYSIS
Robert A. Schoenlaub, Columbus, Ohio, assignor to The Edward Orton, Jr. Ceramic Foundation, Columbus, Ohio
Filed July 23, 1969, Ser. No. 844,031
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 R 6 Claims

A method and apparatus for high measurement of heat content which includes an electric furnace in which a sample holding container of predetermined dimensions is placed. A pair of differentially connected thermocouples are disposed such that one measures the temperature of the container walls as a reference and the other the temperature of the sample. A source of bias voltage is used to cause the hot junction of the reference thermocouple to be maintained at a given temperature differential above the other thermocouple. A control system is operatively connected to the thermocouples and to the power source of the furnace to vary the amount of heat delivered to the container responsive to maintaining the predetermined temperature differential between the thermocouples as established by the bias voltage. The temperature of the sample is then recorded versis



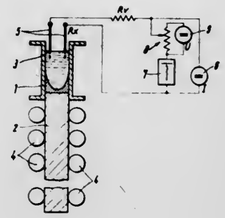
the time required for the temperature of the sample to reach the upper limit of the temperature range of the test run.

3,667,295
OIL GAUGE
Stanislaus Skutella, Rothweg 6 A, 7911 Pfaffenhofen-Roth, Germany
Filed Sept. 2, 1970, Ser. No. 68,932
Claims priority, application Germany, Sept. 6, 1969, P 19 45 241.6
Int. Cl. G01f *23/00*
U.S. Cl. 73—290 R 11 Claims



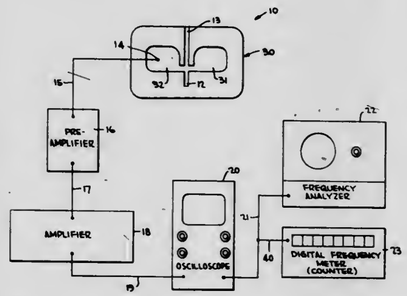
A method of and apparatus for checking the liquid level in a container according to which a tubular member is immersed into said liquid and below its minimum level, whereupon liquid and air is trapped in said tubular member by a piston and a seal about the rod of a piston and the air is compressed by the entrapped liquid, the compression stroke on the entrapped liquid and air furnishing an indication for the liquid level in the respective container.

3,667,296
METHOD AND APPARATUS FOR DETERMINING THE SURFACE LEVEL OF MOLTEN MATERIAL IN A MOLD
Peter Schiefer, Muehlheim (Ruhr), and Bernd Findeisen, Duisburg-Buchholz, both of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany
Filed July 24, 1970, Ser. No. 58,044
Claims priority, application Germany, July 28, 1969, P 19 38 840.0
Int. Cl. B22d *11/10*; G01f *23/24*
U.S. Cl. 73—304 R 4 Claims



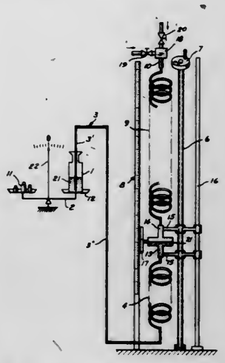
The rising level of molten metal in a mold, pertaining, for example, to a continuous casting apparatus, is supervised by electrical resistance wire probes dipping into the mold and short circuited by the molten metal therein. The resistance change in the circuit is ascertained and used as level indication.

3,667,297
FLUERIC TEMPERATURE SENSOR
Carter Vondell, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Army
Continuation of application Ser. No. 629,867, Apr. 5, 1967, now abandoned. This application May 21, 1969, Ser. No. 831,813
Int. Cl. B21d *28/00*
U.S. Cl. 73—339 A 12 Claims



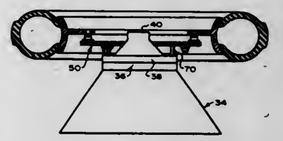
A pressure insensitive, temperature dependent fluid oscillator has a fluid supplied thereto. The frequency of the oscillator is measured indicating the temperature of the fluid. The frequency of the oscillator is made independent of pressure fluctuations by having a choked flow condition exist with regard to the discharge nozzle of the oscillator.

3,667,298
MERCURY MANOMETER
Pierre Chadenson, La Tronche, France, assignor to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Grenoble, France
Filed Nov. 9, 1970, Ser. No. 87,855
Claims priority, application France, Nov. 13, 1969, 6939387; July 16, 1970, 7027329
Int. Cl. G01l *7/18*
U.S. Cl. 73—405 8 Claims



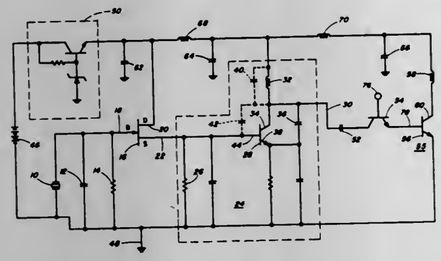
The high precision mercury manometer disclosed herein comprises a container exposed to atmospheric pressure and seated on one of the trays of a balance. Inserted into the container is a vertical portion of a rigid pipe which is coupled at its other end by a flexible connector, to the bottom of a second container exposed either to atmospheric pressure, or to a second pressure to be measured. The second container is displaceable vertically over the length of a scale graduated both above and below the level of the first container. The connection between the two containers constituted of the rigid and flexible conduits has a practically constant volume, irrespective of the change in location of the second container. The first container and the balance may be sealed in a closed chamber which may be exposed either to atmospheric pressure, or to a third pressure between which and the second pressure a differential pressure reading is desired. A connection is provided between the closed chamber and the second container so that the mercury level in the latter may also be subjected to the third pressure.

3,667,299
WHEEL MOUNTING ADAPTOR FOR USE IN WHEEL BALANCING
Warren A. Roberts, 514 Clinton Street, Redwood City, Calif.
Filed May 6, 1970, Ser. No. 35,218
Int. Cl. G01m *1/02*; G60c *25/06*
U.S. Cl. 73—487 9 Claims



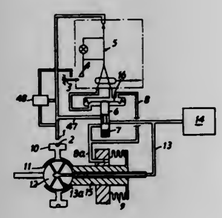
An evenly balanced annular plate for being mounted on the balancing head of a bubble wheel balancer is provided on at least one side with a plurality of rotatably captivated and symmetrically spaced balls for engaging a like plurality of lug holes of a wheel to support the wheel on the balancing head of the bubble wheel balancer.

3,667,300
ACCELEROMETER MONITORING DEVICE
Douglas F. Newell, Bowie, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 1, 1970, Ser. No. 42,218
Int. Cl. G01p 15/08
U.S. Cl. 73—517 4 Claims



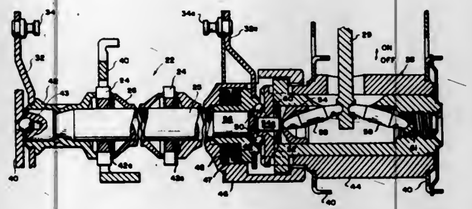
An acceleration monitoring device for an ordnance vehicle having a piezoelectric transducer for sensing acceleration and for providing a signal responsive thereto. The acceleration responsive signal frequency modulates an oscillator connected, via a field-effect transistor, to the piezoelectric transducer to provide an output signal which is transmitted by an antenna to a location remote from the ordnance vehicle. The field-effect transistor directly couples the piezoelectric transducer to the frequency modulated oscillator and, therefore, provides both a transient and a quiescent acceleration response. A Class C buffer amplifier is coupled to the frequency modulated oscillator and the antenna to isolate the oscillator from the adverse effect of detuning which occurs as the ordnance vehicle approaches a target or the like.

3,667,301
CONTROL OF GYROSCOPE SPIN-UP DEVICES
Alan Hugh Kent, Wokingham, and John Christopher Hammond Davis, Wargrave, both of England, assignors to Plessey Telecommunications Research Limited, Taplow, England
Filed Oct. 2, 1970, Ser. No. 77,593
Claims priority, application Great Britain, Oct. 3, 1969, 48,745/69
Int. Cl. G01c 19/26, 19/52
U.S. Cl. 74—5.1 9 Claims



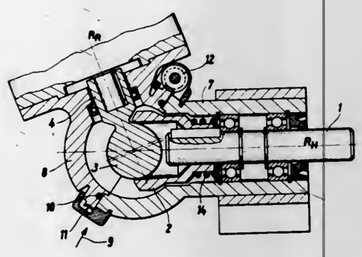
A gyroscope and spin-up system in which the gyroscope rotor is rotated by fluid from a spin-up device. Fluid pulses are generated as a result of fluid from the spin-up device striking pulse-generating fluid-receiving areas provided on the rotor. The number of pulses produced depends upon the speed of the rotor. The pulses act on a resonant means which operates at a predetermined rotor speed to cut off the supply of fluid to the spin-up system.

3,667,302
MEMORY MECHANISM FOR PUSHBUTTON TUNERS
Emery E. Olah, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 13, 1970, Ser. No. 80,295
Int. Cl. F16h 35/18
U.S. Cl. 74—10.37 4 Claims



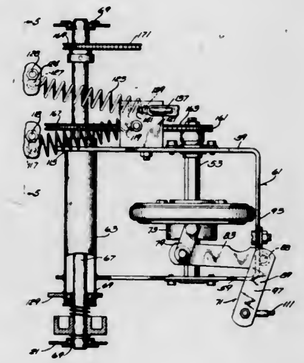
For a pushbutton radio tuner, a mechanical memory mechanism having a plurality of memory cams positioned at axially spaced apart locations on a common shaft. The shaft is rotated by actuation of a pushbutton which has a portion thereof engaging one of the memory elements to tune the radio to a desired preselected radio station. A common lock mechanism is used to unlock all of the cams on the shaft, and friction holding means is provided for each cam to hold the cams that are not being set in a fixed position on the shaft, while other cams are being set on the shaft. The cam being set is moved only under the influence of a setting action by its associated pushbutton.

3,667,303
CONTROL TRANSMISSION
Detlef Hofmann, Eutinger Strasse 7531, Kieselbronn, Germany
Filed Dec. 29, 1970, Ser. No. 102,454
Claims priority, application Germany, Dec. 29, 1969, P 19 65 279.0
Int. Cl. F16h 15/04, 55/34, 15/16
U.S. Cl. 74—190 15 Claims



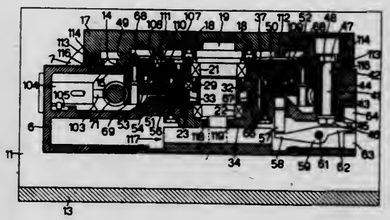
An infinitely variable transmission, which includes an input shaft with a first friction member and an output shaft with a second friction member while one of said friction members is formed by a sleeve with a conical bore and the other friction member is formed by an egg-shaped body of revolution extending into said conical bore and in firm contact with the wall defining said bore for frictional engagement and rotation with said sleeve, said body of revolution being tiltable with regard to the axis of said sleeve for varying the transmission ratio between said input and output shafts.

3,667,304
RIDING LAWN MOWER FRICTION DRIVE
Edward W. Puffer, Galesburg, and Howard K. Duncan, Roseville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.
Filed Sept. 3, 1970, Ser. No. 69,255
Int. Cl. F16h 15/08
U.S. Cl. 74—197 11 Claims



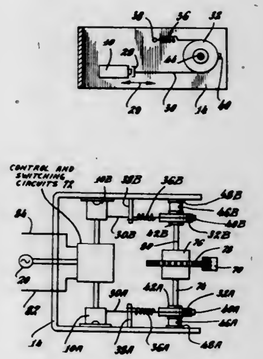
Disclosed herein is a riding lawn mower including a friction drive comprising a rotatably driven disc mounted on a frame, together with a bracket which supports a roller and which is movable relative to a position locating the roller in driving engagement with the disc and means on the frame for biasing the bracket so as to initially engage the roller with the disc with a first normal force and for subsequently increasing the normal force between the roller and the disc.

3,667,305
MACHINE TOOL HAVING A ROTARY WORKTABLE
Michelangelo Rasotra, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed June 18, 1970, Ser. No. 47,319
Claims priority, application Italy, June 21, 1969, 52334-A/69
Int. Cl. B23b 29/32
U.S. Cl. 74—818 9 Claims



A machine tool having a rotary work-table driven in rotation by a circular gear carried by the work-table cooperating with a worm gear and drive mechanism mounted on the work-table support. The underside of the work-table bears upon a slideway. The work-table is locked to the slideway by means of three equidistant posts biased into clamping relationship with a slot in the slideway. An annular piston operates a linkage that engages the posts, and upon actuation of the piston the posts are moved to a position spaced from the slot to unlock the work-table for rotation. The annular piston also moves a plurality of bearings into engagement with the underside of the work-table to remove the full load thereof from the slideway to facilitate rotation.

3,667,306
DEVICE FOR PROVIDING CONTROLLED MOVEMENT
George L. Bush, Stamford, Conn., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Feb. 16, 1970, Ser. No. 11,746
Int. Cl. F16d 27/10
U.S. Cl. 74—125.5 4 Claims



A device for moving a member by a controlled amount or to a controlled position. An element undergoing a rotary vibrational movement is coupled to rotate a rotatable member when the element vibrates in one direction but not when the element vibrates in the opposite direction, causing a slight incremental advance of the rotatable member in the one direction for each cycle of the vibrating element.

3,667,307
STEPPING CLUTCH DEVICE
Heinz Kelch, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen, Black Forest, Germany
Original application July 15, 1969, Ser. No. 841,773, now Patent No. 3,589,486. Divided and this application Dec. 1, 1970, Ser. No. 94,128
Claims priority, application Switzerland, July 9, 1968, 10833/68
Int. Cl. F16h 27/02; F16d 67/02
U.S. Cl. 74—126 10 Claims

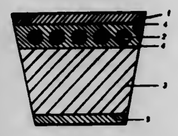


A stepping clutch device has two annular outer members with inner ratchet teeth, and an inner member having first and second sets of resilient arms having pawl portions engaging said ratchet teeth and recesses of said two outer members, respectively. The arms can be bent by the ratchet teeth in radial direction during relative turning of the outer and inner members in one direction, but couple the inner and outer members slippage-free during relative turning in the opposite direction. The first outer member is fixed, and the second outer member is biassed by a spring toward a first end position in one direction of rotation. Electromagnetic means stepwise turn the second outer member in the opposite direction to a second end position so that the inner member is turned in successive steps in one direction by the spring which is wound up by the electromagnetic means after each step.

3,667,308
V-BELT

Johann Schwab, Vienna, and Anna Magritsch, Maria Enzersdorf, both of Austria, assignors to Semperit AG, Vienna, Austria

Filed Nov. 23, 1970, Ser. No. 91,984
Claims priority, application Austria, Dec. 3, 1969, 11267
Int. Cl. F16g 5/16, 1/22
U.S. Cl. 74—233 19 Claims

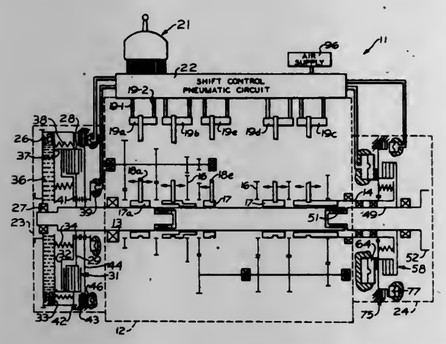


A raw-edged V-belt which is of the type embodying at least a top cover layer, reinforcement insert means, and a substantially trapezoidal-shaped core formed of an elastomer. According to important aspects of the invention, the top cover layer is formed of a fiber fleece or a wide-meshed fabric completely impregnated with an elastomer. If desired, the raw-edged V-belt construction of the invention may further be equipped with a bottom cover layer. The invention further contemplates that one or both cover layers of the V-belt consist of an elastomer of low modulus of elasticity, but higher breaking elongation, than the elastomer of the core.

3,667,309
MULTI SPEED DRIVE TRANSMISSION

Maurice F. Franz, East Peoria; Charles H. Herr, Peoria; Harry B. Newman, Washington, and Philip S. Webber, Morton, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 14, 1970, Ser. No. 80,716
Int. Cl. B60k 29/00, 21/00
U.S. Cl. 74—340 12 Claims

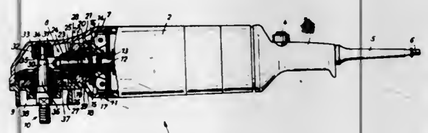


A drive transmission for powered vehicles and the like has change speed gears which may be shifted to provide a selected one of a plurality of drive ratios and has clutches at both the input and output ends whereby the gears may be decoupled from both the driving engine and driven shaft and may then be braked to a stop to facilitate shifting. Brakes are provided at both the input and output ends of the gearing section and a pneumatic control system responds to movement of the operator's shift lever by operating the clutches and brakes in a programmed sequence which assures smooth shifting and avoids damage. Upon movement of the operator's shift lever to a selected setting, the control system simultaneously disengages both clutches and applies both brakes. The control system then energizes fluid operated means for making the appropriate gear interconnections and then sequentially releases the input brake and the output brake. The input clutch is then engaged and finally the output clutch is engaged to reestablish a driving connection between the engine and driven elements. The delay between release of the input and output brakes assures that abutted teeth in the gearing section engage easily at low relative speeds and under only light loading.

3,667,310
SELF-TIGHTENING TRANSMISSION GEAR MOUNTING

Reinhard Hahner, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 29, 1971, Ser. No. 111,031
Claims priority, application Germany, Feb. 20, 1970, P 20 07 849.3
Int. Cl. F16h 1/14; F16d 21/04
U.S. Cl. 74—417 10 Claims

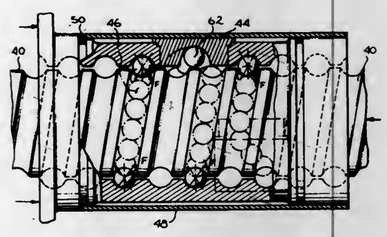


A drive gear is freely mounted on a drive shaft and meshes with an output gear on an output shaft. The meshing teeth are slanted so that a load on the output shaft and output gear, produces an axial force component on the driven gear, urging the same into frictional engagement with a threaded nut so that the same is held against rotation, and moves axially to press the drive gear into tight engagement with an abutment on the drive shaft while the rotating drive shaft screws a threaded portion thereof into the nut.

3,667,311
RECIRCULATING BALL SCREW

Paul V. Wysong, Northridge, Calif., assignor to Schirillo Company, Sepulveda, Calif.

Filed Dec. 9, 1970, Ser. No. 96,340
Int. Cl. F16h 1/18, 55/22, 57/04
U.S. Cl. 74—424.8 R 7 Claims

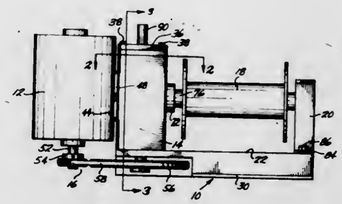


A recirculating ball screw suitable for high speed operation and having an improved lubrication system is disclosed. Recirculation of the balls is accomplished in a smooth and continuous manner by a new ball recirculating member which cooperates with the lead screw to urge the balls out of their normal ball track to transfer the ball over the lead screw in an axial direction and then deposit the ball smoothly back into the ball track without the use of ball pick-up fingers protruding into the ball track. The improved lubrication system is comprised of an outer sleeve which seals the lubricant in place by the use of sealing rings so as to prevent lubricant contamination and unwanted lubricant migration.

3,667,312
DRIVE REDUCTION MECHANISM

Howard C. Dahl, 6420 Nyanza Park Drive, Tacoma, Wash.

Filed Jan. 11, 1971, Ser. No. 105,540
Int. Cl. F16h 1/18; B66d 1/00
U.S. Cl. 74—425 7 Claims

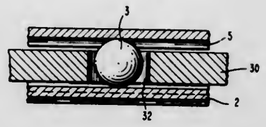


An electric motor is secured to a side wall of a housing formed in part from a short length of stock metal tubing. The drive shaft of the motor is parallel to the axis of the tubing. A belt and pulley drive interconnects the motor shaft with one end of a worm shaft which extends axially through the tubular housing and meshes with a worm gear supported in the housing. The worm gear is secured to an output shaft which projects through a wall of the housing and extends perpendicular to the worm shaft. The worm shaft and the output shaft are supported by bearings contained within bearing housings which are welded to wall or closure portions of the tubular housing.

3,667,313
FLEXIBLE REMOTE CONTROL WITH SPACED BALL BEARINGS

Don L. Young, Jr., Hazelwood, Mo., assignor to Controlex Corporation of America, Croton Falls, N.Y.

Filed Mar. 6, 1970, Ser. No. 17,191
Int. Cl. F16c 1/10
U.S. Cl. 74—501P 2 Claims



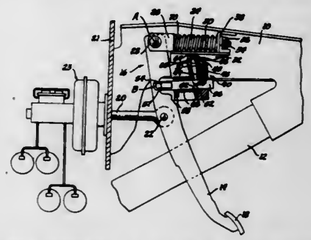
Flexible remote controls of the type in which at least one push-pull blade extends through a tubular sheath and is supported on its opposite sides by spaced balls are improved by replacing the usual metal ball-cage strips with lightweight, flexible plastic strips provided with perforations to hold the balls with the desired spacing.

3,667,314
VARIABLE RATIO LEVER MECHANISM

Thomas E. Ritter, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1970, Ser. No. 92,484
Int. Cl. G05g 1/04
U.S. Cl. 74—518 3 Claims

A variable ratio lever mechanism for a power booster assisted motor vehicle braking system includes a variable ratio fulcrum mechanism which normally establishes a first pivot point providing the relatively low mechanical advantage needed for booster assisted actuation of the brake system. A force sensitive locking mechanism allows the first pivot point to break away when the reaction force acting thereon exceeds that associated with booster assisted break

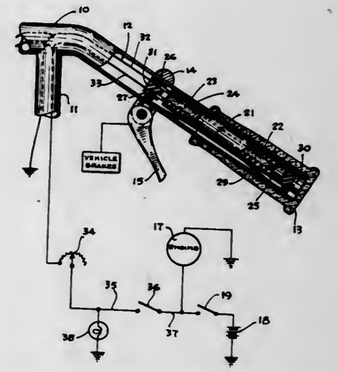


actuation and establishes a second pivot point of relatively higher mechanical advantage enabling the vehicle operator to actuate the break system independent of the booster assist.

3,667,315
VEHICLE HANDLE BAR HEATER

Jack J. Polly, Sr., 2524 Silver Creek Drive, Franklin Park, Ill.

Filed Feb. 10, 1971, Ser. No. 114,134
Int. Cl. B62k 21/12
U.S. Cl. 74—551.8 9 Claims

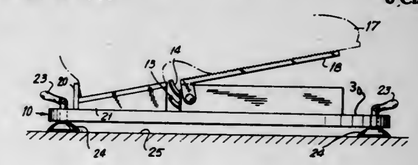


The tubular cross member defining the handle bar of a vehicle, such as a snowmobile, has cartridge heater elements in the tubular interior thereof. The wiring from the cartridge heater extends through the handle bar to the vehicle battery or other source of electricity and includes a heat control and electrical switches.

3,667,316
FOOT PEDAL POSITIONING DEVICE

Rose Valletti, and Angela Arone, both of 241 North Long Beach, Freeport, L. I., N.Y.

Filed Mar. 11, 1971, Ser. No. 123,276
Int. Cl. G05g 1/14
U.S. Cl. 74—560 6 Claims



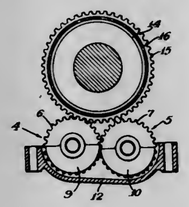
A positioning device particularly adapted for foot pedal controls and the like consisting of a foot shaped platform for

receiving a foot pedal control and including one or more heel stops which automatically position the user's heel in front of the foot pedal control. The platform also includes an anti-friction bottom surface such as foam rubber or suction cups which prevent the platform from becoming accidentally dislodged from its normal operating position.

3,667,317
BALANCER

Franz Hillingrathner, Junkersdorf near Cologne, Germany, assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 66,949
Int. Cl. F02b 75/06
U.S. Cl. 74—604 3 Claims

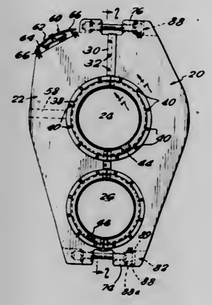


A balancer for an engine having a crankshaft including a gear connected to and driven by the crankshaft, and a pair of meshing pinions connected to and driving a pair of counter-rotating weights, one of the pinions meshing with the gear. The gear has a ring and a hub with projections on each and an elastic material interposed to isolate the crankshaft from vibrations caused by the rotation of the weights.

3,667,318
LIGHTWEIGHT GEAR HOUSING

Harry R. Lock, Sherman Oaks, Calif., assignor to Power Parts Company

Filed Sept. 18, 1970, Ser. No. 73,440
Int. Cl. F16p 1/00
U.S. Cl. 74—609 5 Claims

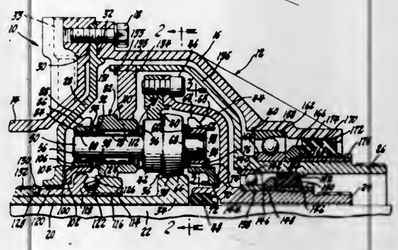


A lightweight, split housing is provided for drive gears for locomotives wheels by a pair of lightweight shells with the open edge on one shell having rigidifying means secured thereto and projecting therefrom for complementary rigidifying cooperation with the open edge of the other shell.

3,667,319
ROLLER TRACTION DRIVE MECHANISM

Milton H. Scheiter, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 20, 1970, Ser. No. 56,315
Int. Cl. F16n 37/06, 13/08
U.S. Cl. 74—665 K 4 Claims

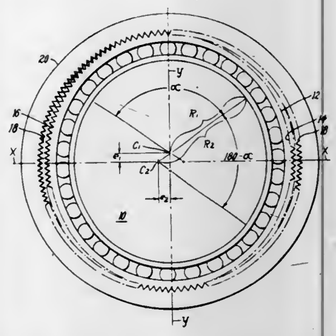


A contrarotating, equal speed-change ratio, dual output compound roller traction driver mechanism from a single input, wherein the single input drives one member of split input sun members. The driven sun members rotates a first set of split planet pinions, the latter, in turn, driving both a carrier member and a first ring member connected to a first output shaft. The driven carrier member rotates the second set of split planet pinions on the other or fixed member of the split input sun members in the opposite direction to that of the first set of planet pinions. The second set of planet pinions, in turn, drives a second ring member connected to a second output shaft for driving the latter at the same speed and torque as the first output shaft and in the opposite direction thereto.

3,667,320
WAVE GENERATOR CONFIGURATIONS

Hugh A. Robinson, Wenham, Mass., assignor to USM Corporation, Boston, Mass.

Filed Jan. 18, 1971, Ser. No. 107,038
Int. Cl. F16h 37/04
U.S. Cl. 74—640 1 Claim

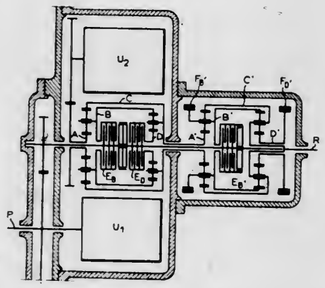


In mechanical harmonic drive actuators, an elliptoidal wave shape is employed to generate a circumferential wave of radial deflection. The present invention provides an improved shape for a wave generator cam, specifically a wave generator plug defined by a pair of arc centered on the major axis, a pair of arc centered on the minor axis, and these arcs sharing common points of tangency. Bending stress is reduced in the deflecting member and better load distribution attained in the wave generator bearing.

3,667,321
CONTINUOUS TRANSMISSION, ESPECIALLY FOR AUTOMOBILE VEHICLES

Jean Maurice, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Aug. 7, 1969, Ser. No. 848,310
Claims priority, application France, Aug. 29, 1968, 164477
Int. Cl. F16h 47/04
U.S. Cl. 74—682 7 Claims

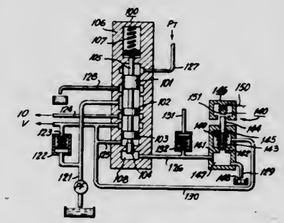


A continuous power transmission device provided between a movement take-off and a receiving shaft, especially for automobile vehicles, comprising a reversible continuous speed-varying device and a planetary train with four elements, in which two elements of said train are continuously active, one of said elements being coupled to the movement take-off through the intermediary of said reversible continuous speed-varying device and the other element being coupled to said shaft, each of the two remaining elements, known as change-over elements being adapted to be rendered active or passive, and further comprising means for rendering one of said change-over elements active while the other element is passive, and vice versa.

3,667,322
OIL PRESSURE CONTROLLING DEVICE FOR AUTOMATIC TRANSMISSION WITH HYDRAULIC TORQUE CONVERTER

Masaaki Noguchi, Nagoya; Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Aichi-Ken; Osamu Ito, Toyota, and Takaaki Kato, Toyohashi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, by said Noguchi, Sumiyoshi, and Sakakibara and Nippon Denso-Kabushiki Kaisha, by said Ito and Kato

Filed July 9, 1970, Ser. No. 53,364
Claims priority, application Japan, July 19, 1969, 44/57145
Int. Cl. F16h 47/06, 5/42; B60k 23/00
U.S. Cl. 74—731 9 Claims

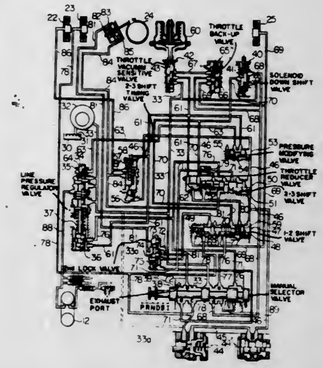


An oil pressure control system is provided in relation to an automatic transmission for vehicles composed of a hydraulic torque converter pump, a hydraulic torque converter turbine, a gear transmission unit incorporating gears and frictionally engaging means, and an oil pressure operating circuit for controlling the engagement and disengagement of the aforesaid frictionally engaging means, said circuit incorporating a constant pressure valve for maintaining the operation oil pressure in such circuit at a predetermined value, an electronically controlled actuator, and an actuating valve for changing the predetermined value of the constant pressure valve by energizing or de-energizing the actuator. A computer circuit is provided for controlling the activation of said actuator through the medium of delivery thereto of, respectively, a signal in accordance with the number of revolutions of the output shaft of the gear transmission and a signal in accordance with the number of revolutions of the hydraulic torque converter turbine shaft.

3,667,323
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Namio Irie, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Apr. 28, 1970, Ser. No. 32,527
Claims priority, application Japan, Apr. 30, 1969, 44/32720
Int. Cl. F16h 5/42; B60k 21/00
U.S. Cl. 74—752 C 3 Claims



A hydraulic control system for an automotive automatic transmission using a planetary gear set, the control system having a reverse reaction brake which is applied by the motion of a manual selector valve when the selector valve is set to the neutral position with the engine operating and which is prevented from being applied when the vehicle is being driven in a forward direction and the selector valve is shifted from the drive to the neutral position. The manual selector valve is controlled by a governor pressure which may be connected direct to the source of hydraulic pressure.

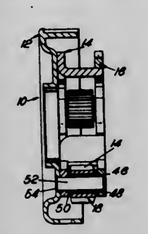
3,667,324
PLANETARY CARRIER ASSEMBLY AND METHOD OF MANUFACTURE THEREOF

James Morrison Laing, Letchworth, England, assignor to Borg-Warner Limited, Letchworth, England

Filed May 15, 1970, Ser. No. 37,795
Claims priority, application Great Britain, June 17, 1969, 30,711/69
Int. Cl. F16h 1/28, 3/44
U.S. Cl. 74—801 6 Claims

A planetary carrier assembly for a transmission in which the support for the planet pinions is provided by a preassembled sheet metal part formed of a support member, a spacer and a plate member secured together by welding. Aligned holes are bored in the three parts after welding to accom-

modate shafts for the pinions, thrust bearing washers being located between the planet gears and the support and plate



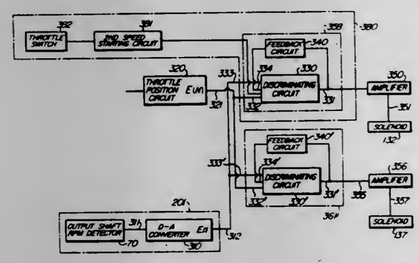
members. The pinions are secured by an upsetting operation on the plate member and the support member at adjacent the ends of the pinion shafts.

3,667,325

AUTOMATIC SHIFT CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION FOR VEHICLES

Shin Ito; Seitoku Kubo, and Takakazu Mori, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Aug. 10, 1970, Ser. No. 62,557
Claims priority, application Japan, Oct. 18, 1969, 44/83413
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **11 Claims**



An automatic shift control system for an automatic transmission for vehicles having an engine torque responsive signal generator, a vehicle speed responsive signal generator and a plurality of discriminating circuits generating a shift signal when the relation between these signals satisfies a predetermined condition. One of the discriminating circuits is connected to a second speed starting circuit which is connected in turn to a throttle switching which is turned on and off depending on the position of the throttle valve so that the vehicle can be started in the second gear under a low load and in the first gear under a high load to the engine.

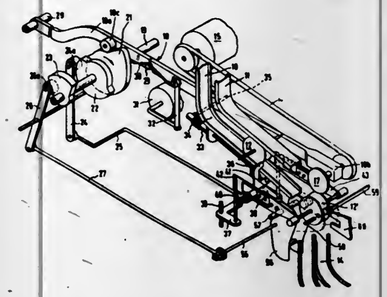
3,667,326

DEVICE FOR TESTING THE IMBALANCE OF BALANCE WHEELS

Paul Jahn, Schramberg, and Alfred Kapp, Schramberg-Sulgen, both of Germany, assignors to Gebruder Junghans GmbH., Schramberg, Wurttemberg, Germany

Filed Nov. 16, 1967, Ser. No. 683,724
Claims priority, application Germany, Nov. 16, 1966, J 32260
Int. Cl. B23b *41/00, 49/00*
U.S. Cl. 408—16 **1 Claim**

A device for testing, finding and eliminating any imbalance of a rotary body such as a balance wheel of watches and clocks having various elements to measure imbalance and equilibrate the body to its desired correct balance. The device includes measuring means, correction tools, drilling



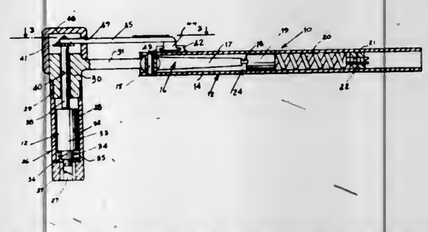
means, brake structure and means to transport the bodies through the various corrective and measuring stages.

3,667,327

MANUALLY OPERATED MARKING TORQUE WRENCH

Christopher James Lance, Royal Oak, Mich., assignor to Ivan F. Belknap, Detroit, Mich., a part interest

Filed July 13, 1970, Ser. No. 54,465
Int. Cl. B25b
U.S. Cl. 81—52.4 **13 Claims**



A marking wrench has a conventional torque-limiting, overcenter connection between its operating handle and a tubular socket-type wrench. The handle fixedly mounts an elongated, laterally offset and forwardly extending operator arm, which extends just beyond the axis of the wrench socket, at one side of that axis. The socket end slidably guides a plunger or tappet coaxial with the socket; and a conical cam element at the top of the tappet is engaged cammingly by the operator arm when the over-center connection is broken. This causes the tappet to operate a felt-tipped marker to mark a fastener engaged by the socket jaw, the marker being coaxially slidable in the socket.

3,667,328

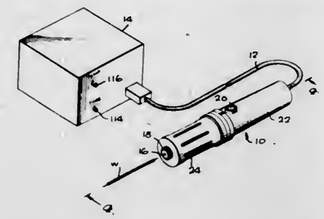
APPARATUS FOR REMOVING INSULATION FROM ELECTRICAL CONDUCTORS

John D. Stolshek, La Habra, Calif., assignor to Republic Corporation, Beverly Hills, Calif.

Filed Aug. 31, 1970, Ser. No. 68,066
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 **13 Claims**

A wire stripper of the type wherein an electrically heated blade rotates about the wire to melt a circle of insulation so that an end piece of insulation can be pulled off. A circuit for energizing the device operates for a preset time at a predetermined current, to assure melting of insulation to the required depth without damaging the central conductor and to minimize the time of the operation. A blade support extends

along a side of the blade opposite the side that contacts the wire, to support the blade against deflection, and to help confine heat to the blade. The blade is an easily replacable ele-



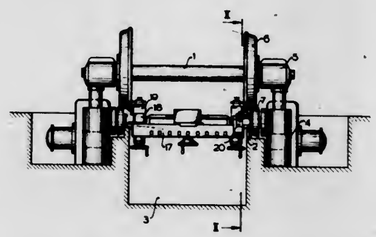
ment whose opposite end extends through apertures in a pair of spaced pins, and current is carried to the pins by a pair of slip rings and a pair of flexible wires that extend in helixes about the shaft from the slip rings to the pins.

3,667,329

APPARATUS FOR REWORKING WHEELS ON A RAIL VEHICLE

Theodor Dombrowski, Erkelenz, Germany, assignor to Wilhelm Hegenscheidt Kommanditgesellschaft, Erkelenz, Germany

Filed Dec. 16, 1969, Ser. No. 885,398
Claims priority, application Germany, Dec. 19, 1968, P 18 15 689.3
Int. Cl. B23b *5/28*
U.S. Cl. 82—8 **9 Claims**



A rail vehicle is supported so that its wheels have freedom to rotate, and thereupon the wheels are engaged and supported. The wheel flanges of the wheels are turned until they are centrical and cylindrical. The diameter of the thus turned wheel flanges is measured and the desired new circumferential configuration of the wheel rims is determined as a function of measurement taken with reference to the axis of rotation of the wheels and with reference to the diameter of the wheel flanges. Thereupon the wheel flanges are turned to the thus determined new circumferential configuration.

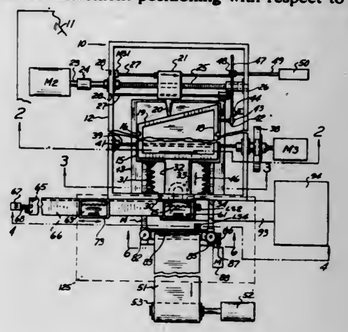
3,667,330

MICROTOME ASSEMBLY

Sidney D. Kobernick, Birmingham, Mich., assignor to Devco, Inc., Detroit, Mich.

Filed Dec. 16, 1970, Ser. No. 98,606
Int. Cl. G01n *1/06;* B26d *7/02, 7/08*
U.S. Cl. 83—98 **18 Claims**

In a microtome which has a housing on a support a carriage adapted for forward feed and retraction movements in a horizontal plane and mounting a vertically adjustable head which supports a forwardly extending block holder adapted to mount a tissue specimen containing block adapted for vertical slicing movements with respect to a stationary knife and with each vertical slicing movement accompanied by incremental horizontal feed movement of the block towards the knife for successive slicing thereof; the improvement for said microtome which includes a block holder on the forward end of the head preformed to snugly receive the tissue block to be sliced and with a magnet for holding the tissue block within the block holder, a power operated reciprocal block support carrier and cassette for the storage of blocks to be sliced and for delivering said blocks one at a time to the block support for increment positioning with respect to the



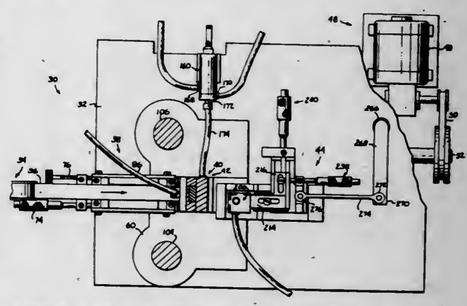
block holder and with power means for effecting automatic feed movements of the block support, an improved knife assembly with flexible blade whose ends are mounted upon feed and take-up reels for intermittent advancement, a motor for advancing the take-up reel, the power operated conveyor belt for transporting away specimen slices in a continuous manner together with a chute for delivery of partly sliced blocks to a storage chamber positioned below the block holder when retracted adapted to receive blocks when released from the block holder and including an electrical circuit connected with a series of motors and limit switches to provide for an automatic cycling operation in a continuous manner.

3,667,331

APPARATUS FOR CUTTING, TRANSFERRING AND DEPOSITING SELF-SUPPORTING STRIP MATERIAL

John Jacob Regec, Emporium, Pa., and Henry William Roeber, Waterloo, N.Y., assignors to Sylvania Electric Products, Inc.

Original application Feb. 20, 1969, Ser. No. 801,114, now Patent No. 3,598,009. Divided and this application Jan. 25, 1971, Ser. No. 109,187
Int. Cl. B26d *7/06*
U.S. Cl. 83—98 **1 Claim**



Apparatus for performing the title functions with thick film resistor or capacitor material. The material is fed in discrete

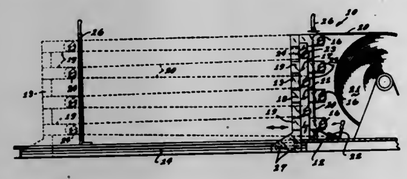
increments to a cutting head which severs selected portions and transports the same to a remote location where it is deposited across conductors formed on an insulating substrate.

3,667,332

APPARATUS FOR STACKING FABRIC FOR PATTERN CUTTING

Robert M. Kirche, 411 West Arbor Vitae, Inglewood, Calif.

Filed Apr. 19, 1971, Ser. No. 135,058
Int. Cl. B65h *17/00, 45/101*
U.S. Cl. 83—424 13 Claims



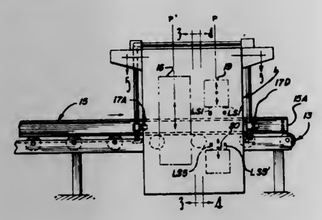
Apparatus for simultaneously providing a multiplicity of similarly sized pieces of sheet material in a stacked relationship in preparation for a multiple piece cutting operation employed in the garment and piece good industry. A movable carriage and clamping arrangement withdraws in one pass, a plurality of overlying lengths of sheet material from a single supply roll or bolt of material. Further provision is made to individually sever the overlying lengths after the withdrawal takes place.

3,667,333

SINGLE PASS STRUCTURAL SHAPE PUNCH

Benjamin Harrison Flynn, Jr., P.O. Box 5755, 1629 Fulton Drive, Alexandria, La.

Filed Sept. 30, 1970, Ser. No. 76,918
Int. Cl. B26d *9/20*
U.S. Cl. 83—255 6 Claims



Individually movable, integral punch and die assemblies at a common punching station cooperate to complete punching of a structural member with a single pass of the member through the station.

3,667,334

THIN CONDUCTIVE PLATE LOCATING SYSTEM FOR A PUNCH PRESS

Peter Frank Brunett, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 28, 1970, Ser. No. 41,508
Int. Cl. B26f *1/02*
U.S. Cl. 83—362 3 Claims

The invention relates to a system for accurately aligning a thin conductive plate relative to a plurality of punch dies for making holes in the plate which are accurately aligned with respect to one edge. The system employs spaced conductive pins on the plate supporting bed of the machine for guiding the plate into position and for indicating that the plate is in position and ready for punching. The plate position sensing and punch control is performed by an electrical circuit which is completed through the locating pins and the conductive

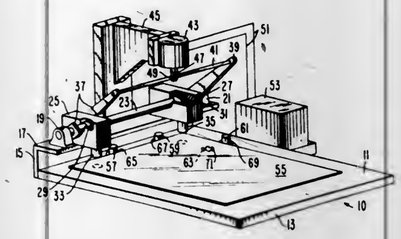


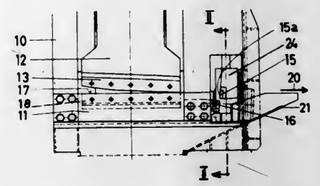
plate. Time delay devices are employed in the control circuit to preclude premature operation of the punch due to accidental completion of the sensing circuit during the initial placement of the plate into the punch. The sensing circuit must be closed for an interval of time before the control circuit automatically initiates punching action.

3,667,335

EDGE TRIMMING SHEARS FOR ROLLED METAL SHEETS WITH CROSS-KNIVES FOR SEVERING THE EDGE STRIPS

Paul Friedrich Hamacher, St. Ingbert (Saar), Germany, assignor to Moeller & Neumann G.m.b.H., St. Ingbert (Saar), Germany

Filed Feb. 16, 1970, Ser. No. 11,372
Claims priority, application Germany, Feb. 15, 1969, P 19 07 777.9
Int. Cl. B26d *9/00*; B23d *17/04*
U.S. Cl. 83—513 2 Claims



A straight-knife edge trimming shears more particularly suitable for opposite mounting in shearing lines for cutting thick sheets whose cross-knife for severing the edge strips still connected to the sheet after the cutting by the edge trimming knife has an independent drive and starts its cutting action after the edge trimming knife mounted ahead of the cross-knife.

3,667,336

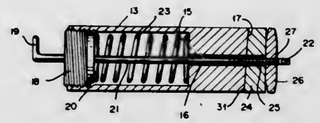
MECHANICAL TUNER FOR STRING INSTRUMENTS

Sidney Itzler, and Robert G. Towle, both of New City, N.Y., assignors to Sidney Itzler, New City, N.Y.

Filed July 12, 1971, Ser. No. 161,518
Int. Cl. G10d *3/00*; G10g *7/02*
U.S. Cl. 84—454 4 Claims

The invention relates to a mechanical tuner for stringed in-

struments which permits student players to rapidly tune and retune their instruments and is characterized by the tuner



forming a part of the instrument during playing and being mounted in series with the string.

3,667,337

GRIP PLATE FOR WOODEN TRUSS MEMBERS

James Stanley Burke, 2675 S.W. 69th Court, Miami, Fla.

Filed June 11, 1970, Ser. No. 45,330
Int. Cl. F16b *15/00*; A43b *23/20*
U.S. Cl. 85—13 1 Claim



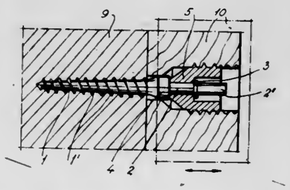
Grip plates or connectors for wooden structural members, preferably metal, provided with a plurality of integral punched projections in circular arrays or clusters about a center opening, the projections being adapted for impressing into and engaging in the body of the wood members. The projections are in the form of pointed teeth or prongs of alternating short and long lengths with different end configurations, with the tooth edges bevelled at their inside surfaces to impart outward deflection to the teeth upon impression into the material for enhanced retention therein.

3,667,338

DEVICE FOR ADJUSTABLE FIXING OF AN ELEMENT TO A FIXED ELEMENT

Rolf Arne Reinhold Johansson, Lundegrens gata II b, Kungsbacka, Sweden

Filed Oct. 10, 1969, Ser. No. 865,245
Claims priority, application Sweden, Dec. 16, 1968, 17184
Int. Cl. F16b *25/00*
U.S. Cl. 85—41 1 Claim



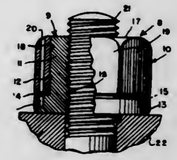
Screw device for adjustable interconnecting two elements, such as a wall and a door frame, comprising a screw member to be screwed into one of the elements having a head portion adapted to be engaged by a wrench or similar tool and an externally screw threaded tubular nut member to be screwed into the other element, and which rotatably surrounds the head portion while being maintained against axial displacement, the nut member having a socket for receiving the head portion in spaced relationship to provide access for a tool to selectively rotate the screwhead and the nut for adjustment of the spacing between the elements and to lock the screwhead and the nut against relative movement.

3,667,339

FRICTION CONTROLLED TORQUE FASTENING

Richard E. Dame, 12625 Billington Road, Silver Spring, Md.

Filed Mar. 30, 1971, Ser. No. 129,545
Int. Cl. F16b *31/02*
U.S. Cl. 85—61 2 Claims



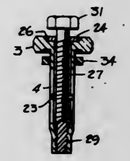
A friction controlled torque threaded fastening which depends upon the static coefficient of friction between contacting surfaces of two parts of the fastening and the normal forces which retain said surfaces in engagement with one another. The two parts comprise an inner section or core having a threaded portion and an outer section or shell. The shell has a cylindrical bore of a diameter less than the diameter of a peripheral surface of circular cross section of the core which is applied to the bore by a shrink fit connection. The shell and core are formed of the same material so that the connection can be accomplished by heating the shell and cooling the core.

3,667,340

FASTENING DEVICE AND METHOD OF MAKING SAME

Daniel A. Black, Pittsburgh, Pa.; Albert A. Ingersoll, Santa Ana; Ira Bill Lee York, Costa Mesa, and David O. Jones, Tustin, all of Calif., assignors to Textron Inc.

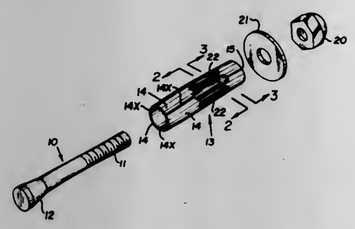
Filed Apr. 29, 1970, Ser. No. 32,970
Int. Cl. F16b *13/04*
U.S. Cl. 85—71 1 Claim



The fastening device is in the nature of a rivet wherein a tubular sleeve has a head on one end bearing against one side of the work, and an internally threaded tail. A screw extended through the head and sleeve is threaded into said tail, and is so positioned that the screw head is initially spaced from the head of the sleeve; the shank of the sleeve is slotted and the resulting strips are notched internally at about the middle so that by turning the screw the tail travels toward the head and the strips are folded flat against the other face of the work. In the method of making this fastener, after the hollow rivet with the head is formed, it is positioned in a die, and cutting blades are forced through the wall of the sleeve to cut parallel longitudinal slots dividing the middle portion of the sleeve into strips of arcuate cross section; then the sleeve is held in a die while a tool is inserted and rotated to cut a groove into the strips for facilitating the collapsing of the sleeve; then the screw is inserted into the sleeve and the tail of the sleeve is pressed or swaged into the screw to form

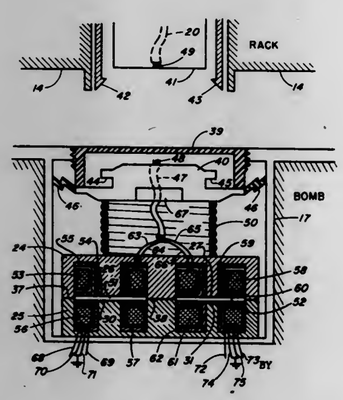
the internal thread in the tail and hold the screw. The shank between the sleeve head and the adjacent ends of the slots is approximately equal to the minimum thickness in which the fastener is used. The sleeve head has a recess in both faces to accommodate suitable washers.

3,667,341
ANCHOR BOLT
Stanley Kaplan, 10 Grover Avenue West, Massapequa, N.Y.
Filed July 6, 1970, Ser. No. 52,453
Int. Cl. F16b *13/06*
U.S. Cl. 85—77 **1 Claim**



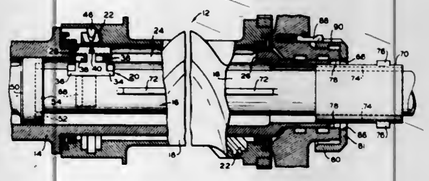
This invention relates to an improvement in anchor bolts having a plurality of slots forming sleeve legs having bridge portions of narrow width, said legs being moved outwardly in a drilled masonry well or hole to rigidly engage the well wall upon suitable operation of the bolt. The improvement consists of the provision of suitable stampings in said bridge portions to form projections adapted to engage the well wall in non-rotative engagement upon insertion in a well. Moreover, the stamped out projection re-enforces the narrow bridge portion of the sleeve thereby preventing premature collapse or rollback upon insertion in close-fitting holes.

3,667,342
MAGNETIC WEAPON LINK TRANSDUCER
Frederick E. Warnock, Bethesda, and John H. Malloy, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 8, 1970, Ser. No. 26,479
Int. Cl. B64d *1/04*
U.S. Cl. 89—1.5 D **7 Claims**



A magnetic weapon link transducer transfers both power and option information signals from an ordnance delivery vehicle to an ordnance device. The transducer includes a plurality of magnetic cores of diverse diameters located in excitation and load units, respectively. Airgaps, which may be of diverse thicknesses, separate corresponding cores on the excitation and load units. Individual AC and RF shields are included to insure that only concurrent excitation of the transducer and weapon release will transfer the power and information signals from the delivery vehicle to the ordnance device.

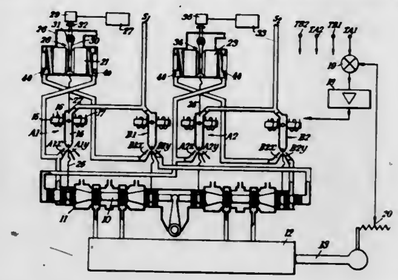
3,667,343
MEANS FOR ATTACHING BARREL TO CROSSOVER SLIDE FOR QUICK REPLACEMENT
Chester P. Jurkowski, Budd Lake, and Mitale W. Kruzel, Flanders, both of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed Dec. 30, 1969, Ser. No. 889,115
Int. Cl. F41f *17/00*
U.S. Cl. 89—161 **8 Claims**



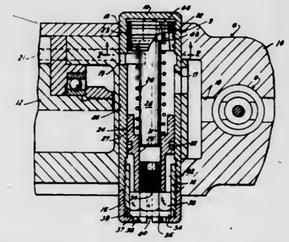
In an automatic gun comprising a drum journaled for rotation around the exterior of the receiver and a barrel disposed for reciprocation therein, a crossover slide is slidingly mounted in a longitudinal slot through the receiver and is slidingly engaged with cam tracks in the drum to convert rotation thereof to translational movement and transmit the translational movement through the receiver. Flanges on the crossover slide are engageable by cooperating flanges on the barrel responsive to rotation thereof to connect the crossover slide to the barrel for translation therewith. A sleeve is slidingly mounted on the barrel and is provided with a lug receivable by a recess in the receiver and longitudinal grooves slidingly engaged with cooperating ribs on the barrel to prevent relative rotation of the barrel and receiver when the lug is located in the recess. The sleeve is blocked against displacement to maintain the lug in the recess by locking collar rotatingly mounted to the receiver by bayonet lug means.

3,667,344
POSITION CONTROL SERVO SYSTEMS
Roy Westbury, Bridgnorth, and John Richard Simmons, Wolverhampton, both of England, assignors to H. M. Hobson Limited, London, England
Filed Nov. 24, 1970, Ser. No. 92,343
Claims priority, application Great Britain, Nov. 25, 1969, 7,677/69
Int. Cl. F15b *13/02*; F01b *25/26*
U.S. Cl. 91—1 **6 Claims**

A position control servo system comprising a hydraulic actuator controlled by a fluid control valve which is responsive to output signals applied to it from a pair of transducers, each of which is responsive to an input signal applied thereto to produce an actuator output which a function of the input signals, which are in normal operation substantially equal, and control means responsive to a difference between the transducer output signals up to a predetermined and allowable difference to adjust on or the other or both of the transducers and/or input signals thereto, thereby to maintain the tranducer output signals within the predetermined and allowable difference and to produce an indication when the difference is exceeded.



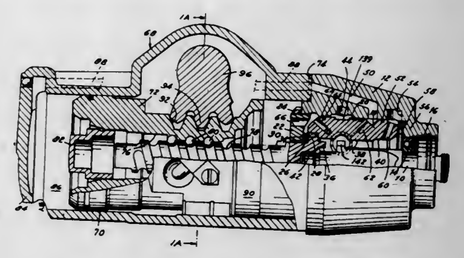
3,667,345
AIR SHUT-OFF TORQUE RESPONSIVE CONTROL VALVE UNIT FOR PNEUMATICALLY POWERED TOOLS
Raymond J. Schaedler, and Lester A. Amtsberg, both of Utica, N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,059
Int. Cl. B23b *45/04*
U.S. Cl. 91—59 **9 Claims**



A completely assembled air shut-off control valve unit illustrated as fitted in a bore of a pneumatically powered nut runner in the path of air flow between the throttle valve and the motor. The unit is of capsule form defined by means of a shell in which the various components are confined. A cap closes over an open end of the shell through which end the various components may be withdrawn. The valve is of a piston and rod form having a spring load in association with an adjusting screw and travel nut means for adjusting the load of the spring upon the valve. Structural design of the valve, together with a valve guide serve to effect pneumatic balancing of the valve and consequent reduced friction in its movement.

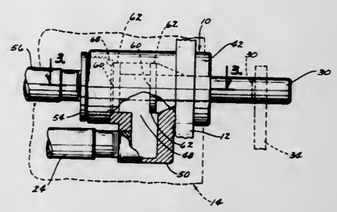
3,667,346
FLUID CONTROL VALVE FOR A HYDROSTATIC POWER BOOSTING MECHANISM FOR AN AUTOMOTIVE STEERING GEAR
James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 29, 1970, Ser. No. 85,013
Int. Cl. F15b *9/10*
U.S. Cl. 91—375 A **7 Claims**

A power boosting mechanism for an automotive vehicle steering gear comprising a pressure operated piston connected mechanically to a steering member for the dirigible wheels of an automotive vehicle, pressure passages extending to opposed sides of said piston, a steering shaft, a ball valve assembly situated in each passage including a ball valve element and a surrounding valve seat in fluid communication



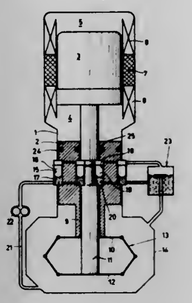
with said passage, an outlet flow controlling valve seat formed in said piston, means carried by the steering shaft for shifting said ball valve elements into and out of registry with the respective valve seats during application of steering effort to said steering shaft thereby controlling pressure distribution to said opposed sides of said piston.

3,667,347
STROKE CONTROL DEVICE FOR HYDRAULIC CYLINDERS
Donald A. Patrick, Sergeant Bluff, Iowa, assignor to Prince Manufacturing Corporation, Sioux City, Iowa
Filed May 22, 1970, Ser. No. 39,656
Int. Cl. F15b *13/04*
U.S. Cl. 91—404 **1 Claim**



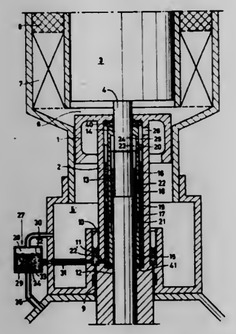
A hydraulic cylinder including a piston rod extending from one end and having adjustable actuating member thereon for engaging the piston rod of a control cylinder in communication with the hydraulic cylinder such that oil is circulated from the hydraulic cylinder through the control cylinder and is shut off upon the actuating element moving the control cylinder piston rod to a closed position thereby limiting further movement of hydraulic oil within the hydraulic cylinder. A double or single acting hydraulic cylinder may be employed and upon fluid flowing in a reverse direction the control cylinder piston will be extended opening the conduit from the hydraulic cylinder through the control cylinder unit for oil circulation. The piston in the control cylinder is entirely metallic and engages an elastomeric seat seal only after the oil pressure has substantially dropped due to the inlet opening into the cylinder having been closed off by the control cylinder piston moving across the inlet opening. The control cylinder may be externally mounted on the hydraulic cylinder.

3,667,348
SEALS BETWEEN COAXIAL ELEMENTS
Gregorius Theodorus Maria Neelen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 1, 1970, Ser. No. 24,506
Claims priority, application Netherlands, Apr. 17, 1969, 6905901
Int. Cl. F15b 21/04
U.S. Cl. 92—83 11 Claims



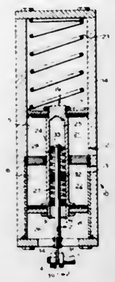
An apparatus such as a hot gas engine and a compressor has a rolling diaphragm seal between adjacent walls of a piston and cylinder and supported by a liquid, and has an additional piston ring seal between the diaphragm seal and gas space above, this ring seal having an operative diameter equal to the effective diameter of the diaphragm seal for maintaining constant the volume above said diaphragm seal.

3,667,349
SEAL FOR PISTON-CYLINDER ASSEMBLY
Hans Joachim Siebert, Gersthofen, Germany, and Gregorius Theodorus Maria Neelen, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,354
Int. Cl. F01b 19.02; F16j 3/00
U.S. Cl. 92—83 6 Claims



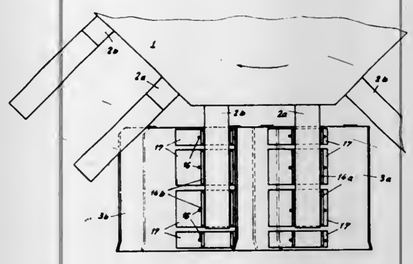
A seal for use with a piston rod and a cylinder assembly or subassembly, where an annular space between the piston rod and cylinder is separated by a sleeve into two annular spaces. The sleeve is axially fixed but radially movable relative to the cylinder, and radially fixed but axially movable relative to the rod, with a rolling diaphragm seal secured between the sleeve and rod.

3,667,350
PNEUMATIC TORQUE MOTOR UNIT
Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation
Filed Oct. 9, 1970, Ser. No. 79,424
Int. Cl. F01b 3/00
U.S. Cl. 92—113 3 Claims



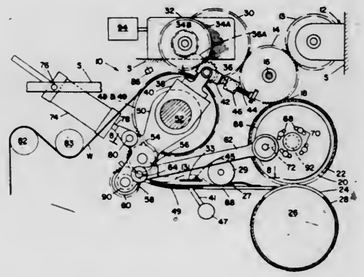
The disclosure concerns pneumatic torque motor apparatus for resisting rotation of a shaft in opposite directions from a null position. The resisting torque is developed by a pair of series-connected calibration springs which are loaded by the piston of a pneumatic motor, and which act upon a drive rod which engages the shaft through flat bearing surfaces on an attached yoke and cooperating knife edges carried by a rocker member fixed to the shaft. One end of the drive rod is guided for reciprocation within the piston by a low friction head, and its tilting movement is limited by cooperating guiding surfaces on the yoke and rocker member. The head and a low friction annular member interposed between the two springs serve as seats for the calibration springs.

3,667,351
DEVICE FOR PRODUCING BAGS BY MEANS OF A MANDREL WHEEL
Alwin Egli, Beringen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfalt, Switzerland
Filed Feb. 20, 1970, Ser. No. 13,132
Claims priority, application Switzerland, Feb. 25, 1969, 2819/69
Int. Cl. B31b 1/32, 1/64; B31c 1/02
U.S. Cl. 93—12 R 1 Claim



A device for producing tubular wrappings for paper bags with a mandrel wheel rotating stepwise in a horizontal plane and having horizontally outwardly extending pairs of spaced parallel folding mandrels. The blanks of bag material are fed horizontally toward a position below the folding mandrels and are brought into contact pressure with a bottom face of the folding mandrels by upwardly moving folding boxes, whereupon a folding fork associated with each folding box moves upwardly to place and wrap the blanks against the sides and around the folding mandrels with the assistance of compressed air.

3,667,352
LOOP STABILIZE WEB FED VARIABLE REPEAT CUTTER-CREASER SYSTEM
Richard W. Helmig, Baltimore, and Floyd Steinmetz, Timonium, both of Md., assignors to The Rotographic Machinery Company, Baltimore, Md.
Filed Apr. 16, 1970, Ser. No. 29,103
Int. Cl. B31b 1/20; B65b 57/02; B31b 1/10
U.S. Cl. 93—58.2 R 24 Claims



A web fed rotary variable repeat cutter-creaser system is provided for the packaging industry which is fed from a web stock of material either printed or unprinted or both. This system consists basically of a pair of large diameter, very heavy walled drums on which is mounted a pair of cutting and creasing dies. These dies are in the form of a sheet metal blanket into which the shape to be cut and creased has been chemically milled. The dies are mounted on these two drums so that as they rotate together, the dies will match one another in a registered position.

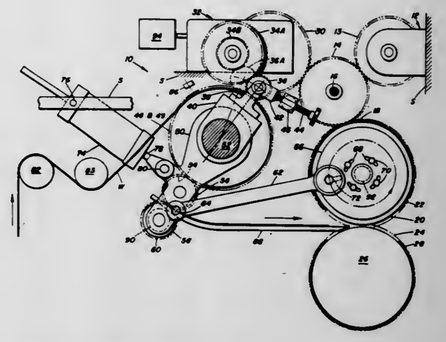
A feeder is provided for the die cylinders which has the qualities of feeding a selected length of material, yet is continuously supplied from roll web stock of material. A crank working directly from the die cylinders forms storage loops in the web and advances it periodically. Swing rolls are oscillated by the crank arm and these are geared to a mechanism for advancing or retarding the fed portion of the web of material in accord with registration marks on the web stock. Apparatus is provided for stabilizing the storage loops at high speeds to prevent the loops from distorting and doubling back on itself. Also, an arrangement is provided to create a definite bend in the web so that the break or start of the storage loop occurs at a predetermined point in the system during operation thereof.

3,667,353
WEB FED ROTARY VARIABLE REPEAT CUTTER-CREASER SYSTEM
Henry D. Ward, Jr., Phoenix, and Floyd Steinmetz, Timonium, both of Md., assignors to The Rotographic Machinery Company, Baltimore, Md.
Filed July 10, 1968, Ser. No. 743,748
Int. Cl. B31b 1/16
U.S. Cl. 93—58.2 R 19 Claims

A web fed rotary variable cutter-creaser system is provided for the packaging industry which is to be fed from a web stock of material either printed or unprinted or both. This system consists basically of a pair of large diameter, very heavy walled drums on which can be mounted a pair of cutting and creasing dies. These dies are in the form of a sheet metal blanket into which the shape to be cut and creased have been chemically milled. The dies are mounted on these two drums so that as they rotate together, the dies will match one another in a registered position.

A feeder is provided for the die cylinders which has the qualities of feeding a selected length of material, yet is continuously supplied from roll web stock of material. A crank working directly from the die cylinders forms storage loops in the web and advances it periodically. Swing rolls are oscillated by the crank arm and these are geared to a mechanism for advancing or retarding the fed portion of the web of material in accord with registration marks on the web stock.

3,667,354
WEB FED ROTARY VARIABLE REPEAT CUTTER-CREASER SYSTEM
Floyd Steinmetz, Timonium, Md., assignor to The Rotographic Machinery Company, Baltimore, Md.
Filed Jan. 30, 1969, Ser. No. 795,326
Int. Cl. B31b 1/16, 17/14; B65b 57/00
U.S. Cl. 93—58.2 R 18 Claims



A web fed rotary variable repeat cutter-creaser system is provided for the packaging industry which is to be fed from a web stock of material either printed or unprinted or both. This system consists basically of a pair of large diameter, very heavy walled drums on which can be mounted a pair of cutting and creasing dies. These dies are in the form of a sheet metal blanket into which the shape to be cut and creased have been chemically milled. The dies are mounted on these two drums so that as they rotate together, the dies will match one another in a registered position. A feeder is

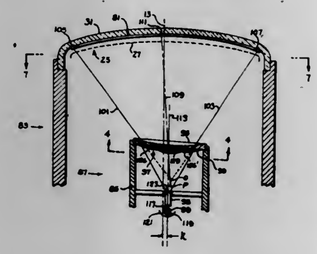
provided for the die cylinders which has the qualities of feeding a selected length of material, yet is continuously supplied from roll web stock of material. A crank working directly from the die cylinders wraps a storage integral of the web about a drum, then unwraps and advances it periodically. Swing rolls are oscillated by the crank arm and these are geared to a mechanism for advancing or retarding the fed portion of the web of material in accord with registration marks on the web stock.

3,667,355

OPTICAL SYSTEM FOR FORMING A WINDOWED WEB IN A COLOR CATHODE RAY TUBESCREEN STRUCTURE

David M. Ng, and Charles H. Rehkope, both of Seneca Falls, N.Y., assignors to Sylvania Electric Products, Inc.

Filed Nov. 2, 1970, Ser. No. 86,123
Int. Cl. G03b *41/00*, *33/00*; H01j *9/00*
U.S. Cl. 95—1 12 Claims



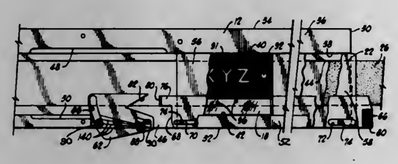
An improvement is provided in the optical system utilized for photo-forming the multiple window pattern defined by the opaque interstitial web portion of a CRT composite screen structure. Exposure illumination from an elongated primary light source is selectively modified by a composite light attenuation coating of nonsymmetrical density discretely disposed relative to the lens in the pattern exposure system. The vapor disposed coating is heavier in the generic form of a modified lemniscate which selectively modifies the photo exposure to effect a variable gradient of window sizes from center to edge of the screen and additionally provides windows of a substantially equal size in annular orientation progressively about the central axis of the screen.

3,667,356

PHOTOTYPESETTING APPARATUS

Arless B. Noble, 428 Chatauqua, Norman, Okla.

Continuation-in-part of application Ser. No. 547,400, May 3, 1966, now Patent No. 3,552,284. This application Feb. 5, 1970, Ser. No. 8,816
Int. Cl. B41b *13/10*
U.S. Cl. 95—4.5 16 Claims



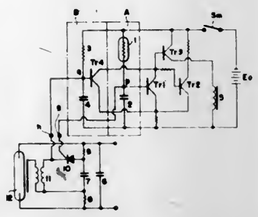
A phototypesetting apparatus for imprinting typographical characters on a photosensitive material, including a character spacing assembly having a stop edge and a leading edge formed therein, the distance therebetween defining a character spacing gap, the character spacing gap being shaped and disposed, to cooperate with an indexing slide, having a photomatrix affixed thereto, to positively control the movement of the photosensitive material within the character spacing gap, thereby assuring a consistent, predetermined character spacing of the characters on the photosensitive material.

3,667,357

AUTOMATIC CONTROL DEVICES FOR A CAMERA

Motonobu Matsuda, Sakai-shi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 12, 1969, Ser. No. 884,568
Claims priority, application Japan, Dec. 24, 1968, 43/94807; Dec. 31, 1968, 44/728; Feb. 24, 1969, 44/16349
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 6 Claims



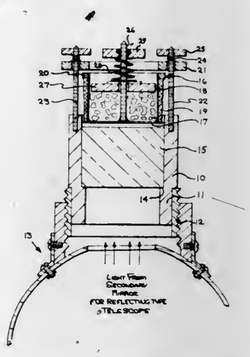
An automatic exposure control device for a camera is actuated by outputs from two separate delay circuits. The first delay circuit includes means for storing an electrical signal in accordance with the brightness of an object to provide a first output, and the second delay circuit includes means for storing an electrical signal representative of a desired flash time delay to provide a second output. A switching circuit is responsive to the first and second outputs whereby a flash circuit is actuated only when the second output exceeds the first output. A modified embodiment incorporates a third delay circuit and the flash is actuated only when the first output is less than the third output or when the first output exceeds the third output which in turn exceeds the second output. The first and second delay circuits are respectively responsive to the brightness of the entire picture and a central portion of the picture, whereas the third delay circuit provides the desired flash time delay.

3,667,358

COLD EMULSION CAMERA

William D. Williams, Jr., 2 Heather Lane, Manwah, N.J., and Scott Usher, 98 Copley Avenue, Teaneck, N.J.

Filed Jan. 5, 1971, Ser. No. 103,981
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R 6 Claims



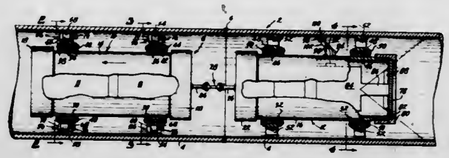
A cold emulsion camera in which the film is gripped between an optical plug and a metallic plate, which is reduced to a very low temperature by dry ice, for example. The optical plug, which may be of optical glass, is sufficiently thick to serve as an insulator for preventing frosting of the outer face of the plug. The clamping action of a metal plate against the inner end of the plug with the interposed film prevents frosting in this region.

3,667,359

PHOTO INSPECTION POD ASSEMBLY FOR PIPELINES

Raymond K. Watts, and Walter Harry Chapman, both of El Paso, Tex., assignors to El Paso Natural Gas Company, El Paso, Tex.

Filed Nov. 25, 1969, Ser. No. 879,872
Int. Cl. G03b *37/00*
U.S. Cl. 95—11 HC 8 Claims



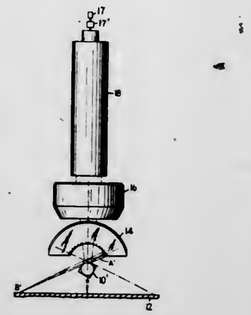
A self-contained inspection pod assembly for pipelines, propelled by gas pressure within the pipeline. The pod assembly has resilient cups thereon equipped with spring-loaded calibrated valves that stabilize travel speed, and contains rearwardly directed photographic camera means for periodically taking pictures of the pipeline's interior.

3,667,360

OPTICAL SCANNING SYSTEM

Frederick Vicik, Tuckahoe, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Apr. 23, 1969, Ser. No. 818,769
Int. Cl. G03b *37/02*
U.S. Cl. 95—12.5 6 Claims



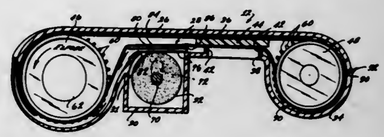
A real image of a point source of radiation is formed in space by a light beam modulated to convey information and reflected from a rotating prism. The rotation of the prism causes the image to move along a limacon curve. The moving image is reflected by a Mangin mirror and a second real image is formed on a photographic film strip. The second image remains in focus as it traverses a straight line on the film strip with a speed directly proportional to the tangent of the angle formed by the scanning beam by which the second image is formed with a line normal to the straight line traversed by the second image.

3,667,361

FILM DEVELOPING CAMERA

Daniel H. Meggs, Redondo Beach, and John W. Ryan, Los Angeles, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 8, 1969, Ser. No. 789,804
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 12 Claims



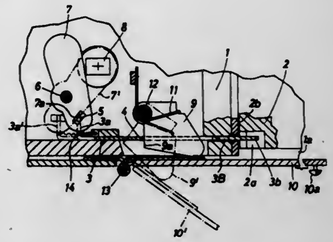
A simple camera and film cartridge which enables the film to be developed within the camera, comprising a length of film within the cartridge with its ends joined to form a loop. The film loop can be advanced in one direction to take successive pictures and then can be moved in the reverse direction for developing. At the beginning of reverse movement, the film removes a cover that separates it from a sponge that is saturated with a monobath developer/fixer solution, so that continuous turning of the loop develops the film which can then be removed from the cartridge.

3,667,362

PHOTOGRAPHIC APPARATUS WITH MEANS FOR ADJUSTING THE EXPOSURE CONTROL IN DEPENDENCY ON THE SENSITIVITY OF FILM

Karl Neudecker, and Anton Theer, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 25, 1970, Ser. No. 75,501
Claims priority, application Germany, Oct. 1, 1969, G 69 38 210.1
Int. Cl. G03b *17/18*
U.S. Cl. 95—31 FS 10 Claims

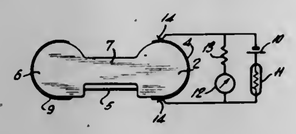


A photographic camera wherein the exposure control is automatically adjusted as a function of the speed of film in the inserted magazine. The camera has a door which opens automatically in response to unlocking and thereby disengages one or more scanning members from coding elements on the inserted magazine. The scanning member or members form part of one or more slides which are coupled to one or more adjustable parts of the exposure control and are biased in directions to move the scanning members into engagement with the corresponding coding elements. The door opening mechanism includes a strong spring which biases a lever against the door so that the lever tends to move the door toward its open position. The lever engages and retracts the slide or slides while it pivots in a direction to open the door.

3,667,363
FILM SENSITIVITY COMPENSATED LIGHT MEASURING NETWORK AND FILM MAGAZINE

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1970, Ser. No. 80,703
Int. Cl. G03b 17/26
U.S. Cl. 95—31 CA 5 Claims

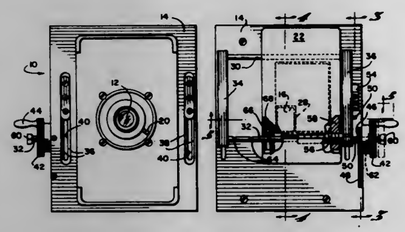


A camera includes a light responsive network having a pair of first and second terminals the resistance between which varies the network sensitivity and which are connected to first and second contact elements exposed in the camera film magazine chamber. A film magazine carries a resistor tape whose value corresponds to the film sensitivity and which is releasably engaged by the contact elements to correspondingly vary the network sensitivity. Alternatively, a plurality of spaced second contact elements are provided which are connected to the second network terminal through respective resistors and the film magazine carries a conductor tape of a shape and position in accordance with the film sensitivity and which engages predetermined second contact elements to provide a resistance between the network terminals to adjust its sensitivity in accordance with the film sensitivity. The resistor or conductor tape is the pressure sensitive tape securing the magazine cover.

3,667,364
CAMERA INCLUDING SEQUENTIAL EXPOSURE APPARATUS FOR A FILM PLATE

Arthur S. Mann, 1790 S. W. 23rd Avenue, Miami, Fla.

Filed Dec. 12, 1969, Ser. No. 884,682
Int. Cl. G03b 17/32
U.S. Cl. 95—37 13 Claims

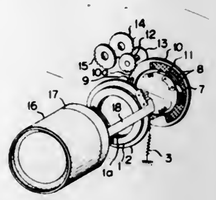


A camera including a fixed lens and aperture and means for sequentially moving a film plate past the lens sight line to present predetermined areas of the film plate for exposure each time the lens shutter is actuated. A secondary, simultaneous exposure system photographs and transmits identifying data, such as a number, to the predetermined film plate area. A rack and pinion assembly moves the film plate to selected positions for exposure of an area of the film plate and includes a numbered and lettered reference guide system. A pencil light beam apparatus allows proper alignment of the camera lens with the subject. Micrometer adjustment means are provided for the rack and pinion assembly. A master control switch is located in the secondary exposure system which prevents activation of the entire camera unless the identifying data is properly positioned.

3,667,365
DEVICE FOR COMPENSATING POSITIONAL DEVIATIONS USEFUL WITH INTERCHANGEABLE LENSES HAVING SCREW THREADS

Sakae Fujimoto, and Tadayuki Imai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 21, 1969, Ser. No. 809,286
Claims priority, application Japan, Mar. 25, 1968, 43/19337
Int. Cl. G03b 3/00
U.S. Cl. 95—44 R 6 Claims

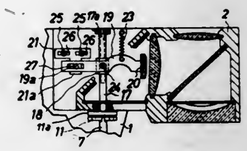


A device for compensating positional deviations in screwing interchangeable lenses into a single-lens reflex camera by means of an aperture setting ring including a pin mounted in a slot to determine its angular movement. A barrel lens has a hook element engagable with a notched area on the aperture setting ring. The hook element is mounted to have less angular movement than the aperture setting ring so that positive engagement is always provided within the range of movement of the barrel lens.

3,667,366
PHOTOGRAPHIC CAMERA WITH BUILT-IN RANGEFINDER

Dieter Engelsmann, Unterhaching; Dieter Maas, Munich; Rolf Schroder, Munich, and Gerda Linke, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 21, 1970, Ser. No. 39,306
Claims priority, application Germany, May 23, 1969, G 69 20 873.7
Int. Cl. G03b 3/08
U.S. Cl. 95—44 C 9 Claims

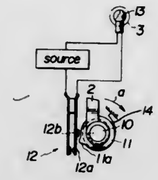


A photographic camera wherein a plastic camera body supports the metallic casing of a built-in rangefinder and a lens mount including a focussing ring whose rotation causes displacements of a movable optical element in the rangefinder casing by way of a gear train. A shaft of the gear train drives a rotary cam which displaces the movable optical element by way of one or more levers. Alternatively, the shaft of the gear train drives a threaded shaft which effects axial movements of a nut so that the latter pivots a lever which supports the movable optical element. The connection between the shaft of the gear train and the cam or nut is such that the shaft can move radially to compensate for eventual displacements of the lens mount with reference to the casing of the rangefinder.

3,667,367
SHUTTER RELEASE TIME PRELIMINARY INDICATION DEVICE FOR A PHOTOGRAPHIC CAMERA HAVING A BUILT-IN SELF-TIMER

Fumihiro Miyagawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,414
Claims priority, application Japan, Aug. 21, 1969, 44/79663
Int. Cl. G03b 17/38
U.S. Cl. 95—53.3 4 Claims

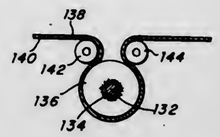


A photographic camera having a self-timer which can be set to release the shutter after a predetermined time delay, wherein the improvement is in a device operative after the setting of the self-timer to indicate when the shutter is about to be released. A level connected to the self-timer shaft trips a switch a few seconds before the shutter is released and turns on a lamp visible from the front of the camera. The lamp indicates that the shutter is about to be released and serves to alert the persons who are about to be photographed.

3,667,368
GEL ROLLER FOR USE IN PHOTOGRAPHIC PROCESSING

Alvin Cronig, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Original application Sept. 3, 1968, Ser. No. 756,797, now Patent No. 3,574,618. Divided and this application Dec. 10, 1970, Ser. No. 96,710
Int. Cl. G03d 3/00
U.S. Cl. 95—89 A 2 Claims

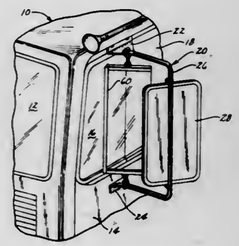


Improved photographic gel processes, apparatus, and compositions wherein the photographic materials are carried in a gel composition. The gel composition preferably comprises the reaction product of a solution of image forming materials and a gel former. Preferably the gel composition structure is heat-reversible and flexible. In a preferred method of this invention, a photosensitive copy medium is exposed and contacted with a gel composition comprising a reaction product of a solution of image forming materials and a gel former. The gel composition is allowed to remain in contact with photosensitive material for a sufficient time to process the exposed photosensitive material. The gel composition is cooled during the processing in order to form a layer which is strippable from the photosensitive material. In one embodiment of this invention, the gel composition is in the liquid or viscous state when it is contacted with the photo sensitive layer. The gel composition also may be in the form of a tape, gel roller, or the like when it is brought into contact with the photosensitive layer. Another preferred embodiment of this invention is where the gel composition is heat reversible and therefore, can be heated after use to convert to a liquid or viscous state and can then be reused in the system which requires a liquid or viscous gel composition for the starting material. A gel comprising a solution of metal ions or physical developer is an especially preferred system.

3,667,369
AIR DEFLECTION PLATE FOR A VEHICLE

Donald D. Smith, 3117 Homeway Drive, Cedar Falls, Iowa

Filed Feb. 19, 1970, Ser. No. 12,594
Int. Cl. B60h 1/24
U.S. Cl. 98—2.12 4 Claims



An air deflection plate for use with a vehicle having a door with a vent window and a door window positioned therebehind. Upper and lower support members are secured to the vehicle door adjacent the upper and lower ends of the vent window. A U-shaped support extends outwardly from the support members and has a rear view mirror operatively secured thereto. The deflection plate is frictionally pivotally secured at its upper end to the upper support member and is frictionally pivotally secured at its lower end to the lower support member. The air deflection plate is comprised of clear safety plate glass and has an inner side edge which is complementary in shape to the exterior surface of the vent window. The air deflection plate is movable from a first position wherein the inner side edge of the plate is positioned closely adjacent the vent window to prevent air currents from passing between the air deflection plate and the vent window so that the air currents are deflected outwardly and rearwardly therefrom. A resilient molding strip is secured to the inner edge of the air deflection plate to effectively seal the inner side edge of the air deflection plate against the vent window. The air deflection plate is also pivotally movable to a second position wherein the inner side edge thereof is positioned forwardly and outwardly of the trailing edge thereof so that air currents may be deflected into the vehicle cab through the door window when the door window is lowered or opened.

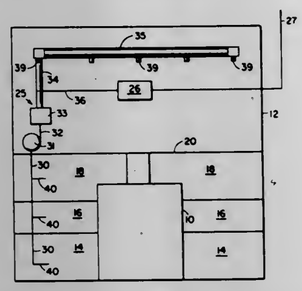
3,667,370
NUCLEAR CONTAINMENT EMERGENCY VENTILATING SYSTEM

John H. Noble, Wellesley Hills, Mass., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Jan. 13, 1970, Ser. No. 2,531
Int. Cl. F24f 11/02
U.S. Cl. 98—33 R 16 Claims

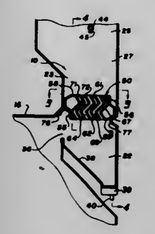
An emergency air mixing and venting system within the containment structure of a nuclear power reactor contain-

ment system mixes gases and vapors contaminated with radioactivity with air contained in the containment structure



prior to passing air in the containment through conventional gas treatment equipment and subsequently discharging it to the outside atmosphere.

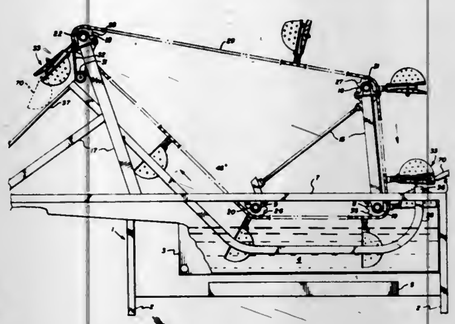
3,667,371
STOVE VENTILATING APPARATUS
Kenneth S. Russell, 3928 Marine Drive, West Vancouver, British Columbia, Canada
Filed Mar. 30, 1970, Ser. No. 23,538
Int. Cl. B01d *45/00*
U.S. Cl. 98—115 K **1 Claim**



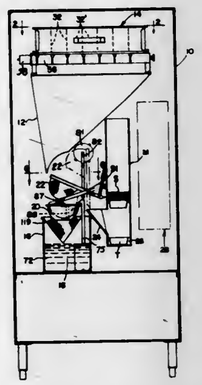
Ventilating apparatus for cooking stoves and other appliances using hot oils and fats and including a duct having an entrance through which grease-laden air enters the duct. A cartridge positioned within the duct is reversible between two operative positions. This cartridge has a passage therethrough in which baffle means is located for causing grease to be deposited in the cartridge, the baffle means being such that it works effectively regardless of which of the two operative positions the cartridge is in. A spray is located above the cartridge to wash the grease off the baffle means and into a trough located beneath the cartridge.

3,667,372
FOOD COOKING APPARATUS
Arthur L. Hilvitz; Philip E. Hilvitz; Harvey M. Hilvitz, and Richard Campbell, all of Pueblo, Colo., assignors to La Tolteca Foods, Inc., Pueblo, Colo.
Filed Nov. 13, 1969, Ser. No. 876,429
Int. Cl. A47J *37/12*
U.S. Cl. 99—404 **19 Claims**

There is disclosed a food cooking apparatus having a conveyor positioned over a cooking vessel. The cooking vessel is filled with frying fat and means are provided for heating the fat to a predetermined temperature. A plurality of normally open food molds are mounted on the conveyor. Uncooked tortilla cakes are loaded into the normally open molds and the conveyor operates to move each loaded food mold into engagement with guides which define a path through the cooking vessel. The guides operate to fold the loaded food molds into a closed position, thereby to form a U-shaped tortilla. Means are also disclosed on each mold to prevent the accidental opening of the mold while it is in the guides. Pusher means are further included in each food mold for automatically discharging cooked tortillas onto a tray.



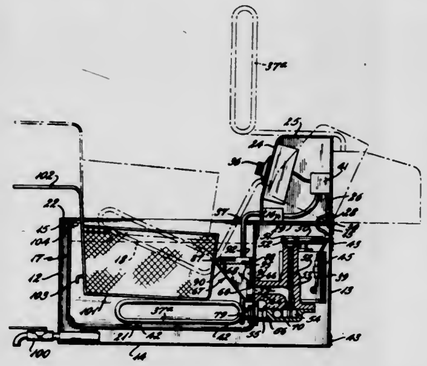
3,667,373
AUTOMATIC MACHINE FOR VENDING FRIED FOODS
Frederic A. Sicher, Glen Ellyn, and Joseph Gaysowski, Westchester, both of Ill., assignors to said Sicher, by said Gaysowski
Filed June 8, 1970, Ser. No. 44,232
Int. Cl. A47J *37/12*
U.S. Cl. 99—407 **19 Claims**



A fried potato vending machine characterized by an upright cabinet having mounted therein a support for a removable multiple bin supply tray adapted to have each bin filled with a predetermined quantity of raw or partially cooked potatoes and a mechanism for feeding the batches of potatoes from successive bins to a hopper which empties into a cooking bowl pivotally mounted above a storage vessel in which a supply of cooking oil is maintained at predetermined temperature by an immersion heater and means for transferring a quantity of the hot cooking oil to the cooking bowl in which successive batches of potatoes are cooked and when cooking is completed, the cooked potatoes are dumped into a serving tray fed from a supply stack, the cooking bowl

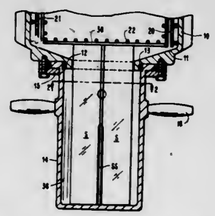
being pivoted, when cooking of each batch is completed, to dump the oil through a removable and replaceable filter member into the storage vessel. Electrical operating and control circuitry, which is actuated by deposit of a coin, includes drive motors and timed switches for operating the feeding and handling mechanisms and provides for heating the oil, the electrical requirements being such that the machine can be operated when supplied with current from a conventional 110–115 Volt current supply line.

3,667,374
DEEP FAT FRYER APPARATUS
Brandon M. Holmes, Nashville, Tenn., assignor to Progressive Products Corporation, Nashville, Tenn.
Filed Oct. 14, 1970, Ser. No. 80,736
Int. Cl. A47J *37/12*
U.S. Cl. 99—408 **6 Claims**



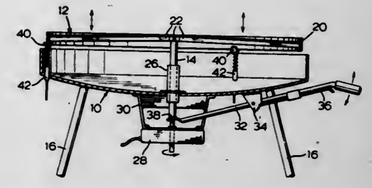
A deep fat fryer having a pump for circulating cooking fluid or oil in a cooking receptacle and a filter for removing foreign substances from the cooking oil. Cooking fluid circulated through the receptacle flow over the heating elements and sweeps along foreign particles in the fluid which are removed by a filter interposed in the flow path of the cooking fluid.

3,667,375
MEANS FOR MELTING CONGEALED LIQUID AND FOR PREVENTING CONGELATION
Eugene A. Pottinger, Louisville, and Winston L. Shelton, Jeffersontown, both of Ky., assignors to Commercial Appliances, Inc.
Filed Feb. 24, 1971, Ser. No. 118,283
Int. Cl. A47J *37/12*
U.S. Cl. 99—408 **2 Claims**



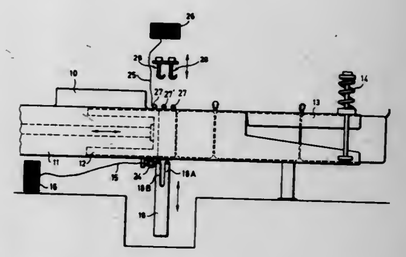
A heat-conductive member having an upper portion in contact with a bath of hot cooking liquid is detachably mounted in a collector unit of a pressure cooking vessel and by its presence serves to melt congealed liquid in said unit and without interference with the normal functioning of the cooking operation.

3,667,376
BARBECUE
Orla D. Thompson, 40 Owen Boulevard, Willowdale, Ontario, Canada
Filed July 11, 1969, Ser. No. 841,020
Int. Cl. A47J *37/07*
U.S. Cl. 99—443 R **6 Claims**



This invention relates to a barbecue that has a rotatably mounted grill for holding the foods in which a device is provided for preventing the travel of liquid fat beyond the outer peripheral edge of the barbecue as the grill is rotated.

3,667,377
TYING MECHANISM FOR BALES
Bengt Ake Persson, Traktorgatan, Sweden, assignor to Personer AB, Ystad, Sweden
Filed Mar. 15, 1971, Ser. No. 124,407
Int. Cl. B65b *13/28*
U.S. Cl. 100—19 **3 Claims**

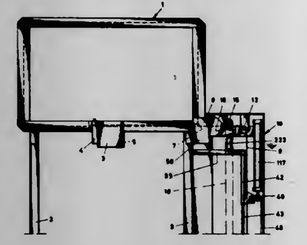


A bale tying mechanism in a bale press comprises a reciprocable forked needle which forms against three spaced intercepting members two standing wire loops in the spaces between the intercepting members. The intermediate intercepting member has co-operating cutting members for severing the wire forming the loops where such wire engages the intermediate intercepting member.

3,667,378
WIRE OR BAND STRAPPING MACHINE
Pieter Arnoldus Van de Bilt, Zeist, Netherlands, assignor to N. V. Metaverpa
Filed Dec. 7, 1970, Ser. No. 95,687
Claims priority, application Netherlands, Dec. 10, 1969, 6918527
Int. Cl. B65b *13/10*
U.S. Cl. 100—26 **2 Claims**

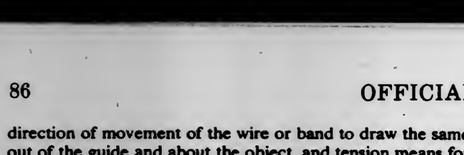
A wire or band strapping machine comprises a driven roll pair for feeding a wire or band toward a guide loop about an object to be strapped, a driven roll pair for reversing the

direction of movement of the wire or band to draw the same out of the guide and about the object, and tension means for tightening the wire or band in that reversed direction. The tension means is disposed between the two roll pairs, with the feeding pair disposed closer to the loop than the reversing



pair with respect to the direction of travel of the wire or band. The wire or band approaches the loop along a horizontal U-shaped path with the feeding and reversing roll pairs operating on the upper and lower horizontal legs of that path, respectively, and the tensioning means acting downwardly on the wire or band in the bend of its U-shaped path.

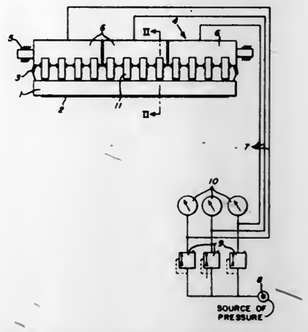
3,667,379
APPARATUS FOR PREFABRICATING WOOD STRUCTURES
Gail H. Templin, Vero Beach, Fla., assignor to Templin Associates, Inc., Vero Beach, Fla.
Filed Jan. 11, 1971, Ser. No. 105,253
Int. Cl. B30b *7/00*
U.S. Cl. 100—139 **15 Claims**



Apparatus for fabricating wood trusses providing a moving jig upon which the metal truss plates are placed in proper position on the tops and bottoms of the joints of the wood truss, and are conveyed by the jig through a first pressure means which partially drive the truss plates into the wood truss at the joints thereof, only forcing penetration sufficient to hold the plates in proper position. A set of pressure rollers through which the truss, with the truss plates partially inserted in the truss, passes for forcing the truss plates into the wood truss into their final joint holding positions. The jib is provided with means for properly positioning the properly maintaining the truss thereon, certain of which are automatically disengaged when the means is reached.

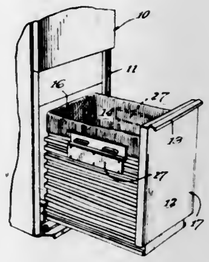
3,667,380
SMOOTHING RULER FOR PAPER GLAZING CALENDERS
Jurgen Schlunke, and Dieter Junk, both of Krefeld, Germany, assignors to Joh. Kleinewefers Sohne Maschinenfabrik, Krefeld, Germany
Filed Sept. 3, 1970, Ser. No. 69,405
Int. Cl. B30b *3/04*
U.S. Cl. 100—161 **7 Claims**

For use in connection with a paper glazing calender, a smoothing ruler the position of which is adjustable by a plurality of pressure members which are vertically movable on a support beam that is pivotally connected to said ruler, said pressure members forming fluid operable plungers which are



remote controlled and operable at variable pressure to press against surface areas of the ruler while a web of material is passed thereover, to smooth out creases in said web.

3,667,381
REFUSE COMPACTOR AND BAG THEREFOR
Michael J. Bottas, St. Joseph, and Charles R. Difley, Niles, both of Mich., assignors to Whirlpool Corporation
Filed Nov. 5, 1969, Ser. No. 874,251
Int. Cl. B30b *15/00*
U.S. Cl. 100—229 A **8 Claims**

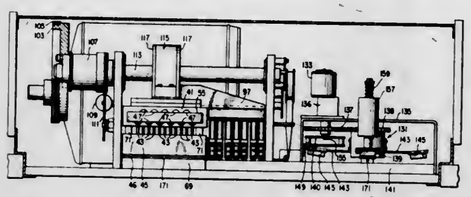


A refuse receiver in a refuse compactor comprising a receptacle having an open top bounded by peripheral edge portions, a refuse holding bag in the receptacle having a double cuff formed by a pair of successive outward folds of the edge of the bag with opposite edge portions of the bag each having a single slit that facilitates folding of the bag sides in the pair of successive outward folds to form the double cuff and with the single slits facilitating the folding without excessive danger of refuse spillage through the bag sides at the slits during removal of a filled bag from the compactor. A refuse holding disposable bag having this construction for positioning in a refuse receptacle having an open top in which refuse is compacted.

3,667,382
PRINTING PUNCHING AND ENCODING APPARATUS FOR FILE FOLDERS AND THE LIKE
Robert P. Kaplan, Tonawanda, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,517
Int. Cl. B41J *11/58*, *1/00*; B41l *19/04*
U.S. Cl. 101—19 **9 Claims**

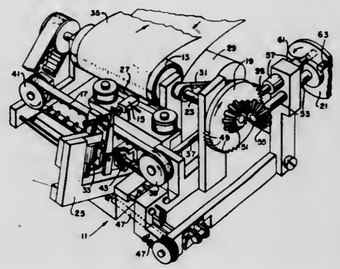
This disclosure describes an apparatus for encoding file folders and the like, said file folders having corresponding

file folder containers in which the file folders are to be stored. The file folders are coded along one edge with perforated digital information, alpha numeric information and color code information by the apparatus of the invention. More specifically, the apparatus includes a means for



punching digital perforations, a means for printing numbers and a means for printing a color code along the edge of a file folder and the like. The punching and printing are all done in accordance with input data derived from the container in which the encoded folder is to be ultimately stored.

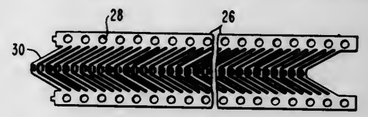
3,667,383
PRINT AND TRANSPORT BELT SYNCHRONIZER
Ronald H. Mack, Plymouth; Nicholas Kondur, Jr., Plymouth Township, both of Mich., and James A. Mitchell, Paris, France, assignors to Burroughs Corporation, Detroit, Mich.
Filed Dec. 23, 1969, Ser. No. 887,605
Int. Cl. B41J *5/00*
U.S. Cl. 101—93 C **9 Claims**



A high-speed serial printer including a continuously rotating print drum having characters on its periphery, a hammer and carrier, and a belt for transporting the hammer and carrier parallel to the axis of drum along a line of print. A control system, including two timing discs, operates in synchronism with the drum. The first disc is indicative of the angular position of the drum and the second disc is to signal the hammer carrier to engage the transport belt at the start of each line of print. A double-ended transducer responds to the two timing discs to provide the appropriate signals for the printer.

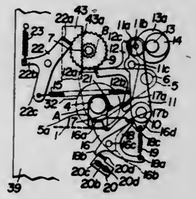
3,667,384
SLOTTED PRINT TYPE BELT WITH ANGULARLY DISPOSED TYPE MOUNTING STRIPS
Albert Snilderman, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 1, 1970, Ser. No. 77,183
Int. Cl. B41J *1/20*
U.S. Cl. 101—111 **5 Claims**

A print type belt provides a flexible band that is slotted to form a plurality of angular mounting strips extending across the band, and a like number of type members removably attached to the strips at their centrally located apexes, the arms of the strips acting to resiliently support the type members



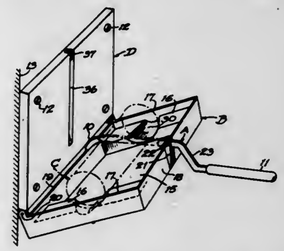
and to maintain their alignment with a print line during a printing operation.

3,667,385
PAPER FEED TABLE LIFTING DEVICE FOR A PRINTING PRESS
Minoru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki-Kaisha Ricoh, Tokyo, Japan
Filed Oct. 8, 1969, Ser. No. 864,830
Claims priority, application Japan, Oct. 11, 1968, 43/74443
Int. Cl. B65h *1/14*
U.S. Cl. 101—232 **5 Claims**



A lifting device for a paper feed table for a printing press which operates to lift a table, by rotation of a pinion meshing with a rack connected to the table and disposed substantially vertically, when the height of a stack of printing sheets on the feed table is decreased during printing. A ratchet wheel is rotatable with the pinion and a pawl means is movable into and out of engagement with the ratchet wheel, for intermittently rotating the latter. The pawl means normally is retained out of engagement with the ratchet wheel, and is brought into engagement therewith only responsive to a predetermined reduction in the height of the stack of sheets on the printing table. Thereupon, the feed table is lifted through a distance corresponding to the reduction in the height of the stack of sheets thereon.

3,667,386
CAN CRUSHER
Grandell H. Workman, 1845 Federal Ave., Los Angeles, Calif.
Filed May 7, 1971, Ser. No. 141,232
Int. Cl. B30b *7/00*
U.S. Cl. 100—233 **8 Claims**



An apparatus for two-stage crushing of a can, the center of the can being first collapsed by a lever finger while the ends

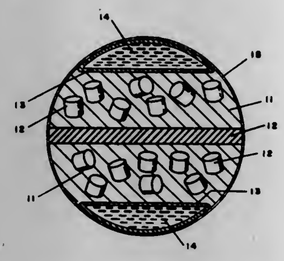
of the can are supported on shoulders at the sides of a swinging jaw on which the lever is fulcrumed, the ends of the can being tilted inwardly by such central collapse, and the tilted ends then being pushed against a fixed anvil to which the swinging jaw is hinged, resulting in the can being crushed flat between the jaw and the anvil.

3,667,387

SELF-DESTRUCT LAND MINE

Jean P. Picard, Morristown; Thomas E. Dunigan, Oak Ridge, and Lawrence W. Pell, West Orange, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 19, 1971, Ser. No. 107,766
Int. Cl. F42b *23/00*
U.S. Cl. 102—8 **7 Claims**



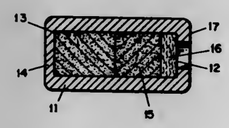
A land mine capable of self-destructions after a selected period of time which includes a central portion of a friction sensitive material capable of supporting self combustion. A layer of white phosphorus disposed so as to surround and directly contact said friction material and having embedded therein a plurality of explosive pellets. One or more thin wall, frangible, glass vials containing a vaporizable solvent, abutting at least a portion of said white phosphorus and facing outwardly thereof. The entire structure being coated with an elastic material which is soluble under the action of said solvent. There is specifically disclosed the use of acetone in conjunction with a nitrocellulose coating and a generally spherical configuration. The mine being capable of initial activation by pressure applied thereto, which, ignites the frictional material and in turn the phosphorus. The ignited phosphorus detonates the explosive pellets. The self-destruct operation commences when the mine is dropped, as for example, from an airplane, and the glass vial is broken thus releasing the solvent which starts the dissolution of the nitrocellulose outer film. When dissolved the phosphorus is exposed to the atmosphere and self destruction is initiated thus providing in addition, a visual indication of activation and self-destruction.

3,667,388

EXPLOSIVE INITIATING DEVICES

Robert W. Heinemann, 147 Elm St., Dover, N.J.

Filed July 1, 1969, Ser. No. 838,120
Int. Cl. F42b *3/12, 3/18*
U.S. Cl. 102—28 R **2 Claims**



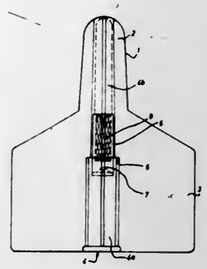
Explosive initiating devices constructed to permit a volatile liquid to penetrate into the housing, thereby saturating the explosive to prevent inadvertent initiation of the devices. Subsequent evaporation of the liquid from the explosive, over a predetermined interval of time, arms the devices.

3,667,389

SKEET SHOOTING ARRANGEMENT

Claude H. Tritenne, 5, rue des Mesanges (Haute-Savoie), Gaillard, France

Filed Mar. 16, 1970, Ser. No. 19,791
Claims priority, application France, Mar. 21, 1969, 6908230
Int. Cl. F42b *15/00*; F41c *27/06*
U.S. Cl. 102—34.1 **4 Claims**



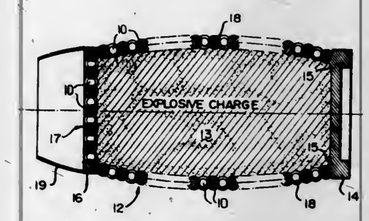
A skeet shooting assembly wherein the skeet has a hollow central channel with a cartridge therein. The ignition of the cartridge charge is accomplished by means of a fuse fired by an elongated fuse firing element, preferably of pistol-type which penetrates the central channel and engages the cartridge.

3,667,390

EXPLOSIVE WEAPONS AND FRAGMENTARY ELEMENTS THEREFOR

Gunnar F. A. Medin, and Erik G. Olsson, both of Eskilstuna, Sweden, assignors to Forsvarets Fabriksverk, Eskilstuna, Sweden

Continuation-in-part of application Ser. No. 686,189, Nov. 28, 1967, now abandoned. This application Oct. 29, 1969, Ser. No. 872,153
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **7 Claims**



An explosive weapon and a fragmentary element therefor are disclosed. The explosive weapon comprises an explosive charge and a means to combine a plurality of fragmentary elements with the explosive charge to form an explosive assembly. Each of the fragmentary elements comprises a member having the general shape of a sphere. Each of the members has six flat surfaces located along the greatest diameter of the sphere. This greatest diameter occurs along the great circle or equatorial zone of the spherically shaped member. Each of the flat surfaces intersects the next adjacent flat surface at the greatest diameter of the sphere.

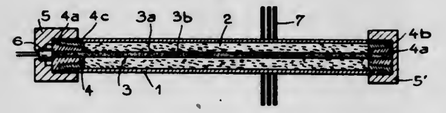
Therefore, a cross section through the element in a plane including the greatest diameter and the center of the sphere has a regular hexagonal shape. The flat surfaces are adjacent elements adapted to be facially disposed to prevent rotation of the elements with respect to each other. These flat surfaces are further adapted to join other flat surfaces located in the structure of the explosive weapon. The fragmentary element has an air resistance that is only slightly greater than the air resistance of a totally spherical member of corresponding size. In more specific embodiments of the weapon, the fragmentary elements are in flat surface to flat surface contact to form rows adjacent each other. The elements of adjacent rows interlock each other to prevent shifting of the rows with respect to each other.

3,667,391

DETONATOR AND IGNITER FOR EXPLOSIVES

Rene' Amiable, Sevran; Jean-Noel Lhuillier, Vert-le-Petit, and Paul Benkheiri, Sevran, all of France, assignors to Etat Francais represente par Le Ministre des Armees, Delegation Ministerielle pour L'Armement (Direction Des Poudres), Paris, France

Filed May 1, 1969, Ser. No. 820,902
Claims priority, application France, May 17, 1968, 68152245
Int. Cl. F42c *19/08*
U.S. Cl. 102—70 **2 Claims**



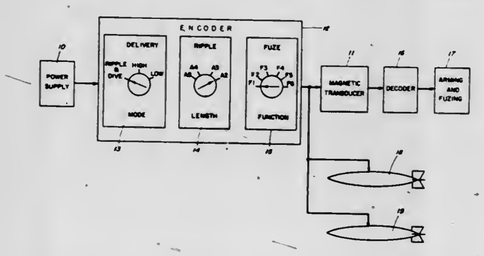
A detonating fuse suitable for an igniter of propelling charges, which comprises a narrow metal sheath of lead or tin containing a mixture of a secondary explosive with a non-explosive ignition-booster. The invention also includes an igniter containing the detonating fuse.

3,667,392

ORDNANCE FUZE ENCODING AND DECODING SYSTEM

Rodney E. Grantham, Bethesda; John H. Malloy, Silver Spring, and Frederick E. Warnock, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Apr. 6, 1970, Ser. No. 25,942
Int. Cl. F42c *13/00, 15/24, 11/02*
U.S. Cl. 102—70.2 R **12 Claims**



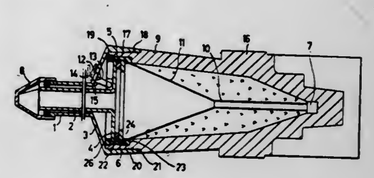
An ordnance fuze system includes a source of D.C. voltages and an encoder located on an ordnance delivery vehicle, such as an aircraft, and a magnetic transducer, decoder, and arming and fuzing circuit located on an ordnance device, such as a bomb. A ternary voltage code is encoded on the aircraft to select the delivery mode, arming time, and fuze options of the bomb. The coded signal is transferred to the bomb at aircraft-bomb separation via the transducer and decoded in the decoder, which includes a plurality of SCR's and switch actuators, to initiate the arming and fuzing circuit which includes a plurality of fuze sensors, energy storage devices, switches, and an arming motor. The encoder includes a mechanically initiated ripple option.

3,667,393

ELECTRIC FUZE FOR SHAPED-CHARGE MISSILES

Lars Bertil Aronsson; Anders Bertil Arnell, both of Eskilstuna, and Ulf W. Molitor, Torshalla, all of Sweden, assignors to Forsvarets Fabriksverke, Eskilstuna, Sweden

Continuation-in-part of application Ser. No. 686,068, Nov. 28, 1967. This application July 24, 1969, Ser. No. 844,554
Int. Cl. F42c *13/00*
U.S. Cl. 102—70.2 **1 Claim**



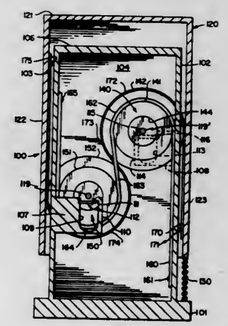
An electric fuze for a shaped-charge missile, said missile having an outer and an inner front closure plate, said plates being spaced apart by an air gap, a tubular stand-off member projecting forwardly from said front closure plates and comprising an outer and an inner tube spaced by an air gap, said tubes being mechanically and electrically connected to different ones of said outer and inner front closure plates, a piezoelectric crystal element being located behind said front closure plates and connected in a circuit comprising an electric fuze, said front closure plates, said tubes and said air gaps, so that initiation of the fuze occurs when the front portion of the missile is deformed and one or both of said air gaps is short-circuited and said piezoelectric crystal generates an electric pulse.

3,667,394

ROLAMITE SAFETY AND ARMING MECHANISM

David W. Lewis, Charlottesville, Va., assignor to The United States of America as represented by the Secretary of the Army

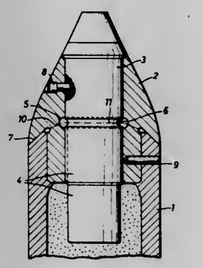
Filed Jan. 21, 1971, Ser. No. 108,540
Int. Cl. F42c *15/24*
U.S. Cl. 102—78 **11 Claims**



An inertial operated fuzing and arming mechanism having two telescoping encasing members and a pair of rollers held within said encasing members and a pair of rollers held

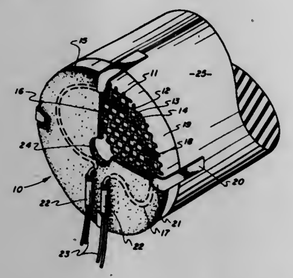
within said encasing members by a plurality of S-shaped flexible bands, each band engaging different diameter portions of the rollers and the ends of the bands being attached to the inside of said encasing members. A detonator and explosive are associated with one of said encasing members and one of the rollers and the other encasing member has an aperture therein so that when said two encasing members and said roller are aligned, the fuze is activated to detonate the explosive.

3,667,395
DUMMY SHELL
Rudolf Romer, and Heinz Hap, both of Dusseldorf, Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed May 26, 1969, Ser. No. 827,727
Claims priority, application Germany, June 1, 1968, P 17 03 518.6
Int. Cl. F42b 5/22
U.S. Cl. 102—92.7 **3 Claims**



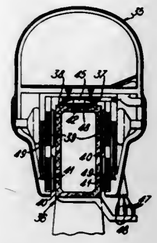
A dummy shell with a screwed-in impact-ignition-and-decomposition device which comprises means for weakening the cross-section of the head of the shell at a set breaking point within the range of the connecting plane between the impact-ignition device and the decomposition device. By this arrangement it is brought about that upon inclined or flat impact of the shell, the impact-ignition-device separates itself from the decomposition device, and the latter remains in the jacket of the shell.

3,667,396
SOLID PROPELLANT GRAIN IGNITER
Donald H. Barrett, Waco, Tex., assignor to North American Rockwell Corporation
Filed Apr. 2, 1969, Ser. No. 812,935
Int. Cl. F42b 1/00
U.S. Cl. 102—101 **8 Claims**



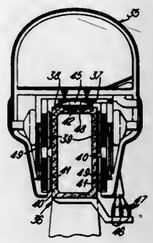
An igniter for a solid propellant grain having a perforated sheet substrate, which serves as a support structure for a flexible pyrotechnic coating applied to either one side or both sides of the sheet and extending into the interstices of the sheet, and an igniter cord attached to the sheet in which said cord contains a detonating-igniting composition which when initiated by a squib produces hot particles to penetrate the sheet interstices and ignite the coating.

3,667,397
LINEAR INDUCTION MOTOR SECONDARY MEMBER
Richard Humphrey Haynes, Hemingford Grey, England, assignor to Tracked Hovercraft Limited, London, England
Filed June 25, 1971, Ser. No. 156,624
Int. Cl. H02k 41/04
U.S. Cl. 104—148 LM **14 Claims**



The secondary member in or for a linear induction motor of the single-sided and short stator variety is mounted generally horizontally for co-operation with a linear induction motor primary member carried above it. The secondary member comprises a rolled aluminum reaction plate with downwardly-inclined side edges, and magnetic material which is interposed between the track and the plane central part of the reaction plate. The reaction plate extends beyond the magnetic material along either side, and supports are provided for supporting the overhanging portions from the track inwardly of the downwardly-inclined parts. The reaction plate is secured in position by members which are attached to the track along either side of the secondary member and which abut the upper surfaces of the downwardly-inclined parts of the reaction plate.
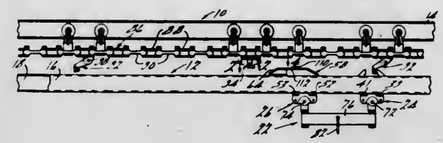
3,667,398
LINEAR INDUCTION MOTOR SECONDARY MEMBER
Christopher Durrant English, Burwell, England, assignor to Tracked Hovercraft Limited, London, England
Filed June 25, 1971, Ser. No. 156,625
Claims priority, application Great Britain, June 26, 1970, 31,143/70
Int. Cl. H02k 41/04
U.S. Cl. 104—148 LM **14 Claims**



The secondary member in or for a linear induction motor of the single-sided and short stator variety is mounted generally horizontally for co-operation with a linear induction motor primary member carried above it. The secondary

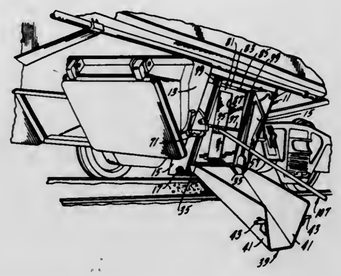
member comprises an aluminum reaction plate disposed above magnetic material which supports it from the track. The reaction plate is wider than the magnetic material and extends beyond it along either side of the secondary member at side portions which in operation provide the longitudinally extending parts of the current paths in the reaction plate. The reaction plate is clamped down on to the track by clamping devices which produce clamping forces on the undersides of the side portions immediately adjacent the magnetic material.

3,667,399
POWER AND FREE CONVEYOR SYSTEM
Adolph Czarnecki, Birmingham, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.
Filed Sept. 3, 1969, Ser. No. 854,817
Int. Cl. B65g 17/42
U.S. Cl. 104—172 S **7 Claims**



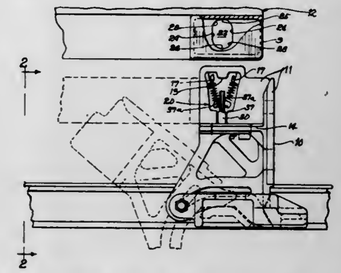
A power-and-free conveyor system of the type having work carriers each consisting of coupled front and rear trolleys adapted to be propelled along a track by lugs on an overhead chain drive and each adapted further to be disconnected from the drive in a localized close pack section of the conveyor by a cam plate on the rear trolley of the preceding carrier, and wherein the drive and the cam plate of each carrier have novel means which are uniquely cooperative to prevent the carrier from back-sliding on inclined portions of the track in the event the front trolley thereof inadvertently becomes uncoupled from the drive and also to more effectively and efficiently transfer the carrier through a switch point from one conveyor to another or from a conveyor onto a spur track for storage or the like.

3,667,400
RAILWAY BALLAST DISTRIBUTING CAR DOOR ASSEMBLY
Sergio Rene Damy, Apartado Postal "A" 2041, Guadalajara, Jalisco, Mexico
Filed Nov. 3, 1970, Ser. No. 86,486
Int. Cl. B61d 7/18, 7/26; F07t 5/27
U.S. Cl. 105—239 **4 Claims**



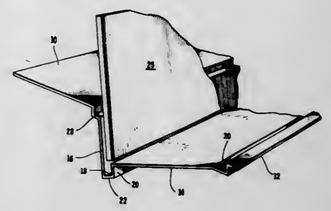
A terracing door assembly for a railway hopper car having an outer door which also functions as a chute and an inner ballast flow control door. A mechanism is provided to lock the outer door in its closed position and also in several lowered and open positions. The inner ballast flow control door may be opened to a variety of positions ranging from fully closed to fully opened and may be locked in these positions by means of a sliding locking bar whose ends ride in guides located on opposite sides of the ballast discharge opening. A tool is provided for opening and closing the inner ballast flow control door.

3,667,401
CONTAINER RETAINING LATCH MECHANISM
Phillip D. Schwiebert, Glencoe, and Edward S. Steck, Chicago, both of Ill., assignors to MacLean-Fogg Lock Nut Co., Mundelein, Ill.
Filed Feb. 14, 1969, Ser. No. 799,400
Int. Cl. B65J 1/22; B60p 7/08
U.S. Cl. 105—366 D **11 Claims**



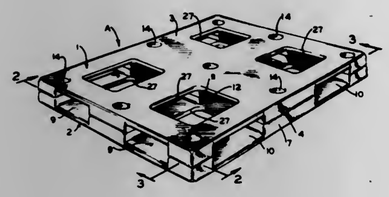
A latch mechanism including a pivotable clasp biased for engagement with a catch opening in a container part. The clasp has a head portion with a cam surface of steep incline and a detent surface of slight incline, with respect to the plane of a catch support having an opening through which the clasp extends, whereby bias is easily overcome through engagement of the detent surface for latching engagement, and retention force is large, as a result of the steep angle of the cam surface. Space for lateral play of the clasp element in its receiving opening of the container, together with wedge sides of the clasp and rounded surfaces of the catch opening compensate for off-center variations therebetween upon initial container seating. Bias springs acting upon the clasp form the arms of a lateral "Y" configuration, respectively, to balance, center and stabilize the clasp upon final container seating.

3,667,402
SHELF FOR BOOKS
Kent M. Graves, 71 West Ave., Apt. #12, Brockport, N.Y.
Filed May 3, 1971, Ser. No. 139,586
Int. Cl. A47b 85/00
U.S. Cl. 108—12 **2 Claims**



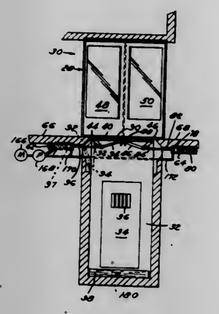
The invention relates to a shelf for books or the like having an insert which allows the shelf to be easily converted for use with either normal or conventional sized books in one instance or smaller books such as paperbacks in another instance.

3,667,403
PALLET
John A. Angelbeck, Jr., Chesterfield, Mo., assignor to Pack-Rite Packaging & Crating Co., Inc.
Filed June 11, 1970, Ser. No. 45,511
Int. Cl. B65d 19/18
U.S. Cl. 108—58 10 Claims



A pallet used for the storage and transporting of load bearing structures. The pallet is formed by securing two mating unitary plastic members by means of bolts or other fasteners. The two plastic members are formed in a rotational molding operation and each includes a pair of spaced outer skins which are internally connected by a plurality of properly spaced webs for internal strength. The skins also have a plurality of strategically located apertures which extend through each of the skins.

3,667,404
REVOLVING DOOR LOCK MECHANISM AND TRAP FLOOR ASSEMBLY
Ernest Foster, 4793 Concord Avenue, Detroit, Mich.
Filed Jan. 18, 1971, Ser. No. 107,096
Int. Cl. E05g 3/00
U.S. Cl. 109—8 8 Claims



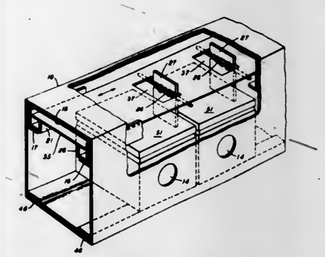
The revolving door lock mechanism and trap floor assembly includes means for automatically locking a revolving door with a person trapped therein from a point remote from the door. A trap floor is provided beneath the door assembly. A room is provided beneath the trap door for incarcerating a person. The trap floor includes means for automatically opening thereof when a person is standing thereon and, subsequently, for automatically closing the floor after the person has fallen into the room beneath the trap floor.

3,667,405
VANDAL RESISTIVE POST
Albert F. Roach, Jr., 8325 Ohio River Boulevard, Pittsburgh, Pa.
Filed Oct. 29, 1970, Ser. No. 85,113
Int. Cl. E05g 1/04; E04h 12/18
U.S. Cl. 109—51 10 Claims



A compound post for supporting publicly used parking meters, fine boxes, vending machines, money changers, and other related publicly used facilities, the post being so designed as to prevent the vandalism and/or theft of the supported facility, and wherein the compound post includes an upright pipe having its lower end ground secured, the facility mounted for rotation about the axis of the pipe at its upper end, and at least one other pipe telescoped over the upright pipe for free rotation thereon to resist the action of a cutting tool applied thereto, the other pipe extending substantially the entire distance between said facility and the ground.

3,667,406
PORTABLE SECURITY VAULT
Frank Joseph Shea, 258 East Shore Trail, Sparta, N.J.
Filed Sept. 2, 1970, Ser. No. 68,813
Int. Cl. E05g 1/00
U.S. Cl. 109—57 34 Claims



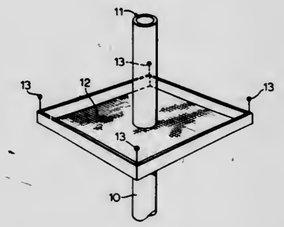
A portable security vault for temporarily storing coin boxes in transit as collected from vending devices, telephone pay stations and the like includes an elongated tube open at opposite ends, a member coextensive lengthwise with the tube and slidable interiorly thereof, and a plurality of paddles spaced vertically along a lengthwise axis of the member to provide tandem spaces between adjacent paddles to store the respective coin boxes therein. The paddles are restricted to rotation in a given direction from normal perpendicular positions to permit the insertion of coin boxes into the spaces at a tube predetermined end and the ejection of the stored coin boxes at the tube opposite end, the latter being responsive to repetitive insertion and withdrawal movements of the slidable member thereat. An arrangement for locking the paddle member to the vault structure precludes unauthorized retrieval of the stored coin boxes at the tube predetermined end. The tube ends may be lock-enclosed as desired.

3,667,407
INCINERATOR
Conrad H. Miller, Rogers, Ark., assignor to Hoyt Corporation, Rogers, Ark.
Filed Oct. 13, 1970, Ser. No. 80,351
Int. Cl. F23g 9/00
U.S. Cl. 110—18 C 5 Claims



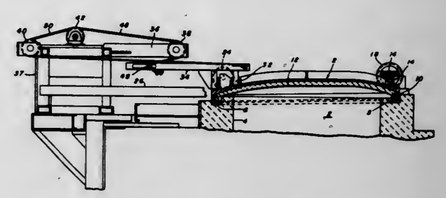
An upright incinerator has a burner at the bottom and a removable one-piece combined grate and flue. This removable unit comprises a bundle of upright bars that define the flue. A grate of bar stock mounted adjacent the lower end of the upright bundle comprises a plurality of circular bars interconnected to the flue by outwardly extending bars. The unit rests removably on the grate.

3,667,408
FLARE STACK
Victor Jasinsky, and Ambrose T. Upfold, both of Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited
Filed Aug. 4, 1970, Ser. No. 60,831
Int. Cl. F23j 15/00
U.S. Cl. 110—119 7 Claims



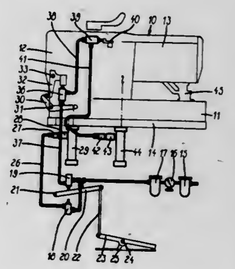
Flare stack smoke is reduced or eliminated by controlling the temperature of the flare. Said temperature is sensed by a sensing element e.g. one or more thermocouples connected in parallel and located in the vicinity of the flare; the sensing element produces a signal which directly or indirectly activates steam control valve to adjust the flow of steam to the tip of the flare stack so as to raise or lower the flare temperature to the temperature of optimum combustion of flare stack effluent.

3,667,409
SOAKING PIT
Fred J. Motz, McKeesport, and Stephen Shufran, North Versailles, both of Pa., assignors to United States Steel Corporation
Filed July 30, 1970, Ser. No. 59,408
Int. Cl. F23m 7/00
U.S. Cl. 110—173 A 5 Claims



A soaking pit has a sand seal for the cover of its opening which extends around the top of the walls of the pit. The bottom of the sand seal trough is lower at the cover approach end than at the opposite end and the trough slopes upwardly along each side from the approach end. A peripheral flange on the cover extends into the sand in the trough with the bottom of the flange being spaced the same distance from the bottom of the trough around its periphery. Improved means for moving the cover between operative and inoperative positions includes a drum mounted on a fixed frame. The drum rotates about a generally horizontal axis transverse to the direction of movement of the cover. A first sheave is mounted on the stationary frame substantially parallel to the drum on the side thereof toward the pit opening, a wire rope passes around the first sheave with one end secured to the drum and the other end secured to the cover. A second sheave is mounted on the frame substantially parallel to the drum on the side thereof away from the pit opening. A second rope passes around the second sheave with one end attached to the drum and the other end attached to the cover. The drum is rotated by a reversible motor to move the cover.

3,667,410
DRIVE AND CONTROL SYSTEM IN SEWING MACHINES PRODUCING GROUPS OF STITCHES
Nereo Bianchi, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy
Filed Apr. 23, 1970, Ser. No. 31,252
Claims priority, application Italy, Apr. 23, 1969, 32410 A/69
Int. Cl. D05b 69/20
U.S. Cl. 112—67 1 Claim



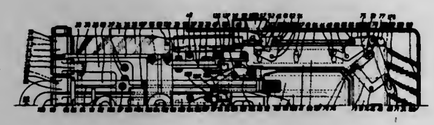
The present invention is a pneumatically actuated control system for sewing machines to begin and end the sewing cycle and simultaneously to place and retain the work clamp

or presser foot into proper relationship with the material during the sewing cycle and comprises a first pneumatic circuit of a control valve, adjustable inlet valve and exhaust valve which circuit is mechanically linked to the sewing cycle control element in the sewing machine and a second pneumatic circuit of a first control valve, a second control valve actuated by the mechanical linkage of the first circuit, a third control valve actuated by the work clamp control element in the sewing machine, an adjustable inlet valve, and an exhaust valve which second circuit is mechanically linked to the work clamp and means to selectively actuate the control valve of the first circuit and the first control valve of the second circuit.

3,667,411
APPARATUS FOR AUTOMATICALLY SEWING PATCH POCKETS ONTO GARMENTS

Silvano Perlino, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

Filed July 14, 1970, Ser. No. 54,723
Claims priority, application Italy, July 21, 1969, 32414 A/69
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **4 Claims**

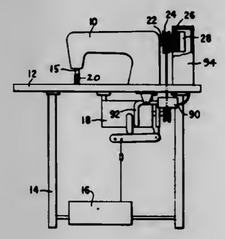


A sewing machine for sewing patch pockets onto garments and comprising a pocket clamping and folding device correlated with a guide system for moving the clamping device relative to the machine needle. The clamping device includes a plurality of pocket forming blades all actuated by a single drive means.

3,667,412
NEEDLE POSITIONING MECHANISM FOR SEWING MACHINES

Martin R. Perla, 75 Lounsbury Road, Fairfield, Conn.

Filed July 2, 1970, Ser. No. 51,833
Int. Cl. D05b *69/22*
U.S. Cl. 112—219 A **12 Claims**

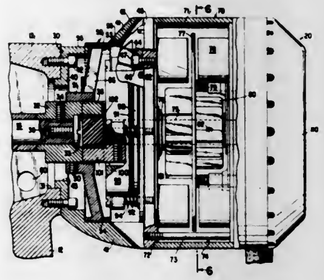


A needle positioning mechanism for a sewing machine in which the needle driving shaft of the sewing head mounts a pair of pulley wheels and a lock wheel. The pulley wheels are mounted with overriding clutches for independently driving the shaft; one pulley wheel connected to the main motor of the machine and the other to an auxillary motor having juxtaposed switches in its circuit; one normally open and the other normally closed. A lock arm having a detent projection at one end is movable by a solanoid energized by an operator into contact with the lock wheel which is provided with at least one detent recess. In its movement against the lock wheel, the lock arm closes the normally open switch as it contacts the surface of the lock wheel, to activate the auxillary motor, and then closes the normally open switch to deactivate the auxillary motor as its projection engages within the detent recess of the lock wheel.

3,667,413
COOLING SYSTEMS FOR SEWING MACHINE DRIVING UNITS

Johann O. Kleinschmidt; Heinz E. Walter, both of Blankenloch, and Helmar H. Holl, Karlsruhe, all of Germany, assignors to The Singer Company, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,139
Int. Cl. D05b *69/00*
U.S. Cl. 112—220 **7 Claims**



An electrically operated driving unit for a sewing machine is supported on the sewing machine in axial alignment with the main shaft of the sewing machine with which the driving unit is operatively connected. The flow of heat from the driving unit to a handwheel on the main shaft adjacent thereto is controlled by an insulated interposer between the driving unit and main drive shaft and by a fan associated with the handwheel for inducing a flow of air to cool the handwheel and the driving unit. Fan means included within a sealed electric motor forming a part of the driving unit also induces transfer of heat generated inside the motor to peripheral portions of the motor which are located within the influence of the air flow induced by the handwheel fan.

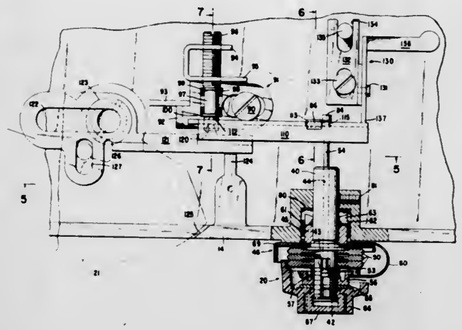
3,667,414
THREAD TENSIONING DEVICE FOR SEWING MACHINES

Stephen J. Illes, Summit, N.J., and Salvatore A. D'Orio, Staten Island, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,430
Int. Cl. D05b *47/00*
U.S. Cl. 112—254 **5 Claims**

A needle thread tensioning mechanism for a sewing machine which is arranged in the removable top cover of a sewing machine bracket arm. A diminutive thread engaging

head and operator influenced tension adjusting member protrude exteriorly of the top cover, while the mechanisms

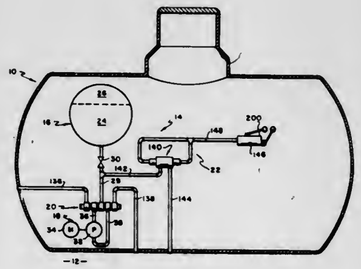


for influencing the tension imposed upon the thread and a tension releasing means are carried inside the top cover.

3,667,415
BUOYANCY CONTROL SYSTEM FOR DEEP DIVING SUBMERSIBLES

Roland W. Robbins, Jr., Arnold, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 26, 1970, Ser. No. 84,010
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 E **6 Claims**

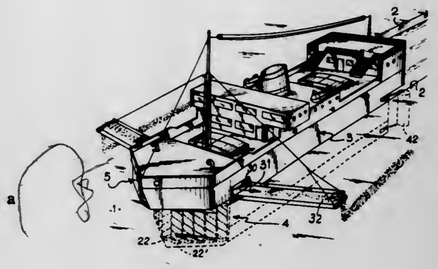


A buoyancy control system for a submersible having a hard ballast tank, a pump, an automatic spool positioning valve and a metering valve for transferring water ballast between the tank and ambient regardless of the direction in which the pressure gradient is working. The pump is only required to move water in one direction, which is against the pressure gradient, with the automatic spool positioning valve setting itself to control flow in the proper direction. Flow with the pressure gradient is controlled by a metering valve.

3,667,416
DEVICES FOR CUTTING A CHANNEL IN A LAYER OF ICE, AND AN ICE-BREAKER SHIP EQUIPPED WITH SAID DEVICES

Jean Floravanti, 3 Allee du Cedre, Chatenay-Malabry, Hautes de Seine; Robert Lucien Carriere, 28 Avenue Daniells Casanova, Saint-Gratien, Val d'Oise; Paul Thibault, 30 Avenue de Ceinture, Enghien-les-Bains, Val d'Oise, and Alain J. F. R. Floravanti, 3 Allee du Cedre, Chatenay-Malabry, Hauts de Seine, all of France

Filed July 27, 1970, Ser. No. 58,246
Claims priority, application France, Dec. 24, 1969, 6944891
Int. Cl. B63b *35/08*
U.S. Cl. 114—42 **16 Claims**



The invention relates to a method of and devices for cutting a channel in a layer of ice covering the surface of an expanse of water, said method utilizing a rotary cutting device actuated from an independent source of power, the cutting force being directed in a substantially horizontal plane and being applied over a limited ice-cutting front. The broken pieces of ice are given a lateral vertical direction, upwards or downwards, and are ejected outside the edges of the cut channel. The rotary cutting device comprises two sets of spiral-blade cutters with inserted knives, one set on each side of the longitudinal axis, the cutters of each set rotating in opposite direction. An ice-breaker ship incorporating the invention has conveyor means for transferring the cut ice away from the channel, auxiliary screws on each side of the front portion and auxiliary devices at the sides of the stern for varying the direction of the cut channel.

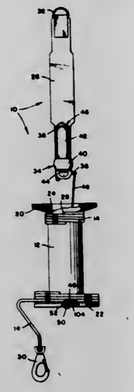
3,667,417
MESSENGER BUOY RECOVERY DEVICE

James D. Clinkenbeard, San Gabriel, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Apr. 24, 1970, Ser. No. 31,715
Int. Cl. B63c *7/02, 7/26*
U.S. Cl. 114—51 **10 Claims**

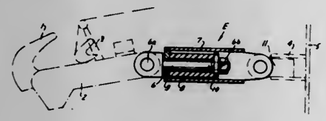
A messenger buoy recovery device which can be attached by a diver to a submerged object including a spool for exteriorly winding recovery cable, the spool having an interior receptacle; an inflatable float which is adapted to be received within said receptacle; means for retaining the float in the receptacle in a deflated condition; and the flat having means for manually pulling the float from the receptacle. The float may be retained within the receptacle by friction between the float and the wall of the receptacle, and means may be provided for automatically inflating the buoy when the buoy is pulled from the receptacle. The recovery device may further

include a winding assembly which has a winding spindle which is adapted to be received by the spool receptacle, and



means may be provided for retaining the spool to the winding spindle.

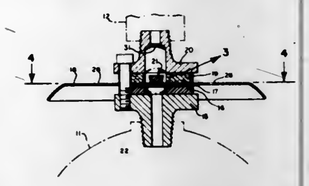
3,667,418
MARINE TOWING DEVICE
Hans-Georg Janssen, Bremerhaven, Germany, assignor to Aktien-Gesellschaft "Weser", Bremen, Germany
Filed Mar. 13, 1970, Ser. No. 24,416
Claims priority, application Germany, Mar. 15, 1969, G 69 10 623
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 A **10 Claims**



A marine towing device has support means which is to be mounted on a marine vessel. A hook is pivotably mounted in a frame and interposed between and connected with both the support means, and the hook is an elastically yieldable unit which yields elastically to a predetermined maximum extent if tensile forces develop between the support means and the hook, as when the latter is engaged with an element to be towed.

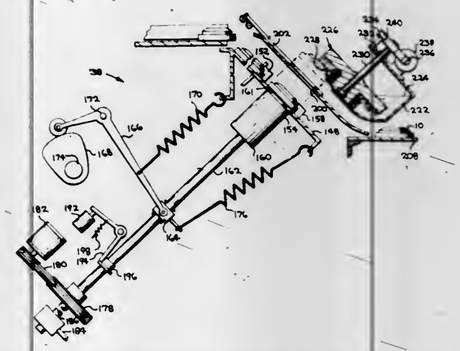
3,667,419
PRECISION TEMPERATURE DETECTION AND ALARM SYSTEM
Joseph T. Sullivan, Huntingdon Valley, Pa., assignor to Standard-Farrington Alarm & Signal Corp., Trevose, Pa.
Filed Sept. 28, 1970, Ser. No. 76,017
Int. Cl. G08b *17/00*
U.S. Cl. 116—106 **4 Claims**

A temperature sensing and alarm system for quickly and accurately sensing a sharply defined temperature threshold, comprising a Freon powered horn, the Freon stored in a cylinder and normally blocked from passage to the horn by a eutectic pellet bonded in a brass cup and blocking a Freon release orifice. A heat collector is held in tight contact with an activator disc which contains the aforementioned cup, the cup having angled side walls of a thickness less than the disc portion in contact with the heat collector, thereby providing rapid and uniform heat transfer to the inter-molecular bond between the pellet and the cup, the rapid heat transfer at the



eutectic temperature permitting a smaller disc orifice through which sufficient Freon pressure is applied to expel the pellet from the cup at precisely the eutectic temperature.

3,667,420
FRANGIBLE TARGET APPARATUS
Eli H. Mechling, 2881 McClain Road, Lima, Ohio
Filed Oct. 19, 1970, Ser. No. 81,956
Int. Cl. B05c *1/02, 11/14*
U.S. Cl. 118—6 **10 Claims**

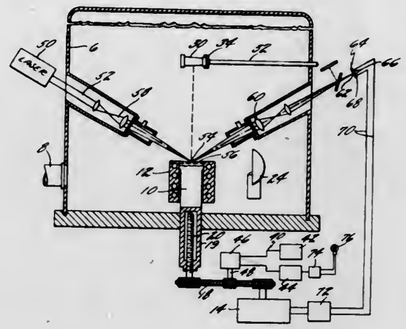


Apparatus for handling and painting clay pigeons or targets is provided. The clay targets are fed in a line along a conveyor and are then formed into two lines, and subsequently four lines, after which the targets are sequentially removed from each of the four lines of the conveyor. The clay targets are then fed to four painting positions. In each position, the target is moved upwardly by a plunger into contact with a circular brush. The brush is located at an angle to the vertical with a lower portion submerged in a receptacle of paint and the target is positioned to one side of the receptacle so that if the target should be broken, it will not tend to fall into the receptacle. The target is rotated by its support while in contact with the brush and the brush is periodically, incrementally rotated to supply additional coating material from the receptacle.

3,667,421
MECHANISM FOR CONTROLLING THE THICKNESS OF A COATING IN A VAPOR DEPOSITION APPARATUS
Mitchell J. Bala, Enfield, and Sol S. Blecherman, Newington, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation-in-part of application Ser. No. 806,872, Mar. 13, 1969, now abandoned. This application Sept. 17, 1970, Ser. No. 72,966
Int. Cl. B05c *11/00;* **C23c** *13/08*
U.S. Cl. 118—7 **2 Claims**

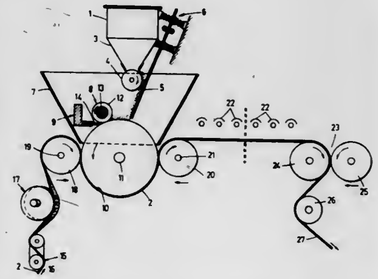
Apparatus for accurately determining and continuously measuring the thickness of a coating deposited on a substrate

in a vacuum deposition chamber and for terminating the coating operation after the desired thickness is obtained, the apparatus utilizing a mechanical counter for determining the length of ingot fed to the crucible in combination with a



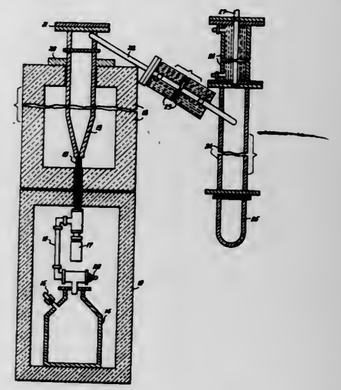
precision laser device for maintaining a constant pool level in the crucible since the length of ingot fed is a direct indication of the thickness of the coating deposited.

3,667,422
APPARATUS FOR TRANSFERRING A PARTICULATE MATERIAL TO A WEB
Benno Saladin, Sirnach, Switzerland, assignor to Saladin A. G., Sirnach/TG, Switzerland
Filed Nov. 14, 1968, Ser. No. 775,819
Claims priority, application Austria, Nov. 20, 1967, A 10399/67
Int. Cl. B05c *1/08, 1/16*
U.S. Cl. 118—34 **8 Claims**



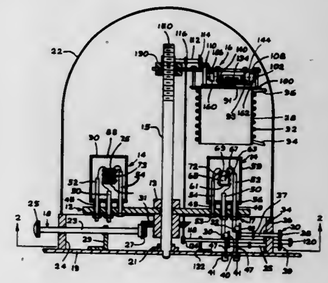
A device for adding a thermoplastic or thermosetting material to a receiving web includes means for distributing a particulate material throughout recesses or grooves defined on the surface of an endless member such as a continuously rotating drum. The grooves which have been filled with the material are then moved into association with a web of a material such as a textile material which is moved into contact with the drum and at the same speed as the drum while it is maintained at a temperature great enough to cause the tackiness and adherence of the particulate material to the web in the pattern defined by the grooves of the drum. The granules are advantageously directed to the top face of the drum as it rotates and the web is advantageously delivered to a location at which it feeds around a major portion of the lower part of the drum surface. A pressure roller is located at the infeed of the web and at the outfeed of the web and is advantageously maintained in a heated condition to provide a temperature to facilitate the transfer of the thermoplastic material from the grooves of the drum to the surface of the web. The particulate coating material is delivered to the backing material web at a coating station while the material is maintained at a temperature lower than that at which it is applied to the backing material. Conversely, the backing material is maintained at or heated to a temperature at which the particulate material will become tacky and move into adhering engagement with the backing material as it is transported into association therewith at the coating station.

3,667,423
METAL VAPOR COATING APPARATUS
Adrian Monroe Gammill, Ashton, Md.; Franklin Keith Guinn, Johnson City, Tenn.; Urban S. Bird, Unicoi, Tenn., and William R. Householder, Erwin, Tenn., assignors to Nuclear Fuel Services, Inc., Wheaton, Md.
Filed Dec. 6, 1968, Ser. No. 781,928
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **3 Claims**



An apparatus for coating nuclear fuel particles with a metal by the decomposition of the metal salts and the deposition of the free metal on the fuel particles.

3,667,424
MULTI-STATION VACUUM APPARATUS
William L. Cornelius, Mountain View, and John G. Martner, Atherton, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Apr. 14, 1969, Ser. No. 815,814
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.5 **7 Claims**



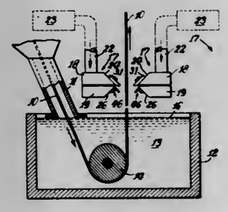
A high-current vacuum system suitable for on-vacuum deposition of multiple layers onto a substrate. A vacuum

chamber encloses a stationary substrate holder disposed above a plurality of vapor sources utilizing diverse heating elements. The vapor sources are arranged on a rotatable support for sequential movement to a deposition station for the vaporization and deposit of low and high temperature metals and dielectrics. Manipulators for making and breaking electrical contact to the station and for rotation of the support are positioned without the chamber and are externally operated to change sources without breaking vacuum. A liquid nitrogen cooled cold cam is situated between the station and the substrate support to funnel the vapor stream toward the stationary substrate target.

3,667,425
APPARATUS FOR CONTROLLING COATING THICKNESS

Wright D. Bozeman, Calumet, Ill., and Clifford D. Blackwell, Crown Point, Ind., assignors to Inland Steel Company, Chicago, Ill.

Filed Mar. 1, 1971, Ser. No. 119,479
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **8 Claims**

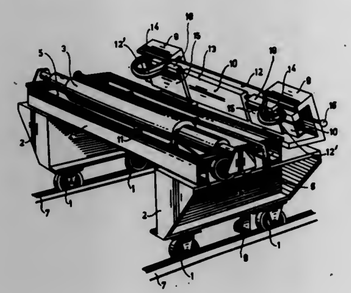


A blowing nozzle for controlling coating thickness in continuous hot dip metal coating has an elongated orifice arranged in a plane perpendicular to the plane of the vertically moving strip. A deflector is mounted on the upper side of the nozzle for diverting the effluent gas stream downwardly at an angle against the strip. A guard is mounted on the lower side of the nozzle to prevent deposition of coating metal on the nozzle in the vicinity of the orifice and on the deflector plate.

3,667,426
DEVICE FOR APPLYING GLUE TO THE SUPPORTING BELT OF A SCREEN PRINTING SCREEN

Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Apr. 15, 1970, Ser. No. 28,622
Claims priority, application Netherlands, May 2, 1969, 6906722
Int. Cl. B05c *11/04*
U.S. Cl. 118—123 **4 Claims**

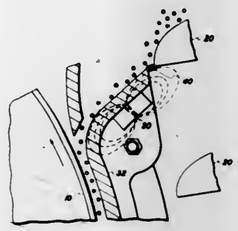


Device for applying a film of glue to a travelling belt of a screen printing machine, especially for textile fabric, said device comprising a roller contacting the belt along a genatrix on one side and dipping into a glue trough on the opposite side, further comprising a flexible doctor lying mainly parallel to said roller and having means to curve an adjustable length of both end parts towards said roller.

3,667,427
IMPROVED CASCADE APPARATUS

Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,488
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **3 Claims**

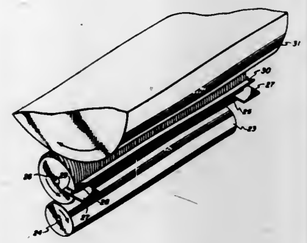


Improved cascade apparatus for developing electrostatic images wherein a latent electrostatic image supported on a moving member is developed by cascading a flow of developer material including a magnetic component and an electroscopic component through a development zone. A chute receives a sufficient quantity of the developer material from a conveyor which moves the developer material in buckets from a sump and unloads a developer material at the inlet side of the chute. A magnetic member is positioned at the inlet side of the chute in close proximity to the path of the conveyor to affect the buildup of the magnetic developer material in the path of the conveyor buckets such that a sufficient quantity of the developer material is directed along the chute into the development zone instead of a certain portion being returneed into the sump as the buckets are inverted by their movement to dump the conveyed developer at the inlet of the chute leading into the development zone.

3,667,428
DEVELOPING SYSTEMS

Richard E. Smith, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 1, 1969, Ser. No. 838,141
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **5 Claims**

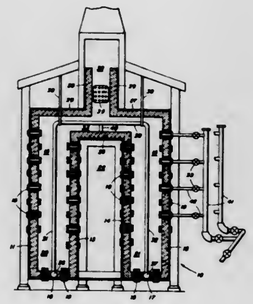


A development system is provided wherein a movable developer loaded applicator surface is first doctored on the edges and corners of the surface to remove excess developer and prevent the accumulation of developer on the corners and is finally doctored with another doctoring surface along the entire applicator surface to provide a uniform distribution of developer on the surface which doctored applicator surface is brought into developing engagement with an image to be developed. Dry and liquid development techniques can be employed and the doctoring surfaces may be provided by doctor blades or rollers.

3,667,429
FIRED HEATER

Alan Cross, Little Neck, N.Y., assignor to The Lummus Company, Bloomfield, N.J.

Filed Jan. 25, 1971, Ser. No. 109,368
Int. Cl. F22b *21/30*
U.S. Cl. 122—240 B **17 Claims**



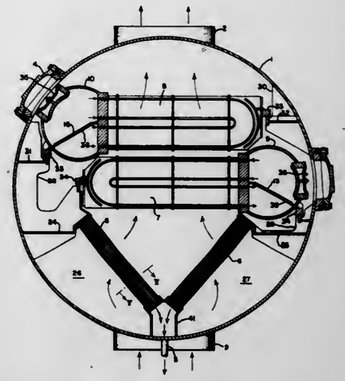
A fired heater having two parallel vertical radiant sections essentially completely separated from each other and a convection section above and offset from both radiant sections with each radiant section having a single row of process tubes which are fired from both sides, with tubes of each section being interconnected with each other by horizontal crossover tubes to provide for flow of process fluid from inlet to outlet through both sections. The inlet radiant section may be fired at higher heat rates to heat a fluid to be processed from an inlet temperature to an intermediate temperature in a short residence time. The heater may be employed for: heating a mixture of carbon monoxide and hydrogen; pyrolysis of hydrocarbons; or steam reforming of hydrocarbons.

3,667,430
MODULAR COMBINED MOISTURE SEPARATOR AND REHEATER

William Schenck Hubble; Kenneth K. Woods, both of Cape Elizabeth, Maine, and Salvatore S. Tramuta, Schenectady, N.Y., assignors to General Electric Company

Filed June 4, 1970, Ser. No. 43,359
Int. Cl. F22g *5/16*
U.S. Cl. 122—483 **7 Claims**

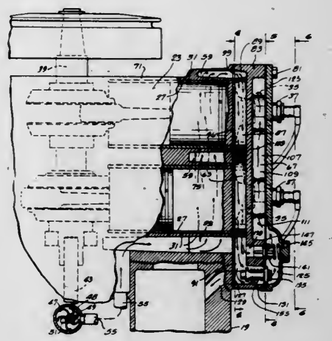
A combined moisture separator and reheater suitable for a nuclear steam turbine-generator powerplant has modular reheater stages in which the tubes extend in a transverse direction to the shell centerline and a pair of moisture separator elements which are positioned in parallel along either side of the shell. The steam to be reheated enters the shell through a plurality of openings towards the bottom of the shell and flows generally in a vertical direction up through the moisture separator elements and over the rows of reheater tubes and then out of the shell through a plurality of openings toward the top thereof. A uniform flow is maintained by the appropriate arrangement of the reheater stages and the moisture separator elements. By standardizing the cross section of the combined moisture separator and reheater, the overall capacity may be readily increased by simply adding any desired number of additional axial sections of moisture separator elements and reheater stages.



3,667,431
ENGINE TEMPERATURE CONTROL SYSTEM

Don F. Kueny, Waukegan, and Howard M. Pollari, Libertyville, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 5, 1970, Ser. No. 635
Int. Cl. F01p *7/14*, *7/16*; F02f *1/10*
U.S. Cl. 123—41.08 **20 Claims**

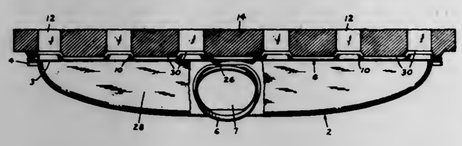


Disclosed herein is an internal combustion engine including a cooling system having a first coolant jacket portion for cooling the engine in the vicinity of the cylindrical portion of the cylinders and a second coolant jacket portion for cooling the engine in the vicinity of the cylinder heads. Flow of coolant from the first coolant jacket portion is selectively controlled by a restricted by-pass which leads to an overflow discharge, and by each of a thermostatic valve and a pressure responsive valve which are operable to afford coolant flow from the first coolant jacket portion to the second coolant jacket portion when the temperature or pressure in the first coolant jacket portion is above a predetermined value.

3,667,432
ENGINE AIR MANIFOLD

Jack F. Greathouse, Hagerstown, Md., assignor to Mack Trucks, Inc., Allentown, Pa.

Continuation of application Ser. No. 704,636, Feb. 12, 1968, now abandoned. This application May 4, 1970, Ser. No. 31,872
Int. Cl. F02b 75/18
U.S. Cl. 123—52 M 5 Claims

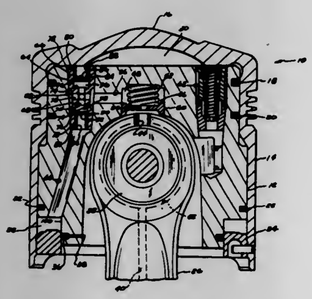


A manifold for a multi-cylinder internal combustion engine including a hollow manifold casing having an air inlet connection and a barrier plate on one side thereof provided with ports aligned with the intake passages of the engine, the manifold being mounted on the engine block or cylinder head with the barrier plate spaced from the head or block to enable an insulating barrier of air to be maintained between the barrier plate of the manifold and engine for reducing the transfer of heat from the engine to the air admitted into the engine cylinders, and openings through the baffle plate allowing air to flow from the passageway to the ports.

3,667,433
VARIABLE COMPRESSION RATIO PISTON INCLUDING OIL FILTER MEANS

Walter F. Isley, Grosse Pointe, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed June 1, 1970, Ser. No. 41,918
Int. Cl. F02b 75/04
U.S. Cl. 123—78 B 13 Claims

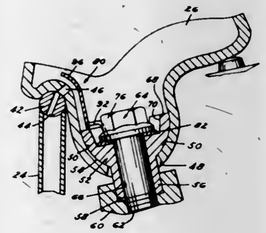


A two-part variable compression ratio piston provided with an upper and lower chamber, supply valve means connected with the lubrication system of the engine for supplying oil to the chambers in a manner which permits the parts by inertia forces and the forces generated by combustion chamber pressures to move relative to each other at a controlled rate to increase the compression ratio of the engine until a predetermined constant maximum combustion chamber pressure has been achieved, a discharge valve assembly for discharging some of the oil from the upper chamber to the engine crankcase when the pressure in the upper chamber exceeds a predetermined maximum value and a restricted discharge orifice formed in the inner member and connected to the lower chamber for discharging a controlled quantity of oil therefrom. The supply valve and discharge valve assembly are each formed with a conically shaped exterior surface that mates with a similarly shaped hole within the inner piston member for retaining the valves therein. A narrow annulus is formed between the inner member and the discharge valve for filtering oil before it enters the discharge valve so that impurities which might retain the valve in an opened position are filtered out of the oil. A second narrow annulus is provided between the discharge orifice and the lower chamber so that impurities that might plug up the orifice are filtered out of the oil.

3,667,434
ROCKER ARM ASSEMBLY INCLUDING FULCRUM MOUNTED LUBRICANT DEFLECTOR

Bernard J. Sandusky, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 31, 1970, Ser. No. 103,218
Int. Cl. F01m 9/10; F01l 1/18
U.S. Cl. 123—90.35 8 Claims



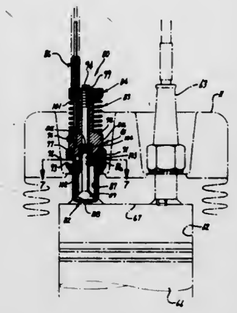
A rocker arm assembly for the operation of a valve in an internal combustion engine in which the rocker arm is pivotally mounted on a fulcrum supported by the cylinder head of the engine. A lubricant deflecting means mounted on the fulcrum is employed to deflect lubricant that flows through a push rod having a lubricant passage positioned therein and through an aperture in one end of the rocker arm onto the bearing means that pivotally supports the rocket arm on the fulcrum.

3,667,435
VEHICULAR ENGINE BRAKE ASSEMBLY

Richard M. Bygdnes, Atherton, Calif., assignor to said Richard M. Bygdnes, by said Perry A. Bygdnes

Continuation-in-part of application Ser. No. 797,841, Feb. 10, 1969, now abandoned. This application Apr. 13, 1970, Ser. No. 27,666
Int. Cl. F01l 13/08
U.S. Cl. 123—97 B 9 Claims

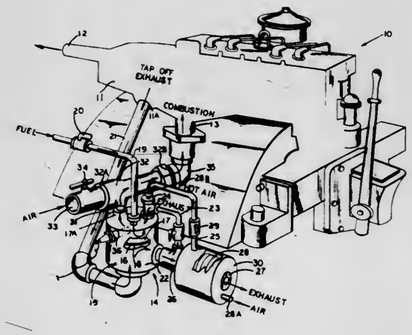
An engine brake for a two-cycle engine equipped vehicle is operative through selective venting of the engine's combustion chamber and includes a plug with an actuable poppet valve arranged in a passageway communicating with the combustion chamber. In one form, a collector receives gases passing from the passageway, the collector being in communication with a conduit extending to a controlled air source so that gases passing to and from the combustion chamber to the atmosphere pass through the controlled air source. In another form, a one-way check valve permits gas discharge but impedes entry of airborne particles into the combustion chamber.



3,667,436
FUEL GASIFICATION FOR INTERNAL COMBUSTION ENGINES

Robert Reichheim, 155 LePore Drive, Lancaster, Pa.

Filed Jan. 14, 1970, Ser. No. 2,880
Int. Cl. F02m 25/06, 17/18, 31/08
U.S. Cl. 123—119 A 9 Claims

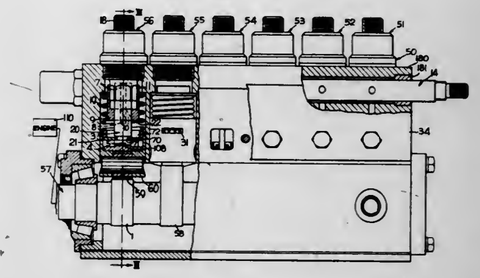


A system and method is provided adapted to utilize low-grade liquid fuel in an internal combustion engine providing a gasification chamber and a method for introducing the low-grade liquid fuel into the gasification chamber while at the same time directing a portion of the engine exhaust products to the gasification chamber for direct mixture with the liquid fuel to gasify the liquid fuel and thereafter conducting the fuel to the engine system. There is also provided a system for additional indirect heating of the liquid fuel by circulating a portion of the engine exhaust products to the gasification chamber without direct mixture with the fuel, and auxiliary heat to provide gasification of the liquid fuel on start-up. Air may also be introduced into the gasification chamber and, preheated.

3,667,437
MULTIPLE PLUNGER FUEL INJECTION PUMP

Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 19, 1970, Ser. No. 65,202
Int. Cl. F02m 59/00
U.S. Cl. 123—139 R 10 Claims

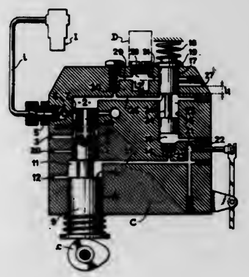


Multiple plunger fuel injection pump having built in fuel injection timing and quantity control.

3,667,438
FUEL INJECTING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Jean Moulin, Chatou, and Marcel Regneault, Paris, both of France, assignors to Automobiles Peugeot, Paris, France

Filed Sept. 29, 1970, Ser. No. 76,444
Claims priority, application France, Dec. 19, 1969, 6944138
Int. Cl. F02m 39/00, 59/34
U.S. Cl. 123—139 AS 4 Claims

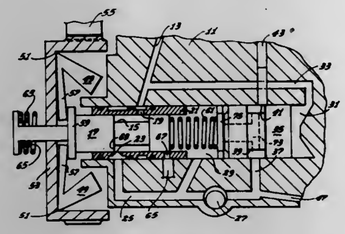


Fuel injecting device for an internal combustion engine comprising at least one injection pump connected to at least one injector and a regulating system of the liquid abutment type formed by a fuel relief or discharge passageway for the injection pump in which is interposed a movable closing member whose movement is controlled by a fluid pressure regulated by an acceleration control of the engine so that the amount of fuel delivered for each stroke of the pump is determined by the movement of the closing member. The characteristic of the injecting device is that a fuel deducting chamber having an inlet constituted by a throttling orifice is connected in parallel with the discharge passageway upstream of the closing member.

3,667,439
TORQUE AND SPEED CONTROL GOVERNOR

Earl B. Muir, Palos Verdes Peninsula, Calif., assignor to White Motor Corporation, Cleveland, Ohio

Filed Aug. 7, 1970, Ser. No. 61,980
Int. Cl. F02d 1/04
U.S. Cl. 123—140 MC 21 Claims

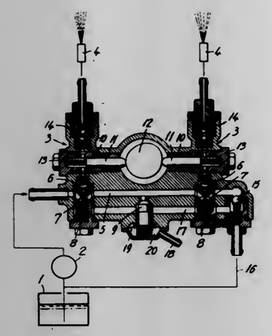


An axially movable governor shaft is acted upon by flyweights in opposition to a force transfer spring and a plurality of torque control springs. The force exerted by the springs is increased or decreased by a fuel pressure differential measured at a variable orifice at the fuel inlet. The position of a servo valve is controlled both by the pressure differential and by the position of the governor shaft to control a flow metering orifice through which fuel to be injected into the engine must pass.

3,667,440
FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Hiroyuki Yoshino, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1970, Ser. No. 80,631
Claims priority, application Japan, May 21, 1970, 45/49063
Int. Cl. F02d 1/04
U.S. Cl. 123—140 MP 7 Claims

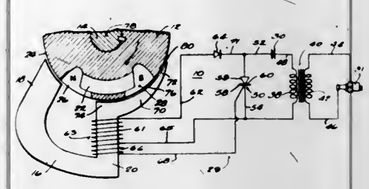


An apparatus is provided for stopping fuel injection in a fuel injection type internal combustion engine wherein a fuel supply passage for a fuel injection pump incorporates a pusher facing an inlet valve of the pump. The pusher is arranged such that during ordinary engine operation, the pusher is retracted to an inoperative position by the supply pressure of the fuel within the fuel supply passage whereas a valve is displaced upon rapid reduction of engine speed to connect the fuel supply passage with the outside atmosphere.

3,667,441
CAPACITOR DISCHARGE IGNITION SYSTEM WITH AUTOMATIC SPARK ADVANCE

David T. Cavil, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of application Ser. No. 647,426, June 20, 1967, now abandoned. This application May 16, 1969, Ser. No. 825,194
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E 17 Claims

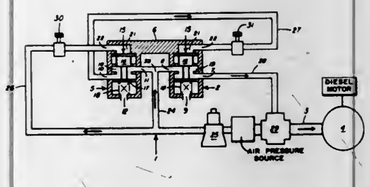


Disclosed herein is a capacitor discharge ignition system which utilizes a magneto-type flywheel assembly with a permanent magnet located in the flywheel to induce a voltage pulse in a charge coil located on one leg of a U-shaped coil core to charge a capacitor and to induce a trigger pulse in a trigger coil to trigger a silicon controlled rectifier which thus becomes conducting and closes a circuit between the capacitor and the primary coil of a transformer for discharge of the capacitor. In the disclosed construction, the charging and triggering coils constitute portions of a single coil to advance the time at which the capacitor discharges and accordingly to fire the associated spark plug prior in time to the normal firing time in relation to engine crankshaft position, the coil core is provided with an extension or foot which extends circumferentially of the flywheel in the direction opposite flywheel rotation.

3,667,442
PNEUMATIC STARTING SYSTEM FOR DIESEL ENGINES

Harvey F. Bredlow, Salem, Va., assignor to Graham-White Sales Corporation, Salem, Va.

Filed Feb. 16, 1970, Ser. No. 11,754
Int. Cl. F02n 7/08; F16k 31/12
U.S. Cl. 123—179 F 8 Claims

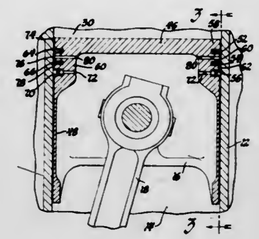


A pair of normally open, air-actuated valves supplied from a common pressure source and acting respectively as a line valve and a pilot valve, the latter for controlling with associated time delays closing and reopening of the line valve, for automatically purging a diesel engine of any liquid condensate by applying operating air to the engine's air starter motor in two separate stages, one brief and the other extended.

3,667,443
INTERNAL COMBUSTION ENGINE WITH VENTED PISTON CLEARANCE SPACES AND METHOD

James H. Currie, Rochester, and Stanley H. Mick, Mt. Clemens, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1970, Ser. No. 15,494
Int. Cl. F01b 31/00; F02f 3/00; F16j 1/00
U.S. Cl. 123—193 P 6 Claims

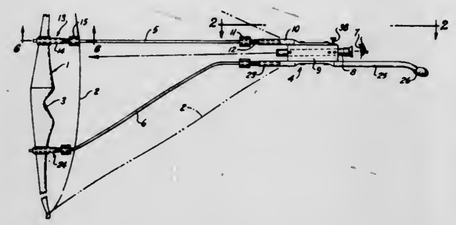


An internal combustion engine is provided with pistons having vent openings connecting the space between the first and second piston rings with the engine crankcase so as to vent to the crankcase hydrocarbon-rich gases which escape from the combustion chamber past the first piston ring. This method of venting the clearance space has been shown to reduce hydrocarbon emissions in some instances.

3,667,444
ARCHERY BOW WITH SIGHTING MECHANISM

Alfred J. Depatie, 12229 McShane Drive, Franklin, Wis., and Elwyn P. Hart, 426 South 92nd Street, Milwaukee, Wis.

Filed Mar. 10, 1970, Ser. No. 18,078
Int. Cl. F41b 5/00
U.S. Cl. 124—24 9 Claims

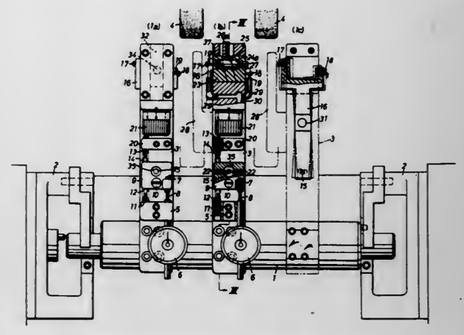


An archery bow with a telescopic sight windage is attached to a bow by a frame which locates the eye sighting portion of the sight immediately adjacent to the shooter's eye with the arrow and string drawn back preparatory to actual shooting. The mounting frame is light weight and adjustably connected to the bow for adjusting the position of telescopic sight relative to the archer. The frame includes a locating element adjacent the archer's head for positioning of the sight with respect to the archer. A string guide is provided with an accurate reference point to which the bow string and arrow is drawn each time.

3,667,445
SIDE-DRESSING APPARATUS FOR A GRINDING MACHINE

Hiroshi Ota, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed Aug. 21, 1970, Ser. No. 65,931
Claims priority, application Japan, Aug. 25, 1969, 44/81082
Int. Cl. B24b 53/12
U.S. Cl. 125—11 DF 11 Claims



A side-dressing apparatus for a grinding machine having a chuck means for journaling workpieces transversely of a plurality of parallel grinding wheels, comprising a plurality of dressing members mounted at a precise angle to said grinding wheels on a holding member journaled on said chuck means, and transverse to the grinding wheels, said dressing members being provided with feeding means including adjusting knobs to modulate the rightward and leftward movements of diamond dressers set in slidable members engaged in the top ends of said dressing members, and means to measure the dressing amount to be applied to the sides of the grinding wheels, said measuring means having measuring arms, operation rods for said measuring arms, movable members moved by said rods, resilient members to hold said movable members normally in a neutral position, feelers operated by said movable members, and measuring gauges, whereby easy, efficient, and safe side dressing of said grinding wheels may be accomplished with accurate results and consequent increase in production efficiency of grinding.

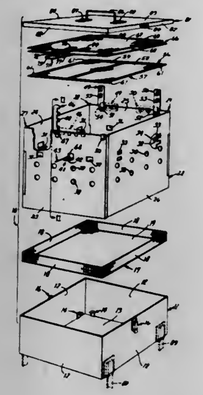
3,667,446
CHARCOAL GRILL

Paul S. Morton, 82 Mandalay Drive, Oshtemo, Mich.

Filed Aug. 12, 1970, Ser. No. 63,166
Int. Cl. A47j 37/00; F24b 3/00; F24c 1/16
U.S. Cl. 126—9 R 14 Claims

A portable and collapsible charcoal burning grill having an open top base and a removable cover therefor. The grill construction also comprises an upstanding collapsible support member adapted to be mounted on the open top base when in a position of use around the perimeter of the open top, the support member being also adapted to collapse and be received in the open top base for storage therein. A charcoal holding grate is provided and is adapted to be removably mounted on the support member when in a position of use and further adapted to be receivable in the open top base along with the collapsed support member for storage therein. A food holding grill is also provided and adapted to be removably mounted on the support member when in a position of use and spaced upwardly from the charcoal holding grate. The food holding grill is also adapted to be receivable in the open top base along with the collapsed support member and the charcoal holding grate for storage therein. The base has a sufficient depth to permit the cover to cover the open top to thereby permit a storage of the collapsed

support member, the charcoal holding grate means and the food holding grill means within the base. If desired, a charcoal collecting member may be provided and adapted to be



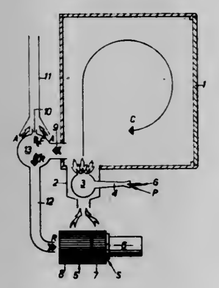
removably mounted in the open top base below the charcoal holding grate when in the position of use.

3,667,447

GAS-FIRED DOMESTIC OVENS

Bela M. Toth, and Ian Thow, both of Solihull, England, assignors to Parkinson Cowan Limited, London, England

Filed June 19, 1970, Ser. No. 47,798
Claims priority, application Great Britain, June 21, 1969, 31,451/69
Int. Cl. F24c *15/32*
U.S. Cl. 126—21 A **3 Claims**



In a domestic gas-fired oven of the pyrolytic self-cleaning type with a forced-draught fan re-circulating a portion of the combustion products back through the oven during self-cleaning the re-circulation ratio, that is to say, the ratio of the total mass circulating to the net mass entering and leaving the system, is between three to one and five to one, being preferably four to one.

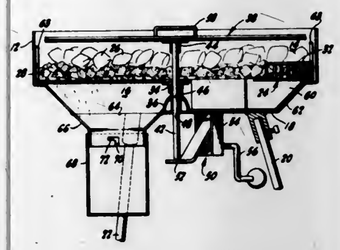
3,667,448

PORTABLE BRAZIER WITH CLEANING MEANS

Jack Dorian, 1196 Vermont Way, San Bruno, Calif.

Continuation-in-part of application Ser. No. 59,423, July 30, 1970. This application Jan. 28, 1971, Ser. No. 110,718
Int. Cl. A47j *37/00*; F24b *3/00*
U.S. Cl. 126—25 R **15 Claims**

A portable brazier for cooking and barbequing foods. One embodiment of the invention provides a leg-supported bowl provided with a rotatable apertured tray dividing the bowl into upper and lower compartments and adapted to retain the burning coals below a top grill holding the food to be cooked. A scraper blade depends from the tray and is adapted to rotate with the tray for scraping ashes and other



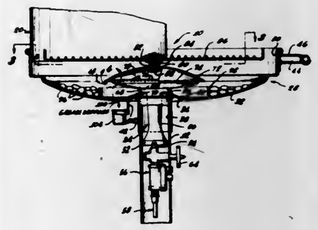
residue from the bowl bottom wall into an opening leading to a removable trap. Another embodiment provides a fixed blade with a bowl adapted to turn relative to the blade. A trap in the bowl receives the ashes and other residue scraped from the bowl.

3,667,449

GAS-OPERATED BARBECUE GRILL

Laverne O. Persinger, Burbank, and Merle L. Persinger, Glendale, both of Calif., assignors to Big Boy Manufacturing Co., Inc., Burbank, Calif.

Filed Sept. 8, 1970, Ser. No. 70,263
Int. Cl. A47j *37/00*; F24c *3/00*
U.S. Cl. 126—41 R **13 Claims**



A barbecue grill having a gas burner mounted within a firebowl which is supported above a base by a tubular column. The burner directs flames horizontally into the firebowl and is shielded against fouling by grease drippings from the cooking surface. Pumiceous rock is carried in the firebowl and is heated by the burner flames to re-radiate heat to the cooking surface. A ceramic-coated metal deflector can be provided over the burner to protect the burner and deflect the burner flames downwardly towards the firebowl bottom for heating the pumiceous rock so that the cooking surface is uniformly heated by both direct and radiant heat.

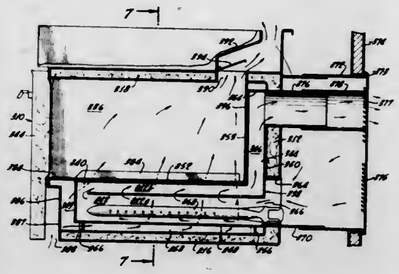
3,667,450

OVEN HEATER COMBINATION

Stanley F. Skafte, Arcadia, Calif., assignor to Williams Furnace Co., Buena Park, Calif.

Continuation-in-part of application Ser. No. 16,282, Mar. 4, 1970, now abandoned. This application Oct. 2, 1970, Ser. No. 77,449
Int. Cl. F24c *3/00*
U.S. Cl. 126—85 B **9 Claims**

A closed combustion oven heater combination to be mounted in a room of an enclosed structure, such as a camper, motor home and the like and having an oven enclosure, a closed combustion chamber disposed under the oven enclosure, ducting for bringing intake air into the combustion chamber from outside the room, heat exchanging flue spaces in communication with the combustion chamber for heating the oven, exhaust ducting communication with the heat



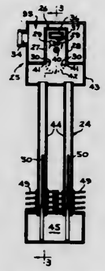
exchanging flue spaces, and a vent to allow heated air to escape from the oven enclosure. The oven enclosure is thus completely closed from the combustion chamber and the air source so that oven enclosure air which may be circulated into a room of the enclosed structure is independent of the air circulation of the combustion chamber.

3,667,451

GAS-FIRED HEATER MEANS

James D. Boucher, Tyler, Tex., assignor to General Electric Company

Filed Aug. 25, 1970, Ser. No. 66,800
Int. Cl. F24h *3/06*
U.S. Cl. 126—110 R **2 Claims**



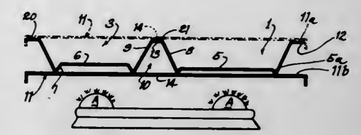
The present invention provides improved gas-fired heater means for supplying heat to a space, such as a room, house, building or the like. The improved heater means includes heat exchanger means for transferring heat generated by the combustion of a fuel gas-air mixture to an air stream circulated between the heat exchanger means and the space, and pressurized combustor means for mixing fuel gas with pressurized air and burning that mixture to provide a source of heat to the heat exchanger means. In accordance with the present invention, the pressurized combustor means has its discharge fluid-connected to the upper portion of the heat exchanger means, and its vent for exhausting the waste products of combustion to the atmosphere is fluid-connected to the heat exchanger means lower portion. With this arrangement, the combustion products will be forced downward through the heat exchanger means and out through the vent by the pressurized air during operation of the combustor means, but condensate which may deposit within the heat exchanger means during dormancy of the combustor means will be directed away from the combustor means by gravity.

3,667,452

CONTAINER FOR THE PRESERVATION AND CONSUMPTION OF DIFFERENT COOKED FOODS

Robert Brebant, 8 bis place Charles Digeon, 94 Saint-Mande, and Maurice P. Tamboise, 78 Crespieres, both of France

Filed Mar. 30, 1970, Ser. No. 23,762
Claims priority, application France, Mar. 31, 1969, 6909706
Int. Cl. F47j *27/00*
U.S. Cl. 126—390 **5 Claims**



A sheet metal container for the packaging and service of various food products to be heated to different temperatures in which the sheet metal container is formed with separated compartments having bottom walls at different levels, depending upon the amount of heat required to be generated in the compartment, and having outer walls with surfaces having different reflective characteristics, depending upon the amount of heat desired to be generated within the compartments, and in which the compartments are separated one from another with slotted portions in between to minimize heat transfer by conduction and which includes a lid having corresponding differences in heat reflection of the surfaces and with slotted portions therein corresponding to the slotted arrangement in the container.

3,667,453

EXERCISE CHAIR

William G. Schenck, and Earl T. Stark, both of 201 North Riverside Drive, Pompano Beach, Fla.

Filed Mar. 15, 1971, Ser. No. 124,201
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 R **10 Claims**



An exerciser is provided in the form of an armchair having a body-carrying seat member mounted on the chair for rotary reciprocating motion about a vertical axis relative to the chair including its legs, back and arms. Power driving mechanism is provided for effecting the rotary reciprocating motion of the seat member so that a person sitting on the seat will have imparted to his buttocks a movement which will exercise his leg muscles when his feet are on the floor, his arm muscles when his arms or hands are engaging the arms of the chair and his back muscles through his arms or directly if his back is against the back of the armchair.

3,667,454

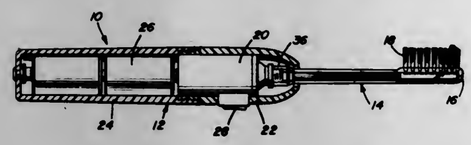
TOOTHBRUSH WITH ULTRAVIOLET EMITTER

Larry W. Prince, 1320 South Depew Street, Denver, Colo.

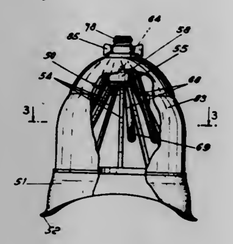
Filed June 12, 1970, Ser. No. 45,634
Int. Cl. A61h *29/00*; A46b *13/02*
U.S. Cl. 128—24.2 **12 Claims**

A powered, vibrating toothbrush from which ultra-violet radiation is emitted at the bristle end. The bristles are carried

on the end of a tubular shank projecting from a handle. A radiation emitting lamp tube is enclosed within the shank, the lamp tube being coated with a radiation blocking material except at its end portion aligned with the bristles. The source of electrical energy in the handle energizes the vibrator and the lamp tube.



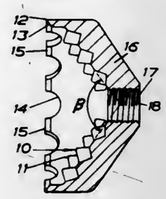
3,667,455
ROTARY DOUCHE FOR TREATING BREASTS
Jacques Courtin, 7 Rue Guenegaud, 75 Paris 6°, France
Filed Apr. 17, 1970, Ser. No. 29,607
Claims priority, application France, July 29, 1969, 6925877
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **3 Claims**



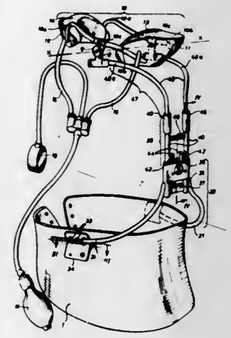
A rotary douche for treating breasts which is used with a water supply and which comprises three major component parts : a bell-shaped body, a stator and a rotor which are easily assembled and disassembled in order to facilitate the removal of deposits from the water supply such as calcium. The stator includes an extending lip for sealingly engaging the chest of the user. The stator is adapted to support the rotor for rotation thereon and includes a tubular portion extending through a portion of the bell-shaped body remote from the open end and adapted to be connected to a water supply. Ports are provided in the tubular member for conducting the water to the rotor. The rotor includes fingers having orifices at their tips so that the rotor is driven by reaction.

3,667,456
HIP-JOINT OPERATIONS
John Charnley, Hale, England, assignor to Chas. F. Thackray Limited, Leeds, Yorkshire, England
Filed Nov. 19, 1970, Ser. No. 90,914
Claims priority, application Great Britain, Nov. 25, 1969, 57,539/69
Int. Cl. A61b 17/16, 17/32
U.S. Cl. 128—92 R **5 Claims**

A method for re-attaching the great trochanter to the femur in which the faces to be joined are shaped respectively by matching male and female reamers so that one fits into the other to create an interlocking action. Suitable male and female reamers, preferably of conical or frusto-conical form are described, together with holders for the reamers.



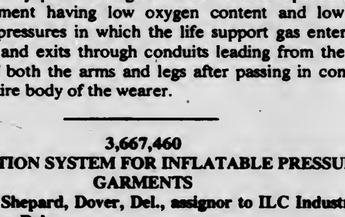
3,667,457
ORTHOPAEDIC APPARATUS FOR TRACTION OF THE SPINAL COLUMN
Giovanni Zumaglini, Turin, Italy, assignor to Officina Medico-Ortopedica Dott. Giovanni Zumaglini, Turin, Italy
Filed Jan. 20, 1970, Ser. No. 4,383
Claims priority, application Italy, Jan. 23, 1969, 50266 A/69
Int. Cl. A61h 1/02
U.S. Cl. 128—75 **6 Claims**



A truss for placing the spine under traction has a pelvic girdle and an upwardly extending tractor structure at the top of which is connected a head-supporting structure. The lower part of the tractor structure has two diverging curved arms which extend from the patient's back around to the sides of the girdle, where they are pivoted to the girdle. This allows the patient to bend forward. Pneumatic cushions on the support for the head are inflated to adjust the traction force finely. Spring means in the tractor structure act as shock absorbers. Other articulated joints allow the patient to nod and turn his head.

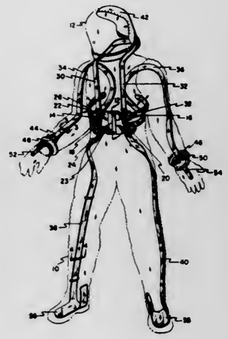
3,667,458
SURGICAL DRAPE SHEET
Kay E. Krebs, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 2, 1970, Ser. No. 15,471
Int. Cl. A61l 15/00
U.S. Cl. 128—132 **4 Claims**

A disposable surgical drape sheet, of the type having a porous nonwoven fabric sheet for placing over a surgical patient and having a fenestration near its center to expose an operative area, is provided with a continuous film of pressure-sensitive adhesive surrounding the fenestration near its center to expose an operative area. It has a continuous film of pressure-sensitive adhesive surrounding the fenestration and extending a substantial distance from the periphery. A removable abherent peel strip covering the adhesive area is removed before using the sheet, thereby exposing the adhesive and permitting the sheet to be secured around the operative area. Additionally, the adhesive fluid-proofs one side of the drape.



3,667,459
VENTILATION SYSTEM FOR INFLATABLE PRESSURE GARMENTS
George P. Durney, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.
Filed May 8, 1967, Ser. No. 636,855
Int. Cl. A62b 7/14, 18/04
U.S. Cl. 128—142.5 **10 Claims**

An improved ventilation system for a space suit or other inflatable pressure garment assembly, such as used by astronauts and by pilots of high altitude vehicles operating in an environment having low oxygen content and low atmospheric pressures in which the life support gas enters at the helmet and through ducts at the extremities of the arms and exits from the garment only through ducts located at the legs after passing over the entire body of the wearer.



3,667,460
VENTILATION SYSTEM FOR INFLATABLE PRESSURE GARMENTS
Leonard F. Shepard, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.
Filed May 8, 1967, Ser. No. 641,735
Int. Cl. A62b 7/14, 18/04
U.S. Cl. 128—142.5 **7 Claims**

An improved ventilation system for a space suit or other inflatable pressure garment assembly, such as used by astronauts and by pilots of high altitude vehicles operating in an environment having low oxygen content and low atmospheric pressures in which the life support gas enters at the helmet and exits through conduits leading from the extremities of both the arms and legs after passing in contact with the entire body of the wearer.

3,667,461
DISPOSABLE SYRINGE
Paul A. Zamarra, Lake Road, Far Hills, N.J.
Original application Nov. 5, 1968, Ser. No. 773,455, now Patent No. 3,589,362. Divided and this application Dec. 7, 1970, Ser. No. 95,762
Int. Cl. A61m 1/00
U.S. Cl. 128—232 **5 Claims**

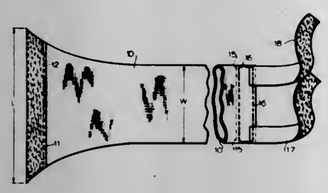


A spray nozzle has spray openings at one end and a flange at its other end, and a bag has folded or pleated portions of its thin plastic wall at the mouth of the bag or around a hole in said wall which has a thickness of the order of from 0.00125 to 0.005 of an inch. Said pleated portions are secured to said flange with a liquid-tight connection by a clamping ring which is outside the bag, grips said pleated portions between itself and said flange and by said snap ring or screw action is quickly attachable to and detachable from said flange which is inside the bag, so that the syringe can be compactly packaged, easily assembled for use and discarded after one use.

3,667,462
ORTHOPEDIC, SURGICAL, ATHLETIC AND ANIMAL BANDAGING

Jacob R. Moon, St. Mary's Road, Box 642, Hillsborough, N.C.

Filed June 4, 1970, Ser. No. 43,446. The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed.
Int. Cl. A61f *13/02*
U.S. Cl. 128—169 10 Claims

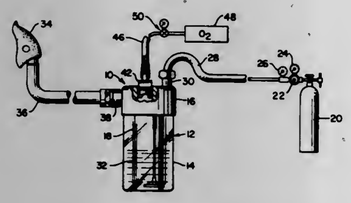


A bandage for animal, orthopedic, surgical and athletic applications comprises a seamless, stretchable, tube knit of synthetic yarn with a fuzzy surface engageable by the hooks of a set of Velcro straps and which provides a bandage the base laps of which can be bonded together so as to minimize slippage during use and the securing strap ends of which are adapted to be hidden.

3,667,463
METHOD AND APPARATUS FOR TREATMENT OF RESPIRATORY DISEASE

David L. Barnes, Springfield, Ohio, assignor to Paul A. Grossi, Carrollton, Ohio, a part interest

Filed Nov. 14, 1969, Ser. No. 876,660
Int. Cl. A61m *15/00*
U.S. Cl. 128—194 2 Claims



A method and apparatus for treating respiratory disease is disclosed. An aerosol generator provides an initial aerosol having an initial oxygen concentration and humidity. Adaptor means are provided to introduce additional oxygen to the aerosol to increase the oxygen concentration so as to provide the specific oxygen concentration required by the patient.

3,667,464
FLUID DISPENSING DEVICE

Lawrence M. Alligood, Jr., 2469 Hunting Valley Drive, Decatur, Ga.

Filed Sept. 4, 1970, Ser. No. 69,531
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C 9 Claims

A fluid flow regulating device for insuring a constant rate of flow therethrough, suitable for use in intravenous therapy, including a constant fluid level chamber with an adjustable piston having a drip orifice in the head thereof seated within and forming the bottom of the chamber. The top portion of the chamber has a fluid receiving tube seated therein. A buoyant body having an upwardly projecting member is located within the chamber and is received within said fluid receiving tube, with at least a portion of the projecting member conforming in shape and size to the orifice of the fluid receiving tube so as to occlude the orifice when in contact. The hydrostatic head pressure is kept constant within

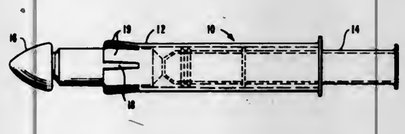


the constant level chamber, thereby providing a constant flow rate which can be adjusted over wide ranges by moving the piston up or down to vary the height of the liquid column in said chamber.

3,667,465
APPLICATOR TUBES FOR SUPPOSITORIES AND THE LIKE

Joseph A. Voss, Denver, Colo., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 8, 1969, Ser. No. 882,841
Int. Cl. A61f *13/20*
U.S. Cl. 128—271 17 Claims



An applicator tube and suppository combination is disclosed having a shape and structure such as to permit easy and accurate insertion in a body cavity, such as the rectum, with the applicator comprising a two piece telescoping tubular member for easy ejection of the suppository from the applicator after initial insertion is accomplished. The telescoping tubular members are provided with mating ring configurations which serve to lock the tubular elements in a particular juxtaposition to be maintained prior to use, with the rings being releasable from each other under slight pressure and thereafter serving as guides ans the tubular members are telescoped, one into the other. A novel suppository configuration and means for latching the suppository in place in the applicator prior to use, are also disclosed.

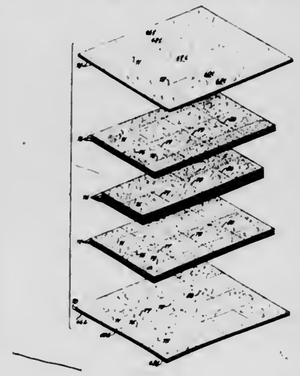
3,667,466
SELF-DISINTEGRATING DIAPER LINER AND RETAINER

Harold J. Ralph, 2002 E. Santa Clara, Santa Ana, Calif.

Filed Sept. 21, 1970, Ser. No. 74,013
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 38 Claims

A diaper having a disposable liner comprises a vinyl retainer having a main body panel and side and end flaps

overlying respective side and end edges. Groups of snap fasteners are mounted at extremities of the end flaps to permit the retainer to be adjustably secured about the waist and thighs of a baby. Freely insertable and removable into and from the vinyl retainer is a diaper liner that has adequate strength to enable packaging, normal use and handling. Nevertheless, the liner is self-segmenting and self-disintegrating when fully immersed in a body of water. The liner has a central panel substantially coextensive with the main body panel of the retainer. It also has pleated sides forming a barrier panel and a protective panel extending the length of the liner along each edge. The liner is inserted into and positioned within the retainer with its central panel and its barrier panels underlying side and end flaps of the retainer, but



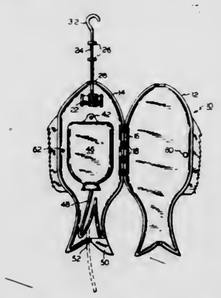
with the outermost protective panels fully overlying the retainer side flaps.

The liner is formed of a number of layers of absorbent wadding sandwiched between layers of wet-strength paper. All liner layers are perforated along lines at which the sides of the central panel adjoin the barrier panels, and all layers of the central panel except the upper layer are provided with patterns of perforations. Accordingly, the wet-strength layers upon total immersion, as in a toilet bowl, are self-segmenting along lines bounded by the perforations. The lower layer of wet-strength material is additionally self-segmenting along its additional patterns of perforations, whereby the interposed wadding is released and self-disintegrating.

3,667,467
DOUCHE BAG SUPPORT MEANS

Elsworth D. Dory, 4407 Kinmount Road, Lanham, Md.

Filed Nov. 18, 1970, Ser. No. 90,589
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 6 Claims

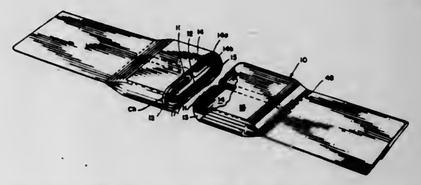


An improved support means for a douche bag and its portable cover assembly in which a hinged cover assembly is supported by a notched string and hook arrangement for bathroom fixtures, and the like, means for supporting the douche bag within the hollowed, contoured cover assembly, openings at the upper and lower portions of the cover assembly, the first for passing the notched string therethrough, the second for passing a hose therethrough, and a receptacle for liquid cup portion in the lower extremity of the cover assembly for containing a solution for providing a wash or sterilization feature to the douche tip.

3,667,468
SANITARY NAPKIN AND METHOD AND MEANS OF PRODUCING

Ernst Daniel Nystrand, and Brian H. McIntosh, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Inc., Green Bay, Wis.

Filed Apr. 28, 1970, Ser. No. 32,560
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 4 Claims

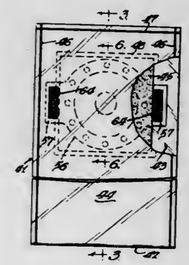


A sanitary napkin which has a fluff layer sandwiched between carrier layers, the sandwich being C-folded to provide a lined channel on one side of the sandwich which encourages more even, rapid, and complete dispersion of body fluids.

3,667,469
POST-SURGICAL DRAINAGE POUCH

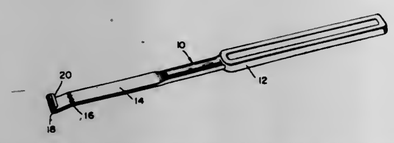
Arthur E. Marsan, 1265 Bellaire Avenue, Denver, Colo.

Filed Dec. 15, 1969, Ser. No. 884,842
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 20 Claims



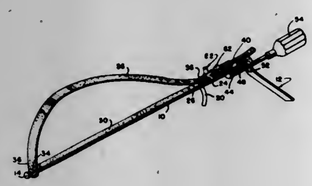
This invention is characterized by a drainage pouch having a bag of plastic film and a gelatinous sealing member for providing a seal between the pouch and the stoma of a patient when the pouch is in use on the patient, and novel construction whereby a single pouch and its sealing member (as an article of manufacture) serves a wide range of stoma sizes, and also whereby the film bag entirely encloses the sealing member before use and serves as the wrapper for the pouch. The invention is further characterized by a method of making the pouch wherein the sealing member is molded to shape and is in operative position within the bag and in which a wall of the film serves as a lining for the mold.

3,667,470
BONE SHAVER AND GROOVER
Frank F. Rubin, 795 Southern Artery, Quincy, Mass.
Continuation of application Ser. No. 660,621, Aug. 15, 1967, now abandoned. This application Apr. 14, 1970, Ser. No. 28,200
Int. Cl. A61b *17/22*
U.S. Cl. 128—304 3 Claims



A hand-tool for shaving bone or cartilage has a flat shank slightly bent near its end and then reversely curled with a sharp edge at its extremity. In one form of the tool a narrow extension projects from the middle of the sharp edge, the extension having sharp edges on its three sides.

3,667,471
SURGICAL CLAMP
Donald B. Doty, Silver Spring, and Heinz W. Kugler, College Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Aug. 15, 1969, Ser. No. 850,504
Int. Cl. A61b *17/12*, *17/08*; B65d *63/00*
U.S. Cl. 128—325 4 Claims



A surgical clamp for application directly to the liver parenchyma which includes a rigid elongated base member for supporting two flexible foam rubber covered blades and a means for the independent adjustment of each blade. A handle is attached to one end of the clamp base for the convenience of the operator in positioning the clamp and manipulating the liver for better exposure. When properly positioned one blade is bent through tension to conform to the shape of the superior surface of the liver, and the other blade is arched through compression against the inferior surface of the liver to achieve tight compression through blade cooperation.

3,667,472
ADHESIVE FOR LIVING TISSUE
Benjamin D. Halpern, Jenkintown, Pa., assignor to Borden, Inc.
Filed Oct. 19, 1961, Ser. No. 155,741
Int. Cl. A61b *17/04*
U.S. Cl. 128—334 R 5 Claims

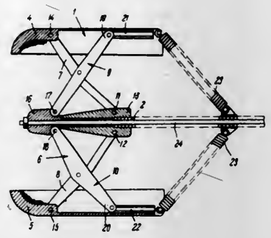
This invention relates to the surgical use of monomeric C_2–C_4 alkyl alpha-cyanoacrylate adhesives for the purpose of rapidly bonding together moist living tissue. The said adhesives are applied to the tissue wherein polymerization takes place in situ and the tissue is firmly bonded together.

3,667,473
ADJUSTABLE ARCH SUPPORT FOR A SHOE
William M. Matteson, 2210 North Street, Nacogdoches, Tex.
Continuation-in-part of application Ser. No. 877,753, Nov. 18, 1969. This application Apr. 27, 1970, Ser. No. 32,327
Int. Cl. A41f *5/14*
U.S. Cl. 128—598 6 Claims



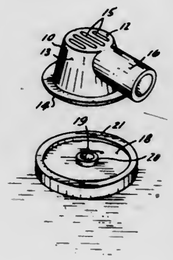
A shoe is provided with an adjustable arch support which is constructed to permit ready adjustment of the height and curvature of an arch formed on the insole of the shoe. An adjustment screw means is positioned to be rotated for lifting and lowering at least one arch-forming spring means located under the insole of the shoe. Downward pressure through the adjustment screw means is distributed by a pressure distribution plate positioned above the outsole of the shoe and secured at its rear end to the heel portion of the shoe. The adjustment screw means may be accessible from the bottom, back, or inside of the shoe. A preferred arrangement provides for two arch-forming spring means in a generally side-by-side relationship with separate adjustment screw means for each spring means.

3,667,474
DILATOR FOR PERFORMING MITRAL AND TRICUSPIDAL COMMISSUROTOMY PER ATRIUM CORDIS
Konstantin Vasilievich Lapkin, Sredne-Pervomaiskaya ulitsa, 29, kv. 34, Moscow; Georgy Fedorovich Romanov, ulitsa Gorkogo, 3, kv. 1, Kirovo-Chepetsk; Vladimir Ilich Golevinin, ulitsa Azina, 3, kv. 29, Kirovo-Chepetsk, and Lev Mikhailovich Popov, Tsentralny proezd, 1, kv. 13, Kirovo-Chepetsk, all of U.S.S.R.
Filed Jan. 5, 1970, Ser. No. 728
Int. Cl. A61m *29/00*
U.S. Cl. 128—345 7 Claims



A dilator for performing mitral and tricuspidal commisurotomy per atrium cordis, comprising a working head with jaws and a jaw actuating mechanism, the working head being associated with a hand-operated drive through a flexible base. The working head of the dilator has a relatively rigid portion which enables the surgeon to easily pass the working head with finger guidance through tracts of any curvature, i.e., to utilize the dilator in all current methods of instrumental commissurotomy performed per atrium cordis. The working head of the dilator is distinguished by its high rigidity and strength.

3,667,475
ENDO-TRACHEAL TUBE ADAPTORS FOR USE IN ADMINISTERING GASES
Fred W. Venturelli, and Foy L. Brigman, both of Racine, Wis., assignors to National Equipment Research Inc., Racine, Wis.
Continuation-in-part of application Ser. No. 499,272, Oct. 21, 1965, now abandoned. This application May 10, 1971, Ser. No. 141,940
Int. Cl. A61m *16/00*; F16l *27/10*
U.S. Cl. 128—351 10 Claims



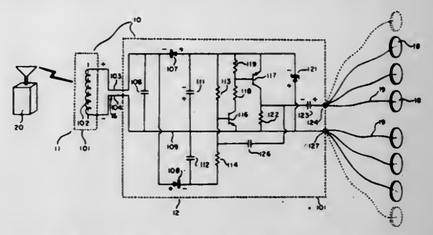
An endo-tracheal tube adaptor including an inexpensive, light weight, transparent open-bottom housing, there being a flexible elastic diaphragm removably stretched over said housing bottom having an expandable opening through which the ends of endo-tracheal tubes of various diameters can be projected to couple the same to a gas supply line connected to said adaptor, the transparency of said housing enabling an attendant to detect an accumulation of phlegm or other foreign matter therein, and the detachable nature of said diaphragm permitting said foreign matter to be readily removed from the housing.

3,667,476
APPARATUS FOR MONITORING BODY TEMPERATURE AND CONTROLLING A HEATING DEVICE TO MAINTAIN A SELECTED TEMPERATURE
Henry Muller, Hatboro, Pa., assignor to Bio/Data Corporation, Norristown, Pa.
Filed Apr. 27, 1970, Ser. No. 31,920
Int. Cl. A61b *6/10*
U.S. Cl. 128—399 7 Claims

A servocircuit measures and controls temperature. A thermistor detects temperature and a controller controls a heating device to maintain a selected temperature in a living organism. The danger of electric shock is removed by using field effect transistors to isolate the thermistor from hazardous voltage currents. Alarm and control circuitry eliminates danger of overheating.

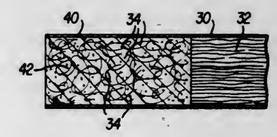
3,667,477
IMPLANTABLE VESICAL STIMULATOR
Jacques G. Susset, Montreal, Quebec, and Robert Nagler, Chomedey, Quebec, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Nov. 17, 1967, Ser. No. 683,944
Claims priority, application Canada, Nov. 25, 1966, 976,490
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 E 3 Claims

A device and method for artificially electrically stimulating the body wall of a bladder by an electromagnetic wave which propagates through the bladder wall and is converted by a receiving mechanism into electrical stimulating pulses which are conducted to the bladder wall. But the receiving mechanism receives all its power from the outside source of electromagnetic energy and since it uses no internal power source for generating the electrical pulses to stimulate the



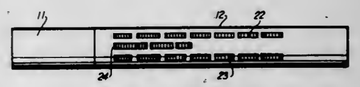
bladder wall, a substantially permanent receiving mechanism is achieved which requires no free charging of an internal power supply.

3,667,478
FILTER CIGARETTE INCORPORATING VITAMIN A
Nelson J. Waterbury, Palm Beach, Fla., assignor to F. Barry Haskett, Ocean City, N.J. and Joan Hixon Martin, Washington, D.C., part interest to each
Continuation-in-part of application Ser. No. 666,810, Sept. 11, 1967, now Patent No. 3,525,582, which is a continuation-in-part of application Ser. No. 617,219, Feb. 20, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 590,392, Oct. 28, 1966, now Patent No. 3,339,558. This application July 17, 1969, Ser. No. 842,475. The portion of the term of the patent subsequent to Sept. 5, 19o4, has been disclaimed.
Int. Cl. A24d *01/06*; A24b *15/02*
U.S. Cl. 131—9 2 Claims



A cigarette is disclosed for introducing Vitamin A into the mouth and the respiratory tract of a smoker which consists of incorporating in the filter of a filter cigarette a stabilized form of Vitamin A. The Vitamin A is in the form of a stabilized aqueous emulsion of an active Vitamin A or the active esters thereof. The stabilized form of the Vitamin A used is such as to provide stability over long period of storage before use in smoking.

3,667,479
CIGARETTE WITH MODIFIED PAPER WRAPPER
Robert A. Sanford, Prospect; Robert Reiner Johnson, and Thomas Wade Summers, both of Louisville, all of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.
Filed Jan. 19, 1970, Ser. No. 3,862
Int. Cl. A24d *1/02*
U.S. Cl. 131—15 8 Claims



An improved cigarette is prepared through use of a modified cigarette paper as a wrapper. The wrapper is

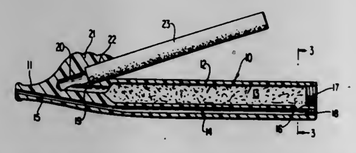
treated in preselected areas with a burn control additive, preferably a strong combustion supporting, oxidizing agent. When the burning coal reaches the area of treatment, the treated area is burned away, allowing for the passage of air through the opening created, during smoking of the cigarette. This air entering through the opening dilutes the smoke stream and results in a substantial reduction in smoke substituents delivered on smoking of the cigarette, with a corresponding improvement in the organoleptic properties of the smoke. The preselected areas on the wrapper are so arranged that larger areas are burned away as the burning coal proceeds from the tip of the cigarette toward the mouthpiece of the cigarette, so that increasing amounts of air are drawn into the tobacco column as smoking proceeds, and substituent delivery is correspondingly reduced in greater amounts as smoking proceeds, so as to provide for a more uniform constituent delivery. The strong, combustion supporting, oxidizing agent may be sodium chlorate, sodium bromate, potassium chlorate, an alkali or alkaline earth metal perchlorate, sodium nitrite, potassium nitrite, ammonium perchlorate or nitric acid. The burn accelerating agent is applied so as to cover 2 to 50 percent of the wrapper and in concentration constitutes ¼ to 8 milligrams per square centimeter of the treated portion.

3,667,480

CIGARETTE HOLDER AND FILTERING UNIT WITH MOUTHPIECE

Stephen Hreno, 29 Dawson Avenue, Clifton, N.J.

Filed Aug. 11, 1970, Ser. No. 62,905
Int. Cl. A24f *01/16*
U.S. Cl. 131—207 **1 Claim**



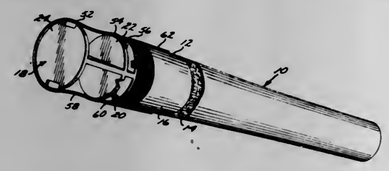
A holder for a cigarette, cigar, or pipe bowl has a socket to receive the article to be smoked and the smoke is caused to circulate through a long filtering passage containing a filtering medium and then through a reversely directed long cooling passage leading through the mouthpiece. The filtering and cooling passages may be reversed. The filtering and cooling passages may extend generally longitudinally of the mouthpiece axis or generally normal thereto.

3,667,481

TOBACCO SMOKE FILTER

Leonard L. Thomas, 14092 Ash Street, Westminster, Calif.

Filed Dec. 5, 1969, Ser. No. 882,675
Int. Cl. A24d *01/04*; A24f *07/04, 13/06*
U.S. Cl. 131—261 B **13 Claims**



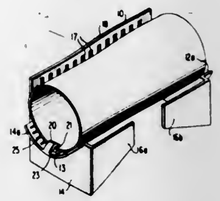
A tobacco smoke filter employing two barriers in the smoke path, each having an opening to form a flow path past the barriers. The first barrier defines a small area flowpath in which smoke and entrained liquids and solids are accelerated and high kinetic energy is imparted to them. The second barrier diverts the smoke but, because of its closeness to the first barrier, the moisture and solids impinge on the latter. A third, downstream barrier marks off a smoke storage space from which smoke is drawn during initial phases of subsequent inhalation to overcome feeling that excessive suction is required to overcome filter impedence. The filter and storage unit is divided into two passageways and is made of plastic and surrounded by paper so that the latter is employed as a repository for moisture and solids and to retain the filter in situ.

3,667,482

HAIRSETTING DEVICE

Justin W. Morgan, 1117 Daytona Avenue, Holly Hill, Fla.

Filed Nov. 13, 1970, Ser. No. 89,394
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **8 Claims**



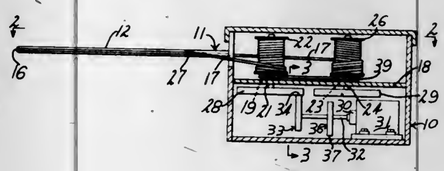
A roller lift for effecting straightening of the hair while simultaneously supporting a roller for curling a portion thereof including a clamping arrangement for positively retaining the hair roller in position without movement on the roller lift without the need for auxiliary clips or pins which might come into contact with the hair or render more difficult the use of the roller lift.

3,667,483

DENTAL FLOSS RECIPROCATOR

James B. McCabe, 1900 Deo Dara Drive, Birmingham, Ala.

Filed Dec. 14, 1970, Ser. No. 97,979
Int. Cl. A61c *15/00*
U.S. Cl 132—92 **9 Claims**



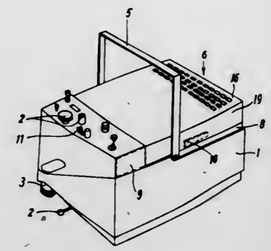
Dental floss reciprocator embodying pair of arms projecting from support frame and spaced from each other to receive teeth therebetween. Guides at outer ends of arms receive and permit relative movement of floss passing from supply reel to take-up reel. Forward and rearward angular movement imparted alternately to reels with forward movement greater than rearward movement to reciprocate and move floss progressively to take-up reel.

3,667,484

PORTABLE MONEY COUNTING MACHINE

Katharina Maria Reis, Bachenauer Str. 19, 7520 Bruchsal, Baden, Germany

Filed Mar. 12, 1970, Ser. No. 19,054
Claims priority, application Germany, Mar. 15, 1969, G 69 10 464
Int. Cl. G07d *9/00*
U.S. Cl. 133—8 R **3 Claims**



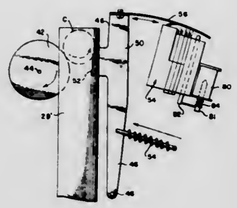
Money counting apparatus comprises a housing having means for counting and sorting coins located therein, a rotary disk is mounted on top of the housing and is adapted to centrifugally separate and feed coins. A cover member is mounted above the disk. The housing and cover member are provided with cooperating interlocking means for selectively securing the cover on the housing in a first position enclosing the disk, and a second position inverted thereto to form a feed tray for the disk.

3,667,485

FARE BOX WITH BELT CONVEYOR AND COIN SIZE DETECTOR

William J. Sesko, 12942 Highway 3, Bremerton, Wash.

Filed Oct. 21, 1969, Ser. No. 868,114
Int. Cl. G07d *3/00*
U.S. Cl. 133—8 **36 Claims**



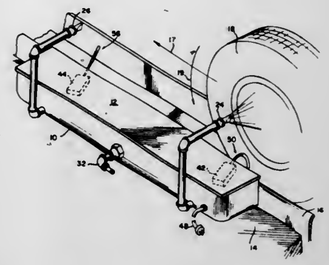
Fare box in which belt conveyors transport coins and dollar bills past an inspection window to a vault. The coins are sized, indicated audibly, and registered. Both sides of dollar bills may be inspected by transillumination or by automatic reversal of the bills in transit. The coin size detector comprises a multiple-contact switch employing an actuator arm driven in a first direction by the coins and in the opposite direction by a spring, the length of the stroke of the actuator arm in the first direction determining which contacts are transferred when the arm moves in the reverse direction.

3,667,486

AUTOMATIC WHEEL CLEANING APPARATUS

Joseph J. Cole, and Charles A. Bookwalter, II, both of c/o Nora Plaza Car Wash, 1300 E. 86th Street, Indianapolis, Ind.

Filed Feb. 19, 1971, Ser. No. 116,809
Int. Cl. B60s *3/04*; B08b *3/04*
U.S. Cl. 134—45 **7 Claims**



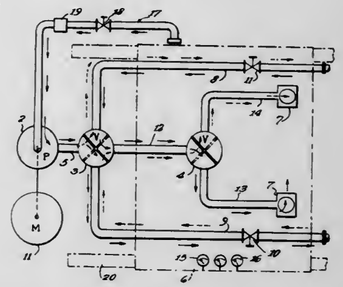
Wheel cleaning apparatus for automatic vehicle washing installations in which steam is applied to a wheel while the wheel is in contact with a projecting wand. Contact between the wand and a passing wheel closes an electrical circuit and actuates a solenoid which opens a valve to permit steam to pass from a source to and through the steam outlet. When the wheel passes beyond the wand the electrical circuit is broken and the steam control valve closes.

3,667,487

INTEGRATED CHEMICAL CLEANING APPARATUS

Delbert L. Schoenbeck, Clarendon Hill, and Reece Kincaid, Crete, both of Ill., assignors to Richardson Chemical Cleaning Service, Inc., Schererville, Ind.

Filed Dec. 11, 1970, Ser. No. 97,160
Int. Cl. B08b *9/00, 13/00*
U.S. Cl. 134—108 **4 Claims**

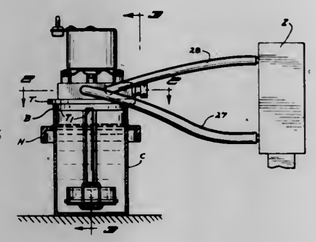


An integral chemical cleaning apparatus for supplying and recirculating compositions used in the process of removing scale, rust, grease and dirt coatings from internal metallic surfaces of closed industrial equipment where the stages of pickling, passivating and flushing are performed consecutively without change-over to separate devices for each of such stages of the process. The apparatus comprises a circulating pump forcing fluids from a supply source to valve means capable of directing flow in either of two directions for reverse cleaning and flushing and circulation back to said valve and on through a second valve means for discharge into one of a plurality of filters for removal of insoluble particles wherein said filtrate is collected in said supply source for recirculation into the system.

3,667,488
DEVICE FOR REMOVING DIRT AND CORROSION FROM HEAT EXCHANGER CORES

Harold W. Paggen, P.O. Box 381, Hopkins, Mich.

Filed Feb. 17, 1970, Ser. No. 12,114
Int. Cl. B08b 3/08, 9/02
U.S. Cl. 134—169 A 3 Claims

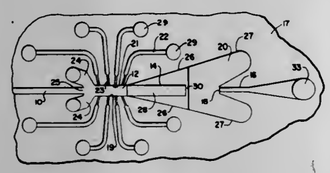


The compact portable device for flushing out and removing dirt and corrosion from the cores of heat exchangers employs an upstanding open top container for the liquid having a bottom of substantial area to constitute a base. A multifunctional mounting and top is employed with a portion thereof to close the container and with a portion thereof constituting passages and support and securing means for first a depending immersion-type motor-driven pump and secondly a valving mechanism preferably constructed of dielectric material which is affixed to the multi-functional top between the same and the bottom of the pump motor. The valving mechanism has passages for alternately connecting the discharge of the pump with either of two passages to provide for reversing flow of the liquid under pressure through the heat exchanger core with attendant recirculation through the container.

3,667,489
PURE FLUID DEVICE

Paul M. Blaiklock, Newton Centre, and Hans-Dieter Kinner, Duxbury, both of Mass., assignors to Fluidic Industries, Inc., Hingham, Mass.

Filed Jan. 12, 1970, Ser. No. 2,297
Int. Cl. F15c 1/18
U.S. Cl. 137—81.5 8 Claims

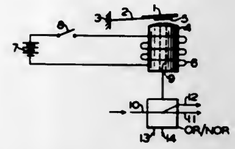


A pure fluid device for providing efficient digital operation. A laminar input stream is caused to interact with one or more control streams within a confined interaction chamber to provide a binary output pressure whose level depends upon the laminar or turbulent condition of flow within the chamber. The invention provides extremely rapid switching in a precisely controllable manner. The invention is also operable to provide controllable proportional amplification by producing an output pressure of a magnitude variable in response to control pressure variation.

3,667,490
ELECTRO-PNEUMATIC DIGITAL INTERFACE

Clifford W. Allen, Lexington, Ky., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 28, 1970, Ser. No. 32,697
Int. Cl. F15c 3/08; F16k 31/02
U.S. Cl. 137—81.5 3 Claims

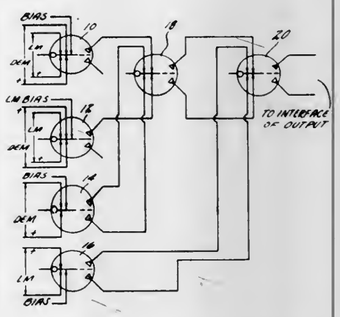


An electro-pneumatic digital interface device utilizing a low level electrical input signal to control an interrupter vane in a control port to a fluidic device.

3,667,491
FUNCTION GENERATOR USING FLUID AMPLIFIERS

Thad M. Hasbrouck, Wethersfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 4, 1970, Ser. No. 34,287
Int. Cl. F15c 1/14, 4/00
U.S. Cl. 137—81.5 4 Claims

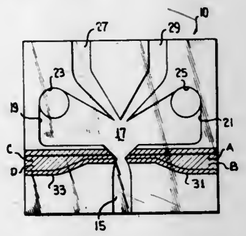


The function generator generates a nonlinear open loop schedule summing by a fluid amplifier the outputs of two or more fluid amplifiers that are both responsive to two or more independent variables.

3,667,492
PURE FLUID ADDITION AND SUBTRACTION

Carmine V. Di Camillo, Silver Spring, Md., assignor to Bowles Fluidics Corporation

Filed Feb. 18, 1969, Ser. No. 800,163
Int. Cl. F15c 1/14
U.S. Cl. 137—81.5 7 Claims



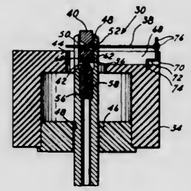
Accurate analog addition and subtraction are performed in a proportional fluidic amplifier of the stream interaction type

in which a pair of control nozzles are superposed, one atop the other, so as to issue their respective control streams against the same point in the power stream flow path.

3,667,493
FLOAT VALVE FOR AIR LINE LUBRICATORS

Barry E. Lindstrom, Englewood, and Donald A. Robb, Denver, Colo., assignors to Wilkerson Corporation, Englewood, Colo.

Filed Dec. 28, 1970, Ser. No. 101,966
Int. Cl. F16k 33/00
U.S. Cl. 137—87 10 Claims

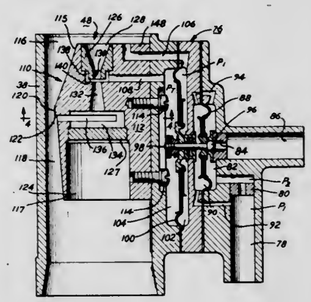


This invention relates to a float-actuated shut-off valve for use in the pressurized reservoir of an air line lubricator to cooperate with the latter upon a drop in the oil level below a predetermined point so as to automatically open an air line to the air pressure within said reservoir and use the resulting pressurized line to either actuate a warning device or shut down the pneumatic equipment dependent upon the system for lubrication.

3,667,494
MASS AIR FLOW MEASURING MEANS

Elmer A. Haase, 22905 Edison Road, South Bend, Ind.

Original application Oct. 9, 1967, Ser. No. 673,815, now Patent No. 3,549,815, dated Dec. 22, 1970. Divided and this application Aug. 11, 1970, Ser. No. 62,808
Int. Cl. G01f 1/00
U.S. Cl. 137—100 5 Claims

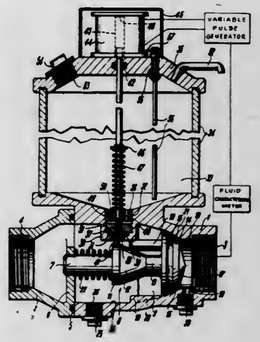


A mass air flow sensitive fuel control for controlling fuel to a multiple cylinder internal combustion engine wherein the fuel control apparatus includes mass air flow sensing means such as a high gain venturi disposed in the air induction passage for measuring the mass air flow to a single engine cylinder and a fuel control valve actuated as a function of the venturi air pressure output for controlling fuel flow to all of the engine cylinders as a function of the mass air flow to the one engine cylinder.

3,667,495
PROPORTIONING DEVICE, ESPECIALLY FOR WATER TREATMENT SYSTEMS

Hansjorg Schuler, Waldrems, and Hartmut Dopslaff, Winnenden, both of Germany, assignors to Julius Dopslaff KG, Winnenden, Germany

Filed Mar. 20, 1970, Ser. No. 21,460
Claims priority, application Sweden, Feb. 16, 1970, 1914/70
Int. Cl. G05d 11/035, 11/13
U.S. Cl. 137—101.21 38 Claims



A proportioning device for the admixture of an additive fluid into a fluid medium flowing in a pipe or conduit. The flow rate of the fluid medium is measured and the pump which introduces the additive fluid is controlled in response to the measured flow rate. The measuring system includes a body disposed to be moved linearly against the force of a spring by the fluid medium passing thereby. In one embodiment, this body has a surface which varies along its length and the additive fluid pump has a plunger in contact with this surface. As the body is moved by the varying flow rates of the fluid medium, the effective plunging stroke of the pump is controlled. In another embodiment, a magnetic field is used to detect changes in the position of the body.

3,667,496
PRESSURE-MODULATED HYDRAULIC CONTROL VALVE

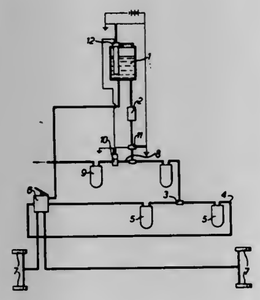
John Wayne Schletzbaum, Hudson, and Reno Antonio Rodeghiero, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 22, 1969, Ser. No. 868,498
Int. Cl. B60t 15/04
U.S. Cl. 137—116.3 3 Claims

A pressure-modulated hydraulic control valve is provided for controlling fluid flow to engage and disengage a dif-

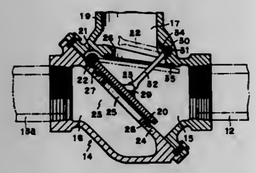
ferential lock. A manual actuator acts through a modulating spring to shift a spool valve to selectively establish conditions in the control valve for engaging and disengaging the differential lock and the manual actuator includes a length adjustable link which may be adjusted without disassembly to change the modulating force to desired values. A check valve in the pressure port normally prevents flow to the spool valve when the lock is disengaged and a pin extends from the check valve into the valve bore and is engaged and moved by a ramp on the spool valve to unseat the check valve when the spool valve is shifted to establish the condition for engaging the lock.

3,667,497
HYDRAULIC SYSTEMS
George K. Farmery, Scothern, England, assignor to Clayton Dewandre Company Limited, Lincoln, England
Filed May 11, 1970, Ser. No. 36,002
Int. Cl. G05d *11/00*; B60q *1/00*
U.S. Cl. 137—118 5 Claims



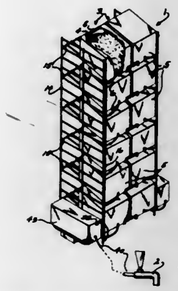
A hydrodynamic type hydraulic system for actuating the brakes and other auxiliary devices on a motor vehicle includes a solenoid-operated valve for controlling the flow of pressure fluid to the auxiliary devices, said valve being controlled by means responsive to the pressure at the output side of the pump and additionally by means responsive to fluid level in the system reservoir.

3,667,498
WATER SPRINKLING SYSTEM
Shuzo Mizuno, Tokyo, Japan, assignor to Sanko Engineering Company, Limited, Tokyo, Japan
Filed Dec. 29, 1969, Ser. No. 888,319
Claims priority, application Japan, Dec. 26, 1968, 43/96273
Int. Cl. A01g *25/00*; B05b *9/00*
U.S. Cl. 137—119 19 Claims



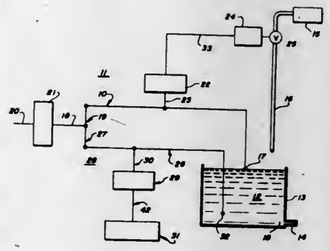
A water sprinkling system comprising a main supply conduit and a plurality of branch conduits. Each branch conduit is connected to the main supply conduit by a valve which is constructed to switch the flow of fluid from the branch conduit to the main conduit by cutting off the fluid pressure for a selected time interval. Each valve comprises a pivoted gate which is biased to close the branch conduit and open the main conduit. The gate is pressed by the fluid pressure to close flow to the main conduit and allow flow to the branch. When the supply of fluid is cut off, the gate swings to close the branch and open the main conduit.

3,667,499
LIQUID DISPENSING SYSTEM
Donald L. Branton, and James R. Mowery, both of Delavan, Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.
Filed May 4, 1970, Ser. No. 34,372
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—318 19 Claims



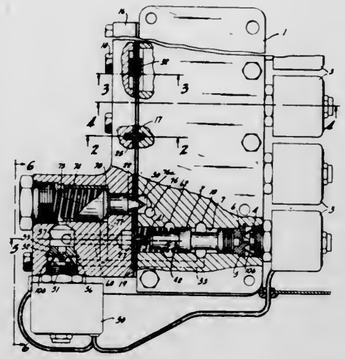
The disclosed liquid dispensing system contemplates a liquid source comprising a plurality of containers arranged in a vertical column. Each of the containers is provided with an outlet means adjacent to the bottom thereof and which may be coupled to a vertically extending manifold tube. The liquid in the containers flows by gravity from the containers to a pump connected to the manifold tube. The pump is operated as required to force the liquid into a pressure accumulator tank from which the liquid is drawn at the point of use.

3,667,500
LIQUID LEVEL CONTROLLER
Leslie F. Stone, Westchester, Ill., assignor to The Richardson Company, Melrose Park, Ill.
Filed Dec. 11, 1969, Ser. No. 884,301
Int. Cl. F16k *21/18*
U.S. Cl. 137—386 5 Claims



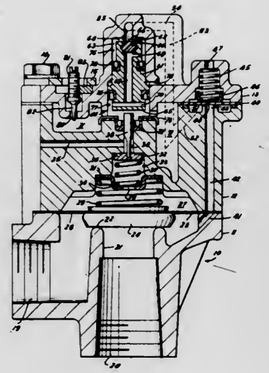
An apparatus for controlling liquid levels for viscous liquids such as printing ink utilizing pneumatic probes and responsive liquid regulating means.

3,667,501
SELECTOR VALVE ASSEMBLY WITH MECHANICAL LATCH
Joseph B. Snoy, and Bradford K. Shull, both of Rockford, Ill., assignors to Twin Disc, Incorporated, Racine, Wis.
Filed Dec. 30, 1970, Ser. No. 102,780
Int. Cl. F16k *11/20*
U.S. Cl. 137—612.1 11 Claims



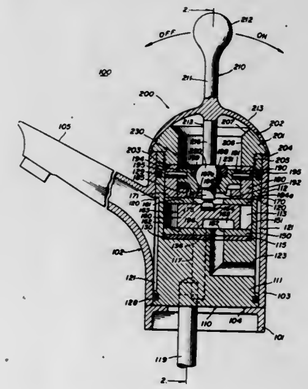
A selector valve assembly for use with power shift transmissions to select various operating speed ranges, and of the type having a plurality of shiftable hydraulic spools. The assembly includes a mechanical latch plate for holding the selected spools in an extended, operative position. A neutral piston is provided for engagement with the latch plate to urge the latter to the piston releasing position to thereby disengage the spools.

3,667,502
SELF-RECYCLING ACTUATOR AND VALVE INCORPORATING IT
Noel A. Otto, Whippany, N.J., assignor to Automatic Switch Co.
Filed Mar. 19, 1970, Ser. No. 24,916
Int. Cl. F16k *31/383*, *31/385*
U.S. Cl. 137—624.14 9 Claims



A self-recycling actuator operated by a source of fluid pressure is used to control the operation of a valve. The valve has a main valve member whose position is controlled by a pilot valve adapted to vent the high pressure side of the main valve member. The self-recycling actuator controls the pilot valve and is operated by the high pressure fluid from the inlet of the main valve. High pressure fluid brought to the inlet of the self-recycling actuator displaces a plunger member thereby opening the pilot valve and hence the main valve. At the same time, high pressure fluid enters a recycling chamber. As pressure builds up in the recycling chamber, the plunger is returned to its initial position. Vent means reduces the pressure in the recycling chamber thereby initiating a new cycle.

3,667,503
SINGLE-HANDLE MIXING AND PROPORTIONING VALVE
Gerald J. Farrell, Elmhurst, and Frank J. Bartos, Chicago, both of Ill., assignors to Elkay Manufacturing Company, Broadview, Ill.
Filed June 5, 1970, Ser. No. 43,911
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 21 Claims

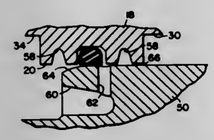


There are disclosed two embodiments of a water faucet mixing and proportioning valve including a housing defining a valve seat having hot and cold water inlet ports and an outlet port, a valve plate having a mixing cavity cooperating with the inlet and outlet ports to control the flow therethrough, a bearing mounted on the housing for pivotal movement about an axis, and a lever pivotally mounted on the bearing and having a handle at one end and coupled at the other end to the valve plate for movement thereof, the lever being limited to pivotal movement with the bearing about the axis for accommodating curvilinear hand movement and rectilinear valve plate movement between full-off and full-on positions and being limited to pivotal movement with respect to the bearing in a direction parallel to the axis for accommodating rectilinear movement of the valve plate between full-hot and full-cold positions; seals and hydraulic seal loading means are also provided.

3,667,504
ZERO-LEAKAGE SPOOL VALVE
Richard Arthur Wittren; Raymond Richard Meysenburg, both of Cedar Falls, and Robert Hugh Tweedy, Brookfield, all of Wis., assignors to Deere & Company, Moline, Ill.
Filed Dec. 28, 1970, Ser. No. 101,917
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.69 13 Claims

A plurality of O-ring packings are mounted between ports in a spool valve bore. A valve spool is selectively shiftable in

the bore for routing fluid among the ports and includes a plurality of lands, each of which, when located between a pair of ports, is seatingly engaged by one of the packings for preventing leakage between the pair of ports. Under normal operating conditions, the fluid pressures respectively existing at the pair of ports are different and this pressure differential exists across the packing. In order to prevent the packing



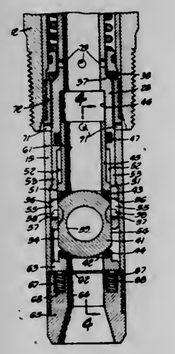
from being dislodged from its mounting groove by fluid pressure, when the land portion is moved past the packing, a passage means located in the valve spool connects the fluid pressure at the port, away from which the land portion is moving, to the side of the packing remote from the port, to balance the pressure on the opposite sides of the packing, when the land portion is just about to move past the packing.

3,667,505

ROTARY BALL VALVE FOR WELLS

Gary A. Radig, Lakewood, Calif., assignor to Cook Testing Co., Long Beach, Calif.

Filed Jan. 27, 1971, Ser. No. 110,078
Int. Cl. F16k *11/16*
U.S. Cl. 137—630.14 **9 Claims**



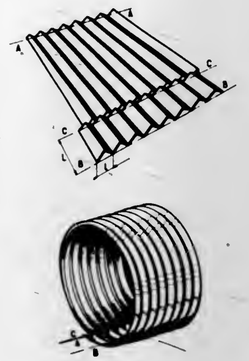
A subsurface safety valve for a well employs a rotary ball valve assembly which includes a ball member interposed between annular seats positioned within the housing. The upper seat is mounted on a carrier having flange portions engaging under a shoulder within the housing. A lower seat is spring-loaded against the spherical surface of the ball member. Integral offset aligned pins on the ball member are engaged by arms on an actuator mounted for axial movement within the housing, the arms straddling the ball member and having laterally opening slots which engage the pins. The ball member and the flange portion of the carrier have laterally spaced parallel vertical surfaces which are received between similar surfaces on the actuator arms. A bypass valve is provided between the actuator and the housing so that fluid may pass through housing ports and actuator ports to equalize pressure across the ball member during the first part of movement of the actuator, the subsequent part of the movement serving to move the ball member between open and closed positions. A spring moves the actuator axially in one direction and a hydraulic cylinder assembly acts to move it in the other direction. Pressure in the hydraulic cylinder is obtained from a control line extending to the surface.

3,667,506

CORRUGATED METAL TUBE FOR AN EXTERNAL CONDUCTOR OR SHEATH OF AN ELECTRIC CABLE

Robert Jocteur, Lyon, France, assignor to Cable De Lyon Alsacienne, Lyon, France

Filed Dec. 17, 1970, Ser. No. 99,205
Claims priority, application France, Dec. 18, 1969, 6943940
Int. Cl. F16l *9/06*
U.S. Cl. 138—156 **4 Claims**



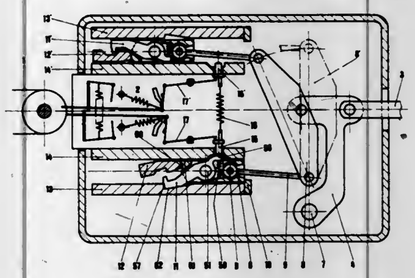
A corrugated metal strip is curved and transversely overlapped to form a tube, the corrugation being inclined relative to the transverse axis such that the edges have their corrugations axially offset by half a corrugation and the external zone in turn is axially offset by one half a corrugation to define an edge abutment determining the exact diameter of the completed tube.

3,667,507

DOUBLE-LIFT DOBBY

Joseph Palau, Duingt, Haute-Savoie, and Jacques de Germond, Menthon-St. Bernard, both of France, assignors to Staubli Ltd., Horgen-Zurich, Switzerland

Filed June 24, 1970, Ser. No. 49,308
Claims priority, application Switzerland, June 25, 1969, 9705/69
Int. Cl. D03c *1/06*
U.S. Cl. 139—71 **11 Claims**



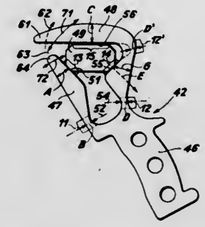
A double lift dobby with a balance for each heald and with a draw hook for each end of the balance. The dobby also includes a draw knife slidably arranged in the same guideway with the draw hook so that, whenever the draw hook is hooked in or engages the draw knife, both the draw hook and draw knife are guided within the single guideway so that no relative motion takes place between the draw knife and the draw hook during the whole of their commonly executed movement.

3,667,508

GUIDE ELEMENT FOR THE WEFT PICKING MEANS IN A LOOM

Anton Xaver Inglin, Zuchwil SO, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 6, 1968, Ser. No. 781,799
Claims priority, application Switzerland, Dec. 8, 1967, 17279/67
Int. Cl. D03d *49/60, 47/00*
U.S. Cl. 139—188 **8 Claims**



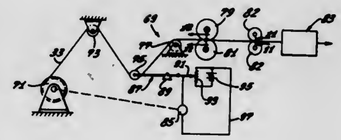
The weft picking means is guided through the shed through a plurality of spaced guide elements. Each guide element is constructed with a foot which secures the guide element to the loom frame and a pair of jaws which define a guide path for the picking means. Either the jaws are formed with a reduced cross-section between the picking means guide surfaces and foot or the foot is formed with a reduced cross-section adjacent the jaws so as to permit resilient deflection of the jaws under canting forces of the picking means.

3,667,509

WIRE FABRIC AND APPARATUS AND METHOD FOR MAKING SAME

Herbert E. Rohrbacher, Whittier, Calif., assignor to Bergandi Manufacturing Company, Inc., El Monte, Calif.

Original application Aug. 4, 1967, Ser. No. 658,530, now Patent No. 3,512,760, dated May 19, 1970. Divided and this application Feb. 12, 1970, Ser. No. 10,885
Int. Cl. B21f *23/00, 27/04*
U.S. Cl. 140—3 C **8 Claims**



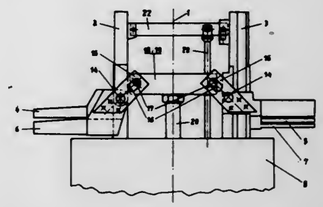
This disclosure describes a wire fabric of open construction including a plurality of wires each of which is formed into a coil. The several coils are interlinked and secured together to form a wire fabric of open construction. The wire is of non-circular cross section and provides a wire fabric of increased strength.

3,667,510

APPARATUS FOR WINDING COILS FOR ELECTRICAL MACHINES

Klaus-Dieter Sattler, 24 Lubeck, Luisenstrasse 3C, Germany

Filed Feb. 24, 1970, Ser. No. 13,336
Claims priority, application Germany, Mar. 7, 1969, P 19 11 551.6-32
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.2 **9 Claims**



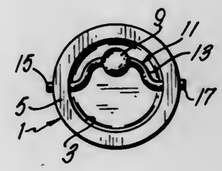
In an apparatus for winding concentrically disposed coils, or groups of coils respectively, for electrical machines, wherein the coil wire is wound around the outer surfaces of coil carriers with differently dimensioned outer circumferences defining the widths of the coils, the invention resides in that the coil carrier for the coil of smallest width remains stationary during the winding operation, as is known per se, while its surface on which the wire is to be wound is arranged in parallel relation to the axis of winding, or the axis of the coil respectively, wherein the remaining coil carriers for supporting the coils of greater widths are arranged in pairs opposite to each other with respect to the winding axis, and are formed as hinged arms which are pivoted for each width of coil successively in pairs out of a position of rest, in which they do not interfere with the winding of the preceding coil carrier, into a working or winding position, in which the winding circumferences of all of the coil carriers are disposed parallel to each other and eccentrically or concentrically with respect to the winding axis.

3,667,511

DEVICE FOR CRACKING THE SHELLS OF NUTS

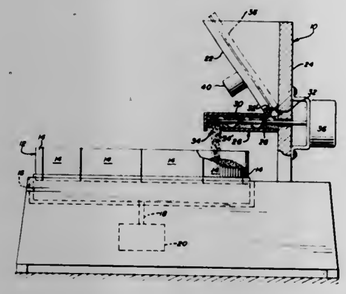
Anton F. Van Der Wey, 350 Bourbeau Street, Asbestos, Quebec, Canada

Filed June 1, 1970, Ser. No. 41,952
Claims priority, application Canada, Apr. 25, 1969, 060,391
Int. Cl. A23n *5/02*
U.S. Cl. 146—14 **3 Claims**



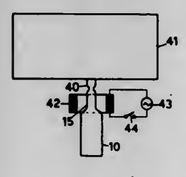
A device for cracking the shells of edible nuts comprising a body member having a cavity for receiving a nut. An impactor is resiliently connected to the body member. The impactor is manually pulled away from the body member against the force exerted by its resilient connection, and then released, to be projected by the resilient connection against a nut in the cavity.

3,667,512
POWDER SAMPLER
Meryl R. Jackson, Schaumburg, Ill., assignor to Freeman Laboratories, Inc., Rosemont, Ill.
Filed Oct. 21, 1970, Ser. No. 82,686
Int. Cl. B65b *43/50*
U.S. Cl. 141—130 7 Claims



A sampling device for obtaining representative samples of material from a bulk quantity thereof includes a plurality of rotating sample containers which are sequentially and repetitively fed by a flow stream of the material. The flow stream eminates from a hopper. The mechanism controls the flow rate of the flow stream to insure representativeness and statistical validity of the samples.

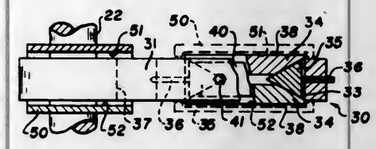
3,667,513
GENERATION OF ALKALI METAL VAPORS
Paolo Della Porta; Mario Zucchinelli, and Carlo Emili, all of Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed May 20, 1970, Ser. No. 39,119
Claims priority, application Italy, May 24, 1969, 17303 A/69
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—311 13 Claims



An alkali metal generator comprising: an evacuated container; at least one heat-responsive source of an alkali metal vapor in the container; a closed conduit for connecting the evacuated container to a vessel to be charged with the alkali metal vapor; and means for opening said closed conduit. The container can also have a getter device.

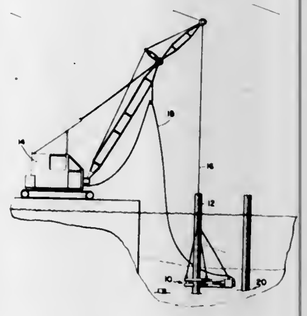
3,667,514
GUIDING CIRCULAR SAWS
Oliver E. Krog, Richmond, British Columbia, Canada, assignor to Canadian Forest Products Ltd., British Columbia, Canada
Filed Jan. 22, 1970, Ser. No. 4,817
Claims priority, application Canada, Jan. 5, 1970, 071,340
Int. Cl. B27b *5/34*
U.S. Cl. 143—37 R 8 Claims

A guide for a circular saw comprising a pair of guide elements each with a guide surface for guiding the saw or saws, the spacing between the surfaces being adjustable either by



cams or wedges movable between the two elements.

3,667,515
PILE CUTTING DEVICE
Robert J. Corey, Lowell, Mass., assignor to Corey's Steeplejacks, Inc., Lowell, Mass.
Filed Jan. 26, 1970, Ser. No. 5,511
Int. Cl. B27b *23/00*
U.S. Cl. 143—34 1 Claim

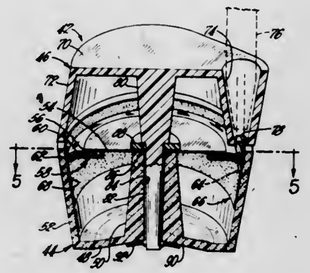


A pile cutting device comprising a base having a guide adapted for reception of a pile, the base being adapted for reciprocal movement with respect to the pile, connectors affixed to the base for suspending the base in a substantially horizontal plane, a blade having a pair of opposite extremities, one of the extremities being pivotably mounted to the base, an actuator having a fixed member and a movable member, the fixed member being pivoted to the base and the movable member being pivotably mounted to the other extremity of the blade, the blade being swept across the guide when the actuator is engaged and being retracted away from the guide when the actuator is disengaged. When the pile cutter is lowered to the base of a pile, the guide being positioned about the pile for restricting the lateral movement of the base with respect to the pile, the actuator is engaged causing the blade to shear the pile at its base.

3,667,516
APPARATUS FOR SHARPENING LEADS FOR PENCILS OR THE LIKE
Robert M. Grosjean, 4625 Merry Lane, Toledo, Ohio
Filed Mar. 27, 1970, Ser. No. 23,312
Int. Cl. B43l *23/00*
U.S. Cl. 144—28.11 19 Claims

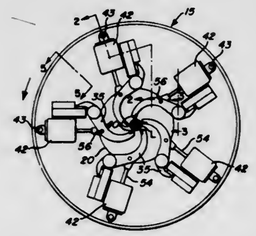
A disposable, expendable sharpener for leads and a drive for manipulating and rotating the sharpener are provided. The sharpener includes a bottom wall, side wall, and central truncated cone or hub which are integrally formed of foamed plastic material. A top is provided for the sharpener with an opening for access to a truncated conical abrasive surface in the sharpener. A flexible lip extends from an edge of the top toward the abrasive surface to urge a lead inserted in the

opening against the surface. The lip tends to enclose the sharpener to restrict spreading of graphite powder therefrom and also wipes graphite powder from the lead when being sharpened and when removed. The drive for the sharpener includes a gear arrangement which causes the sharpener to move in a circular path and, at the same time, to rotate about



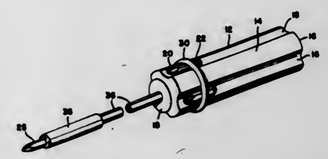
its own axis, with a vertical line through the conical abrasive surface of the sharpener being stationary. This line represents the position at which the lead is inserted for sharpening, which is accomplished without need for rotating or otherwise manipulating the lead.

3,667,517
LOG BARKER
Allan M. Bentley, and Elmer Christensen, both of Everett, Wash., assignors to The Black Clawson Company, Middletown, Ohio
Filed Sept. 2, 1970, Ser. No. 69,038
Int. Cl. B27l *1/00*
U.S. Cl. 144—208 E 13 Claims



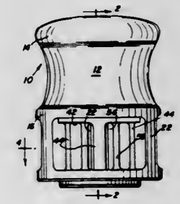
An annular barking rotor has a hub portion rotatably supported by a concentric anti-friction bearing and supports a plurality of radially pivotable barking arms each biased by an air motor mounted on the rotor and connected to an annular air chamber within the rotor. Air is supplied to the chamber and motors through a set of sliding air shoes, and the pressure of the air is controlled by a series of pilot operated valves, relay exhaust valves and regulating valves actuated by controls located at a remote console. Pilot operated diaphragm exhaust valves are carried by the rotor for connecting the air chamber directly to atmosphere and are actuated by a pulse of pilot air supplied through another air shoe connected to the main air supply through a pilot operated valve controlled by a valve also located at the console.

3,667,518
SCREWDRIVER WITH BIT STORING HANDLE
George B. Stillwagon, Jr., Dayton, Ohio, assignor to Gardner-Denver Company, Dayton, Ohio
Filed Apr. 30, 1970, Ser. No. 33,355
Int. Cl. B25g *1/08*
U.S. Cl. 145—62 3 Claims



A hand tool, in the form of a screwdriver in which a series of tool bits are stored in longitudinal recesses formed in the outer circumferential surface of the handle. The tool bits are retained in the recesses by an elastic O-ring, and may be easily removed by rolling back the O-ring for snap fitting into the shank portion of the tool.

3,667,519
FOOD CHOPPER
Laurine R. Shadduck, 6220 Byron Street, Rosemont, Ill.
Filed Apr. 9, 1970, Ser. No. 26,952
Int. Cl. A47j *43/00*; B26b *3/04*
U.S. Cl. 146—160 3 Claims

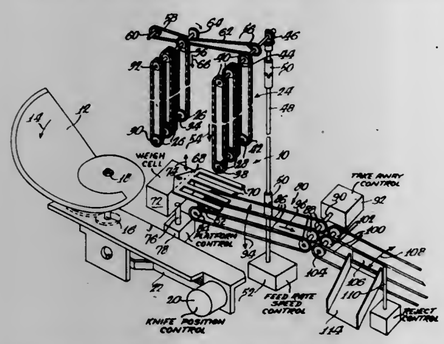


A hand-operated food chopper has concentric cylindrical cutting blades which have large openings in their vertical walls to permit flow of chopped materials therethrough and prevent clogging. Spring-actuated motion of one or more of the blades is also provided to further insure against clogging.

3,667,520
WEIGHT CONTROLLED SLICING SYSTEM INCLUDING GROSS ERROR DETECTING MEANS
Keith E. Flesch, Garrett, Ind., assignor to Peter Eckrich & Sons, Inc.
Filed Dec. 14, 1970, Ser. No. 97,590
Int. Cl. B26d *4/56*
U.S. Cl. 146—94 R 10 Claims

A slicer control system of the type for use in slicing operations wherein a predetermined number of slices are cut from a length of material and are intended to have a predetermined weight. The exemplary embodiment employs a slice receiver which receives slices as they are cut and a take-away conveyor for removing slices from the slice receiver after a predetermined number of slices are cut. The invention further includes a weight monitoring system for comparing the weight of the slices cut against a predetermined standard to prematurely actuate the take-away conveyor when a

predetermined error exists even though the predetermined number of slices have not yet been cut to minimize the



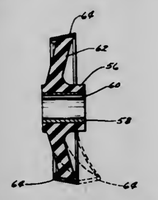
number of groups of slices having gross errors and ultimately require rejection for weight deviation from a standard.

3,667,521

HOLD DOWN ATTACHMENT FOR A SKINNING MACHINE

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Aug. 18, 1969, Ser. No. 850,960
Int. Cl. A22c *17/12*
U.S. Cl. 146—130 **12 Claims**



A hold down attachment for a skinning machine comprising a hold down roller means rotatably mounted above the feed roller and skinning blade of the skinning machine. The hold down roller means is comprised of a plurality of spaced apart resilient rollers mounted on a driven shaft and adapted to engage the slab being skinned. The configuration of the resilient rollers is such that the slab is simultaneously stretched in two lateral directions as the slab is being skinned which maintains the bottom of the slab in a straight or horizontal condition as it engages the skinning blade. A modified form of the hold down roller means is also disclosed and comprises a plurality of spaced apart rollers, each of which are comprised of four spring loaded shoes extending outwardly from a central hub portion. The spring loaded shoes engage the slab being skinned and simultaneously stretch the slab in two lateral directions as the slab is being skinned to maintain the bottom of the slab in a straight or horizontal condition to achieve the same results as the first described embodiment.

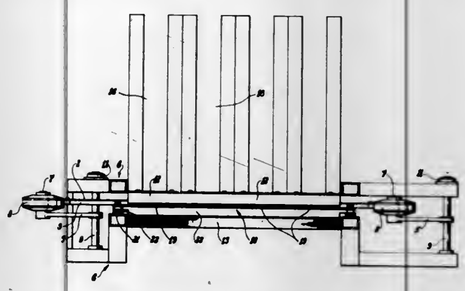
3,667,522

SLICING APPARATUS

David W. Bingham, Brighton, Victoria, Australia, assignor to Pitters Proprietary Limited, Moorabbin, Victoria, Australia

Filed Jan. 28, 1970, Ser. No. 6,525
Claims priority, application Australia, Feb. 12, 1969, 50353/69
Int. Cl. B26d *4/22, 5/14*
U.S. Cl. 146—131 **11 Claims**

Cutting or slicing apparatus having a cutter blade movably mounted on a frame so as to be oscillatable along an arcuate path of travel, and gauge means adapted to correctly locate material to be cut by the cutter blade and which is also movably mounted on the aforementioned frame. The gauge means is positioned in advance of the cutting edge of the blade to allow passage of cut material to a conveyor located



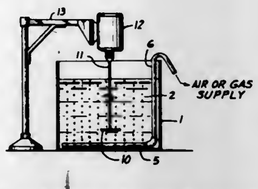
therebeneath, and it is coupled with the cutter blade so as to reciprocate in response to oscillatory movement of that blade. The coupling is such that a constant spacing is maintained between the cutting edge of the blade and the adjacent side of the gauge means.

3,667,523

APPARATUS AND PROCESS FOR THE REMOVAL OF THE GERM AND BRAN COAT FROM CEREAL GRAINS

Lawrence Lynn; John W. Hunnell, both of Houston, Tex., and Carl B. Leger, Kaplan, La., assignors to Food Engineering International, Inc., Abbeville, La.

Filed Dec. 29, 1969, Ser. No. 888,219
Int. Cl. B02b *3/08*
U.S. Cl. 146—221.8 **12 Claims**



An improvement in apparatus and method for the removal of the seed coat, or bran layers, and the germ from cereal grains in the presence of a liquid. Said improvement in apparatus and method includes the provision, and use, of a vessel containing kernels of grain (preferably whole kernels) immersed in a liquid medium, and means for moving a member such as a blade or bar rapidly through the liquid medium and preferably at a velocity relative to said medium in excess of 10 feet per second to cause an impacting face of said movable member to strike against the kernels of cereal grain in said liquid to detach the seed coat and germ from said kernels.

3,667,524

HIGH-ENERGY PROPELLANT CONTAINING COATED HYDRAZINIUM AZIDE

John E. Paustian, Whippany, and Marvin M. Fein, Westfield, both of N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Original application May 12, 1966, Ser. No. 551,838, now Patent No. 3,459,607, dated Aug. 5, 1969. Divided and this application Mar. 28, 1969, Ser. No. 828,052
Int. Cl. C06b *19/02*
U.S. Cl. 149—8 **3 Claims**

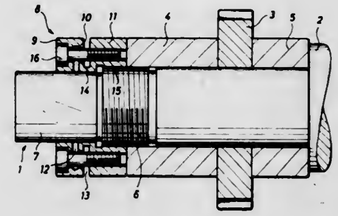
A high energy propellant of hydrazinium azide coated with a non-hygroscopic coating.

3,667,525

THREADED RING

Rudolf Spieth, Kennenburger Str. 40, D 73 Esslingen am Neckar Kennenburg, Germany

Filed July 28, 1970, Ser. No. 58,867
Claims priority, application Germany, July 29, 1969, P 19 38 448.6
Int. Cl. F16b *39/00*
U.S. Cl. 151—21 C **3 Claims**



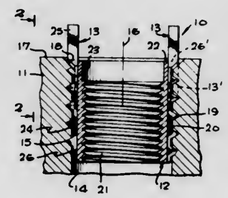
A threaded ring of one piece construction for securing cutters and the like to a shaft is disclosed. The ring has a single threaded portion for engaging threads upon the shaft. An outer portion has screws which pass through an intermediate portion and engage other threads in the threaded portion. By tightening the screws, the intermediate portion flexes radially to lock onto the shaft, preventing the threaded ring from loosening upon the threads of the shaft.

3,667,526

FASTENERS HAVING LOCKING KEYS

Robert Neuschotz, 1162 Angelo Drive, Beverly Hills, Calif.

Original application Feb. 12, 1969, Ser. No. 798,659, now Patent No. 3,537,118. Divided and this application Mar. 17, 1970, Ser. No. 20,294. The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed.
Int. Cl. F16b *39/06*
U.S. Cl. 151—23 **14 Claims**



A fastener having a thread with a groove extending through and interrupting the thread, and a locking key retained in the groove and adapted to be driven axially to lock the fastener in a carrier part, with the groove being deformed by the key, upon initial installation thereof in the groove, to a slightly undercut cross-section confining and retaining the key in the groove.

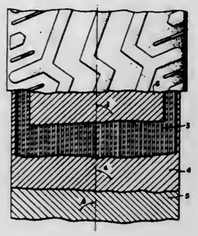
3,667,527

TREAD RING FOR REMOVABLE TREAD TIRES

Carlo Magistrini, Monza, and Luigi Maiocchi, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed June 30, 1970, Ser. No. 51,100
Claims priority, application Italy, July 29, 1969, 20215 A/69; Mar. 13, 1970, 21873 A/70
Int. Cl. B60c *11/02*
U.S. Cl. 152—176 **8 Claims**

A separable tread ring for pneumatic tires which embodies an armor longitudinally resistant to tension, the armor being formed by a helically wound metal cord, the coils of which are disposed generally parallel to the mid-circumferential plane of the tire. Two additional layers of metal cords parallel to each other in each layer are provided, the cords being disposed in two directions crossed relative to the mid-circumferential plane at angles ranging from 10° to 65°. The latter



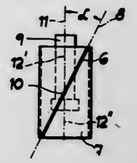
layers are disposed radially inwardly relative to the armor. A third layer of extensible metal cords is positioned radially outwardly of the armor, the cords of such layer being inclined with respect to the mid-circumferential plane at an angle ranging between 10° and 65°.

3,667,528

SPIKE FOR MOTOR VEHICLE TIRES

Georg Gottauf, Munich, Germany, assignor to Stahlgruber Otto Gruber & Company, Munich, Germany

Continuation-in-part of application Ser. No. 736,616, June 13, 1968, now Patent No. 3,545,515. This application July 10, 1970, Ser. No. 53,838
Claims priority, application Germany, July 26, 1969, P 19 38 091.7
Int. Cl. B60c *11/16*
U.S. Cl. 152—210 **9 Claims**



Spike for motor vehicle tires comprises casing of synthetic material with reinforcing jacket embedded in casing. Hard metal pin is centrally disposed in reinforcing jacket. Jacket surrounds hard metal pin and includes pair of opposed side edge portions that overlap one another to form a seam. Alternatively, opposed side edge portions of reinforcing jacket may meet along line of contact which is curved and sloping relative to longitudinal axis of metal pin.

3,667,529

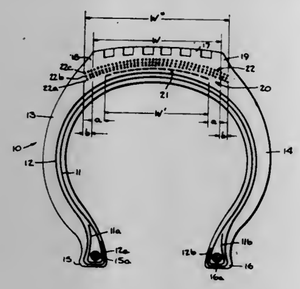
HIGH SPEED RADIAL PLY TIRES

Henri Mirtain, Compiegne, France, assignor to Uniroyal Englebert France, Neuilly sur Seine, France

Filed May 20, 1970, Ser. No. 39,115
Claims priority, application France, May 30, 1969, 6917845
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 **27 Claims**

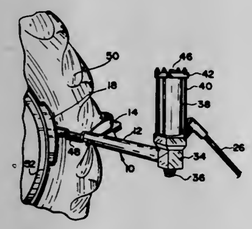
Radial ply pneumatic tires capable of being run at very high speeds are disclosed. Such tires are characterized by a tread-reinforcing breaker having a plural-layer non-metallic textile cord ply structure wider than the tread, with the cords oriented at a O° angle to the median equatorial plane, and a single-layer ply structure, narrower than the tread, of metallic wires or strips oriented at a substantial bias angle, preferably between about 20° and 45°, to the said plane. The plural-layer ply structure is constituted by a single length of

breaker cord fabric wound in a continuous spiral circumferentially of the carcass for at least a plurality of full turns. If the metal ply structure in such a tire is superposed onto the



textile ply structure, the tire is additionally provided with means indicating the manner in which it should be mounted on a vehicle so as to have a specified direction of rotation during normal high speed forward movement of the vehicle.

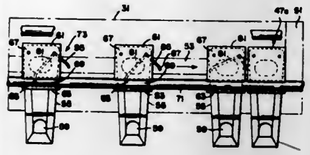
3,667,530
PORTABLE TIRE BREAKER
John V. Gray, P.O. Box 217, Severy, Kans.
Filed Oct. 9, 1970, Ser. No. 83,261
Int. Cl. B60c 25/06
U.S. Cl. 157—1.26 7 Claims



This tool can be easily made from mostly standard parts, such as standard pipe for the cylindrical arm having an arched member to straddle a tire of any size fixed to one end of the pipe and a piston in said pipe having a rod extending from the inner end of said pipe with a wedge head on its outer end for pressing against the bead edge of a tire, while the outer end of the arched member is purchased against the opposite edge of the wheel rim, and a hand pump unit having a threaded port connected to the outer end of the cylindrical arm for pumping fluid under pressure against said piston to press said wedge head between the bead edge of the tire and the rim edge of the wheel for breaking the tire off the side of the rim without necessarily removing the wheel from its axle. The tool can be readily handled by the cylindrical arm with one hand while the other hand is used for operating the hand pump. A tire iron may be used for the pump handle.

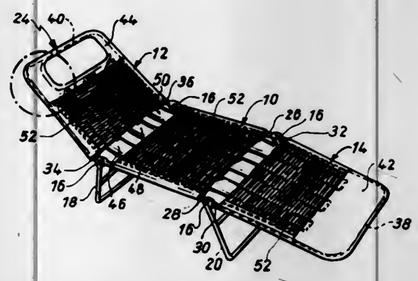
3,667,531
DRAPE SLIDE CARRIER
Edmond J. Wilkins, Levittown, Pa., assignor to Reversafold Inc., Levittown, Pa.
Filed Feb. 2, 1971, Ser. No. 111,852
Int. Cl. A47b 5/032
U.S. Cl. 160—345 7 Claims

A drape slide carrier for a draw drape for homes and the like, said drape carrier preventing bunching or gathering of drape pleat headings as the drape is being opened, comprising a housing adapted to receive a pull cord, a cord lock and release member pivotally mounted in the housing with a locking leg for grasping the cord when the drape is being opened to move the drape and prevent bunching or gathering



of the drape pleat headings until the drape reaches the end of its travel, and with a release leg for releasing the locking leg from the cord, a hook plate for receiving a hook that supports the drape, and a track slide member connecting the hook plate to the housing and adapted to ride in a track of a drape traverse rod.

3,667,532
PIECE OF FURNITURE
Rudolf Kurz, Bissingen, Germany, assignor to Kurz GmbH, Bietigheim, Germany
Filed June 23, 1970, Ser. No. 49,034
Claims priority, application Germany, June 27, 1969, P 19 32 649.9
Int. Cl. A47c 7/02
U.S. Cl. 160—371 15 Claims

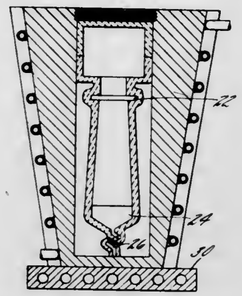


A frame has transversely spaced frame portions which are suitably connected with one another. Elongated flexible support webs are carried by the frame extending in parallelism with one another and with the frame portions. Flexible tubular sections of synthetic plastic material extend transversely of the frame portions from one to the other, being located in parallelism with each other and arrayed lengthwise of the frame portions. Sheet-material strips are each connected with the end portions of the tubular members located adjacent the respective frame portions; these sheet material strips extend lengthwise of the respective frame portions and are secured to the same.

3,667,533
MAKING DIRECTIONALLY SOLIDIFIED CASTINGS
Raymond R. Boucher, Tequesta, Fla., and Charles M. Phipps, Jr., Wapping, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Apr. 28, 1970, Ser. No. 32,593
Int. Cl. B22d 25/06
U.S. Cl. 164—60 3 Claims

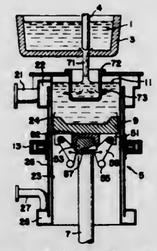
A mold having a crucible portion connecting with the article forming portion is positioned within a tapering susceptor

heated by a surrounding induction coil and the susceptor serves to control the temperature gradient during the solidification of the alloy in the mold. The crucible is located at the



bottom of the assembly until the alloy is melted and the entire assemblage is then inverted to cause the molten alloy to flow into the article portion of the mold, the latter being preferably positioned on a chill plate.

3,667,534
STEEL INGOT MAKING METHOD
Tatsuro Kanokogi, Osaka, and Kunio Yasumoto, Hyogo, both of Japan, assignors to Sumitomo Metal Industries Ltd. (Sumitomo Kinzoku Kogyo Kabushiki Kaisha), Osaka-shi, Japan
Continuation of application Ser. No. 703,385, Feb. 6, 1968, now abandoned. This application Mar. 11, 1971, Ser. No. 123,394
Int. Cl. B22d 11/12, 27/10
U.S. Cl. 164—83 5 Claims



A method for semi-continuously casting long-length, large steel ingot by pouring molten steel into a thin walled, water cooled, long-length mold made of iron, steel or cast iron which does not thermally deform, in contact with the molten steel during pouring and withdrawing the solidifying ingot down through the mold at suitable speed without directly water cooling the solidifying ingot until a predetermined length of ingot is obtained, and then holding the ingot in the mold for a while till the ingot solidify enough to draw out from the mold on to a truck which carry away the said ingot to further processing and apparatus thereof.

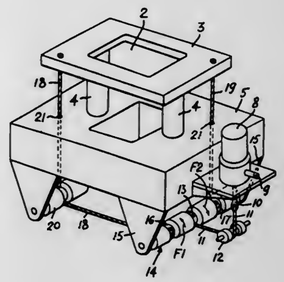
3,667,535
CONTROLLED ATMOSPHERE GRAVITY CASTING SYSTEM
Marshall K. Thomas, Jr., and James N. Thompkins, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 22, 1970, Ser. No. 83,059
Int. Cl. B22d 27/16
U.S. Cl. 164—258 8 Claims

An improved system for evaluation of unique materials formed by quenching the same in their liquid state under predetermined controlled uncontaminated gaseous environment. The apparatus permits rapid solidification of the



material in the desired gaseous atmosphere such that the possibility of undesirable oxidation or contamination is minimized.

3,667,536
APPARATUS FOR RECIPROCATING CONTINUOUS CASTING MOULDS BY MEANS OF FLEXIBLE DRAWING MEMBERS
Piero Colombo, 27, Via Leopardi, Udine, Italy
Filed Sept. 23, 1970, Ser. No. 74,643
Claims priority, application Italy, Sept. 27, 1969, 7339 A/69
Int. Cl. B22d 11/00, 27/08
U.S. Cl. 164—260 9 Claims

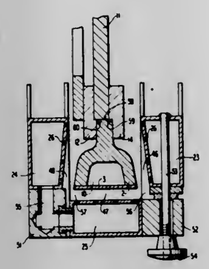


An apparatus for vertically reciprocating open-ended moulds for the continuous casting of metals. The apparatus comprises a supporting platform for each mould, and means for slidably guiding said platform in its reciprocating movement. Hydraulic or mechanical driving means are provided for effecting said reciprocating movement and flexible drawing members, such as ropes, cords, cables, chains or straps, connect said driving means to said platform.

3,667,537
COOLING DEVICE FOR A CONTINUOUS-CASTING WHEEL
Robert Petit, Rosny-Sous-Bois, France, assignor to Societe Nouvelle Spidem, Paris, France
Filed Dec. 30, 1969, Ser. No. 889,023
Claims priority, application France, Dec. 30, 1968, 182114
Int. Cl. B22d 11/06
U.S. Cl. 164—278 8 Claims

A cooling device in which spaces are left between two ad-

joining boxes surrounding the wheel so as to permit cleaning

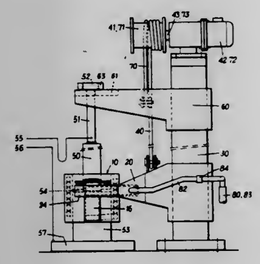


while the wheel is moving.

3,667,538
COOLING SYSTEM FOR CONTINUOUS CASTING INSTALLATIONS

Otmar Kleinhagauer; Peter Cerwenka, and Ewald Neubauer, all of Kapfenberg, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Vienna, Austria

Continuation of application Ser. No. 773,622, Nov. 5, 1968, now abandoned. This application May 12, 1971, Ser. No. 142,771
Int. Cl. B22d *11/00, 27/02*
U.S. Cl. 164—283 9 Claims

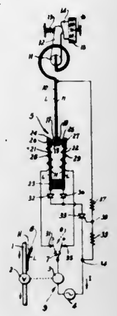


A continuous casting installation with a structure for cooling the mold. The continuous casting mold is provided with a cooling means formed in part by a pair of opposed upper arms which extend from the mold. A carriage means is provided for moving the mold, and this carriage means has a pair of arms extending beneath and engaging the upper arms of the mold so that the arms of the carriage means form a pair of lower arms coacting with the upper arms to support the mold on the carriage means. The upper arms form part of a cooling means for the mold, while the lower arms of the carriage means are formed with passages through which cooling fluid is directed to and from the cooling means of the mold. In this way it becomes possible to simply separate a mold from the carriage means with an automatic separation of the cooling connections, and a new mold, of a different size, for example, can replace the old mold, with the connections for the flow of cooling fluid being automatically made simply by mounting of a new mold on the carriage means.

3,667,539
ON-OFF TIME PROPORTIONING SUMMER-WINTER THERMOSTAT AND CONTROL SYSTEM EMPLOYING SAME

Russell P. Sweger, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 24, 1971, Ser. No. 146,117
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 12 Claims

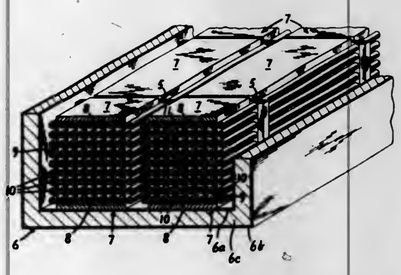


A heating-cooling thermostat employs alternative circuits during heating and cooling seasons to move an actuator in one direction. Heaters controlled by thermostatic contacts in each of the alternative circuits heat bimetals to open the contacts periodically to provide pulsed on-off current through the actuator. The on-off time ratio is modified by the deviation of the controlled temperature from a setpoint to provide on-off time proportioned current to the actuator.

3,667,540
HEAT REMOVAL SYSTEM FOR NUCLEAR FUEL ASSEMBLIES

Robert W. Kupp, 227 Beechwood Road, Ridgewood, N.J.

Filed Sept. 3, 1968, Ser. No. 756,882
Int. Cl. F28f *7/00*; G21h *5/00*
U.S. Cl. 165—47 6 Claims

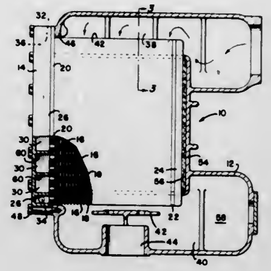


A system to remove heat from nuclear fuel assemblies is disclosed. Such heat removal system includes one or more units having a base and one or more plates extending outwardly therefrom, the units being adapted to fit in a nuclear fuel assembly when it is placed in a shipping cask. The plates of the heat removal device, which are formed of a heat conductive material, fit between the pins of the nuclear fuel assembly and convey heat from the assembly to the shipping cask, from whence it is removed to the atmosphere by conduction through the cask.

3,667,541
COOLER FOR GAS

Frank D. Howe, Painted Post, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,672
Int. Cl. F28d *1/06*
U.S. Cl. 165—74 6 Claims

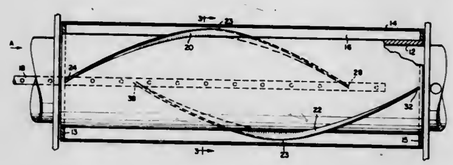


A cooler for gas of a radiator type having a unitized and readily replaceable core. The core comprises a plurality of tube nests which are stacked in surmounting relationship. The nests are held in this relationship in that the tubes terminate in, and are held by, at either ends thereof, tube plates. Inside and outside waterheads enclose the ends of the tubes and are fixed to the tube plates. These components comprise the replaceable and unitized tube core. The core is carried within a shell or housing and bolted thereto at one end thereof for its replaceable mounting therein. The housing has transverse ribs having arcuate cross sections. These ribs are arrayed across the inside of the housing, and face the external surfaces of the core to redirect gas from the housing back into the tube nests. The housing includes inlet and outlet gas plenums, at the upper and lower portions thereof, for conducting gas through the cooler and through the core. The waterheads have porting to accommodate circulation of cooling water.

3,667,542
HEAT TRANSFER ROLL

Ralph C. Parkes, Hancock Street and Lehigh Avenue, Philadelphia, Pa.

Filed Jan. 5, 1971, Ser. No. 104,005
Int. Cl. F28f *5/02*
U.S. Cl. 165—89 3 Claims

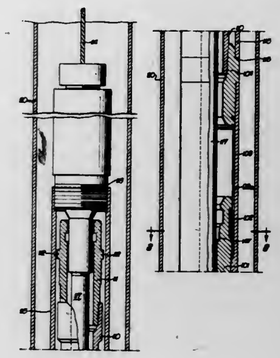


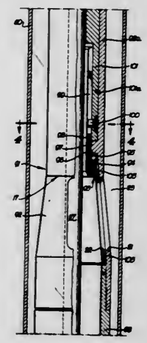
An inner cylindrical shell; an outer cylindrical shell enclosing, and spaced from, the inner shell to provide a jacket adapted to hold a high boiling point liquid; a source of heat in said inner shell for heating the liquid, and agitating means operable when the roll is rotated to bring said liquid into uniform contact with the inner surface of said outer shell.

3,667,543
RETRIEVABLE WELL PACKER

Michael R. Dean, Houston, Tex., assignor to Baker Oil Tools, Inc., Commerce, Calif.

Original application Mar. 2, 1970, Ser. No. 15,403, now Patent No. 3,580,332, dated May 25, 1971. Divided and this application May 22, 1970, Ser. No. 39,637
Int. Cl. E21b *33/12*
U.S. Cl. 166—125 33 Claims





A retrievable well packer to be lowered in a well casing and having a main body with expanders and initially retracted slips thereon for anchoring the body to the well casing, and also an initially retracted packing thereon expandable against the casing, the slips and packing being expanded by moving the body upwardly and a device downwardly along the body, the upward force and movement of the body being transmitted to the slips and packing by a structure releasably locked to the body, such structure being released from the body when the well packer is to be retrieved to enable the body to be moved upwardly of the slips, expanders and packing to effect retraction from the casing of such slips and packing.

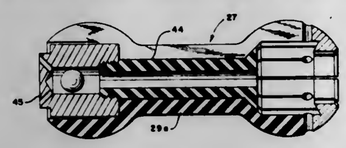
3,667,544
DUMBELL SCRAPER

Willard F. Allimon, Hacienda Heights, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,743
Int. Cl. E21b *37/02*
U.S. Cl. 166—170 6 Claims

A dumbell-shaped paraffin scraper of a type that may be

pumped through a paraffin coated portion of a well flow line

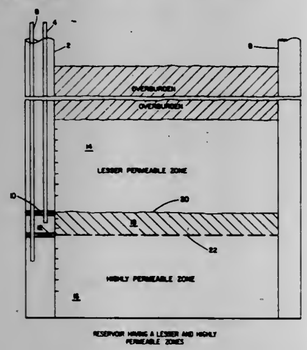


in order to remove the paraffin.

3,667,545
FLOODING EFFICIENCY WITH ZONE BOUNDARY PLUGGING

Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Sept. 28, 1970, Ser. No. 75,859
Int. Cl. E21b *33/138, 43/22*
U.S. Cl. 166—269 **6 Claims**



Injection of an aqueous solution containing a mobility reducing agent into a portion of a highly permeable zone adjacent to a lesser permeable zone is effective to influence zone boundary plugging in a highly stratified reservoir and thereby increase the efficiency of a subsequent micellar flooding process in the highly and/or lesser permeable zone(s). Such reduces or eliminates micellar slug loss to the tighter zones. Thus, a more economical flood can be effected.

3,667,546
WATERFLOODING METHOD

Harry W. Parker, Lubbock, Tex., assignor to Phillips Petroleum Company

Filed May 28, 1970, Ser. No. 41,543
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **9 Claims**

A method of waterflooding a formation with a flood water and surfactant mixture whereby gel particles are added to the injection mixture to improve the efficiency of the flood.

3,667,547
METHOD OF CEMENTING A CASING STRING IN A WELL BORE AND HANGING IT IN A SUBSEA WELLHEAD

Arthur G. Ahlstone, Ventura, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Aug. 26, 1970, Ser. No. 67,005
Int. Cl. E21b *33/13, 29/00*
U.S. Cl. 166—286 **5 Claims**

Method of cementing a casing string in a well bore and hanging it in a subsea wellhead, a safety joint being incorporated in the string below a casing hanger secured to the latter, enabling the joint to be disconnected, in the event the casing string sticks in the well bore during its reciprocation while being cemented, and the casing string above the joint and the casing hanger removed. An extension tool secured to the lower end of a length of casing string is attached to the



casing hanger and spaced therefrom a distance corresponding to the distance between the wellhead and upper end of the casing string cemented in the well bore, and is lowered to place the tool over such upper end, with the hanger landed in the wellhead, after which the casing string cemented in placed is pulled upwardly into and secured to the extension tool by slips of the tool.

3,667,548
METHOD OF WELL STIMULATION

Harry W. Milton, Jr., Findlay, Ohio, assignor to Marathon Oil Company, Findlay, Ohio

Filed Dec. 7, 1970, Ser. No. 95,965
Int. Cl. E21b *43/25*
U.S. Cl. 166—305 R **15 Claims**

Crude oil production from a producing means in fluid communication with an oil-bearing subterranean reservoir is improved by injecting into the formation about 0.1 – 10 barrels of a micellar dispersion per vertical foot of oil-bearing sand and then injecting a sufficient volume of hydrocarbon solution containing an oil-wetting agent, e.g. high molecular amines, substituted-ammonium compounds, etc., into the formation to displace the micellar dispersion radially out into the reservoir and to wet the reservoir rock with the hydrocarbon solution to a distance of about 3 – 20 feet, and thereafter returning the well to production. Such a process, inter alia, improves the relative permeability to the flow of crude oil and establishes an oleophilic character in the reservoir immediately adjacent to the wellbore, the overall effect being to improve the productivity index.

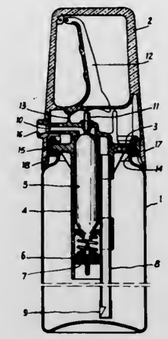
3,667,549
FIRE EXTINGUISHER

Frederic Sachs, Neuilly-sur-Seine, and Guy Vanotti, Oyonnax, both of France, assignors to Compagnie Centrale Sicli, Le Blance-Mesnil, France

Filed May 24, 1971, Ser. No. 146,161
Claims priority, application France, June 15, 1970, 7021858
Int. Cl. A62c *13/00*
U.S. Cl. 169—31 R **8 Claims**

A portable extinguisher having a reservoir for an extinguishing medium, a functional plate secured thereto by a cut

segment member having a "C"-shaped cross-section which serves to position a hood member so as to align an opening in

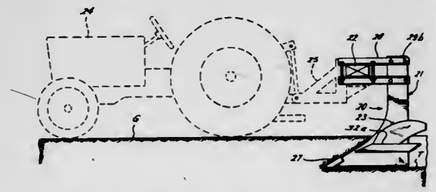


the skirt of the hood member with an outlet nozzle in the functional plate member.

3,667,550
LISTER-CHISEL COMBINATION

Charles L. Lehman, Route 3, P.O. Box 53, Corpus Christi, Tex.

Continuation-in-part of application Ser. No. 703,977, Feb. 8, 1968, now Patent No. 3,554,296. This application Oct. 22, 1969, Ser. No. 868,556. The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed.
Int. Cl. A01b *13/08, 39/20*
U.S. Cl. 172—700 **3 Claims**



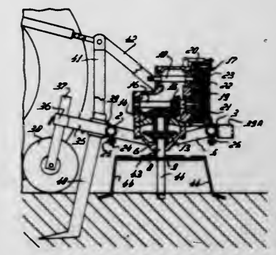
A plurality of chisels are supported in spaced-apart locations along a laterally extending tool bar which is adapted to be moved forwardly over the ground level. Each chisel has a forwardly extending point at its lower end for penetrating the soil to form a narrow trench therein as the tool bar moves forwardly. A lister is mounted on each chisel to dispose its lower cutting edges in position to sever the soil above the lower end of the chisel point and turn it onto beds on opposite sides of the trench.

3,667,551
CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Bruschenrain, Zug, Switzerland, and Ary van der Lely, 10 Weverskade, Maasland, Netherlands

Continuation of application Ser. No. 727,109, May 6, 1968, now abandoned. This application July 8, 1970, Ser. No. 56,164
Claims priority, application Netherlands, May 12, 1967, 67/06637
Int. Cl. A01b *33/00*
U.S. Cl. 172—59 **5 Claims**

An agricultural machine with implements that are powered by rotary shaft, the connections between the implements and the shafts include quick releases so that various implements,

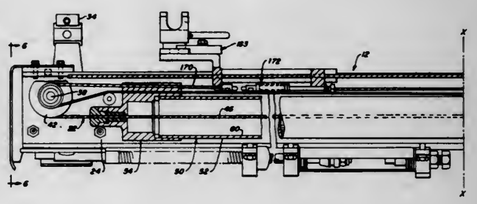


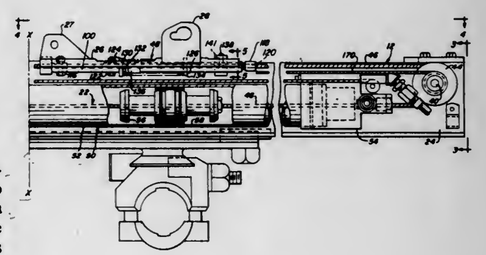
including spreaders, tined members and other working implements, can be interchanged.

3,667,552
CABLE FEED DEVICE

John Edward Gordon, 337 Main Street East, Galt, Ontario, Canada

Filed June 3, 1970, Ser. No. 43,138
Int. Cl. E21c *5/06*
U.S. Cl. 173—147 **14 Claims**





A cable feed device for a drilling apparatus and more particularly improved means for maintaining tension in a feed cable during the feeding of a drill rod.

3,667,553
TELESCOPING SEA FLOOR SOIL SAMPLER

Henry L. Gill, Ojai, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Original application Apr. 1, 1969, Ser. No. 813,403, now Patent No. 3,576,220. Divided and this application Dec. 14, 1970, Ser. No. 97,827
Int. Cl. E21b *7/12, 49/02*
U.S. Cl. 175—6 **5 Claims**

A deep penetrating ocean bottom soil sampler employing a plurality of telescoping tubes that may be sequentially driven

downwardly to penetrate the ocean floor a distance equal to approximately ⅓ of the cumulative length of the tubes. As



the sampler with extended tubes is withdrawn, it extracts an elongate core comprising a representative ocean bottom soil sample.

3,667,554

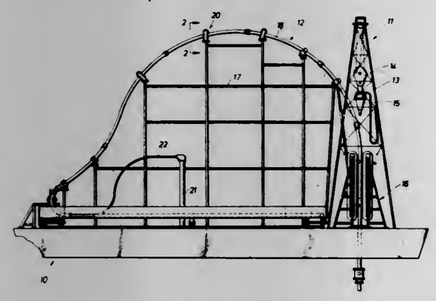
METHOD FOR HANDLING COLUMN OF DRILL PIPE DURING DRILLING OPERATIONS

Eugene A. Smitherman, 1921 Bank of South West Building, Houston, Tex.

Continuation of application Ser. No. 859,634, Sept. 22, 1969, now abandoned , Continuation-in-part of application Ser. No. 685,686, Nov. 24, 1967, now abandoned. This application Nov. 30, 1970, Ser. No. 93,840

Int. Cl. E21b *7/00, 19/00*

U.S. Cl. 175—57 **10 Claims**



A method for removing or installing a column of drill pipe or tubing relative to a well bore during drilling or workover operations wherein the drill string is moved from the well bore preferably in one continuous piece without breaking it into shorter sections, and is moved in an upwardly and radially outwardly curved path from the well bore to a substantially horizontal attitude for storage preferably in a generally circular configuration on the ground or support means for later return to the well bore moving approximately along the same path, and as one piece.

3,667,555

AIR DRILLING METHOD USING CONTROLLED SPLIT STREAM

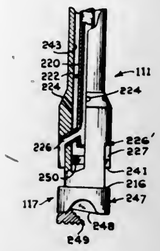
Wayland D. Elenburg, P. O. Box 1588, Monahans, Tex.

Filed May 11, 1970, Ser. No. 36,352

Int. Cl. E21b *49/02*

U.S. Cl. 175—60 **10 Claims**

Method and apparatus for drilling and for obtaining uncontaminated formation samples with an air hammer by flowing compressed air down through the tubing annulus of a dual pupe string to a novel sub, where the flow divides to enable part of the air to power the air hammer while the remaining air flow is directed into the hole annulus. The spent air ex-



hausts from the bit face and carries cuttings back into the sub and into the inner tubing string. An enlargement formed on the sub exterior prevents comingling of the samples with material from the borehole annulus.

3,667,556

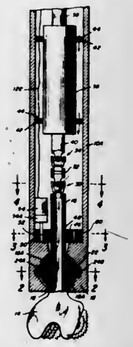
DIRECTIONAL DRILLING APPARATUS

John Keller Henderson, 4012 East 41st Place, Tulsa, Okla.

Filed Jan. 5, 1970, Ser. No. 979

Int. Cl. E21b *7/04*

U.S. Cl. 175—73 **3 Claims**



This invention relates to a directional drilling apparatus. More particularly, the invention is a drilling tool including provisions for changing the direction of drilling of a borehole, the tool including a tubular body having means at the upper end for attachment of a drill string, a drill bit affixed to the lower end of the body by means of a slip clutch drill bit so that the drill bit is rotated when the tubular body is rotated while permitting the drill bit to be rotated independently of the body, means within the tubular body for rotating the drill bit, and means controllable from the surface of the earth of varying the angle of the drilling axis of the drill bit relative to the tubular body.

3,667,557

MUD DIVERTER AND INSIDE BLOWOUT PREVENTER DRILLING TOOL

William L. Todd, Los Angeles, Calif., and James D. Mott, Houston, Tex., assignors to Hydril Company

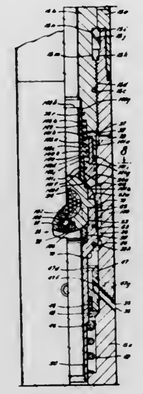
Filed Jan. 20, 1971, Ser. No. 107,951

Int. Cl. E21b *27/00, 41/00, 17/04, 21/00*

U.S. Cl. 175—242 **22 Claims**

A tubular member positioned in the drill string above a drill bit includes a rotatable ball valve to divert drilling fluid

and the like in the well bore if the drill bit nozzles become clogged thus permitting continued circulation of the drilling fluid. The member also includes a movable sleeve to automatically prevent flow of the drilling fluid or the like up the



drill string from the drill bit. The rotatable ball valve tends to prevent clogging of the drill bit nozzles by maintaining smaller channeled openings in the rotatable ball valve unclogged by wiping the ball valve surface and flushing the wiped clogging particles into the well bore.

3,667,558

CABLE-TYPE CORING APPARATUS FOR RETRIEVING UNDERGROUND SPECIMENS

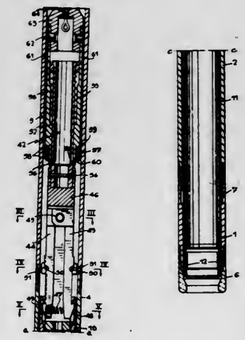
Honore Joseph Lambot, Rue Kindermans 14, 1050 Bruxelles, Belgium

Filed Apr. 9, 1970, Ser. No. 26,972

Claims priority, application Belgium, Apr. 24, 1969, 73209

Int. Cl. E21b *9/20, 25/00*

U.S. Cl. 175—246 **2 Claims**



A cable-type coring apparatus comprises a string of tubing with an annular coring bit at its lower end, a coring head with a core extractor slidable within the tubing, and means for retrieving the head with a cut core therein. Water under pressure forces the coring head and retrieval means downwardly until the head locks in coring position in the tubing with a latch action. An upward pull on the cable unlatches the head and also vents the water under pressure so that it no longer forces the assembly downward, whereupon continued pulling on the cable retrieves the coring head and cut core.

3,667,559

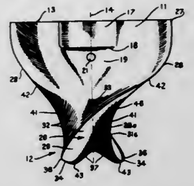
PILOT BIT WITH MULTIPLE CUTTING EDGES

John G. Bennetti, Cupertino, Calif., assignor to Pengo Corporation, Sunnyvale, Calif.

Filed Nov. 19, 1970, Ser. No. 91,058

Int. Cl. E21c *13/04*

U.S. Cl. 175—392 **5 Claims**



Earth auger pilot bit is an improvement upon U.S. Pat. No. 2,773,673. The body of the bit is cone-shaped with a "fish tail" lower extremity. The improvement consists of having two (or more) spiral cutting blades protruding from the cone-shaped body and extending into the fish-tail, the second blade on each side joining the leading blade of the other at the bottom of the bit to reinforce same. The plural blades resist fracture upon severe impact and divide the wear, thereby prolonging the life of the bit.

3,667,560

WEIGHING APPARATUS

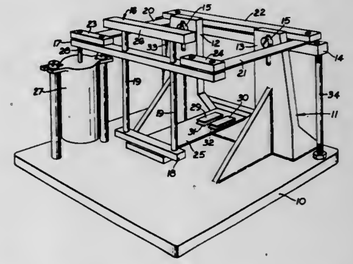
Geoffrey Cyril Cooke, Stourbridge, England, assignor to W. & T. Avery Limited, Birmingham, England

Filed Feb. 27, 1970, Ser. No. 14,942

Claims priority, application Great Britain, Mar. 7, 1969, 12,090/69

Int. Cl. G01g *3/14*

U.S. Cl. 177—211 **16 Claims**



Load measuring apparatus, e.g. self-indicating weigher, having a parallelogramic link system which includes three flexure strips, forming top and bottom linkages connecting a frame member and a moveable load receiving member. Two of the strips are spaced apart horizontally to form one linkage, which may be the top one; and the other strip, which mounts a plurality of strain gauges responsive to flexure thereof to provide a measure of the applied load, forms the other linkage, e.g. the bottom one.

3,667,561

WEIGHING AND HEIGHT MEASURING DEVICE

William Y. Hutchinson, Chicago, and Walter P. Kushmuk, Niles, both of Ill., assignors to Continental Scale Corporation, Chicago, Ill.

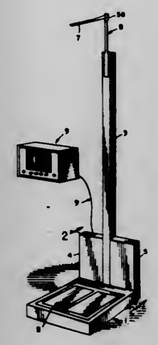
Filed Oct. 26, 1970, Ser. No. 83,924

Int. Cl. G01g *23/37, 19/50*

U.S. Cl. 177—245 **6 Claims**

A device for measuring weight and/or height especially adapted for use with a remote digital read-out system com-

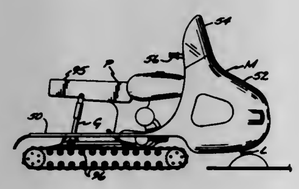
prising a mechanical leverage weighing structure having a high degree of sensitivity and low friction and hysteresis coupled with a compatible electronic measuring system and/or a height measuring means compatible with said system.



3,667,562
MOTORCYCLE SNOWMOBILE CONVERSION UNIT

William F. Compton, 675 W. Hamilton, Apt. D, San Pedro, Calif.

Filed Oct. 30, 1970, Ser. No. 85,421
Int. Cl. B62m 27/02; B62d 55/04
U.S. Cl. 180—5 R 5 Claims



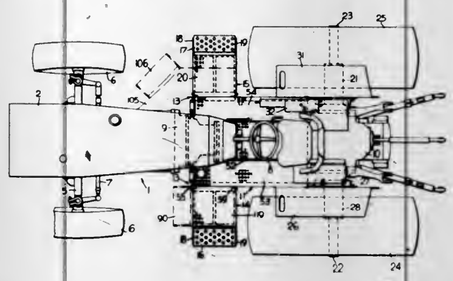
A conversion unit on which the chassis of a motorcycle may be removably mounted after the front and rear wheels of the motorcycle have been separated therefrom, and the motorcycle when so positioned on the unit cooperating therewith to provide a power driven snowmobile. The unit is particularly adapted for use in portions of the country that are subject to extensive snowfall, with the motorcycle capable of being used for its normal purposes during the spring, summer and fall of the year, and during the winter being removably mountable on the unit to provide a vehicle that can negotiate a snow-covered terrain.

3,667,563
SUPPORTING STRUCTURE FOR PLATFORM DEFINING FUEL AND BATTERY COMPARTMENT

Eugene V. Korb, West Allis, and Robert C. Haupt, Milwaukee, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 21, 1969, Ser. No. 878,748
Int. Cl. B62d 25/00
U.S. Cl. 180—68.5 11 Claims

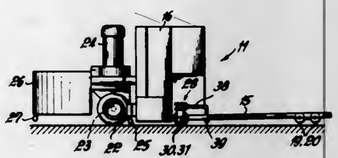
Platform support structure on a tractor having access steps to the platform level and providing supporting structure for a fuel tank and battery compartment. The fuel tank and battery compartments are supported at a level below the operator platform of the vehicle.



3,667,564
TRANSPORTING APPARATUS

Gerhard Schnell, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 4, 1970, Ser. No. 86,686
Claims priority, application Germany, Nov. 6, 1969, P 19 55 837.3
Int. Cl. B62d 5/04
U.S. Cl. 180—79.1 14 Claims



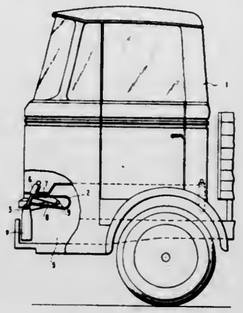
A vehicle from one of whose longitudinally spaced ends a lifting fork projects which is movable between a raised and a lowered position. A ground-engaging steering wheel is provided in the region of the other end of the vehicle and pivotable about an upright axis, and supporting wheels turnably mounted in the region of the fork and displaceable to and from a ground-engaging position. Auxiliary steering wheels are also provided in the region of the fork and displaceable to and from a ground-engaging position as well as pivotable about auxiliary upright axes. Means is provided for effecting displacement of the support wheels to, and at the same time of the auxiliary steering wheels from the respective ground-engaging position when the fork moves to raised position, and vice versa.

3,667,565
DRIVER CAB OF COMMERCIAL-TYPE MOTOR VEHICLES

Adolf Steiner, Gerlingen, and Hans Rinnergschwentner, Rotenfels, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed May 22, 1970, Ser. No. 39,764
Claims priority, application Germany, May 24, 1969, P 19 26 779.9
Int. Cl. B62d 27/04
U.S. Cl. 180—89 15 Claims

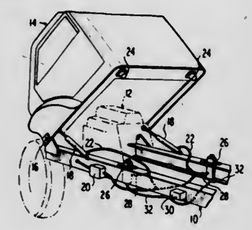
A driver cab for commercial-types of vehicles which is spring-supported with respect to the vehicle frame by spring or guide elements arranged between the vehicle frame and the driver cab on opposite sides of the vehicle; the spring or guide elements are thereby connected with each other by a stabilizer, preferably in the form of a torsion rod.



3,667,566
RELEASABLE CONNECTOR, PARTICULARLY FOR TILT CAB VEHICLES

William C. N. Hopkins, P. O. Box 4551, Walnut Creek, Calif.

Filed May 28, 1970, Ser. No. 41,182
Int. Cl. B62d 27/06
U.S. Cl. 180—89 20 Claims



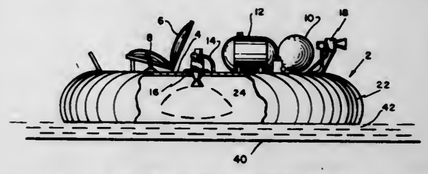
A releasable connector comprises a first part in the form of a collar or cup having an internal annular groove and a second part comprising a cylinder and piston jointly defining a latch arrangement insertable into the collar and including an annular expansible-contractable latch member for selectively nesting in said groove and to secure said parts together. The latch arrangement includes an annular latch part having a conical latch face and fixed to the cylinder, and an annular latch part carried by the piston and having a conical latch face jointly defining an annular channel within which the latch member is seated. The width of the channel is varied selectively by movement of the piston to expand the latch member into the groove to secure the parts together or to permit retraction of the latch member so that the two parts can be separated. The connector is particularly adapted for use with tilt cab vehicles, the first part preferably being secured to the cab and the second part being mounted on the vehicle chassis.

3,667,567
ROCKET POWERED GROUND EFFECT MACHINE

Eugene V. Rutkowski, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 26, 1970, Ser. No. 14,592
Int. Cl. B60v 1/14
U.S. Cl. 180—117 7 Claims

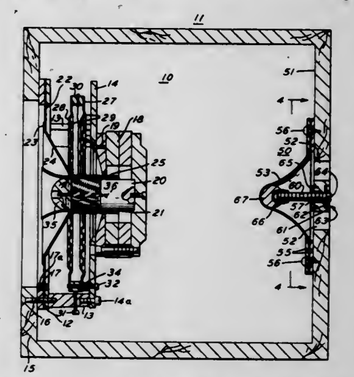
A rocket powered ground effect machine is provided which has a self contained propellant supply which powers a rocket engine to provide gas pressure within a plenum. This type of device has particular applicability in non atmospheric conditions.



3,667,568
PRESSURE COMPENSATOR FOR SPEAKER CABINETS

Arthur Liebscher, c/o Electronics, Inc., Industrial Park, Willow Grove, Pa.

Filed Sept. 15, 1970, Ser. No. 72,463
Int. Cl. G10h 13/00; H04r 1/28
U.S. Cl. 181—31 B 8 Claims

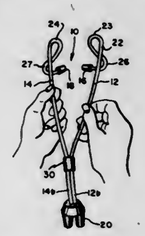


A pressure compensator for speaker cabinets is provided which includes a flexible rubber diaphragm attached to the rear of a speaker cabinet covering a plurality of vent holes and which includes an adjustable rod engaged in a plastic dome within a sponge rubber ball at the center of the diaphragm which extends the diaphragm so as to form a logarithmic profile to substantially reduce the back wave. A second diaphragm may also be employed spaced from the first mentioned diaphragm for greater suppression.

3,667,569
SOUND TUBE HEADSET

Richard C. Mackey, Woodland Hills, and W. James Neill, Santa Monica, both of Calif., assignors to Acoustifone Corporation, Chatsworth, Calif.

Filed Jan. 11, 1971, Ser. No. 105,343
Int. Cl. A61b 7/02; G10k 13/00; G02k 13/00
U.S. Cl. 181—31 R 7 Claims



A sound tube headset formed of flexible tubing having arcuate end portions adapted to rest on the ears, extend

downwardly behind the ears and forwardly in front of the wearer and with an adjustable slider for holding the lower portions of the tubes together and for slightly tensioning the same in the region of the clavicle to effectively secure the ear engaging portions in position and substantially obviate inadvertent dislodgment.

3,667,570

SILENCERS FOR FIREARMS, INTERNAL COMBUSTION ENGINES, OR THE LIKE

Mitchell L. WerBell, III, Powder Springs, Ga., assignor to Michael H. Adair and Rosser S. Reeves, III, New York, N.Y., attorneys-in-fact

Continuation-in-part of application Ser. No. 700,239, Jan. 24, 1968, now Patent No. 3,500,955, dated Mar. 17, 1970. This application Mar. 16, 1970, Ser. No. 19,829

Int. Cl. F41f *17/12*; F41c *21/18*; F01n *1/08*

U.S. Cl. 181—36 R **27 Claims**



Silencers for use in conjunction with firearms and as mufflers for internal combustion engines and the like are provided with entry, suppression and resonant chambers arranged coaxially within a tubular housing. A plurality of helical suppressor elements are axially disposed in the suppression chamber and arranged in opposition to each other. The entry and resonate chambers may be provided with baffles. The entry chamber may be provided with an excess pressure relief valve. Orificed resilient plugs may be provided in the vicinity of the discharge end of the silencer particularly for use in conjunction with firearms. At the entry end of the silencer there may be provided a tube with an L-shaped slot permitting ready mounting of the silencer on the barrel of a firearm.

3,667,571

SOUND-INSULATING DEVICE FOR NOISY APPARATUS

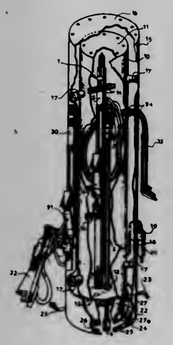
Robert Fattelay, 21 B rue Nicolas Bruand, 25 Besancon, France

Filed May 17, 1971, Ser. No. 143,900

Claims priority, application France, Nov. 6, 1970, 7040095

Int. Cl. F01n *1/08*

U.S. Cl. 181—36 A **11 Claims**



Sound-insulating device for apparatus generating intensive noise comprising a series of *n* impervious enclosures of increasing dimensions, the first enclosure having the smallest dimensions enclosing completely and directly the said apparatus, the second enclosure surrounding at least partially the first enclosure and so on, the means for securing the apparatus to the first enclosure and the means for securing the enclosures to one another being constituted by vibration-damping members.

3,667,572

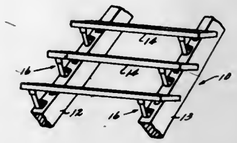
TREAD SUPPORTING ASSEMBLY

Charles E. Anderson, deceased, P.O. Box 264, late of Sardinia, Ohio (Ann Thackston, Executrix), Hillsboro, Ohio

Filed Mar. 5, 1971, Ser. No. 121,470

Int. Cl. E06c *7/50*; E04f *11/16*

U.S. Cl. 182—220 **4 Claims**



A tread support assembly for mounting a stair tread on a beam having a sloping upper face. The tread support includes an angle shaped support member and a main member of substantially channel shape. One flange of the main member and one flange of the support member are attached to the sloping face of the beam with the web of the main member resting on a free end of an outwardly extending flange of the support member adjacent the other flange of the main member. A slide member embraces and holds the other flange of the main member and the outwardly extending flange of the support member in flatwise relation. The tread is attached to the web of the main member.

3,667,573

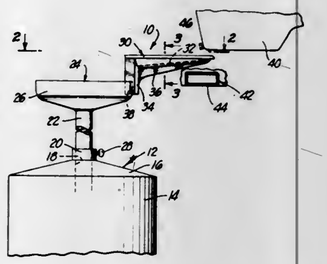
DRAIN SPOUT ATTACHMENT

James D. Edwards, 828 East Plymouth, Glendora, Calif.

Filed Sept. 15, 1970, Ser. No.

Int. Cl. F16n *33/00*

U.S. Cl. 184—1.5 **1 Claim**



A drain spout attachment for an automobile crankcase oil drainage receptacle of the type having an upright collection tank with an upwardly opening funnel at its upper end and adapted for collecting drainage oil from the crankcase of an automobile elevated on a hoist. The spout attachment mounts on and projects horizontally from the funnel rim in a manner such that the receptacle may be placed below the automobile with the spout projecting over the hoist frame member which normally underlies the automobile crankcase drain opening to permit location of the spout directly below the drain opening.

3,667,574

CHASSIS LUBRICATION SYSTEMS

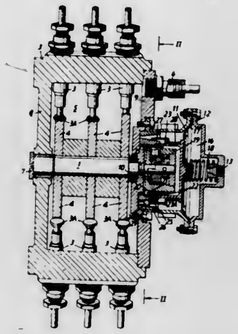
Max Edward Grantham, Plympton, Plymouth, England, assignor to Tecalemit (Engineering) Limited, Plymouth, Devon, England

Filed Dec. 2, 1969, Ser. No. 881,423

Claims priority, application Great Britain, Dec. 3, 1968, 57,369/68

Int. Cl. F16n *7/14, 13/22*

U.S. Cl. 184—7 R **3 Claims**



A motion transfer device is provided for use in lubricating apparatus and systems. This device is for axial mounting on a pump having a rotating shaft. A diaphragm **17** is moved by reduced air pressure in space **16** and moves an inner housing **23** axially. Housing **23** cooperates with member **19** via balls **21** running in helical grooves in the housing and member. This member causes shaft **1** to rotate by use of a pawl and ratchet (**14,15**). Housing **23** is constrained to move axially by balls **24** rolling in axial grooves in the housing **23** and on part **29** (FIG. 1).

3,667,575

DOUBLE ACTING FREE WHEEL

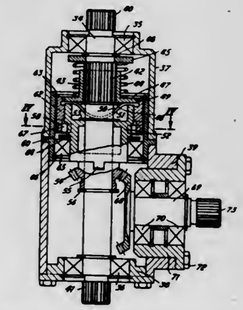
Marcel Pierre Alexis Bouhot, 35 Avenue du General Sarrail, Paris, France

Original application Apr. 9, 1968, Ser. No. 719,922, now Patent No. 3,499,511, dated Mar. 10, 1970. Divided and this application Sept. 12, 1969, Ser. No. 870,726

Claims priority, application France, Apr. 19, 1967, 103325; Nov. 21, 1967, 129035

Int. Cl. B60z *7/12*

U.S. Cl. 188—134 **1 Claim**



The invention relates to stopping device for disconnecting two shafts, which comprises input drive means, an output driven shaft, displaceable wedging cam means releasably coupling said input drive means to said output driven shaft, means to displace said wedging cam means thereby to release said input drive means and said output driven shaft, means sensitive to the torque resisting rotation of said output driven shaft, said torque sensitive means being associated with said displacing means whereby when the resistance to torque reaches a predetermined value said displacing means is actuated to displace said wedging cam means.

3,667,576

HYDRAULIC PRESSURE ACTUATED PRESSING DEVICE FOR DISC BRAKE

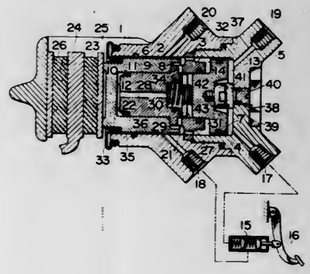
Tadasu Irie, Toyonaka, and Kaname Doi, Ibaragi, both of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed Jan. 27, 1971, Ser. No. 110,237

Claims priority, application Japan, Jan. 29, 1970, 45/8180

Int. Cl. B60t *11/20*

U.S. Cl. 188—345 **2 Claims**



A hydraulic pressure actuated pressing device for disc brake to compensate the wear of friction pads and to keep the braking clearance constant. A piston of the pressing device has a liquid chamber inside thereof containing a quantity of liquid so that a proper braking cleance is maintained in accordance with the increase of the wear of friction pads while preventing the piston from being retracted even when the hydraulic braking pressure is lost.

3,667,577

VEHICLE SPEED RESPONSIVE CONTROLS FOR TRANSMISSION, CLUTCH AND ENGINE

Charles Terres Weymann, Paris, France, assignor to S.I.D.A.R.O Societe Industrielle de Dispositifs Automatiques Robomatic, Oise, France

Filed Apr. 7, 1970, Ser. No. 26,305

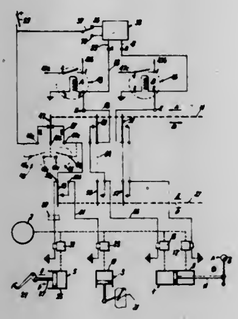
Claims priority, application France, Apr. 28, 1969, 6913392

Int. Cl. B60k *21/00, 29/00*

U.S. Cl. 192—.08 **9 Claims**

The present invention relates to an automatic gearbox control device for automobiles which is applicable to any conventional mechanical gearbox and can be coupled to an existing vehicle without any major modification. The control device comprises : a source of pressure fluid, a double-action ratio-changing jack actuated by said pressure fluid through two electrovalves selectively, and an electrical regulating contactor propelled at a speed proportional to that of the vehicle and comprising two terminals selectively supplied with current by said regulator from the vehicle battery for supplying two connections to said electrovalves respectively, each of said connections comprising two contactors in parallel, namely a self-maintaining contactor activated by the ratio-changing member operatively connected to said jack and a maneuver contactor activated by the vehicle clutch i.e.

which closes in the de-clutched position. The control device also includes means for automatically idling an associated engine or cutting off the fuel supply thereto during ratio shifting.

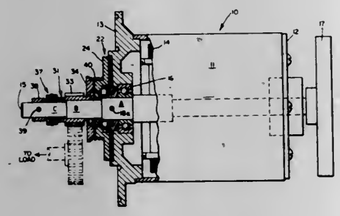


3,667,578

BI-DIRECTIONAL DRIVE RELEASED BRAKE

Robert M. Johnson, Levittown, Pa., assignor to Harold Beck & Sons, Inc., Newtown, Pa.

Filed May 14, 1971, Ser. No. 143,535
Int. Cl. F16d 67/00, 55/48
U.S. Cl. 192—8 R 4 Claims



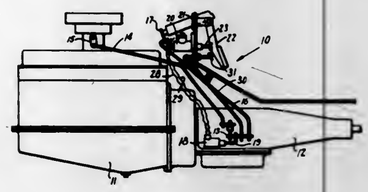
A bi-directional stop clutch or brake for power transmitting rotating shafts is disclosed in which a friction disc is fixed to a fixed housing from which a power transmitting shaft extends. A clutch disc adapted to engage said friction disc is rotatably and slidably disposed on the shaft without the housing for braking the shaft. A drive collar is pinned to the shaft concentrically of the friction disc and between the clutch disc and the housing. The drive collar has formed therein a concentric series of conical depressions, and the clutch disc has also formed therein a corresponding series of conical depressions, the two series of depressions being in mutual alignment and holding therebetween a plurality of balls, one ball per each opposed pair of conical depressions. Distally of the clutch disc and spaced apart therefrom is a flanged pinion which is rotatably sleeved upon the shaft and positioned thereon by means of an annular thrust bearing and fixed collar positioned distally thereof. Facing portions of the flanged pinion and clutch disc likewise have corresponding concentric arrangements of conical depressions formed therein so as to house a plurality of balls therein. A helical spring engages the flanged pinion and clutch disc while being in compression, thereby normally urging the clutch disc into frictional engagement with the friction disc. The pinion is adapted to be connected to a load to be positioned by rotation of the power shaft. A power application to the shaft causes the pinion to be driven by the cooperating drive collar, balls, clutch disc and balls, while lifting the clutch disc out of frictional engagement with the friction disc. Back load similarly causes the clutch disc to be strongly urged into locking action, when power application ceases.

3,667,579

BRAKE OPERATED TRANSMISSION SHIFTER

Joseph Vizza, 414 Broad Avenue, Belle Vernon, Pa.

Filed Nov. 18, 1970, Ser. No. 90,646
Int. Cl. B60k 21/00
U.S. Cl. 192—4 A 4 Claims



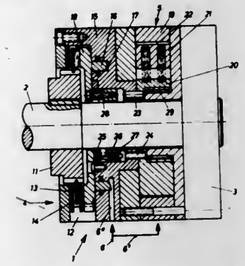
An engine compression brake system in which an automatic transmission is down shifted to second gear and to low gear on moderate to heavy braking pressure applied to the brake pedal. The down shifting may be electrically actuated by pressure actuated switches which are exposed to the hydraulic pressure in the conventional brake system, by flexible cables which are moved by a piston system actuated by the hydraulic pressure in the conventional brake system and by mechanical linkage controlled by a separate foot pedal.

3,667,580

MACHINE TOOL INDEXING SYSTEM

Willi Schacher, Friedrichshafen, and Heinz Marschner, Kressbronn, both of Germany, assignors to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Germany

Filed May 1, 1970, Ser. No. 33,545
Claims priority, application Germany, May 3, 1969, P 19 22 644.9; June 14, 1969, P 19 30 295.5
Int. Cl. F16d 67/02, 57/00
U.S. Cl. 192—12 A 4 Claims



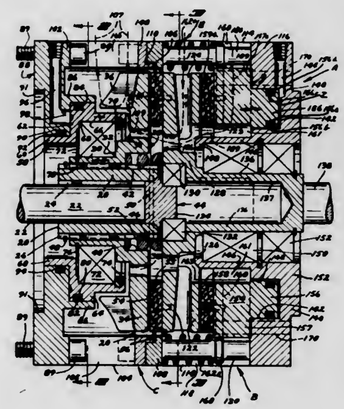
In a machine tool a spindle is brought to a slow speed, e.g., for indexing to selective angular positions, by means of a clutch and a hydraulic pump, in a hydraulic control system, wherein the spindle is slowed down, or stopped, or reversed. The construction, and a number of modifications, envisages carrying a conventional indexing mechanism preferably on the spindle itself, together with the clutch, as well as the hydraulic pump in a compact assembly. The hydraulic system includes a pressure source and a throttle which controls differential pressures acting on the hydraulic pump to drive it as a motor by which the slow speed of the spindle is produced by rotation thereof through the clutch. Differential pressure in the system can be utilized in conjunction with a control device to which an indexing mechanism actuation is responsive. However, the invention has use in any installation where a compact mechanism for slow drive of a shaft is desired, or where it is desired to stop and momentarily reverse such shaft, the main power to the shaft being rendered ineffective in any suitable manner when the mechanism of the invention is operating.

3,667,581

COMBINATION CLUTCH-BRAKE

James V. Hanks, Minneapolis, Minn., assignor to Horton Manufacturing Company, Inc., Minneapolis, Minn.

Filed Mar. 16, 1970, Ser. No. 19,883
Int. Cl. F16d 67/02
U.S. Cl. 192—18.1 7 Claims



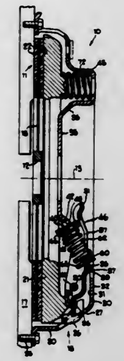
A combination clutch-brake which includes a clutch unit including a clutch housing, a first hub, an annular clutch piston slidably mounted on said hub, an annular clutch cylinder carried by said clutch housing, a friction disc having fins thereon slidably mounted on and rotatable with the first hub, a brake unit including a disc journal having air passageways extending radially therein and mounted on a second hub, means rotatably mounting said second hub axially on said first hub, spring means normally urging said friction disc out of engagement with said disc journal, a brake housing mounted on said second hub, means connecting said clutch housing with said brake housing said brake housing having an annular cylinder formed therein, an annular piston base having an annular brake piston thereon and slidable within the annular cylinder, the brake piston having a friction facing thereon in axial alignment with the disc journal, means for normally urging the annular brake piston with said friction facing thereon out of engagement with said disc journal, means for causing fluid pressure to urge said clutch piston against said friction disc to cause said second hub to rotate, means for causing fluid pressure to urge said brake piston against said disc journal to brake the second hub, the friction disc formed with air passageways extending therethrough, the disc journal formed with air passageways extending therethrough and communicating with said air passageways of said friction disc, the brake piston base formed with air passageways extending therethrough and communicating with said air passageways of said disc journal, and the means connecting said clutch housing with said brake housing being separable.

3,667,582

RADIAL SPRING CLUTCH

Howard O. Borck, Detroit, and Leo W. Cook, Royal Oak, both of Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed July 27, 1970, Ser. No. 58,309
Int. Cl. F16d 23/00
U.S. Cl. 192—99 A 15 Claims



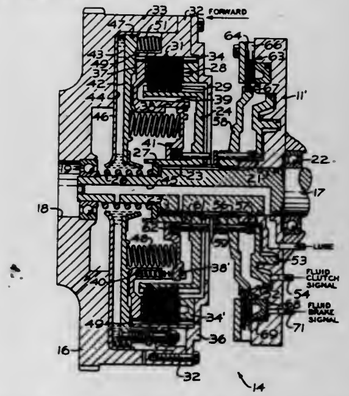
A friction clutch assembly including a driving member, a driven member, a reaction member, a pressure plate, release levers pivotally connected to the reaction member at a point between a front surface of the reaction member and the driving member and pressure springs disposed between the reaction member and the release levers such that upon wear of the friction facing an increase in mechanical advantage is used to maintain a substantially constant pressure plate load while the clutch is engaged regardless of clutch facing wear and upon clutch release a decrease in mechanical advantage is used to reduce operator's efforts.

3,667,583

SELF-MODULATED INPUT CLUTCH FOR VEHICLE DRIVE TRANSMISSIONS

Elmer A. Richards, Kalamazoo, Mich., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 22, 1970, Ser. No. 30,680
Int. Cl. F16d 23/10
U.S. Cl. 192—105 A 6 Claims



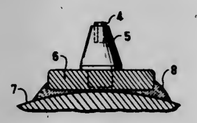
A clutch for a vehicle having a change speed gear box transmission automatically performs control functions which have heretofore required skilled manipulation of a clutch

pedal or the like by the operator. Springs exerting an engagement force on the clutch plates react against a movable piston which responds to a centrifugally generated fluid pressure to increase the spring force as a function of engine speed at the lower range of engine speeds. To facilitate start-ups and to avoid stalling, additional springs automatically disengage the clutch at the idling range of engine speed. The springs and variable fluid pressure provide modulated engagement or disengagement within an intermediate range of speeds and further means engage the clutch with a fixed clutch capacity at normal operating speeds. Fluid signal means force disengagement during shift transients at higher engine speeds. Clutch action differs under different operating conditions in a manner conforming with skilled manual control of a clutch under similar conditions.

3,667,584
TRANSPORT ROLLER

Bengt Sigvard Karlsson, Enskede, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandvlken, Sweden

Filed June 25, 1970, Ser. No. 49,855
Claims priority, application Sweden, July 8, 1969, 9631/69
Int. Cl. B65g *13/00*
U.S. Cl. 193—37 **2 Claims**

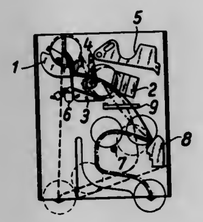


For a transport roller useful in handling timber and similar bulky objects, the surface of a cylindrical roller of metal is provided with spaced rows of studs tipped with wear-resistant material. The studs are fixed to steel strips, which strips are welded or otherwise anchored to the surface of the roller, being disposed in a predetermined pattern thereover.

3,667,585
COIN TESTING APPARATUS

Werner Lindner, Buxtehude, Germany, assignor to National Rejectors, Inc. GmbH, Buxtehude, Germany

Filed June 16, 1970, Ser. No. 46,643
Claims priority, application Germany, July 10, 1969, P 19 34 911.2
Int. Cl. G07f *3/02*
U.S. Cl. 194—101 **2 Claims**

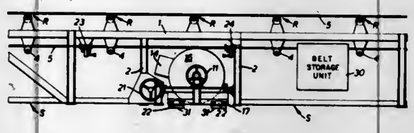


The coin testing apparatus comprises a magnet, a deflecting sheet and an anvil arranged one after the other in the dropping path of the coins. The apparatus permits separation of coins of low, medium and high electric conductivity in a way that the coins of low and high conductivity are directed to a channel for acceptable coins whereas the coins of medium conductivity are directed to the coin return channel.

3,667,586
ENDLESS BELT CONVEYORS

Edmund William Matthews, Hallow, England, assignor to Dowty Meco Limited, Worcester, England

Filed Nov. 2, 1970, Ser. No. 85,980
Claims priority, application Great Britain, Nov. 15, 1968, 56,023/68; 56,024/68
Int. Cl. B65g *15/00*
U.S. Cl. 198—1 **6 Claims**

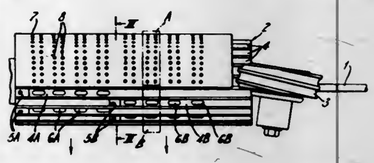


An endless belt conveyor having means for mounting a reel for belting, whereby belting may be readily added to or removed from the endless belt when the overall length of the conveyor has to be increased or decreased.

3,667,587
CONTINUOUS ROD MAKING MACHINES

Edward G. Preston, London, England, assignor to Molins, Limited, London, England

Filed Apr. 15, 1970, Ser. No. 28,800
Claims priority, application Great Britain, Apr. 18, 1969, 20,000/69; Jan. 9, 1970, 1,192/70
Int. Cl. B65g *47/26*
U.S. Cl. 198—25 **10 Claims**



This invention is concerned with a fluted deflector drum which receives axially moving cigarettes or the like and decelerates them by means of suction in the drum applied through ports in the flutes. In order to adjust the deceleration, part of the drum is surrounded by a cowl formed with apertures which can be selectively closed to provide a variable restriction against air flow produced by the suction in the drum.

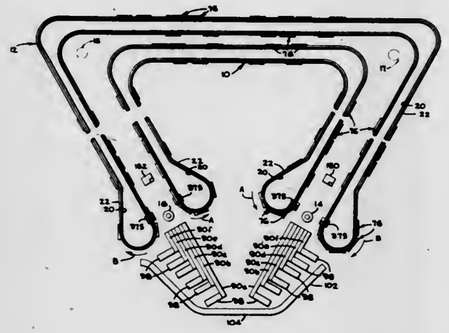
3,667,588
CONVEYOR SYSTEM

Robert J. Traube, San Mateo, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Aug. 21, 1968, Ser. No. 754,443
Int. Cl. B65g *43/08, 47/10*
U.S. Cl. 198—38 **5 Claims**

A storage and retrieval system for goods has two power operated conveyors movable in separate endless loops past two (or more) spaced apart picking stations, each picking station common to both conveyors. Each conveyor has bins with compartments in which goods are stored. Although the bins on each conveyor remain in the same sequence, the bins are movable relative to each other on the conveyor to define "buffer" zones which permit simultaneous picking by two spaced apart pickers. The control system for the conveyors includes a reader which receives digital data concerning a group of orders to be picked from a stack of cards, each card giving the identity, quantity, and distribution of one of the articles to be picked. The two conveyors are automatically

stopped alternately with the bins containing ordered goods at the picking stations, and the operator at each picking station picks goods from the bins in accordance with a read-out unit which displays the card data. A plurality of packing lanes

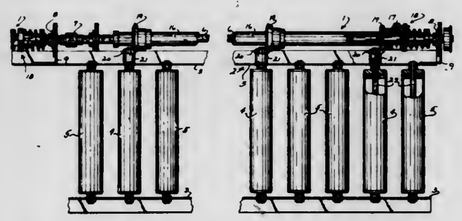


originate at each picking station and terminate at a plurality of packing stations. Each picker distributes goods to the separate packing lanes in accordance with the read-out unit at the picking station.

3,667,589
CONVEYING SYSTEM HAVING AN AUTOMATICALLY DEACTIVATED DRIVE

Charles F. Constable, South Milwaukee, Wis., assignor to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Apr. 1, 1970, Ser. No. 24,611
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**



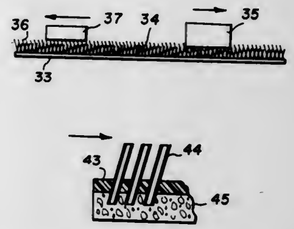
A conveying system including a series of conveyor sections with each conveying section including a series of rolls to support the articles being conveyed. At least one roll of the series is a drive roll. A drive shaft extends longitudinally of the conveyor sections and the drive shaft is individually connected to each drive roll through a clutch which is arranged to disengage the driving connection to each drive roll under predetermined overload conditions. Means is also provided for returning the clutch to an engaged position after a predetermined period of disengagement, whereby the clutch will reengage if the overload condition has been cured and will again disengage if the overload condition continues to exist.

3,667,590
VIBRATORY PILE FEEDER

Dennis E. Mead, Cazenovia, N.Y.

Filed Jan. 2, 1970, Ser. No. 273
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 BA **3 Claims**

A feeder for objects uses a vibratory element bearing a pile material having parallel bristles inclined in the direction of feed. The tips of the bristles engage and resiliently support

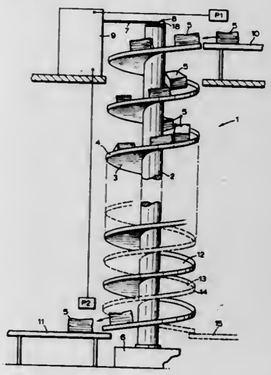


objects to be fed, and the inclination of the bristles establishes the direction of feed as the element is vibrated.

3,667,591
NEWSPAPER BUNDLE FEEDING AND STORING SYSTEM

Thomas R. Sykes, Toronto, Ontario, Canada, assignor to Gerrard Company Ltd., Hamilton, Ontario, Canada

Filed Nov. 19, 1969, Ser. No. 878,063
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 R **3 Claims**



A feeding and storage system for handling bundled newspapers and the like is provided by a spiral chute mounted for oscillatory movement, the chute having a helical ramp encircling a central vertical column the ramp having a helix angle such that the bundle will be held by friction from moving down the ramp under gravitation with the chute stationary. Oscillatory movement in the requisite mode to move the bundle from the input end of the ramp to the output end is provided by a suitable drive and a control is provided adjacent each end of the ramp so that the ramp can be filled as a storage unit from the input end with the output end blocked and when the ramp is full or partially full and it is desired to draw off stored bundles, the chute can be controlled from the delivery end to effect bundle delivery.

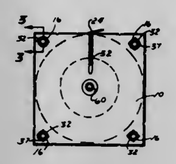
3,667,592
BAND-SAW CARRIER AND DISPENSER

George S. Ayoub, 124 Water Street, Leominster, Mass.

Filed Aug. 20, 1970, Ser. No. 65,632
Int. Cl. B65d *85/67*
U.S. Cl. 206—16 R **10 Claims**

A band-saw carrier and dispenser has a bottom plate and a cover plate which has posts that extend through holes in the

bottom plate. Retaining means retain the posts in said holes, which is accomplished by distorting portions of the posts, as



by heat, to extend them to the bottom plate and thereby retain both plates together.

3,667,593

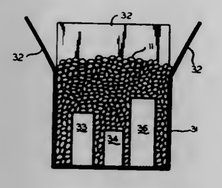
FLOWABLE DUNNAGE APPARATUS AND METHOD OF PACKAGING WITH FLOWABLE AND COMPLIABLE INFLATED DUNNAGE MATERIAL

John M. Pendleton, 5080 Maplewood, Greendale, Wis.

Continuation-in-part of application Ser. No. 777,940, Oct. 1, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 617,977, Feb. 23, 1967, now abandoned. This application Mar. 30, 1970, Ser. No. 23,650

Int. Cl. B65d *77/26, 81/02, 85/30*

U.S. Cl. 206—46 FR **5 Claims**



Flowable dunnage apparatus characterized by discrete inflated capsules formed of elastic impervious webs in facing relationship and sealed along their edges with a quantity of air under pressure captured therein, the discrete capsules being of minuscule dimension as compared to the dimensions of an outer container, and the dimensions of smaller articles or containers disposed within the outer container. The discrete capsules are adapted to flow into a partly filled container and to partly fill the interstices thereof, and to fill the outer container to a surcharged condition before the closing thereof. The closing of the outer container, either by placing flaps into position, or by placing a separable closure thereover, exerts pressure on the compliant capsules, causing them to fill the interstices of the outer container substantially completely, and to prevent migration or shifting of smaller containers or articles within the outer container.

The invention herein also comprehends a method of packaging with flowable and compliant dunnage material.

3,667,594

CLOSURE FOR FILM PACKAGES AND METHOD OF MAKING SAME

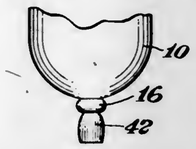
Arthur D. Herrell, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1969, Ser. No. 878,462

Int. Cl. B65d *75/48, 79/00*

U.S. Cl. 206—46 R **1 Claim**

A method of forming improved film packages of a type wherein one or more of the package ends or regions is gathered and tied closed by encircling metal bands, closure clips or other closure devices. The resultant closure of compressed film is made leak-proof by application of ultrasonic vibratory energy to the package in the vicinity of the gathered region of film. The invention in its modified embodiments further envisions elimination of present bands,



closure clips or other closure devices by using instead a temporary film gathering and holding means, and then applying ultrasonic energy to the gathered region of film to form a permanent closure not requiring a band or clip.

3,667,595

DEVICE FOR PACKAGING REELS OF MAGNETIC TAPE OR THE LIKE AND FOR STOWING THEM BY SUSPENSION

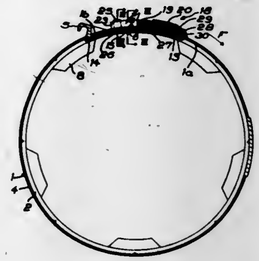
Pierre A. Posso, 20 rue Gandon, Paris 13°, France

Filed June 23, 1970, Ser. No. 49,112

Claims priority, application France, June 25, 1969, 6921301

Int. Cl. B65d *85/04, 85/66*

U.S. Cl. 206—53 **4 Claims**



This invention relates to a device for packaging reels of magnetic tape, cinematographic film or the like and for stowing them in a suspension-type filing cabinet, comprising on the one hand a relatively supple, open annular band, which is U-sectioned and centered on the geometric axis of a reel, on the other hand a locking member connecting the ends of the band and finally, at least one resilient means tending to apply said band, for the purpose of sealing, against the edge of the sides of the reel to be protected, wherein a resilient-return slide is guided in concentric translation on the outer face of the first end of the band, the free terminal part of this slide being separated, by a slit perpendicular to the above-mentioned axis, into two arms having two locking teeth projecting into a direction parallel to this axis, said teeth being capable of cooperating with a guard member unitary with the second end of this band and provided for the passage of said slide.

3,667,596

SHEET DISPENSING UNIT

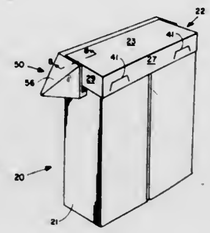
Malcolm B. Lucas, Springfield Township, Hamilton County; Jaime P. Villanueva, Cincinnati, and Stewart Rowe, Wyoming, all of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed May 27, 1970, Ser. No. 40,981

Int. Cl. B65d *71/00, 85/00*

U.S. Cl. 206—57 R **8 Claims**

A sheet dispensing unit in which a stack of sheet materials is adhesively fastened along one end to a rectangular header piece having a depending skirt along its periphery. The header piece is in turn suspended by a pair of oppositely



disposed, spaced hanger blades adapted to enter slots intermediate the sides of the stack and the side portions of the skirt.

3,667,597

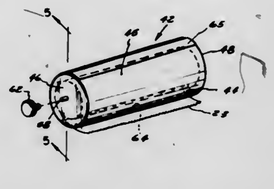
CONTAINER FOR DISPENSING PAPER

Leslie Hollister, 11204 Wester Road, Clio, Mich.

Filed Apr. 27, 1970, Ser. No. 32,288

Int. Cl. B65d *85/67;* **B65h** *75/38*

U.S. Cl. 206—58 **2 Claims**



A container for dispensing paper of the type which is normally rolled about a tubular core, including means carried by the container for releasably attaching the container to a readily accessible place in a motor vehicle or the like. In a preferred embodiment, the container comprises a substantially enclosed hollow housing having two opposed end walls connected by longitudinally disposed side walls; the opposing end walls having means for rotatably mounting the tubular core of the paper roll, while one of the side walls is provided with an elongated opening having a length at least equal to the longitudinal length of the paper roll to permit the withdrawal of selected lengths of the paper therethrough as the paper roll is rotated. In the second embodiment, means are provided on one of the end walls to cause rotation of the paper roll.

3,667,598

WRAPPED PALLET LOAD

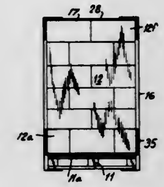
Seymour Zelnick, Orange, N.J., and Martin Michael Wildmoser, Staten Island, N.Y., assignors to Weldotron Corporation, Newark, N.J.

Original application Oct. 7, 1968, Ser. No. 765,302. Divided and this application Feb. 18, 1971, Ser. No. 116,454

Int. Cl. B65d *65/16, 71/00, 85/62*

U.S. Cl. 206—65 S **7 Claims**

A pallet load of product is secured onto a pallet by enclosing the load including the top thereof in thermoplastic film which is heat shrunk to the load, to a sheet of thermoplastic film on the pallet under the load, and to the edge of the pallet therearound. The load enclosing film may be an inverted bag which covers the top and side of the load and the lower end of the bag is fused to said sheet which is on the pallet under the load. Alternatively, the side of the load may be covered by a sleeve of thermoplastic material and the top of the load may be covered by a separate sheet to which the sleeve is fused. Also, layers of thermoplastic sheet material may be disposed between layers of the pallet load and heat sealed to the sleeve which surrounds the pallet load.



3,667,599

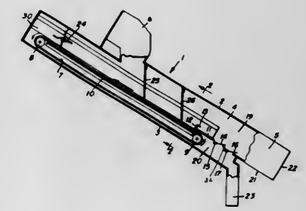
CONTINUOUS CORRUGATED BELT WITH WIRE SCREEN

Oliver K. Hobs, P. O. Box 1306, Suffolk, Va.

Filed Dec. 8, 1969, Ser. No. 882,846

Int. Cl. B03b *7/00;* **B07b** *13/04*

U.S. Cl. 209—12 **11 Claims**



An apparatus adapted to separate peanuts from grass, vines, dirt and other waste material combines a sloping rotating continuous belt having recesses therein adapted to trap the waste material and carry it away as the peanuts roll down its sloping surface with baffles or curtains, a barrier or reservoir across the lower end of the belt and screening means to remove substantially all of the material which remains with peanuts after harvesting.

3,667,600

METHOD AND APPARATUS FOR CENTRIFUGAL CLASSIFICATION

Kazuo Oi, Tokyo, and Katuo Negishi, Nogami-Machi, both of Japan, assignors to Kazuo Oi, Tokyo, Japan

Filed Nov. 14, 1969, Ser. No. 876,822

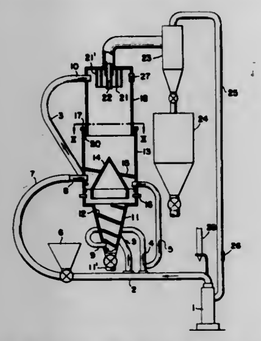
Claims priority, application Japan, Nov. 27, 1968, 43/86786

Int. Cl. B04c *3/00*

U.S. Cl. 209—144 **4 Claims**

A method and apparatus for classifying powdery material comprising a tangential inlet for the material suspended in a gas, means above and below the tangential inlet for introducing additional gas tangentially in the same direction as said tangential inlet. Helical guides are provided for guiding the

material inflow and lower gas inflow upwardly. A peripheral inlet for inducing air from the outside of the apparatus is pro-

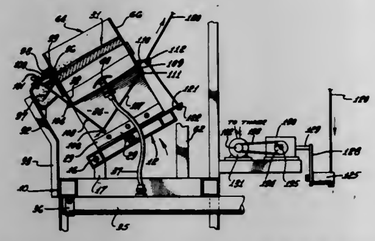


vided between the upper gas inflow and the material inflow to aid in dispersing the powdery material.

3,667,601
APPARATUS FOR THE DRY SEPARATION OF GRANULAR MATERIALS

Norris Johnston, and Mark Latker, both of Ojai, Calif., assignors to Albert M. Clark; John C. Manning, Bakersfield and John G. Troster, Atherton, all of Calif., part interest to each

Filed Oct. 6, 1969, Ser. No. 863,989
Int. Cl. B07b *3/00*
U.S. Cl. 209—466 **6 Claims**



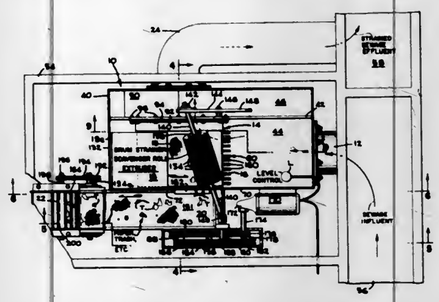
Granular material dry separator apparatus embodying a resiliently mounted porous deck vibrated longitudinally, the deck having parallel transverse upper grooves at right angles to its longitudinal direction of vibration. Granular material is dropped onto the deck at one end, low pressure air being forced upwardly through the deck while it is being vibrated to cause granules or particles of greater specific gravity to drop to the bottom of the grooves while the lighter particles are caused to float upwardly and flow progressively from groove to groove toward the opposite end of the porous bed or deck. At predetermined intervals, a mechanism tilts the porous deck to discharge the granular contents in the grooves into collection troughs.

3,667,602
SELECTIVE COMMINUTION AND SCAVENGING METHOD

Richard Crandall, 17792 Lewis Lane, Huntington Beach, Calif., and Carl H. Nordell, Crystal Bay, Nev.

Original application Sept. 6, 1968, Ser. No. 757,877, now Patent No. 3,570,671. Divided and this application May 18, 1970, Ser. No. 48,746
Int. Cl. B01d *35/28*
U.S. Cl. 210—67 **5 Claims**

A drum screen is inserted into a raw sewage line. Rake fingers help elevate solid materials picked up by the screen from the influent and are cam retracted to leave them on the periphery of the screen. A hinged presser plate holds soft, organic material against the screen to be comminuted and carried away with the effluent and into the disposal system. A

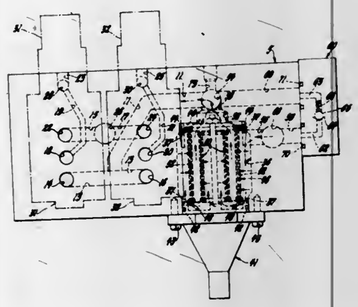


skew-mounted scavenger roller made up of flexible discs rotates against the screen for cleaning off pieces of paper, etc., that remain on the surface of the screen, for disposal as trash.

3,667,603
HYDRAULIC MANIFOLD SYSTEM

Richard B. Courson, Warren, Mich., assignor to Almo Manifold and Tool Company, Center Line, Mich.

Continuation-in-part of application Ser. No. 758,338, Sept. 9, 1968, now abandoned. This application June 8, 1970, Ser. No. 44,231
Int. Cl. B01d *35/14, 35/02*
U.S. Cl. 210—130 **6 Claims**



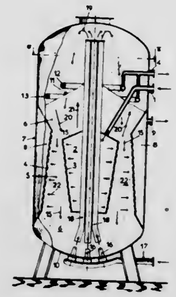
A hydraulic manifold system is disclosed comprising, in combination, a hydraulic manifold having a liquid-directing hydraulic circuit therein, liquid filter means associated with said hydraulic manifold for filtering hydraulic liquid entering a part of said hydraulic circuit, and by-pass means including a uni-directional check valve associated with said filter means operative upon clogging of the filtering action thereof, each said hydraulic manifold, filter means and by-pass means itself consisting of no pipes, said filter means comprising a filter cavity having inlet and outlet liquid passage means therefor and constructed to receive within itself and to seal against a replaceable liquid filter cartridge disposed in said filter cavity, said hydraulic manifold having means for mounting thereon at least one hydraulic liquid flow-control valve, said hydraulic circuit comprising inlet and outlet ports in said hydraulic manifold for hydraulic liquid, respectively,

entering and leaving the latter, a pair of control ports in said hydraulic manifold for said flow-control valve for hydraulic liquid, respectively, entering and leaving said flow-control valve, and liquid passage means for directing hydraulic liquid from said filter cavity outlet liquid passage means to one of said control ports and from the other of said control ports to said hydraulic manifold outlet port, said filter cavity inlet and outlet liquid passage means in communication, respectively, with said hydraulic manifold inlet port and said one control port, said check valve having inlet and outlet liquid passage means therefor in communication, respectively, with said filter cavity and said one control port and constructed to open in the event of clogging of the filtering action to by-pass hydraulic liquid around said filter cartridge from said hydraulic manifold inlet port through said check valve to said one control port.

3,667,604
MOVING BED APPARATUS FOR THE TREATMENT OF FLUID

Pierre Lagoutte, Charly, France, assignor to Filtres Vernay, Villeurbanne (Rhone), France

Filed June 4, 1970, Ser. No. 43,467
Claims priority, application France, Sept. 9, 1969, 6931267
Int. Cl. B01d *33/16*
U.S. Cl. 210—136 **2 Claims**



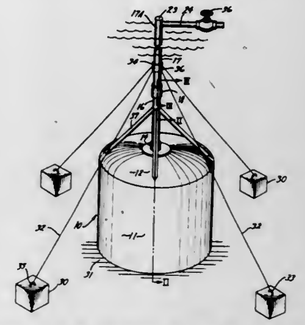
A fluid is filtered by passing a stream of fluid through a porous wall of an inlet chamber through a treatment zone filled with treatment material and then through another porous wall into a collecting chamber. The flow from the inlet chamber to the collecting chamber is substantially horizontal and a vertically upwardly directed liquid stream passes through the treatment material at the bottom of the container to entrain particles of the treatment material and lift them to the top of the container to provide for recirculation of the treatment material. The treatment material is regenerated during the circulation with the impurities being removed from the container near the top portion thereof above the treatment material.

3,667,605
SUBMERGED OIL LEAK CONTROL

Robert O. Zielinski, Route #2, Box 20, Delton, Mich.

Filed May 4, 1970, Ser. No. 34,087
Int. Cl. E02b *15/04*
U.S. Cl. 210—170 **1 Claim**

Cup-shaped casing means inverted upon or adjacent to the ocean floor and tubular means extending upwardly from said casing means and communicating with the interior thereof through an opening in the top wall thereof. The tubular

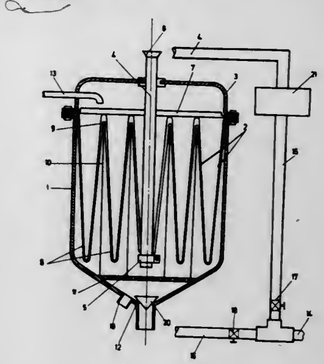


means is braced by a plurality of cables connected thereto and to anchor means located on the ocean floor.

3,667,606
CONSTRUCTION OF FILTERS

Carmen Muela Negro, O'Donnell 13, Madrid, Spain

Filed Dec. 17, 1970, Ser. No. 99,041
Claims priority, application Spain, Dec. 30, 1969, 375038
Int. Cl. B01d *27/04*
U.S. Cl. 210—193 **7 Claims**



A filtering canister which contains a filtering medium of diatomaceous earth which is retained within the canister by a foraminous support consisting of a series of concentric truncated cones of foraminous sheet material and a fabric disposed between the filtering medium and the sheet material. The innermost cone is secured at its inner edge around a central vertical pipe extending through the cover which permits the recharging of the filtering medium. Hoops are provided to loosely retain the fabric in place in the vertices of the cones when flow is arrested.

3,667,607
CHROMATOGRAPHIC MATERIAL

Marcus K. Brandt, Easton, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, Pa.

Filed Nov. 27, 1970, Ser. No. 93,299
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 **10 Claims**

A thin layer chromatographic strip in the form of an elongated tape carrying indicia related to chromatographic test areas, the areas being in contact with a reservoir for solvent,

the combination of test areas, indicia, and reservoir being periodically reproduced on the length of the tape, whereby the indicia may be used to initiate sampling, solvent applica-



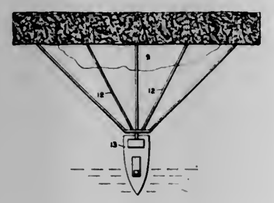
tion, and control passage through development and drying stages, and initiation and termination of scanning stages, thereby to make possible a sequence of unrelated or related analyses automatically on said tape.

3,667,608

APPARATUS FOR REMOVING OIL SPILLS FROM THE SURFACE OF A BODY OF WATER

Ralph H. Burroughs, Chapel Hill, and Paul R. Cox, Jr., Cary, both of N.C., assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 24, 1970, Ser. No. 31,472
Int. Cl. E02b 15/04
U.S. Cl. 210—242 **4 Claims**



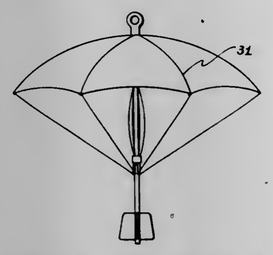
Oil is removed from contaminated water by means of a fibrous structure of low denier polyolefin fibers attached to a pumping system. The polyolefin fiber structure can absorb many times its own weight of oil while absorbing little or no water. The oil is then easily removed from the fibrous structure by pumping.

3,667,609

APPARATUS FOR COLLECTING OIL FROM THE SURFACE OF A BODY OF WATER

William H. Daniel, 541 Putman Rd., Rogers, Ark.

Filed Oct. 13, 1970, Ser. No. 80,350
Int. Cl. C02b 9/02
U.S. Cl. 210—242 **5 Claims**



Oil is collected from the surface of a body of water by immersing a tent-shaped collector just under the surface of the water. The wave action drives oil down below the tent, and the oil rising under the tent then collects in the peak of the tent whence it is conveyed upwardly by hydrostatic pressure through a conduit into a flexible collection receptacle. The apparatus may be dropped from an airplane by a parachute, in which case the collection receptacle itself can be the parachute. The apparatus is buoyant yet weighted to maintain an upright attitude and to position the tent at a desired depth.

3,667,610

APPARATUS FOR COLLECTING OIL FROM THE SURFACE OF A BODY OF WATER

William H. Daniel, Route 3, Rogers, Ark.

Filed Feb. 8, 1971, Ser. No. 113,254
Int. Cl. C02b 9/02
U.S. Cl. 210—242 **8 Claims**



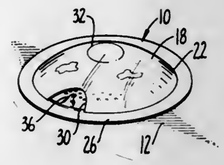
Oil is collected from the surface of a body of water by immersing a tent-shaped collector from above the surface of the water to a depth such that the hydrostatic pressure of the oil in the collector will pump oil to an elevation above the surface of the water and into a collection receptacle. The collector slides vertically on a conduit and delivers the oil into the lower end of the conduit, the lower end of the conduit being positioned at a depth which determines the height to which the oil can be pumped above the surface of the water.

3,667,611

SWIMMING POOL LEAF TRAP

Andrew L. Pansini, 180 Los Cerros Drive, Greenbrae, San Rafael, Calif.

Filed Feb. 11, 1970, Ser. No. 10,385
Int. Cl. E03f 5/04; B01d 35/28
U.S. Cl. 210—244 **4 Claims**



A portable leaf trap for use with swimming pools comprising a dome-like housing, perforate means affixed to the housing, a flexible base member extending outwardly from the housing, and lift means. An opening is provided in the side of the housing to provide communication between the outside of the housing and an interior defined by the perforate means and the housing inner surface. The leaf trap is adapted to be positioned over a swimming pool drain upon the floor of the pool with leaves and the like entering the trap interior through said opening. The lifting element is affixed to the perforate means in the vicinity of said opening and offset with respect to the center of gravity of the trap. When an upwardly directed force is applied to the lifting element, the leaf trap tends to pivot therearound thus trapping the leaves and the like within the interior at a location remote from said opening.

3,667,612

ARTIFICIAL KIDNEY SYSTEM

Joe H. Leonard, 1105 Remington Rd., Knoxville, Tenn.

Filed Sept. 4, 1969, Ser. No. 855,191
Int. Cl. B01d 31/00, 13/00
U.S. Cl. 210—321 **15 Claims**



An open-topped, elongated, rectangular tank is mounted on a framework that is fitted with casters, enabling the unit to be moved from place to place in a hospital, clinic, or in the residence of a patient. The framework supports a motor driven recirculating pump for causing a continuous flow of a dialyzing fluid out of and back into the tank. A pair of clear, colorless elongated plates are clamped together with one or more lengths of clear colorless tubes of semipermeable material confined between them, and this assembly is immersed in the dialyzing fluid in the tank. The ends of the tube or tubes have connection to an artery and a vein of a patient, so that the patient's heart will produce a flow of his blood through the tubes, where toxic substances are removed from the blood by the dialytic action.

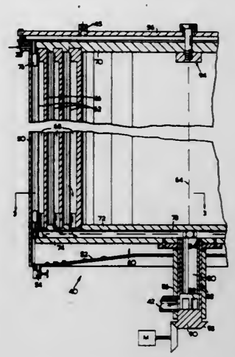
3,667,613

APPARATUS FOR FILTERING COOKING LIQUID

Raymond H. Angold, 179 Fairway Hill Crescent, Kingston, Ontario, Canada

Continuation-in-part of application Ser. No. 716,437, Mar. 27, 1968, now abandoned. This application Oct. 2, 1970, Ser. No. 77,592
Int. Cl. B01d 25/36
U.S. Cl. 210—336 **16 Claims**

A filter assembly for use in apparatus for cooking food in a hot cooking liquid, in which the filter assembly is rotated to centrifugally clean the filter medium. The filter assembly is particularly suitable for continuously filtering uncooked and partly cooked foodstuffs from the cooking liquid, and is supported with a cooperating impervious tube spaced therefrom to form a receiving chamber for filtered liquid. The chamber is connected to a conduit for conveying the filtered liquid, for example, back to a supply reservoir for re-use. The filter medium is one of a cloth woven from strands or fibers of a fluorinated ethylene or propylene resin, a silicone-based thermosetting resin or like substance having similar non-stick and low friction characteristics; strands or fibers of the materials mentioned above pressed together into a felt-like mat structure; or a wire screen whose wire strands are substantially wholly coated, preferably with tetrafluorethylene, or another of the above resins. The filter assembly includes means for rotatably mounting the same in a housing. Preferably, at least one turbulence-generating bar or like structure is provided adjacent the filter surface. This bar creates turbulence in the liquid when the filter assembly is being rotated, and that turbulence tends to loosen filtered material deposited on the filter surface and effects an auxiliary cleansing action on said surface. At least one filter and impervious surface arrangement is provided. Some back flushing aiso occurs when the filter assembly is cleaned.

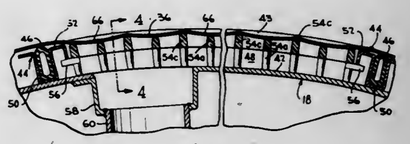


3,667,614

FILTERING APPARATUS

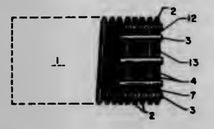
Thomas R. Komline, Gladstone, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed Feb. 4, 1970, Ser. No. 8,531
Int. Cl. B01d 33/14
U.S. Cl. 210—401 **3 Claims**



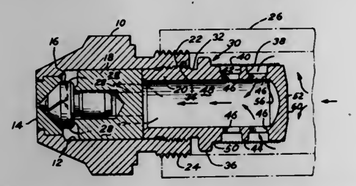
A rotary drum-type vacuum filter in which the grids which support the flexible filter medium over the filtering compartments of the drum are respectively formed to provide one or more corrugations extending generally in the direction of the drum axis and defining one or more channels, said corrugations also defining valleys in addition to said channels and into which the flexible filter medium is sucked during its immersion in the slurry being filtered to form corrugations in the filter media which mate with said valleys. Thereafter, when the filter medium emerges from the slurry with a filter cake formed thereon said mating corrugations, the channels are eliminated by removal of the filter medium from the drum for passage on to the discharge roll. Such elimination of the mating corrugations from the flexible filter medium and the resulting elongation of the filter medium relative to the less flexible filter cake, facilitates the separation of the cake from the medium.

3,667,615
SELF-CLEANING TUBULAR SCREEN
David M. Likness, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 787,708, Dec. 30, 1968, now Patent No. 3,561,605. This application Oct. 5, 1970, Ser. No. 77,944. The portion of the term of the patent subsequent to Feb. 9, 1988, has been disclaimed.
Int. Cl. B01d *29/22*
U.S. Cl. 210—497.1 8 Claims



A self-cleaning tubular screen adapted for de-watering or classifying particulates and the method of making such screen. The screen embodies a slotted construction to provide a self-cleaning "V" slot that enlarges in the outward radial direction. The support rods for the tubular screen are located on the inner periphery of the tubular screen and attached to the wide face of the wedge-shaped wire in a manner so as to preclude any interference with the slot opening. This is accomplished by utilizing a wire having a ridge portion on the wide face thereof to prevent the weld connecting the wire to the rods from disturbing the edges of the wide face.

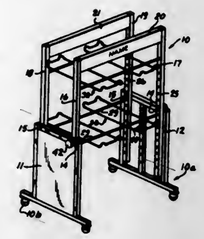
3,667,616
STRAINER
Alex Wayne, Des Moines, Iowa, assignor to Delavan Manufacturing Company
Filed Oct. 29, 1970, Ser. No. 85,170
Int. Cl. B01d *35/28*
U.S. Cl. 210—451 6 Claims



A fluid strainer and method of making same comprises an integral one-piece body having a mounting end, a strainer end and a cap member, both the strainer end and the cap member having a cross sectional dimension smaller than that of the strainer element. The strainer element is slid over the cap member and strainer end and is brought into abutting relationship with a shoulder which separates the mounting and strainer ends and the cross sectional dimension of the cap member is radially expanded in cross sectional dimension so as to engage the strainer element and firmly position and retain same on the strainer body.

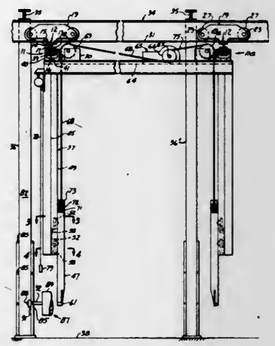
3,667,617
TILTABLE RACK OR DISPLAY DEVICE
Jerry Cohn, 1546 Broadway, New York, N.Y.
Filed July 23, 1970, Ser. No. 57,647
Int. Cl. A47f *3/14*
U.S. Cl. 211—128 12 Claims

The invention has reference to tiltable and adjustable racks, carriers and like display devices equipped with shelves or trays for carrying articles, e.g., samples of fabrics, tiles, and other products. These display trays are connectable with a movable frame, which swings about pivot means from a neutral or median position to predetermined angular positions, in which the trays assume from a superposed and coinciding location to each other a parallel position in which the trays are transposed to a staggered formation or step-like positions, in which the articles retained on their successive trays, are exposed to view with their front and/or rear portions, as desired.



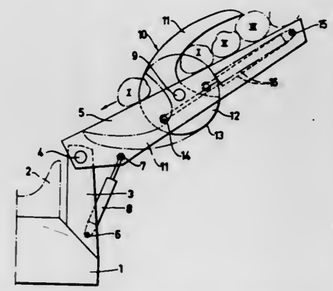
The trays of the display device may be adjusted and fixed in any desired parallel position to each other whereby any further parallel movement of the trays may be impeded. The arrangement of the frame of the device and its parts may also be carried out, so that the framework is subdivided and guidance of the trays occurs in a manner that, e.g., one or more selected upper trays are displaced to an extreme forward and parallel position, while one or more of selected lower trays are guided to likewise take up an extreme forward parallel position, whereas the remaining trays assume other non-coextensive or non-equidistant but parallel positions.

3,667,618
MECHANISM FOR LIFTING AND CONVEYING MATERIEL
Peter H. Bertola, Arcadia, Calif., assignor to General Conveyor, Inc., El Monte, Calif.
Filed Aug. 19, 1969, Ser. No. 851,356
Int. Cl. B65g *1/06*
U.S. Cl. 212—128 1 Claim



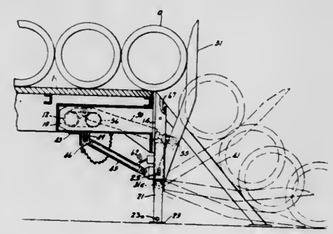
An overhead travelling crane movable along a path of travel, and also from side to side along the path has fixed to it a depending boom or mast which carries a movable section which can be raised and lowered to pick up materiel from either side of the path by means of a fork-like device near the bottom of the movable section. In the usual arrangement there are two such masts provided with lifting forks spaced apart from each other along the path, such that the forks can lift the two ends of cylindrical or pipe-like objects having cylindrical or tubular end members which can be grasped by the two spaced forks. Objects thus lifted by the forks can be carried along the path to some other location. A guide means equipped with wheels and rollers provides ease of movement of the movable mast sections up and down the fixed mast section without binding even under eccentric loading.

3,667,619
STEM FEED ARRANGEMENT
Thore Lindblom, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden
Filed Aug. 7, 1970, Ser. No. 62,087
Claims priority, application Sweden, Nov. 28, 1969, 16399
Int. Cl. B65g *61/00*
U.S. Cl. 214—1 PB 1 Claim



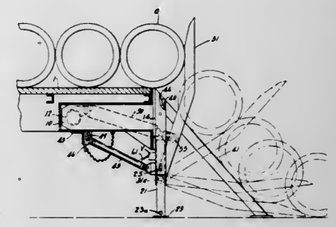
Felled trees were heretofore fed by a crane one by one to a working unit. This method implied poor utilization of the crane capacity. At the invention the upper part of an inclined sliding chute serves as a buffer space for trees into which a crane can load the entire tree bundle and during the intervals carry out other useful work. The buffer store of trees rests against the inside of the longer arm of an unequally armed angular lever, which with its corner is mounted at the sliding chute. By turning upwardly the shorter arm of the angular lever the tree located closest is taken along and by a full turn of the lever lifted over to the lower part of the chute on which it slides down to the unit. Thereafter the lever is swung into the opposite direction back to its original position for repeating the batching operation.

3,667,620
SELF-CONTAINED UNLOADING APPARATUS
Harry Steiro, Madison, Wis., assignor to Wisconsin Foundry and Machine Company, Madison, Wis.
Filed Oct. 20, 1970, Ser. No. 82,359
Int. Cl. B60p *1/48*
U.S. Cl. 214—1 P 8 Claims



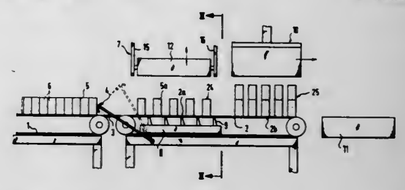
A material handling unit for detachable connection to the rear end of a vehicle and which permits gravitational unloading of heavy objects such as heavy concrete pipes from the bed of a truck. The unit is self-contained and can be easily attached to or detached from the vehicle. The unit contains its own hydraulic system including the extensible cylinders, fluid pump, reservoir and control apparatus.

3,667,621
FLUID POWER SYSTEM FOR A SELF-CONTAINED UNLOADING UNIT
Everett P. Barlow, Cambridge, Wis., assignor to Wisconsin Foundry and Machine Company, Madison, Wis.
Filed Oct. 20, 1970, Ser. No. 82,449
Int. Cl. B60p *1/48*
U.S. Cl. 214—1 P 4 Claims



A precharged, closed circuit, fluid power system for a material handling unit which permits controlled gravitational unloading of heavy objects such as heavy concrete pipes from the bed of a truck. The system comprises extensible cylinders, fluid pump, reservoir and control apparatus.

3,667,622
METHOD OF AND MEANS FOR STACKING MOULDED ARTICLES IN GROUPS
Hermann Kamphues, Rheine, and Hans-Jurgen Rosengarten, Georgsmarienhutte, both of Germany, assignors to C. Keller & Co., Laggenbeck, Germany
Filed Jan. 5, 1971, Ser. No. 104,035
Claims priority, application Germany, Aug. 17, 1970, P 20 40 813.3
Int. Cl. B65g *57/26*
U.S. Cl. 214—6 A 5 Claims

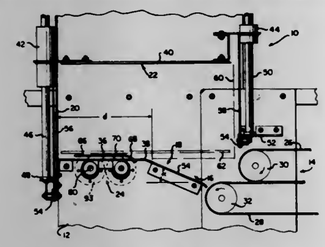


Moulded articles such as bricks are arranged in a plurality of aligned rows side by side on a conveyor belt. The rows are transferred to a second belt and have their spacing adjusted. The articles are then seized in a group and lifted off the belt, turned through 180° and deposited on a next group of articles to form a two-tier set-up. This is then transferred by a gripping device to a firing carriage.

3,667,623
EDGER STACKER
John R. Frazier, Dayton, and Larry D. Longstreth, Wilmington, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Sept. 4, 1970, Ser. No. 69,559
Int. Cl. B65g *57/00*
U.S. Cl. 214—7 3 Claims

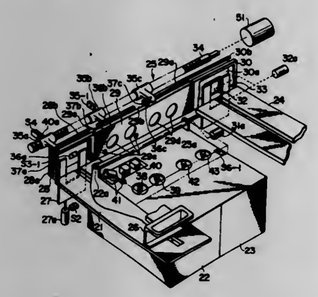
An edger-stacker apparatus for stacking letter mail on a long lower edge of the letters. The apparatus includes a pair

of input belts which deliver letters to an entry point, whence they are deflected by a first portion of a stacking plate supported on a table to a stack of letters already stacked by the apparatus. The stacking plate has a second portion upstanding from the table, which portion has an opening therein. A pusher plate passes through the second portion to push the stack of letters (already stacked) away from the second portion to provide a clearance for the next approaching letter to



be inserted between the stack and the second portion of the stacking plate. As the pusher plate advances out of the opening in the second portion of the stacking plate, it moves the nearest letter in the stack towards an edger plate to "edge" the letter. An orbital-type drive is used to drive the pusher plate and create a vibration on the table, which facilitates edging of the letters.

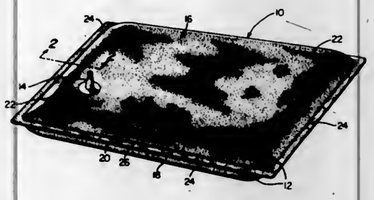
3,667,624
CASSETTE-TAPE SUPPLYING APPARATUS
Mitsuo Ogura, Odawara, and Shinichi Fukazawa, Chigasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 28, 1971, Ser. No. 110,476
Claims priority, application Japan, Jan. 30, 1970, 45/7711
Int. Cl. B65g *60/00*
U.S. Cl. 214—8.5 A **3 Claims**



A cassette-tape supplying apparatus permitting a continuous recording or reproduction of a number of cassette tapes, which is constructed such that a number of cassettes are set upright on an input hopper and that they are fed under the upright state in the order of the first, second and third holders to be outputted from said third holder, and in which said second holder is adapted, upon swivelling, to mount said cassettes onto at least one deck.

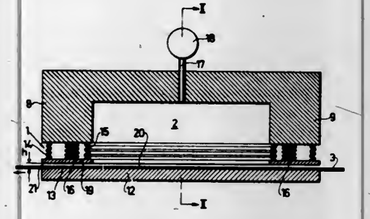
3,667,625
DUNNAGE DEVICE
George A. Lucas, Rockmart, Ga., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 5, 1970, Ser. No. 61,161
Int. Cl. B65g *1/14*
U.S. Cl. 214—10.5 D **13 Claims**

An inflatable, bladderless dunnage device of economical construction for shoring merchandise in a storage compartment. The member includes a unitary body and valve means connected therewith. The body is formed of a laminate of pressure-retaining, flexible material including a layer or sheet of flexible polymeric material and a layer of open mesh textile fabric covering at least substantially the entire outer surface of the polymeric material layer. The polymeric material



fills the openings or interstices of the fabric layer to form a bond therewith capable of withstanding at least low to intermediate pressure when the member is inflated. Preferably the polymeric material is at least substantially air impervious and the textile fabric layer is preferably of a leno weave construction.

3,667,626
SEALING MEANS
Aldo Torelli, and Andre Jacquemet, both of Grand-Lancy, Geneva, Switzerland, assignors to Sandco Limited, Ottawa, Canada
Filed July 31, 1969, Ser. No. 846,366
Claims priority, application Switzerland, Aug. 1, 1968, 115550/68; May 13, 1969, 7327/69
Int. Cl. F26b *25/00*
U.S. Cl. 214—17 B **11 Claims**

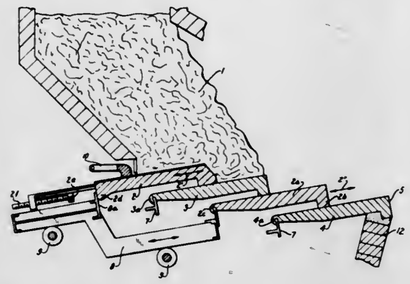


In a sealing means between two members that are movable in relation to each other, one of the members having a sealing ridge which ridge is movable towards the other of said members forming a slit therewith, the sealing ridge is provided with a surface facing said other member, said surface being parallel with the surface of said other member, means are provided for biasing the sealing ridge in the direction towards said other member.

3,667,627
FEED ARRANGEMENT FOR A COMBUSTION FURNACE
Johannes Josef Martin, and Erich Weber, both of Munchen, Germany, assignors to Josef Martin Feverungsbau GmbH, Munchen, Germany
Filed Dec. 29, 1969, Ser. No. 888,483
Claims priority, application Germany, Dec. 30, 1968, P 18 17 436.2
Int. Cl. B65g *25/08*; F23k *3/12*
U.S. Cl. 214—23 **9 Claims**

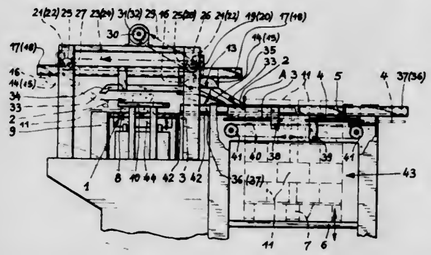
The lower open end of an upstanding supply chute communicates with the upper surfaces of two pairs of stepwise arranged and partly overlapping upper pushing members and

lower supporting members for transferring to the same combustible material. The respective elements are upwardly inclined relative to the horizontal and towards the furnace in-



let, and with the pushing elements reciprocable relative to the supporting elements towards and away from the furnace inlet so as to stepwise displace the combustible material from the support surfaces into the furnace.

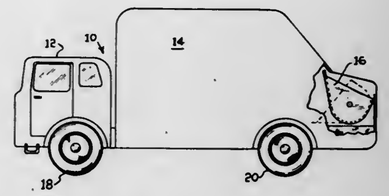
3,667,628
APPARATUS FOR LOADING PALLETS
Friedrich Gabler, and Arthur Giordan, both of Stuttgart-Muhlhausen, Germany, assignors to Carl Drohmann GmbH, Stuttgart-Bad Cannstatt, Germany
Filed Jan. 26, 1970, Ser. No. 5,598
Claims priority, application Germany, Feb. 5, 1969, P 19 05 714.8
Int. Cl. B65g *57/26*
U.S. Cl. 214—6 DK **3 Claims**



In an apparatus for loading pallets comprising a conveyor by which objects are introduced to the loading zone, and a ram for transferring such objects sideways on to a carrier which can be retracted to deposit the objects on to a waiting pallet, the use of a multi-part carrier associated with stop means to allow for size-adjustment and squaring-up at all four sides of an assembly of objects on the carrier.

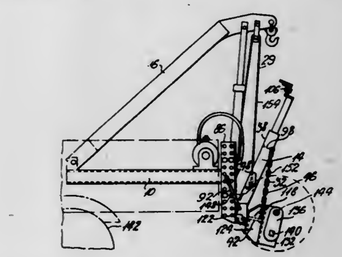
3,667,629
CONTROL AND POWER APPARATUS FOR OPERATING TRASH COLLECTION VEHICLE PACKERS
Francis X. La Voie, 2818 North 51 Street, Phoenix, Ariz.
Filed Feb. 16, 1971, Ser. No. 115,188
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 **9 Claims**

A control and power apparatus for operating trash collection vehicle packers wherein a trash collecting vehicle is provided with a chassis and wheels driven by an engine carried on the chassis and wherein emergency brakes for the wheels are manually controlled and wherein means is provided for automatically shifting the transmission of the vehicle to neutral position when the emergency brakes of the vehicle are applied; and means is responsive to the shifting of the transmission to neutral position to increase the speed of the



vehicle engine to provide sufficient torque for operating a hydraulic pump in connection with the vehicle engine for delivering sufficient power to operate the trash packer mechanism of the trash collection vehicle.

3,667,630
AUTOMOBILE TOWING ASSEMBLY
Albert Rockwood Scott, 287 Wychwood Ave, Toronto, Ontairo, Canada
Continuation of application Ser. No. 808,414, Mar. 19, 1969, now abandoned. This application July 20, 1970, Ser. No. 64,016
Claims priority, application Great Britain, Mar. 21, 1968, 13,638/68
Int. Cl. B60p *3/12*
U.S. Cl. 214—86 A **16 Claims**

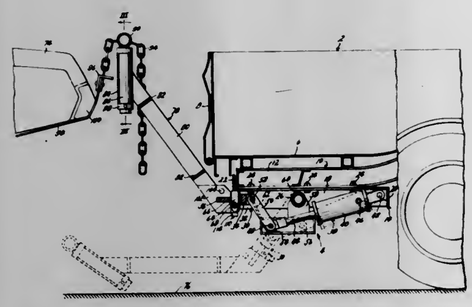


A standard automobile or truck is convertible to a towing vehicle by the easy installation (and removal) of a frame to which is connected a derrick, source of power, rotatable draw-bar system, sling unit and rotatably liftable load bearing towing wheel arrangement which is lockable in lowered operating position and elevated by the rotation into the vertical out-of-use position of said draw system.

3,667,631
HYDRAULIC UTILITY LIFT FOR TRUCKS
Jerald W. Bishop, 1506 Highway 56, Dodge City, Kans.
Filed Jan. 22, 1971, Ser. No. 108,777
Int. Cl. B66c *1/00*; B66f *3/00*
U.S. Cl. 214—86 A **8 Claims**

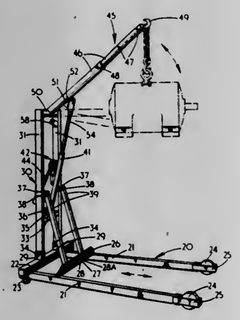
A hydraulic utility lift for pick-up trucks and other vehicles consisting of a frame adapted to be mounted under the rear portion of the truck bed and carrying a lift arm operable to lift a load disposed rearwardly of said truck as said arm is pivoted from a downwardly and rearwardly inclined position to a substantially horizontal position, a hydraulic ram for pivoting said arm, and a linkage operatively connecting said ram to said arm, said linkage having a novel arrangement whereby it both converts horizontal movements of said ram

to vertical movement lifting said arm, whereby said ram may be elevated to preserve better ground clearance for said lift,



and also provides a more uniform power ratio for said ram, permitting economies in the design of said ram.

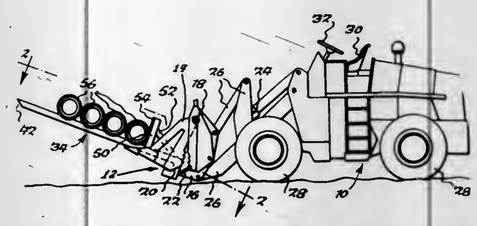
3,667,632
FLOOR CRANE
Anthony Clifford Tidswell, 18, Nene Road, Huntingdon, Huntingdonshire, England
Filed Jan. 16, 1970, Ser. No. 3,541
Claims priority, application Great Britain, Jan. 21, 1969, 3,391/69
Int. Cl. B66c 23/00
U.S. Cl. 214—130 R 2 Claims



A floor crane having a wheeled base with an upright support pivoted to one end thereof, a jib pivoted to the upper end of the upright support and a fluid ram interconnecting the upright support and jib such that the upright support can be disposed parallel with the base with the jib and fluid ram substantially disposed therebetween.

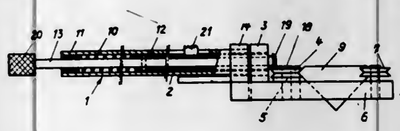
3,667,633
FORK LIFT ATTACHMENT
Michael Cappella, Lancaster, N.Y., assignor to Sergi Bros., Inc., Depew, N.Y.
Filed July 29, 1970, Ser. No. 59,184
Int. Cl. B66f 9/00
U.S. Cl. 214—145 4 Claims

A pair of fork lift elements are clamped at their rear ends in laterally spaced relation between pivotal segments of a bucket mounted on an earth handling apparatus. The bucket thereby is quickly converted to a fork lift having all the



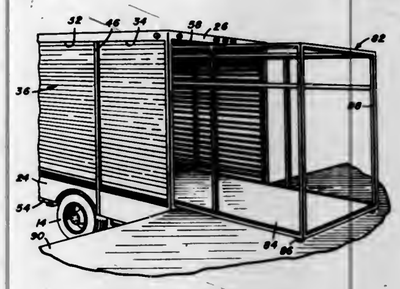
movements imparted to the bucket for lifting and conveying a load.

3,667,634
INSTRUMENT FOR PRESENTING AN OBJECT TO BE VIEWED
Raymond-Gerard Potterat, 6, Avenue des Alpes, 1006 Lausanne, Vaud, Switzerland
Filed Sept. 30, 1970, Ser. No. 76,775
Claims priority, application Switzerland, Oct. 1, 1969, 13248/69
Int. Cl. B65g 7/00
U.S. Cl. 214—340 10 Claims



A device for presenting an article to be viewed, with an elongated support and means mounted thereon for holding and rotating the article. These means are actuated at distance and at will, without cutting the field of view.

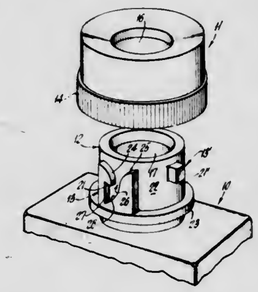
3,667,635
COMBINED TRUCK BODY AND WHEELED RACK AND METHOD OF LOADING AND UNLOADING A VAN
Ralph H. Hackney, Washington, N.C., assignor to J. A. Hackney & Sons, Inc.
Original application July 14, 1969, Ser. No. 841,529, now Patent No. 3,572,815, dated Mar. 30, 1971. Divided and this application Dec. 3, 1970, Ser. No. 94,866
Int. Cl. B60p 1/64
U.S. Cl. 214—515 2 Claims



A combined van type truck body and a wheeled rack or cart of a size commensurate with the internal dimensions of

the body to be loaded into or removed from the body through rear access doors with the body also including roll-up type overhead doors along each side thereof to enable access to both longitudinal sides of the rack or cart throughout the longitudinal dimension thereof so that items to be delivered may be unloaded from either side of the body at any point throughout the longitudinal length and vertical height thereof so that non-deliverable items may remain in the body without hindering delivery of items at subsequent delivery sites thereby enabling a novel method of loading and unloading a van body to be effectively practiced.

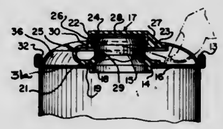
3,667,636
SAFETY-CLOSURE DEVICE
William James Landen, Cheshire, Conn., assignor to Eyelet Specialty Company, Wallingford, Conn.
Filed Nov. 25, 1970, Ser. No. 92,728
Int. Cl. A61j 1/00
U.S. Cl. 215—9 21 Claims



The invention contemplates selectively openable closure means that is tamper-proof, in the sense that a correct sequence of two deliberate and independent movements of two parts is necessary in order to achieve access to the contents of the bottle or the like which is protected by the closure.

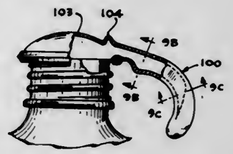
The specific construction that is described involves a bottle with a neck having a circular opening, and a closure cap having a cylindrical wall to overlap and lock to the outer surface of the neck. The closed end of the cap has an axially tapering yieldable section which engages the circular neck opening in the course of closing the bottle. The nature of the lock is such as to preload the yieldable engagement and to utilize the resilient action to retain the lock and to establish a liquid seal of the bottle contents.

3,667,637
SAFETY DEVICE FOR FLIP CAP CLOSURE
Richard B. Bagguley, Dolton, and Carmen T. Mascia, Westchester, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,573
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9 4 Claims



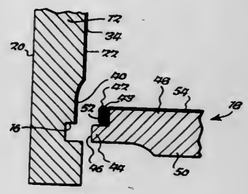
A flexible safety shield for preventing the opening of a flip cap closure until the shield is depressed.

3,667,638
LEVER OPENED SEALED CONTAINER
Orlando D. Cambio, Jr., Chicago, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Dec. 11, 1969, Ser. No. 884,086
Int. Cl. B65d 1/02
U.S. Cl. 215—32 1 Claim



In containers having an integrally molded cap and sealing web, an integral handle, preferably on the mold parting line and extending from the cap, enables cap removal with low force. A fulcrum, within or without the container, cooperates with the handle to open the container.

3,667,639
LINED HOLLOW WOOD BODY
Arthur P. Pfeil, Akron, N.Y., assignor to Arrow Tank Company Inc., Buffalo, N.Y.
Filed June 30, 1970, Ser. No. 51,122
Int. Cl. B65d 9/00, 9/34
U.S. Cl. 217—4 R 6 Claims

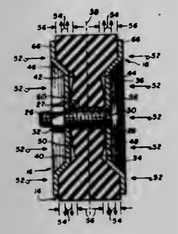


A lined hollow wood body formed of a plurality of staves, each of which is covered across its inner surface and edge faces by a plastic liner mechanically locked in place by the mating edges of adjacent stave sections. A bottom wall having a plastic liner on the inner surface thereof is secured to the inner side of the body in a fluid tight relation. Also, an annular seal is interposed between an annular shoulder on the bottom wall and the inner side of the body to form a second sealing means therebetween.

3,667,640
CONDUIT PLUG
Joseph G. Morrow, P. O. Box 211, East Paterson, N.J.
Continuation of application Ser. No. 778,499, Nov. 25, 1968, now abandoned. This application July 13, 1970, Ser. No. 56,215
Int. Cl. B65d 39/12
U.S. Cl. 220—24.5 6 Claims

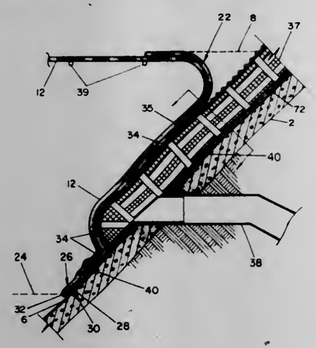
A plug assembly for sealing the open end of a conduit, which assembly includes a resilient plug on the opposite sides of which are disposed a pair of plates which are drawn toward one another to apply pressure to the plug sandwiched therebetween. Under pressure, the plug expands into sealing relationship with the interior of the conduit. The plug includes angularly oriented side surface areas which are engaged by similarly oriented portions of the side plates such that pressure developed between the plates is laterally distributed across the thickness of the plug whereby an area

contact of engagement can be established between the perimeter of the plug and the interior of the conduit. Alternatively, or in addition thereto, a central side surface of the plug is concavely bowed with respect to a central plane



thereof such that a flat central mating portion of the cooperating plate member, when applied thereto, will establish an area contact of engagement between the central portion of the thickness of the perimeter of the plug and the interior of the conduit.

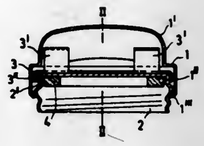
3,667,641
RESERVOIR COVER ARRANGEMENT
Howard S. Dial, Valley Crest Rd., Lebanon, N.J.
Filed Mar. 2, 1970, Ser. No. 15,439
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 S **4 Claims**



A reservoir is provided with a flexible, floating, cover secured to the sides of the reservoir along a line located between the anticipated upper and lower levels which water or other liquid in the reservoir may assume whereby the cover will remain in contact with the surface of the liquid as its level fluctuates up and down. A drain extending through the wall of the reservoir is arranged to draw off any rain or melted snow accumulating on the upper surface of the cover.

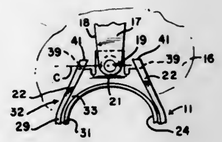
3,667,642
SCREW-ON CLOSURE MEMBERS FOR CONTAINERS, ETC.
Werner Blau, and Theo Gerdes, both of Langenfeld/Rhineland, Germany, assignors to Blau KG Fabrik Fur Kraftfahrzeugteile, Langenfeld-Immigrath/Rhineland and Volkswagenwerk AG(Wolfsburg, Germany
Filed Dec. 2, 1970, Ser. No. 94,410
Claims priority, application Germany, Dec. 3, 1969, P 19 60 674.7
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 R **15 Claims**

A screw-on closure cap for closing the filling opening of a container or a tubular spout, the cap comprising relatively rotatable upper and threaded lower cap parts assembled together coaxially and having a resilient drive connection between them capable of transmitting a predetermined maximum torque between the upper and lower cap parts in the closing direction. When during the screwing on of the cap onto the neck of a container or filling spout by the manual application of closing torque to the upper cap part, directly the closure cap reaches a certain degree of tightness on the cooperating part of the container or spout such that the predetermined transmitted closing torque is exceeded, the resilient drive connection yields ratchetwise to allow the con-



tinued free rotation of the upper cap part relatively to the threaded lower cap part. In this way excessive tightening of the closure, such as would lead to difficulty in loosening it manually, is prevented. The resilient drive connection may comprise a disc having oblique spring tongues engaging ratchetwise in cooperating recess for example in the interior of a hollow pressed-out hand grip portion on the upper cap part; or spring-loaded ball catches cooperating with recesses; or dog-like projections with oblique or rounded faces cooperating with recesses; or oblique spring tongues engaging behind rigid projections.

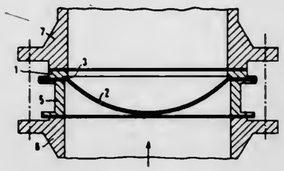
3,667,643
EASY-LIFT PULL TAB
Anilkumar J. Patel, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 28, 1970, Ser. No. 101,694
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **3 Claims**



A pull tab for an easy opening container. The pull tab is of the type having a pair of fulcrum legs. The fulcrum legs are each formed with an extension of single layer of sheet metal which projects outwardly of the fulcrum ends of the legs.

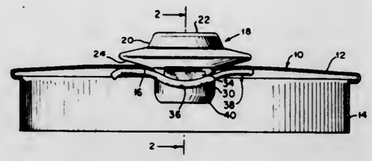
3,667,644
REVERSING RUPTURE DISC FOR PROTECTING EQUIPMENT FROM EXCESSIVE PRESSURE AND METHOD OF MANUFACTURE
Manfred Fortmann, Bensberg, Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bensberg/Cologne, Germany
Filed May 22, 1970, Ser. No. 39,781
Claims priority, application Germany, May 24, 1969, P 19 26 706.2
Int. Cl. B65d *25/00*
U.S. Cl. 220—89 A **14 Claims**

A reversing rupture disc assembly for protecting a vessel or other apparatus from excessive pressure has a carrier ring mountable in the apparatus and a reversing rupture disc tightly positioned in the ring. The disc has a curvature obtained by imparting a force thereto so as to strain the material from which the disc is made. The disc is disposed in the ring, so that the convex surface of the disc is directed toward the pressure. The disc has a weak buckling zone located in the mid-region of the disc, whereby the disc buckles inwardly and ruptures in response to the excessive pressure, the disc deviating from a spherical form at the mid-region, so that the radius of curvature of the disc decreases going from the mid-



region to the edge of the disc and, so that the sector angle ϕ of the disc is greater than $3.82\sqrt{S/R}$, where S is the disc thickness and R is the average radius of curvature of the disc. The material of which the disc is made has a positive stress-strain curve after undergoing the strain required to obtain the curvature, the curve having a slope $d\sigma/d\epsilon$ greater than about 100 kgf/mm².

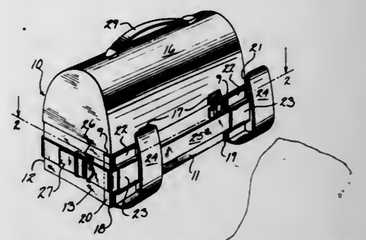
3,667,645
COVER AND KNOB ASSEMBLY FOR A COFFEE PERCOLATOR
Milton Emmer, 2171 Bragg St., Brooklyn, N.Y.
Filed June 17, 1970, Ser. No. 46,896
Int. Cl. A47J *31/04*
U.S. Cl. 220—82.5 **9 Claims**



A cover and knob assembly for a coffee percolator; the cover having an opening for the knob. The knob comprises a hollow body closed at one end and open at its other and has its closed end section projecting from and overlying the edges of the cover opening and its open end section extending through the cover opening. The open end section has oppositely laterally facing detent projections at its bottom. A U-shaped spring clip having arcuate sides with the altitude of the arcs greater than the distance between the projections and the underside of the cover, supported on the projections by the convex edges of the arcuate portions of its sides, with the ends of the sides resiliently pressing against the underside of the cover.

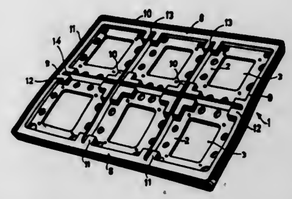
3,667,646
AUXILIARY CARRIER FOR PORTABLE BOXES
Edwin H. Graf, W187, 56876 Jewel Crest Drive, Muskego, Wis.
Filed Aug. 21, 1970, Ser. No. 65,967
Int. Cl. B65d *25/00*; A45c *13/40*
U.S. Cl. 220—85 R **3 Claims**

A pair of corner brackets are removably strapped to spaced corners of the main body portion of a lunch box, each bracket having an upwardly projecting yielding clip whereby an elongated item may be releasably held by the clips in a



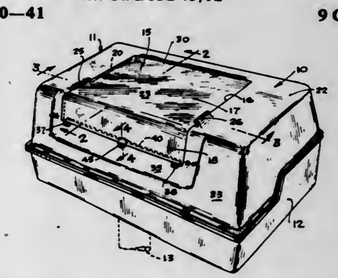
position close to the body of the lunch box and extending longitudinally thereof below the cover.

3,667,647
HOLDER FOR A NUMBER OF ASSOCIATED INDIVIDUAL CONTAINERS
Leendert Van Daalen, Slikkerveer, Netherlands, assignor to N. V. Plastic Industrie Van Daalen, Sliedrecht, Netherlands
Filed Mar. 18, 1970, Ser. No. 20,741
Claims priority, application Netherlands, Mar. 26, 1969, 6904643
Int. Cl. B65d *69/00, 21/02*
U.S. Cl. 220—23.4 **5 Claims**



A stackable holder for a number of individual containers, for vegetables and fruit, with a plate which carries the containers by their bottom and is provided with openings and raised parts to ventilate the contents of the containers.

3,667,648
SLIP OUT GLASS PANEL FOR COVER MEMBER
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.
Filed July 6, 1970, Ser. No. 52,390
Int. Cl. B65d *43/12*
U.S. Cl. 220—41 **9 Claims**



A cover member for a cooking unit wherein a panel can be inserted and removed without fastening means or the

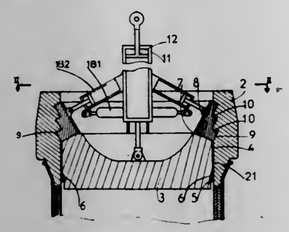
removal or the moving of any parts in the cover member. A frame is provided with an opening to receive a panel which is formed in two different planes and preferably, substantially L-shaped. The frame contains two pairs of oppositely disposed and spaced flanges, the lower pair supporting the panel in its one dimension and a base or ledge portion which supports the panel in its second and shorter dimension.

3,667,649

CLOSURE DEVICE FOR SEALING AN OPENING IN A WALL OF A PRESSURIZABLE CHAMBER

Georges Thillet, 26, rue Edouard Vaillant, Grenoble (Isere), France

Filed Nov. 2, 1970, Ser. No. 86,182
Claims priority, application France, Nov. 5, 1969, 6938066
Int. Cl. A47j *36/10*
U.S. Cl. 220—55 Y 5 Claims



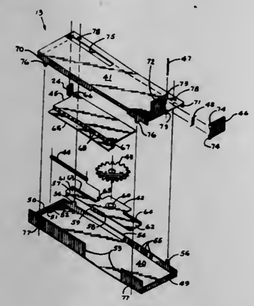
The combination of a pressurizable chamber and a closure device comprised of a closure member operable to close an opening in a wall of the chamber, a sealing member operable to seal the opening when the closure member is disposed in the opening and a plurality of locking members movable radially outwardly of the opening so as to lock the closure member against movement outwardly of the opening due to pressurization of the chamber; the locking members when in their locking position abutting the closure member and having portions thereof engaging in corresponding recesses in that portion of the wall surrounding the opening. The locking members may be moved automatically by means of jacks.

3,667,650

DISPENSING PACKAGE AND SUBASSEMBLY THEREFOR

Ricardo Noda, 802 Zenobia St., Denver, Colo., and Manuel R. Espino, Apt. 2, 277 Silver Ct., Elgin, Ill.

Continuation-in-part of application Ser. No. 820,825, May 1, 1969, now Patent No. 3,558,008. This application Dec. 21, 1970, Ser. No. 100,173
Int. Cl. B65g *59/06*
U.S. Cl. 221—250 12 Claims



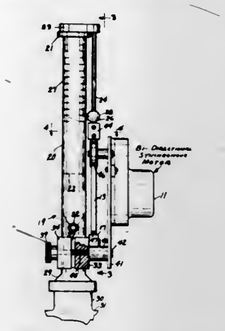
A dispensing package has a casing from which packaged articles are partially removed in sequence by each cycle of the operation within the casing of components of a subassembly with a base plate and a cover plate connected to each other but spaced apart. One of two shorter plates of the subassembly has a lateral extension that passes out a longitudinal slot in the casing for external manual movement of that plate. That shorter plate has an intermediate boss rotatably mounting a gear that is also rotated during this movement relative to the base plate by engagement seriatim with dents in a flange of the base plate. Diagonally opposite that engagement the gear during rotation and linear movement engages seriatim openings in a depending flange of the other shorter plate to move it and its article-pushing finer flange a greater distance to move an article partially out of the casing.

3,667,651

DEVICE FOR DERIVING LIMITED RECIPROCATING MOTION FROM ROTATIONAL MOTION

Justin J. Shapiro, 1802 Second St., Berkeley, Calif.

Filed Dec. 11, 1970, Ser. No. 97,113
Int. Cl. B67d *5/08*; F16d *71/00*
U.S. Cl. 222—63 13 Claims



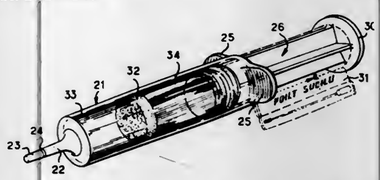
A device for deriving limited reciprocating motion from a bi-directional electric motor. The device is employed, for example, to reciprocate the plunger of a liquid dispensing pipet to dispense a measured amount of liquid with each reciprocation. The motor drives the plunger upwardly, drawing liquid reagent into the pipet, until an adjustable stop carried by the plunger engages the top flange of the pipet barrel. This causes the motor to reverse and move the plunger downwardly to its bottom limiting position, discharging the measured amount of reagent into a collection receptacle.

3,667,652

METHOD AND APPARATUS FOR SEPARATELY PACKAGING TWO LIQUIDS WHICH ARE TO BE SIMULTANEOUSLY DISPENSED

Bruno Morane, Paris; Manlio Maurelli, Vaujours; Charles Paoletti, Aulnay Sous Bois; Louis Merrien, Fontenay Sous Bois, and Robert Sathicq, Villepinte, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 1, 1969, Ser. No. 881,081
Claims priority, application France, Dec. 10, 1968, 177518; May 13, 1969, 6915369
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 21 Claims



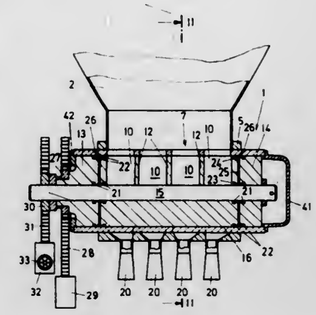
Two liquids are stored in a single jacket on opposite sides of a plug of compressible material. The fluids are mixed by applying fluid pressure to compress the plug and the mixture is then dispensed through a valve or nozzle in the jacket. The pressure may be supplied by actuating a piston or by releasing a compressed fluid into the jacket, or both.

3,667,653

DOSAGING DEVICE FOR VISCOUS SUBSTANCES

Horst Loewenthal, Tiengen, Germany, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed July 15, 1970, Ser. No. 55,087
Claims priority, application Switzerland, July 16, 1969, 10861/69
Int. Cl. G01f *13/00*
U.S. Cl. 222—217 1 Claim



The dosaging device comprises rotary slide valve in the housing of which is arranged a rotatable cylindrical main cock which is combined with an independently rotatable auxiliary cock, both of which are rotatable about the same horizontal axis. The main cock is provided with a plurality of axially alined chambers which open toward the circumference of the cock and are adapted to communicate with an inlet aperture in the housing. Each chamber extends over a sector angle of about 180° along the perimeter of the main cock. In each chamber extends a displacement sector extending over a sector angle of 90° and forming a part of the auxiliary cock whose other part is formed by a shaft about which the main cock is rotatable relatively to the auxiliary cock. The housing has two parallel rows of outlet apertures connectable with the containers which receive the dosages expelled by the cooperation of the two cocks from the chambers in the main cock.

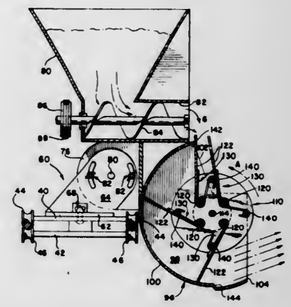
3,667,654

MATERIAL APPLICATOR DEVICE

Percy Ray Holley, 1507 Siegfried St., Victoria, Tex.

Filed May 21, 1970, Ser. No. 39,317
Int. Cl. G01f *11/20*
U.S. Cl. 222—336 5 Claims

A support is rotatably mounted within a housing one side of which is open. A plurality of propelling arms are each swingably mounted by the support and are resiliently biased in one direction. The support is rotated during operation to cause the arms to be alternately cocked and released to propel material onto a suitable surface. Feed means is provided for feeding material to the propelling arms and the device is adjustable both in elevation and azimuth. In addition, a moveable framework is provided which enables the



applicator device to be adjusted in both vertical and horizontal directions.

ERRATUM

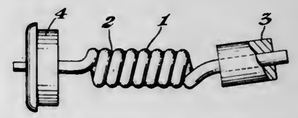
For Class 222—412 see:
Patent No. 3,667,665

3,667,655

METHOD FOR THE RAPID ASSEMBLY OF DIPTUBES INTO SPRAY CANS AND A DIPTUBE USEFUL THEREIN

Herman Knieriem, Jr., Ballwin, Mo., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1970, Ser. No. 23,600
Int. Cl. B67d *5/60*; B65b *3/04*
U.S. Cl. 222—464 12 Claims



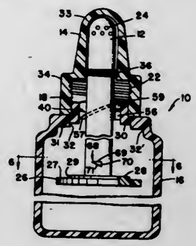
Method for the rapid assembly of long flexible diptubes into spray cans wherein the diptube is fixed into a coiled configuration prior to its insertion into the spray can and regains its normal shape after assembly.

3,667,656

EXTENSIBLE SPOUTS FOR CONTAINERS

John J. De Putron, 5098 Seven Oaks Station, Detroit, Mich.

Filed Sept. 17, 1969, Ser. No. 858,726
Int. Cl. B67d *3/00*
U.S. Cl. 222—524 16 Claims



A container having an extensible dispensing spout. A cap is removably secured to the container and to the spout to seal

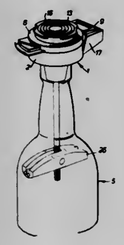
the spout within the container in retracted position and to be used for extending the spout without touching it by hand.

3,667,657
DISPOSABLE CONTAINER
Marcelo Chiquiar-Arias, Insurgentes Sur 403 1st Floor, Mexico City, Mexico
Filed Sept. 29, 1969, Ser. No. 861,841
Claims priority, application Mexico, Jan. 2, 1969, 108027
Int. Cl. B65d 47/10
U.S. Cl. 222—541 5 Claims



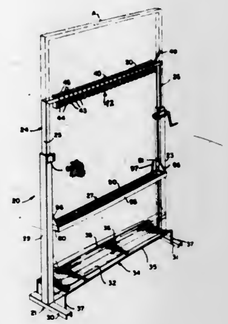
A prophylactic, dosified, disposable syringe includes a container comprising a cylinder composed of material capable of being cut, a piston operable in the cylinder for expelling the contained dosage, and means operable upon ejecting movement of said piston for cutting the wall of the cylinder to preclude reuse thereof.

3,667,658
LIQUID DISPENSER WITH SEPARABLY ATTACHED MEASURING DEVICE
Robert William Young, Cheltenham, England, assignor to Autic Developments Limited, Cheltenham, England
Filed June 1, 1970, Ser. No. 42,261
Claims priority, application Great Britain, May 31, 1969, 27,680/69
Int. Cl. B65d 5/72
U.S. Cl. 222—569 4 Claims



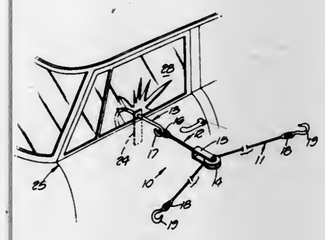
The connecting means has adapter means for attachment to the measure and include a resilient seal for engagement within the mouth of the bottle. A tension rod passes through the seal and is threaded adjacent one end to carry clamping means. The other end of the tension rod has means which limit insertion of the rod into the adapter means and enable the rod to be turned and tightened by a cooperating key, whereupon the clamping means clamp against the inside of the bottle and provide positive retention to prevent withdrawal of the seal from the mouth of the bottle except by releasing the clamping means using said key.

3,667,659
TELESCOPING DRAPERY PROCESSING MACHINE
Vernon D. Clement, P. O. Box 9922, Sacramento, Calif.
Filed May 17, 1971, Ser. No. 143,905
Int. Cl. A41h 43/00; D06j 1/00, 1/10
U.S. Cl. 223—32 11 Claims



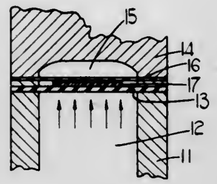
A low clearance machine for processing draperies has an upper rigid frame carrying an integral drapery support bar with its spaced apart legs reciprocally mounted in upright support posts on a base unit and a positive loop drive system in the base unit connected to the distal ends of said legs and a drapery pleater bar extending between the posts whereby the operation of the drive system will simultaneously move the frame and the pleater bar in opposite directions for quick efficient processing of draperies in the machine.

3,667,660
EMERGENCY VEHICLE RESCUE DEVICE AND METHOD
Bruce B. Lewis, 12623 Stillman St., Lakewood, Calif.
Filed Dec. 15, 1969, Ser. No. 885,242
Int. Cl. B26f 3/00
U.S. Cl. 225—1 8 Claims



An emergency rescue device and method of releasing an accident victim trapped in a vehicle by locked or jammed doors. The device comprises powerful hook means on one end of a flexible draft line, the hook means being usable to smash the door window for engagement of the hook over the window sill. The free end of the draft line is attachable to another vehicle and used to deform or smash the door instantly for withdrawal of the victim for emergency treatment or from fire or explosion hazards. A supplemental or snubbing draft line movably attached to the main draft line can be attached to a fixed anchorage thereby enabling a rescue vehicle to apply a pulling force along a line at an angle to the pulling force acting on the door being opened.

3,667,661
APPARATUS FOR USE IN THE MANUFACTURE OF SEMI-CONDUCTOR DEVICES
Francis Louis Farmer, 106 Holifast Rd, Sutton Coldfield, Warwickshire, England
Filed Apr. 8, 1970, Ser. No. 26,734
Claims priority, application Great Britain, May 1, 1969, 22,180/69
Int. Cl. B26f 3/00
U.S. Cl. 225—2 5 Claims



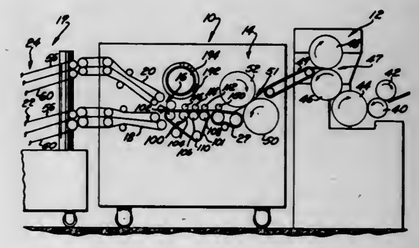
When a semi-conductor slice is subjected to a manufacturing process to convert it to a plurality of semi-conductor components, it is then necessary to separate the semi-conductor components. The invention provides apparatus for doing this in which a pair of resilient diaphragms are used to sandwich the wafer, the diaphragms then being distended to crack the slice along previously scribed lines.

3,667,662
CAPILLARY TUBE CUTTING AND FEEDING APPARATUS
Saul R. Gilford, and Ignacio P. Echesgaray, both of Oberlin, Ohio, assignors to Gilford Instrument Laboratories, Inc., Oberlin, Ohio
Filed Aug. 18, 1969, Ser. No. 850,884
Int. Cl. B26f 3/00
U.S. Cl. 225—96.5 7 Claims



A length of capillary tubing is mounted to an apparatus, being carried by a reciprocable carriage and a fixed support serving as a guide. The carriage and support have releasable unilateral respective first and second grab means. The grab means are effective in opposite directions of axial movement of the length of tubing so that movement of the carriage toward the support will hold the length of tubing on the carriage but permit the length to slip past the second grab means, but upon return movement of the carriage the second grab means locks the length in position and the first grab means permits slipping movement of the length of tubing relative to the carriage. In this manner a forward stroke of the carriage will feed a length of tubing past the support and a return, or rearward stroke will return the carriage without concurrent movement of the length of tubing. The length fed, at most equals the length of the forward stroke, but can be varied by suitable means, for example, for the purpose of feeding a small end for trimming. A cutter is driven by and synchronized with return movement of the carriage to score the fed length of tubing. The apparatus includes means supporting a cuvette or carrier into which the tubing end is inserted during the stroke. Means are provided laterally to strain the short free end of the length of tubing beyond the score line to cause the short end to break off, either falling into waste in the case of trim, or being captured in the cuvette in the case of a regular measured length. Means are provided to control the length fed by the carriage.

3,667,663
FEEDER UNIT
Thomas J. Kacmarcik, Parma Heights, and Robert K. Norton, Twinsburg, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Mar. 13, 1970, Ser. No. 19,221
Int. Cl. B26f 3/00; B65h 35/00
U.S. Cl. 225—100 7 Claims

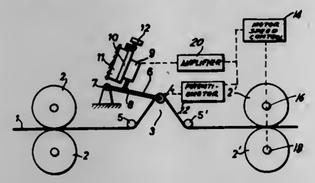


An improved apparatus for processing a stream of articles formed from sheet material with the articles arranged in interconnected rows extending transverse to the direction of movement of the articles includes a first means for transporting the articles at a first speed and a second means for receiving the articles from the first means and conveying the articles at a second speed which is in excess of the first speed. The second means for receiving the articles includes a conveyor unit and a plurality of rollers operatively associated with the conveyor unit and each of which have an article conveying position and an inactive position in which the roller does not cooperate with the conveyor to convey the articles. Means are provided for selectively moving at least one of the rollers between its positions so that the one roller may engage with one of the transversely extending rows of articles as the trailing edge of that row of articles passes from the first means. The one row of articles is then speeded up relative to the next successive row of articles which is engaged with the first means to thereby disconnect the one row from the next row of articles to thereby space the one row of articles relative to the next successive row of articles so as to facilitate processing of the articles as they move through the apparatus. The selective operation of the one roller enables the apparatus to process articles having a wide variety of configurations.

3,667,664
APPARATUS FOR KEEPING A STATE OF TENSION CONSTANT ON A MATERIAL WEB WHICH RUNS BETWEEN SUCCESSIVE PAIRS OF DRIVING ROLLERS
Peter Schroeder, Stockacker, Switzerland, assignor to Paul Weber A.G., Rothrist, Switzerland
Filed Feb. 26, 1970, Ser. No. 14,508
Claims priority, application Switzerland, Feb. 28, 1969, 3016/69
Int. Cl. B65h 43/00
U.S. Cl. 226—30 6 Claims

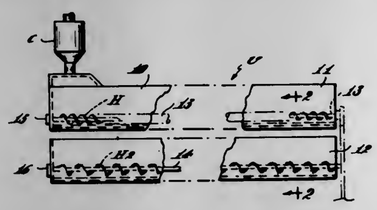
An apparatus for keeping a state of tension constant on a material web which runs between successive pairs of driving rollers includes a torsion bar having a lever extension with a

guide roller over which the material is directed. Sensing means are associated with the lever to sense variations of the torsion acting on the bar through the displacement of the lever by the variations in tension of the material which is



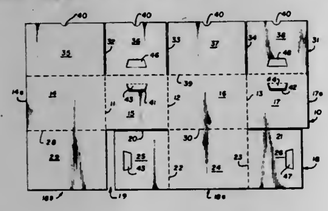
being fed and this sensing means is connected to electrical cont ol means for varying the speed of one or the other set of rollers or for braking the speed of one of the sets of the rollers in order to vary the tension on the web material which is fed.

3,667,665
APPARATUS FOR PREPARING FLOCKED FABRIC
Francis T. Spencer, Biddeford, Maine, assignor to West Point-Pepperell, Inc., Boston, Mass.
Continuation of application Ser. No. 834,825, June 19, 1969, now abandoned. This application May 20, 1971, Ser. No. 145,547
Int. Cl. G01f *11/20*
U.S. Cl. 222—412 **4 Claims**



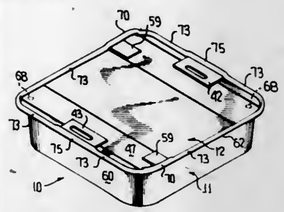
Flock distributing apparatus of the kind which comprises an elongate receptacle for flock, said receptacle having a foraminous bottom, an elongate rotary agitator within and extending longitudinally of the receptacle and which is operative to cause flock fiber to sift down through the bottom of the receptacle, and with further provision of means operative to drop flock down onto the rotary agitator at definitely spaced points lengthwise of the latter.

3,667,666
FOLDABLE STORAGE BOX
James T. Pryor, Dallas, Tex., assignor to Perma Products Co., Dallas, Tex.
Filed Dec. 30, 1970, Ser. No. 102,847
Int. Cl. B65d *5/00*
U.S. Cl. 229—16 B **3 Claims**



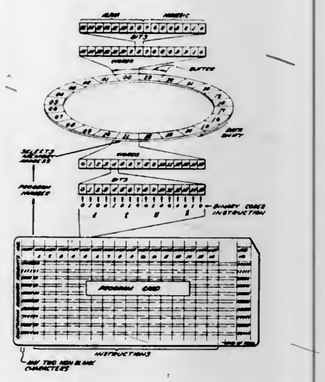
A storage box is disclosed that is folded into a box from a single flat blank of material in such a manner that the resultant box has three-ply end walls and two-ply side walls.

3,667,667
DOUBLE BOILER AND THROW-A-WAY FOOD PACKAGE
Henry E. Frankenberg, Berwyn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 15, 1970, Ser. No. 98,305
Int. Cl. B65d
U.S. Cl. 229—51 TS **14 Claims**



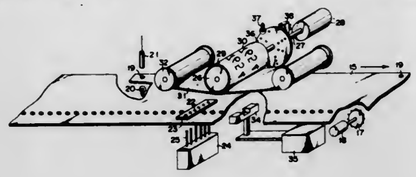
This disclosure relates to an improved container particularly of the so-called double boiler type, in which a cover is secured to the container body by an overfolded or crimped peripheral edge of the latter. Between adjacent side edges of the cover an edge of the periphery thereof is inwardly offset and in this area the cover is not crimped to the container but is actually spaced slightly from the crimp which serves as a vent for steam when the container contents are heated. Moreover, at this same area there is located the starting end of a tear strip portion, and since the latter is not secured to the container by the crimp, the starting end can be easily gripped and the tear strip portion readily removed to gain access to the container contents.

3,667,668
CARD PUNCH SYSTEM AND PROCESS
Clarence G. McCune, Balboa; John C. Vincer, Anaheim, and Kenneth E. Graves, San Jose, all of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.
Filed June 18, 1970, Ser. No. 47,215
Int. Cl. G06k *1/18*
U.S. Cl. 234—15 **21 Claims**



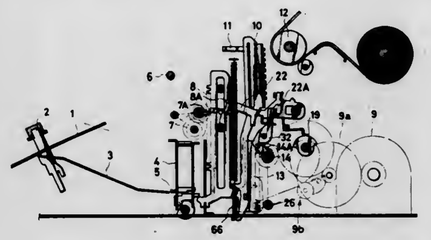
The time required to punch IBM cards can be reduced by using a memory for storing a large number of programs. The card reading capability of a conventional keypunch machine can be used to load the program information. The memory can also be used to store keystroke data while the system is executing automatic operations.

3,667,669
APPARATUS FOR PREPARING A PRINTED AND PUNCHED CARD
Etsuro Nagata, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Apr. 10, 1970, Ser. No. 27,408
Claims priority, application Japan, Apr. 14, 1969, 44/28383; 44/28382
Int. Cl. B41j *5/42*
U.S. Cl. 234—24 **10 Claims**



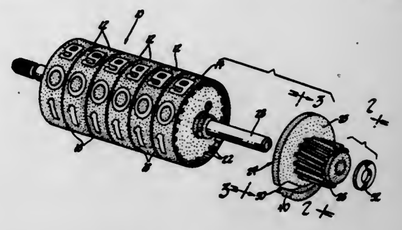
An apparatus for preparing a printed and punched card comprising a readout means for reading out signals representing information punched in a tape, a letter signal generating means for generating letter signals corresponding to the types successively passing through a printing section, a printing means for printing in two rows by a double-faced hammer with a paper card interposed therebetween, a punching means for punching the paper card by the vertical movement of a punching rod and a control device for actuating both printing and punching means at the same time when the letter signals are exactly identified with the information signals.

3,667,670
ADDING MACHINE WITH PRINTING DEVICE
Masaki Okajima, Yokohama, and Ryuzaburo Yokoyama, Urawa, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1970, Ser. No. 89,308
Claims priority, application Japan, Nov. 14, 1969, 44/91040
Int. Cl. G06c *27/00, 15/48*
U.S. Cl. 235—60 MT **6 Claims**



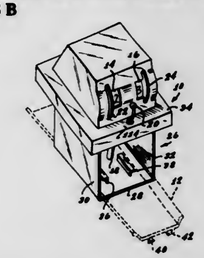
In a printing adding machine having a totalizer comprising a set of pinions cooperating with a set of racks, a second totalizer is provided for storing a number which is the sum of totals stored in the first totalizer. The second totalizer comprises a second set of pinions cooperating with a second set of racks which are connected to the first set of racks for upward and downward movement therewith.

3,667,671
ANTI-REVERSE ODOMETER ONE-WAY DRIVE
Guenter Hachtel, Swartz Creek, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 21, 1970, Ser. No. 65,791
Int. Cl. G01c *22/00*
U.S. Cl. 235—96 **3 Claims**



This invention relates to a drive mechanism adapted to drive a plurality of numbered or counting wheels such as those commonly found in use on odometers wherein the drive mechanism comprises a flexible finger which drives the counter in a forward or counting direction, but prevents driving the counter in the reverse direction.

3,667,672
LAP COUNTER FOR TOY VEHICLES
Melvin R. Kennedy, Compton, and Brian S. Prodger, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Continuation of application Ser. No. 812,736, Apr. 2, 1969, now abandoned. This application Jan. 28, 1971, Ser. No. 110,673
Int. Cl. B61l *1/16*; G06m *1/08*
U.S. Cl. 235—98 B **16 Claims**



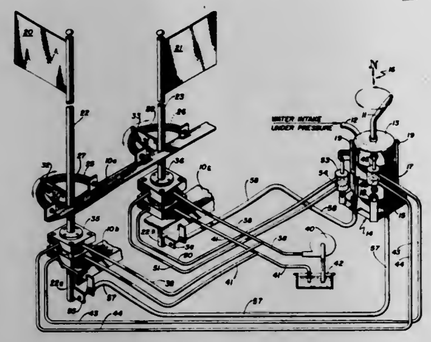
A device for placement on a toy racing track to count the number of laps traversed by a toy vehicle, comprising a spring loaded lever extending into the path of the vehicle that advances counting wheels which display the count. The deflection of the lever by the toy vehicle winds the spring, and the advance of a counting wheel occurs only on the return of the lever, so that the counting wheels do not receive the shock of a fast vehicle hitting the lever. The lever directly advances both a digit wheel and a 10-counting wheel, the digit wheel having a depression that allows a ratchet on the lever to engage the ten-counting wheel once in each revolution of the digit wheel.

3,667,673
WIND ACTUATED CONTROL DEVICE AND METHOD OF REGULATION THEREOF
Vlademar Knudsen, 2443 Makiki Heights Drive, Honolulu, Hawaii
Filed Nov. 5, 1970, Ser. No. 87,073
Int. Cl. B05b *17/00*
U.S. Cl. 239—1 **6 Claims**

The invention comprises an assemblage of a wind-sensitive

device coupled to responsive power-operated means which in turn are connected to a given deice which requires movement or adjustment dictated by wind direction or wind velocity, or both.

In the example given, the invention, as shown in the



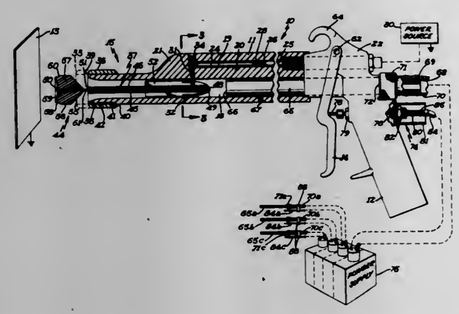
specification, is shown by way of illustration, as connected to and controlling the nozzle fit of a rotary irrigation sprinkler, with respect to the horizontal, and with respect to the wind-velocity and direction, in order automatically to achieve an optimum spray pattern.

3,667,674

ELECTROSTATIC POWDER COATING APPARATUS

Ronald F. Parsons, St. Paul, Minn.; Richard M. Sherman, Northville, Mich., and Robert M. Webb, Chicago, Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed Feb. 16, 1971, Ser. No. 115,542
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **14 Claims**



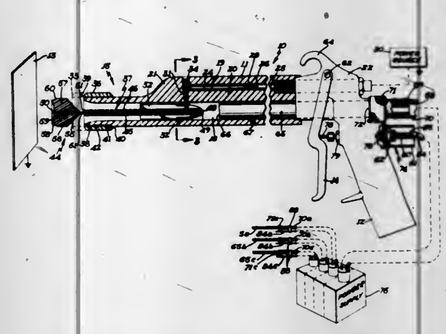
An electrostatic powder coating apparatus for coating the surfaces of articles with pulverulent materials having a quick and efficient material change feature such that said apparatus is adapted for selectively spraying materials having different characteristics wherein the change from one material to another can be accomplished without extensive purging of the system, said apparatus including a spray gun, a powder supply means adapted to be removably connected to the inlet of said spray gun, and a control means adapted to be connected to a switching means on said gun for controlling the supply of pulverulent materials to said gun.

3,667,675

ELECTROSTATIC POWDER COATING APPARATUS

Richard M. Sherman, Northville, Mich., and Robert M. Webb, Chicago, Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed Feb. 16, 1971, Ser. No. 115,685
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **24 Claims**



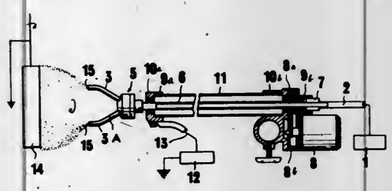
An electrostatic powder coating apparatus for coating the surfaces of articles with pulverulent materials having an ionization member which serves as both an improved charging means and a pattern forming deflecting means including a probe portion positioned immediately to the rear of a deflecting member and a probe portion extending past a forwardmost surface of the deflecting member, with said portions of the probe being maintained at an electrical potential substantially different than that of the article to be coated.

3,667,676

APPARATUS FOR ELECTROSTATICALLY COATING POWDERS ON A WORKPIECE

Tamotsu Watanabe, and Fumio Onoue, both of Tokyo, Japan, assignors to Nippon Kogei Kogyo Co., Ltd.

Filed Dec. 18, 1969, Ser. No. 886,170
Claims priority, application Japan, Mar. 26, 1969, 44/22366; June 11, 1969, 44/45364; 44/45365
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **5 Claims**



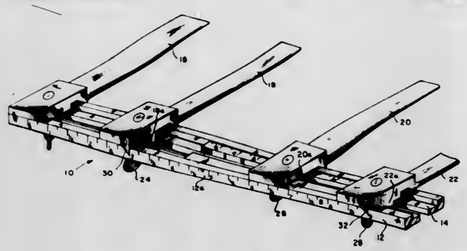
Apparatus for electrostatically coating powders on a workpiece from a rotating injection head having a plurality of nozzles disposed outwardly from the axis of the rotating injection head and rotatably mounted on the injection head for dispersing the powders. Each of the nozzles has a curved or bent portion, such that the distance between the nozzle and the axis of the rotating injection head and the angle from which the powders are dispersed are variable. The apparatus is utilized for performing a method of electrostatically coating powders on a workpiece comprising the steps of dispersing the powders in such a manner that the angle at which the powders are dispersed is variable. The apparatus also comprises a mixer connected to a source of compressed air for supplying the powders from a source through a pipe into the injection head with an air stream fed from a compressed air source, a controller for controlling the powder supply from the powder source to the injection head, and a constant powder supplying means for supplying the powders from the powder source to the mixer, whereby the powder supply is controlled by the powder supply means.

3,667,677

FABRIC PLEATER GUIDE

Edmund Jay Sprong, 38 Lockwood Lane, Riverside, Conn.

Filed Sept. 28, 1970, Ser. No. 76,062
Int. Cl. A41h *43/00;* **D06j** *1/00, 1/12*
U.S. Cl. 223—34 **5 Claims**



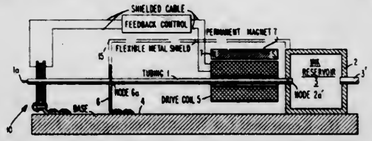
An adjustable fabric pleater guide which is portable and is provided with a scale on the measuring stick as well as indexes on the adjustable fabric guides for rapidly setting the required pleats longitudinally on the fabric.

3,667,678

NOZZLE STRUCTURE FOR JET PRINTERS

John W. Haskell, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1970, Ser. No. 19,367
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **3 Claims**



An ink jet nozzle structure comprising a thin tube, connected to a pressurized ink reservoir, is encircled by an A. C. driven coil which induces longitudinal reciprocating motion to cause formation of ink droplets. A permanent magnet is in the proximity of the drive coil provides a biasing action. The tube length is chosen so as to permit it to vibrate resonantly at the frequency of the induced longitudinal reciprocating motion. Resonant vibration permits the tube to be supported at two points along its length greatly increasing its mechanical stability. An air damper located near the tip of the nozzle broadens the resonant response and provides differential signals proportional to the longitudinal movement of the tube to maintain movements at a fixed or preset level.

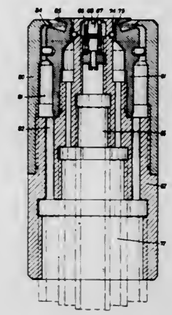
3,667,679

APPARATUS FOR MIXING A PLURALITY OF GASEOUS STREAMS

Josef Wiesenberger, Vienna, Austria, assignor to Dumag Ohg, Dr. Ludwig Kaluza & Co., Wien, Austria

Filed Dec. 22, 1969, Ser. No. 887,115
Claims priority, application Austria, Apr. 8, 1969, A 3379/69
Int. Cl. B05b *3/14*
U.S. Cl. 239—102 **3 Claims**

A method of mixing compressible fluid media (which may include an atomized spray) comprising delivering said media to a mixing zone, at least one said medium being a gas or vapor, and imparting to said gaseous or vaporous medium in



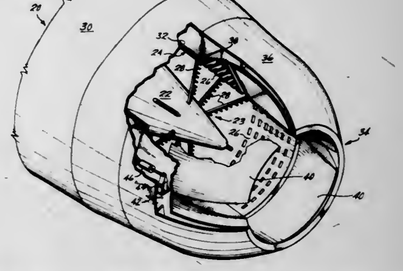
the mixing zone a supersonic velocity and/or a sonic vibration, whereby the supersonic velocity and/or the sonic vibration promotes mixing of the fluid media.

3,667,680

JET ENGINE EXHAUST NOZZLE SYSTEM

Willare N. Weed, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 24, 1970, Ser. No. 31,477
Int. Cl. B63h *25/46;* **F02k** *3/10*
U.S. Cl. 239—265.17 **24 Claims**



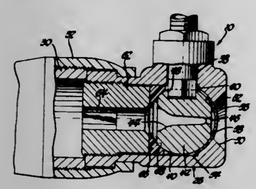
A variable area two-stage ejection nozzle exhaust system for a turbojet engine having an afterburner. wherein, a primary nozzle has spherical segments contained within a spherical shell housing which spherical segments are pivotally adjustable in response to augmented and non-augmented engine operation to provide for an efficient exhaust nozzle exit area choke plane; and a secondary nozzle with aerodynamically actuated trailing edge flaps for varying the secondary exhaust nozzle exit area in response to primary nozzle pressure variations and airplane Mach number. Also provided within the primary nozzle are separate clamshell type blocker doors which, in combination with fluid flow turning vanes incorporated into the primary nozzle wall, turn the fluid flow to obtain reverse thrust from the turbojet engine.

For engine sound suppression, an increase in the primary nozzle exit area at power settings below normal cruise power produces a sound suppression mode through the over expansion of the exhaust gases.

At higher engine power settings, one embodiment for sound suppression is accomplished by rotating channel

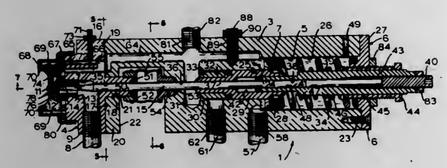
spokes into the exit gas flow and at the same time rotating internal clamshells to uncover openings to suppression tubes that are rotated outward into the free-stream airflow. The suppression tube exits are sized to equal the area of the flow blocked by the channel spokes to maintain engine/exhaust area match.

3,667,681
PLASTIC BEARING FOR AN AIRLESS SPRAY GUN
Erwin B. Biancha, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 21, 1970, Ser. No. 82,716
Int. Cl. B05b *15/02*
U.S. Cl. 239—393 **2 Claims**



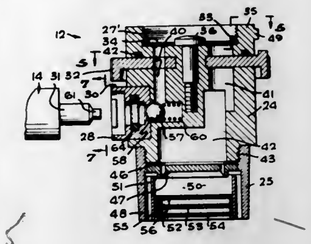
A plastic disc-like bearing for a turret member housing of an airless spray gun includes a roughened generally spherical outer surface that engages a generally spherical seat of the housing. An integral peripheral flange of the bearing has a roughened surface that engages a flange seat of the housing adjacent the periphery of the spherical seat. A smooth generally spherical inner surface of the bearing engages a generally spherical turret member received within the housing and a conventional plastic ring cooperates with the plastic bearing to support the turret member for rotational movement between a spraying position and a non-spraying position. In the spraying position, a spraying orifice of the turret member faces outwardly of apertures in the plastic bearing and the housing, the aperture of the bearing being the smaller of the two.

3,667,682
SPRAY GUN
John M. Purnell, Milwaukee, Wis., assignor to Grovhac, Inc., Milwaukee, Wis.
Filed July 20, 1970, Ser. No. 56,513
Int. Cl. B05b *7/12*
U.S. Cl. 239—412 **9 Claims**



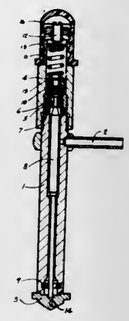
The disclosed gun for spraying atomized materials includes a housing having an orifice for discharge of the materials and atomizing air vent means associated with the orifice for atomizing the materials upon discharge from the orifice. A movable member and separate orifice closure member are reciprocally disposed in the housing and driven in sequence to provide for the venting of atomizing air through the vent means prior to the discharge of materials through the orifice. Adjustability is provided between the orifice containing member of the housing and the orifice closure member to compensate for wear therebetween, with such adjustability not materially affecting the flow volume of atomizing air. The main body and adjacent enclosure parts of the spray gun housing are secured together by a plurality of longitudinally extending fastening means to eliminate the need for distortion prone tools.

3,667,683
DIVERTER VALVE ASSEMBLY
Samuel Gilbert, Los Angeles, Calif., assignor to Hydro Manufacturing Inc., Encino, Calif.
Original application Mar. 16, 1967, Ser. No. 623,676, now Patent No. 3,500,824. Divided and this application Feb. 25, 1970, Ser. No. 17,995
Int. Cl. E03c *1/084*
U.S. Cl. 239—428.5 **4 Claims**



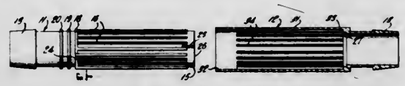
The invention described herein is an oral syringe which dispenses fluid under pressure for the purpose of cleaning teeth and massaging gums. A finger operated push button carried on the syringe handle allows the user to meter desired amounts of mouthwash from a container into the pressurized fluid stream through interconnecting valve passages and chambers. An aerator-valve assembly permits the syringe to be detachably coupled to an ordinary water faucet and additionally allows the user to by-pass fluid from the syringe without the necessity of detaching the entire assembly.

3,667,684
FUEL INJECTION VALVE
Walter Baumgart, Gergen, Germany, assignor to Veb Barkas-Werke, Ifa-Kombinat fur Kraftfahrzeugteile, Renak-Werke, Reichenbach, Germany
Filed Sept. 17, 1970, Ser. No. 72,955
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **10 Claims**



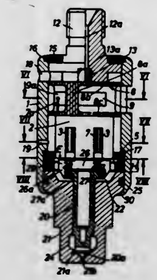
A fuel injection valve comprising a nozzle body having an inlet and an outlet and a cavity therebetween, a nozzle needle arranged in said cavity and spaced apart from said nozzle body to define an annular space therebetween for forming a fluid passage, said nozzle needle being mounted for reciprocating movement between opened and closed positions in said cavity, said nozzle body being sealed off at one end thereof by stop means, said nozzle needle at the end thereof adjacent said stop means being connected to a diaphragm arranged in said stop means, resilient guide means arranged in said nozzle body at the other end thereof from said stop means, said diaphragm and resilient guide means being mounted in said housing for securing said nozzle needle in a desired spatial relationship in said cavity whereby pressure applied onto said diaphragm acts to move said needle in said cavity between said open and closed position.

3,667,685
IRRIGATION DEVICES
Isaac Rinkewich, New York, N.Y., assignor to Rinko Irrigation Systems, Inc., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,677
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **12 Claims**



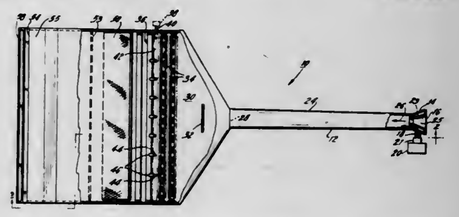
An irrigation device effecting drip action of water fed from a central tube by effecting a substantial pressure drop along the path of the water as it flows from the central feed tube to the exit of the device. The flow path of the water is labyrinthine so that the water path continuously reverses in order to create substantial turbulence to maintain in suspension the foreign matter to minimize the likelihood of clogging. The labyrinthine path causes the water to travel a considerable distance, thereby increasing the pressure drop so that the water drips at a slow rate.

3,667,686
ELECTROMAGNETIC FUEL INJECTORS
Georges Garnier, Blois, France, assignor to Roto-Diesel, Clichy (Hauts-de Seine), France
Filed Aug. 26, 1970, Ser. No. 67,133
Claims priority, application France, Sept. 15, 1969, 6931319
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 **5 Claims**



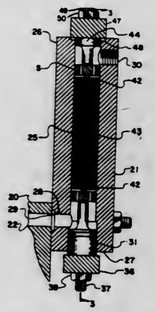
Electromagnetic fuel injector comprising a cylindrical body to which is attached an injection nozzle containing a sliding metering pintle in rigidly fixed relation to a movable armature or pallet which is attracted at each injection stroke of the cycle by an inductor formed of a magnetic core which carries a field winding and housed within the said injector body, wherein a stack of grain-oriented laminations which are cut out in the shape of m and form the inductor core is clamped at the end nearest the movable pallet within a hole formed through a holding disc of non-magnetic material which is stationarily secured within the injector body and at the opposite end by the clamping lips of two strips of non-magnetic metal each located within one of the two recesses which form a separation between the three magnetic arms of the said core and accomodate the field winding which is placed round the central arm, that end of the stack of laminations which is directed towards the movable pallet and that face of the holding disc which is also directed towards the said pallet being placed level with each other so as to form a reference plane which constitutes one side of the air-gap.

3,667,687
APPARATUS FOR PRODUCING HIGH EXPANSION FOAM
Leo E. Riviking, Springfield, and Adolph Blum, Scotch Plains, both of N.J., assignors to The Mearl Corporation, West Roselle Park, N.J.
Filed Aug. 10, 1970, Ser. No. 62,429
Int. Cl. B05b *1/14*; F23d *13/44*
U.S. Cl. 239—553.3 **8 Claims**



Foam producing apparatus comprising eduction means using compressed gas to sweep and educe lower pressure gas or gas laden with dust contaminants or other materials toward a porous foam forming barrier surface; foam forming solution spray nozzles direct such solution to wet the barrier surface; the gas creates foam at the screen, with the foam being moved beyond the screen by the gas.

3,667,688
METHOD FOR SHEARING SOLIDS IN A SOLIDS-LIQUID SUSPENSION
Joseph Iannicelli, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.
Original application June 28, 1968, Ser. No. 740,955, now Patent No. 3,556,416, dated Jan. 19, 1971. Divided and this application Nov. 16, 1970, Ser. No. 89,973
Int. Cl. B02c *19/00*
U.S. Cl. 241—1 **4 Claims**



A method for dis-aggregating solid particles in a slurry by pumping the slurry at pressures in excess of 1,000 p. s. i.

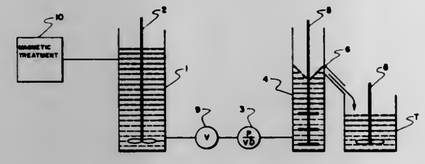
through a column containing particulate media clamped in a fixed position is disclosed.

3,667,689

METHOD FOR PRODUCING MINERAL PRODUCTS

James Brooks Whitley, and Joseph Iannicelli, both of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Dec. 15, 1969, Ser. No. 885,168
Int. Cl. B02c 21/00
U.S. Cl. 241—15 4 Claims



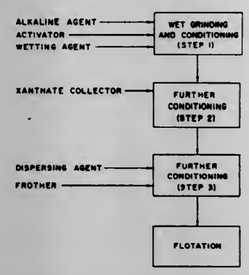
A method for producing minerals of reduced particle size and increased brightness, particularly high grade coating clays employing a hard, abrasive grinding medium following a pretreatment of magnetic separation is disclosed. Coating clays are prepared by the delamination of stack-like particles contained in magnetically extracted coarser clays employing a hard, abrasive grinding medium and high intensity grinding techniques.

3,667,690

FLOTATION OF COPPER-NICKEL SULFIDE ORES

David Weston, 34 Parkwood Avenue, Toronto, 7, Ontario, Canada

Continuation-in-part of application Ser. No. 727,268, May 7, 1968, now Patent No. 3,596,838. This application Nov. 3, 1969, Ser. No. 873,911. The portion of the term of the patent subsequent to Aug. 3, 1988, has been disclaimed.
Int. Cl. B03b 1/04
U.S. Cl. 241—20 27 Claims



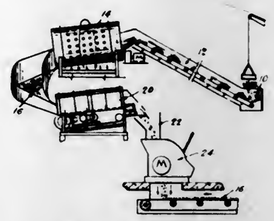
Flotation of sulphide minerals from their ores is achieved by a process in which two or more conditioning steps are carried out prior to a froth flotation step. The first step comprises conditioning a pulp of the ore in the presence of at least one alkaline agent selected from a group of agents which is defined in the specification which follows. The pulp is then further conditioned in the presence of a member of the xanthate family of flotation reagents and sufficient dispersing agent to effectively disperse the host rock minerals. The resulting pulp is then subjected to froth flotation. Preferably there are three separate conditioning steps, namely conditioning carried out in the presence of (1) one of the hereinafter defined alkaline agents, (2) a member of the xanthate family of flotation reagents, and (3) sodium silicate. The invention is particularly valuable for the recovery of metallic sulphides from ores containing talcy minerals or natural slimes and the invention has been applied with signal success to the flotation of copper-nickel sulphide ores containing over 40 percent weight of talcose host rock minerals.

3,667,691

METHOD FOR CRUSHING METAL TURNINGS

A. George Goldberg, Montreal, Quebec, Canada, assignor to I. I. Selig & Sons Ltd., Ville La Salle, Quebec, Canada

Filed July 22, 1970, Ser. No. 57,049
Int. Cl. B02c 21/00
U.S. Cl. 241—24 2 Claims



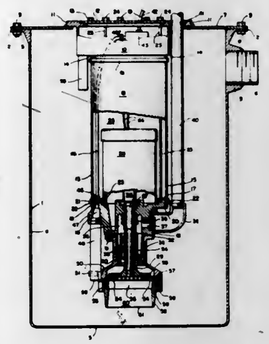
In the crushing of metal turnings, the turnings are first passed through a centrifugal separating drum where the fines and solid chunks are separated from the clusters of turnings. The chunks are removed, and the clusters of turnings are then passed to a shredding apparatus, which includes an endless chain conveyor, mounting teeth for advancing the clusters of metal turnings towards the crusher or pulverizer and stationary teeth spaced above the conveyor and cooperating with the teeth on the conveyor for shredding the large clusters of metal turnings as they are advanced towards the crusher or pulverizer.

3,667,692

PUMP STORAGE GRINDER

Richard C. Grace, Carlisle, N.Y., assignor to Environment/One Corporation, Latham, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,925
Int. Cl. B02c 13/18
U.S. Cl. 241—36 27 Claims



The pump storage grinder employs a tank having a sewage inlet and a removable top cover supporting a depending sealed housing having a motor and motor controls for driving a grinder or comminutor and pump externally of the chamber by means of a common motor shaft. The chamber is formed by a control housing integral with the cover, a tube and pump head, all held together by means of tension bolts

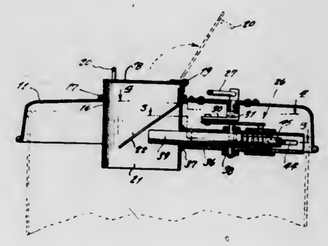
secured between the pump head and cover. The motor shaft extends through the pump head to drive a resilient helical pump and a comminutor impeller disc with depending blades that cooperate with a comminutor ring held between a comminutor inlet shroud and a pump housing secured to the pump head. A pump discharge chamber is provided in the head with a one-way valved passage leading to a discharge conduit extending through the cover. The level responsive motor control is provided with a liquid pressure sensing tube extending through the chamber in communication with a depending pipe secured to the pump head and housing.

3,667,693

REFUSE CAN BOTTLE CRUSHER

Kathleen E. Leeds, P.O. Box 201, New Port Ritchery, Fla., and James E. Davis, 6758 Chestnut St., Cincinnati, Ohio

Filed Oct. 31, 1969, Ser. No. 873,000
Int. Cl. B02c 19/14
U.S. Cl. 241—99 1 Claim



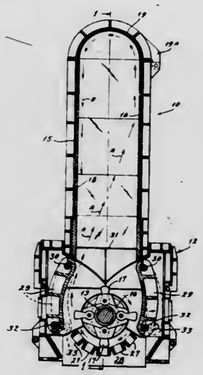
A garbage can incorporating a lid having a bottle crusher built thereinto, the bottle crusher incorporating a receptacle into which a bottle is receivable and held by a bottle holder after which a plunger drives ram against the bottle to crush the same, the broken bottle droping into the garbage can.

3,667,694

MATERIAL REDUCING HAMMER MILL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.

Filed July 17, 1970, Ser. No. 55,728
Int. Cl. B02c 13/02
U.S. Cl. 241—186 R 9 Claims



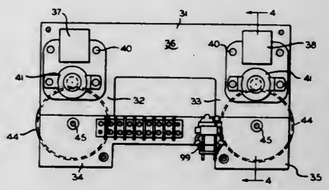
A material reducing hammer mill of reversible character having a material feed stack and breaker bars arranged to control the trajectory of the material being reduced such that the material flung reversely in the feed stack may be directed in its flight to reduce the damaging wear on the walls of the feed stack. The control is obtained by utilizing the breaker bars on the off-side relative to rotation of the hammer rotor to direct the trajectory of the flying material in a predetermined path in the feed stack to minimize the impact and wear on the walls of the feed stack.

3,667,695

REELING APPARATUS WITH DYNAMIC VIBRATION ABSORBER

Philip J. Brownscombe, Millington, N.J., assignor to Eugene Dietzgen Co., Chicago, Ill.

Filed Feb. 16, 1970, Ser. No. 11,471
Int. Cl. B65h 75/02; G03b 1/04; B65h 75/34
U.S. Cl. 242—55 12 Claims



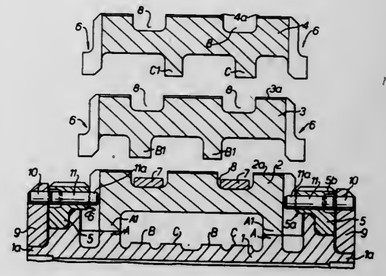
Reeling apparatus adapted for feeding reeled film between reels, film cartridges, etc. in either direction and uses thereof in image projection devices. The film reels are driven by respective electric motor-driven spindles having in the spindle drive a dynamic vibration absorber which resonates at sixty cycles per second to eliminate jittering at slow speed film drive of an image projected on a screen.

3,667,696

CORE GRIPPING AND RELEASE DEVICE

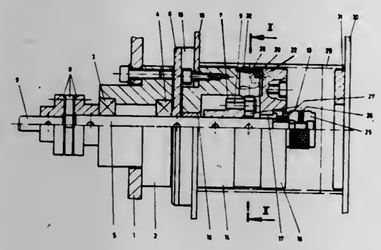
Reginald J. McCarthy, London, England, assignor to Frank F. Pershke Limited, Surrey, England

Filed Apr. 22, 1970, Ser. No. 30,918
Claims priority, application Great Britain, Apr. 24, 1969, 20,999/69
Int. Cl. B65h 75/24
U.S. Cl. 242—72 3 Claims



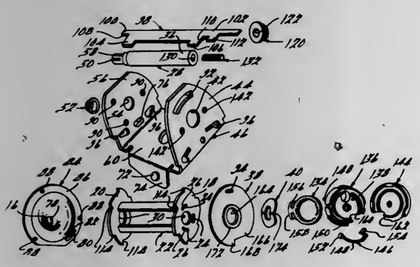
An expandible and contractable device for mounting on a driven shaft of a paper or like handling machine for drivingly engaging the core of a reel of paper and comprising a one-piece cylindrical body part for fixing to said shaft and formed externally with eccentrics, and an outer cylindrical part consisting of trough-like parts having internal eccentrics which combine with those of the body part.

3,667,697
MECHANISM FOR HOLDING A TUBULAR CORE
Erich Binder, Regensdorf/Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
Filed Dec. 16, 1969, Ser. No. 885,491
Claims priority, application Switzerland, Dec. 17, 1968, 18733/68
Int. Cl. B65h 75/24
U.S. Cl. 242—72 6 Claims



This invention relates to a mechanism for securely holding a tubular core on which a band of material such as photographic paper is to be wound. The core is held by a gripping mechanism inside a mandrel on which the core is mounted. Running through the mandrel coaxially therewith is a rotatable shaft having three rollers each mounted on a different apex of a triangular plate securely coupled to the shaft. Studs radially located within the mandrel are positioned to be engaged by the rollers so that on rotation of the shaft relative to the mandrel the studs protrude through the periphery of the mandrel to grip the core. A friction clutch between the mandrel and the shaft is provided to hold them in position after the studs have been engaged with the core.

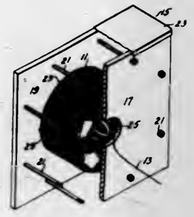
3,667,698
LOCKING SEAT BELT RETRACTOR
Robert C. Fisher, 580 E. Longlake Rd., Bloomfield Hills, Mich.
Continuation of application Ser. No. 759,064, Sept. 11, 1968, now abandoned, and a continuation-in-part of 629,689, Apr. 10, 1967, now abandoned. This application Jan. 22, 1971, Ser. No. 108,923
Int. Cl. A62b 35/00
U.S. Cl. 242—107.4 28 Claims



This invention relates to an automatic locking seat belt retractor of the type in which the belt is wound on a spring actuated spool which exerts a constant belt retracting force on the belt while allowing the belt to be extended by manually pulling it off the spool, and in which means are provided for locking the belt against further extension at any desired degree of extension by locking the spool against unwinding rotation, which means operates in response to a limited retracting movement of the spool. The invention resides in an improved and simplified means for effecting such locking action consisting of a pawl and ratchet normally biased to an engaged position in which they prevent unwinding rotation of the spool and a member journaled concentrically with the spool for limited rotation and having a frictional driving connection with the spool. The said member is frictionally driven to one limit of its movement by a limited extension of the belt and in that position holds the pawl out of engagement during further extension. Initial retracting movement at any degree of extension moves the member to a position in which it allows pawl engagement; thereby locking the belt against further extension. The member is preferably so constructed that further retracting movement of the belt moves the member beyond the last mentioned position to a position in which it again holds the pawl out of engagement with the ratchet to minimize noise and wear during retraction.

The invention further contemplates means for unlocking the retractor manually and also an improved means for unlocking the retractor or holding it unlocked automatically when the belt is substantially fully retracted, said last mentioned means being driven by the spool and effective to hold the pawl out of engagement when the belt is fully retracted and during a limited initial extension from fully retracted position.

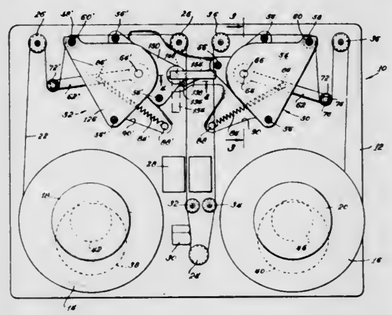
3,667,699
APPARATUS FOR IMPROVED PAYOUT OF WIRE STRAND FROM STRAND PACKAGES
Marcus E. Hobbs, and Carroll W. Bonnet, both of Baltimore, Md., assignors to Bethlehem Steel Corporation
Filed Feb. 10, 1970, Ser. No. 10,163
Int. Cl. B65h 49/00
U.S. Cl. 242—129 16 Claims



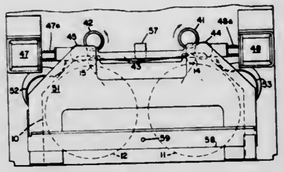
An orifice of a critical diameter is provided in or adjacent to one side of a wire strand package to facilitate controlled payout from a package of stiff wire strand about a temporary core positioned within the orifice.

3,667,700
TAPE TRANSPORT APPARATUS
Murray C. Carney, and Ellis Speicher, III, both of Springfield, Ill., assignors to Sangamo Electric Company, Springfield, Ill.
Filed Mar. 9, 1970, Ser. No. 17,847
Int. Cl. B65h 59/38, 63/02; G11b 15/32
U.S. Cl. 242—189 16 Claims

Apparatus for transferring a flexible tape from a supply reel to a take-up reel including drive motor and brake means for each of the tape reels, a capstan disposed between the reels for effecting selective transfer of the tape between the reels, and a pair of tape storage devices each disposed between one of the tape reels and the capstan, each storage device being adapted to accommodate variations in tape length between the associated tape reel and the capstan and having switch contacts operable to control rotation and braking of the associated tape reel in a manner to maintain linear tape transfer over the capstan.



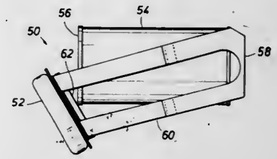
3,667,701
MAGNETIC TAPE APPARATUS
James E. Blum, Sunnyvale, Calif., assignor to Cybercom Corporation, Sunnyvale, Calif.
Filed May 7, 1970, Ser. No. 35,356
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—192 1 Claim



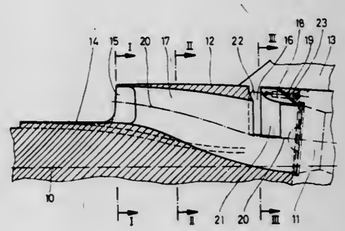
Magnetic tape apparatus including a tape magazine having takeup and supply reels whose rims are engaged by constant-torque slip clutches which are concurrently engaged with the reels driving them in opposite directions to maintain the length of tape extending between the reels in a tension condition. Means for driving the tape back and forth include a shuttle bar having idler rollers which move alternatively between two counter-rotating capstans to engage two guide rollers mounted in the magazine itself to move the tape in a forward or reverse direction.

3,667,702
METHOD AND APPARATUS FOR TRANSPORTING CONTAINERS THROUGH A PNEUMATIC TUBE SYSTEM
William E. Kelley, Houston, Tex., assignor to C. K. Kelley & Sons, Inc., Houston, Tex.
Filed Mar. 19, 1970, Ser. No. 21,143
Int. Cl. B65g 51/06
U.S. Cl. 243—32 7 Claims

A method of transporting containers through a pneumatic tube system by detachably securing the containers directly to air sealing means prior to insertion in the system. A carrier specifically designed for containers uses the container as the body. The container is held in position by a harness attached to the air sealing means by resilient straps allowing the container to be easily attached to the air sealing means. A carrier having a length of tubing resiliently attached to an air sealing means is also disclosed.

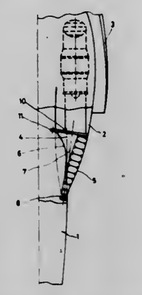


3,667,703
AUXILIARY AIR INTAKE FOR AIR AND SPACECRAFT ENGINES
Helmut Boek, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed Jan. 26, 1970, Ser. No. 5,520
Claims priority, application Germany, Feb. 7, 1969, P 19 06 157.5
Int. Cl. B64d 27/00, 29/00
U.S. Cl. 244—53 B 16 Claims



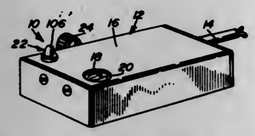
Auxiliary air intake construction for jet engines having a main air intake enclosed in an engine cowling and leading to the engine air inlet. The auxiliary air intake consists of a slot extending through a portion of such cowling and defined by walls which form an acute angle with the axis of the main air intake. A recess is formed in one of said walls and a door structure for at least one sliding door is arranged within said recess. Said door structure includes operating means for retracting same within said recess to open said auxiliary air intake and for extending same across said slot to close same. Said door structure is so positioned and arranged that when in extended position its outer surface is substantially flush with the surface of the engine cowling and its inner surface is substantially flush with the wall defining the main air intake.

3,667,704
CLOSABLE AIR INTAKE DUCT MOUNTED ON THE FUSELAGE AND OPEN IN THE DIRECTION OF FLIGHT
Karl H. Assmann, Germering, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed May 5, 1970, Ser. No. 34,693
Claims priority, appplication Germany, May 23, 1969, P 19 26 553.3
Int. Cl. B64d *33/02*
U.S. Cl. 244—53 B 5 Claims



Door for the air intake duct of auxiliary engine of jet aircraft. The door is pivotally mounted at the forward end of the recess in the fuselage which recess is normally provided and aligned with the air intake duct for the auxiliary engine. In open position the door surfaces are aligned with the surfaces of the auxiliary air intake duct while in closed position the door provides a surface aligned with the inner surface of the main air intake duct.

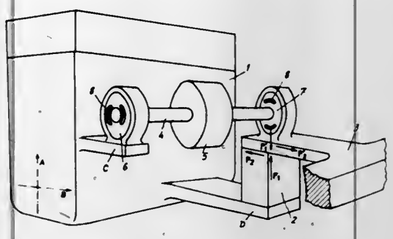
3,667,705
AUTOMATIC CONTROL SYSTEM FOR PARACHUTES
Stephen L. Snyder, 331 Cherry Hill Blvd., Cherry Hill, N.J. 08034
Filed Jan. 12, 1970, Ser. No. 2,332
Int. Cl. B64d *17/58*
U.S. Cl. 244—150 25 Claims



A differential rate control switch and a barometric control device are jointly operative to trigger a parachute opening mechanism at an elevation preset relative to acutal ground level. The barometric control device determines the altitude at which the parachute is opened if the chutist is falling at a high enough velocity as determined by the rate control switch. The system is readily adjusted for the current barometric pressure at the desired ground level elevation immediately prior to use.

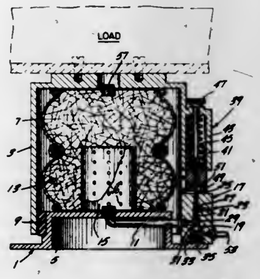
3,667,706
ANTIVIBRATORY DEVICES WITH PHASE REVERSAL
Pierre Tiberghien, Billancourt, France, assignor to Regie Nationale des Usines Renault & Automobiles Peugeot, Billancourt, Hauts-de-Seine, and Paris, France
Filed June 22, 1970, Ser. No. 48,175
Claims priority, application France, July 25, 1969, 6925512
Int. Cl. F16f *15/00*
U.S. Cl. 248—9 6 Claims

Device for damping out a vibration generated by an engine and transmitted directly to the frame structure or chassis through elastic support means connecting the engine to said frame structure or chassis, applicable notably to motor vehicles and machine tools, and adapted to introduce into the frame structure, as near as possible to said elastic support means, a second vibration of same modulus but of inverted phase in relation to the first vibration, through a bar resiliently connected both to



the engine and to said frame structure and adapted to carry throughout its length an inertia weight displaceable therealong for adjustment purpose, characterized in that the terminal elastic elements connecting said bar to said engine and to said frame structure have anisotropic elastic properties depending on the stiffness values of the elements along two orthogonal axes substantially perpendicular to the bar axis.

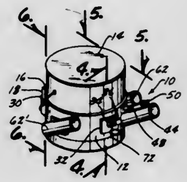
3,667,707
AIR SUPPORT
Billy Y. K. Mui, Astoria, N.Y., assignor to Korfund Dynamics Corporation, Westbury, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,626
Int. Cl. F16f *11/00*
U.S. Cl. 248—20 16 Claims



An air support for maintaining a load at a preselected height while isolating the load with respect to vibrations. The support includes a housing which is disposed above and in slidable engagement with a base. Support for the housing is provided by an inflatable bag to which compressed air is supplied through an air admission valve. When the housing moves downward from the preselected height, a rod forces the check valve open admitting additional air to the bag. The rod carries a piston journalled in a passageway whereby air is continuously allowed to escape from the system. If the housing moves above the preselected height by more than a predetermined distance the rod also moves upward allowing additional air

to escape from the bag to provide a fast return to the preselected height without or with a minimum of oscillation.

3,667,708
COMBINATION FISHING ROD AND FLASHLIGHT HOLDER ATTACHMENT
John F. Smeltzer, Meriden, Iowa 51037
Continuation-in-part of application Ser. No. 889,484, Dec. 31, 1969. This application Apr. 1, 1970, Ser. No. 24,651
Int. Cl. A01k *97/10*
U.S. Cl. 248—39 2 Claims



A combination fishing rod and flashlight holder attachment for use with a cylindrical container comprising a flexible band adapted to be extended around the container and secured thereto. A first tubular support member is selectively movably secured to the band and is adapted to receive one end of a fishing rod therein to support the same. Second and third tubular support members are adjustably movably secured to the band on opposite sides of the first support member and are adapted to receive either a flashlight or a fishing rod therein to support the same. The attachment includes tightening means to maintain the band on the container in the selected position and to permit the attachment to be easily removed therefrom. The first support member also has means thereon for supporting a flashlight thereon. A stringer attachment is secured to the band below the first support member to permit a stringer to be secured to the attachment. The second and third support members extend upwardly and outwardly from the band and are designed to permit the fisherman to fish at night with a flashlight being placed in one of the tubular support members so as to direct light on the upper end of the fishing rod in the first support member. The second and third support members are spaced approximately 180 degrees apart with respect to the container to permit the fisherman to selectively use either of the same depending upon the direction of the stream flow. The first support member also has means thereon for supporting a flashlight thereon.

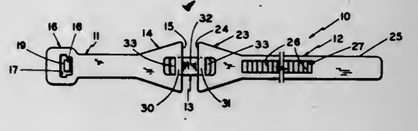
3,667,709
LENGTHWISE ADJUSTABLE SUSPENSION DEVICE FOR ARTICLES, PARTICULARLY SANITATION AND HEATING PIPES
Rudolf Linser, Renningen, Germany, assignor to Stanzwerke Glarus AG, Buchholz, Switzerland
Filed Sept. 25, 1970, Ser. No. 75,323
Int. Cl. F16l *3/14*
U.S. Cl. 248—59 4 Claims

A lengthwise adjustable suspension device for articles, such as in particular sanitation or plumbing pipes and heating conduits, which is of the type incorporating a suspension band member provided at one end thereof with an attachment element to which there can be secured the article which is to be suspended. The invention contemplates the provision of mechanism for regulating the suspension length of the article supported by the band member, such mechanism embodying a rotatably mounted



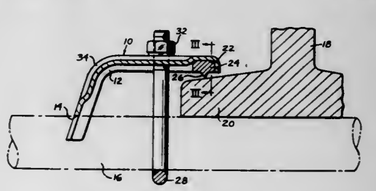
element onto which there can be wound-up and wound-off one end of the band member.

3,667,710
FLEXIBLE STRAP FASTENER
Roy A. Moody, Flossmoor, and Jack E. Caveney, Chicago, Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Aug. 26, 1970, Ser. No. 67,117
Int. Cl. F16l *3/14*
U.S. Cl. 248—71 16 Claims



A flexible strap fastener and several embodiments thereof are disclosed herein and include generally an elongated head strap portion, an elongated tail strap portion, and a resilient mount interconnecting said strap portions and adapted to be pushed into an opening in a panel to retain the entire strap fastener thereto. The head and tail straps are provided with a means for adjustable interconnection whereby the flexible strap fastener is formed into an article retaining loop.

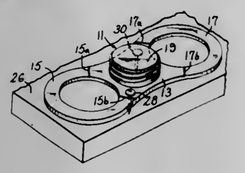
3,667,711
HANGER FOR PIPES AND CONDUITS
Martin S. Kissel, 806 Main St., Latrobe, Pa. 15650
Filed Oct. 13, 1970, Ser. No. 80,273
Int. Cl. F16l *3/04*
U.S. Cl. 248—72 9 Claims



The specification discloses a hanger for supporting a pipe or conduit or the like on a flange, such as the flange of a beam. The hanger is in the form of an L shaped member adapted to engage the upper side of the flange

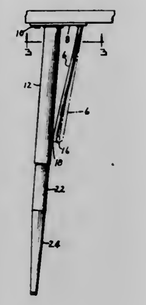
at one end of one of the legs and to engage the top of the pipe or the like with the end of the other of the legs. A U bolt embracing the pipe or the like from beneath has leg portions extending through the ranger and receiving nuts to clamp the assembly fixedly in place.

3,667,712
NOZZLE STORAGE UNIT
George Michael Furgueson, Dogwood Drive, Centerbrook, Conn. 06409
Filed July 10, 1970, Ser. No. 53,864
Int. Cl. A47f *5/08, 7/00*
U.S. Cl. 248—75 6 Claims



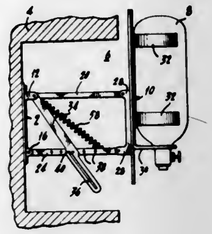
A device for storing a hose nozzle comprising a support member, an externally threaded bracket member on the support member for threadably receiving a hose nozzle, and a pair of apertured members resiliently connected to the support member and adapted to receive and hold a hose through the apertures. The support member, bracket member, and apertured members preferably are constructed from a single piece of semi-flexible plastic.

3,667,713
ADJUSTABLE TABLE LEG
Robert A. Clarke, Blanford, Mass., assignor to The Columbia Manufacturing Co., Inc., Westfield, Mass.
Filed Feb. 8, 1971, Ser. No. 113,432
Int. Cl. F16m *11/26*
U.S. Cl. 248—188.5 2 Claims



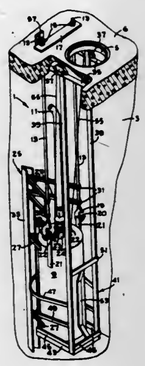
Adjustable table leg assembly having a mounting plate and depending therefrom a fixed tubular sleeve provided with a slot spaced from the lower open end thereof and a V-shaped rod brace member of spring metal having its outer ends fixed to the plate with the lower looped end spring tensioned against the sleeve at said slot. A tapered stud is fixed on the looped end of the brace and projects through said slot. An adjustable tubular lower leg section is slidably inserted in the sleeve and has a series of longitudinally spaced holes releasably engageable by the tapered stud to secure said leg section by the brace member at a selected position of telescopic extension.

3,667,714
TANK SUPPORT
Theodore Ziaylek, Jr., P.O. Box 292, Yardley, Pa. 19068
Filed Aug. 14, 1970, Ser. No. 63,822
Int. Cl. A47f *5/00*
U.S. Cl. 248—284 5 Claims



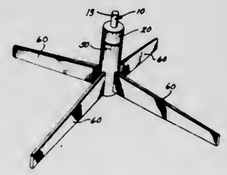
A bracket for supporting a tank, cylinder, or other container such as an oxygen tank, compressed air cylinder, fire extinguisher or the like, is movable to a retracted or inactive position wherein the tank may be housed within a cabinet or recess in a wall, fire apparatus or the like and is movable to an extended or operative position permitting easy removal of the tank for use. Means are further provided for releasably holding the bracket and tank in either of its alternative positions.

3,667,715
MOUNTING APPARATUS FOR REMOTE DISENGAGEMENT AND ENGAGEMENT OF SUBMERSIBLE PUMPS
Johann Mertens, Santa Cruz, Calif., assignor to Nuclear Waste Systems Company, Campbell, Calif.
Filed Jan. 25, 1971, Ser. No. 109,182
Int. Cl. B67d *5/64;* F04d *13/08*
U.S. Cl. 248—327 10 Claims



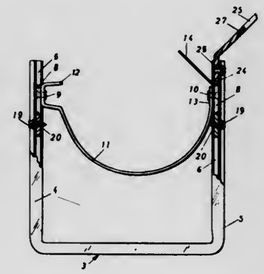
Mounting apparatus for lowering, raising and securing in place a submersible pump. The apparatus includes an alignment rack for aligning within a liquid holding vat a submersible pump with a discharge pipe within the vat for coupling to the pump. Adjustable members are adapted for engaging the pump within the vat and extending outside the vat. The members are further adapted to urge the pump in and out of coupling relationship to the discharge pipe responsive to adjustments performed on said members outside the vat. A pump cage is guided relative to the alignment rack and discharge pipe. The cage is movable laterally with relationship to the discharge pipe so as to move the pump laterally clear of the discharge tube when the pump and pipe are uncoupled, and pulley means are provided for raising and lowering the pump from and to the cage when clear of the discharge tube.

3,667,716
TELESCOPING CHAIR BASE
Bernard J. Fries, Jenison, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Aug. 31, 1970, Ser. No. 68,178
Int. Cl. F16m *11/00, 13/00*
U.S. Cl. 248—405 11 Claims



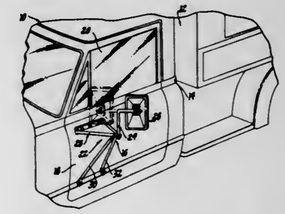
A threaded chair spindle is threadably carried by a nut which is rotatably supported by a hub tube such that the lower bearing surface of the spindle extends within the hub tube. A spindle cover tube is longitudinally fixed with respect to said spindle and encloses the threaded portion of the spindle but can be rotated with respect to the spindle. An elongated, vertical rib projects inwardly from the inside surface of the spindle cover tube and mates with a vertical groove in the side of the nut so that the spindle and the spindle cover tube can be raised or lowered by rotating the spindle cover tube with respect to the spindle.

3,667,717
DEVICE FOR RAINWATER PIPES IN BUILDINGS PROVIDED WITH CORNICES
Kenneth Ulf Folke Fasth, Halmstad, Sweden, assignor to AB C. W. Erikssons Platslageri Eftr. Halmstad, Sweden
Filed July 22, 1970, Ser. No. 57,052
Claims priority, application Sweden, July 24, 1969, 10,416/69
Int. Cl. E02b *9/04;* E04d *13/00*
U.S. Cl. 248—48.2 6 Claims



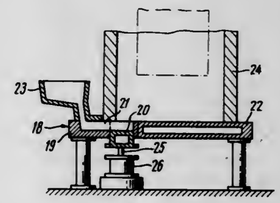
A gutter assembly intended for use in buildings provided with roof cornices of the kind carried in generally U-shaped mounting members. The roof gutter is mounted in said cornices such that the correct fall of a gutter length is easily obtainable and the inclination given to it remains even under considerable load. To obtain this, the mounting members are provided with stirrups carrying the gutter lengths proper, the said stirrups being slidingly mounted in the upright limbs of the mounting members by means of slides which may be adjusted to desired inclination by means of an arrangement of holes and a locking means.

3,667,718
ADJUSTABLE REAR VIEW MIRROR ASSEMBLY
Gerald E. Goslin, Mount Clemens, Russell R. Hershberger, Birmingham, and George J. Mach, Berkley, Mich., assignors to General Motors Corporation, Detroit, Mich.
Continuation of abandoned application Ser. No. 770,522, Oct. 25, 1968. This application May 18, 1971, Ser. No. 144,595
Int. Cl. B60r *1/06*
U.S. Cl. 248—487 7 Claims



A rear view mirror assembly for use on motor vehicles having an outwardly extending removable cargo includes an L-shaped support arm that has a lower leg supported at the vehicle door for rotation about a vertical axis and has an upper leg supporting a mirror element for rotation about a horizontal axis. The mirror element is movable between an inboard position used under normal driving conditions and an outboard viewing position used when a cargo is being carried by rotation of the support member about the vertical axis coupled with rotation of the mirror element about the horizontal axis.

3,667,719
ARRANGEMENT FOR THE BOTTOM POURING OF SLAG INTO A CHILL MOULD
Vitaly Mikhailovich Bagiai, Ulitsa Semashko 10, kv. 54/3; Jury Vadimovich Latash, Vozdukhoflotsky prospekt 48, kv. 14; and Boris Izrailevich Medovar, Bulvar Lesi Ukrainki 2, kv. 8, all of Kiev, U.S.S.R.
Filed Nov. 18, 1969, Ser. No. 877,663
Int. Cl. B22d *27/02*
U.S. Cl. 249—109 3 Claims



An arrangement for the bottom pouring of slag into a chill mould of an electroslag furnace, comprising a head piece for allowing the liquid slag to be poured, and a member provided with a duct connecting the cavity of the headpiece with the cavity of a chill mould, the member with

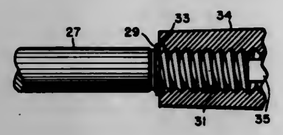
duct being mounted so as to be capable of moving in relation to the chill mould in order to overlap this duct at the point where it communicates with the cavity of the chill mould after the liquid slag has been poured thereinto, and wherein the pouring of the slag into the chill mould enables ingots to be obtained without any lateral projections in their bottom end, and allows effecting the accurate dosing of slag being poured into the chill mould.

3,667,720

TIE ROD CONFIGURATION FOR SEALING THE THREADED INNER END OF A SHEBOLT

Chester I. Williams, 347 Greenbriar SE., Grand Rapids, Mich. 49506

Filed Sept. 22, 1969, Ser. No. 859,757
Int. Cl. E04g *17/06, 17/08*
U.S. Cl. 249—213 **4 Claims**



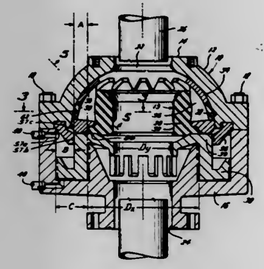
The interior threading on the inner end of a shebolt installed in a wall-form tie system is sealed against the ingress of concrete by the presence of an annular ring adjacent the inner extremity of the threading at the ends of the inner tie rod. The sealing ring is deformable, and operates preferably in conjunction with a positive stop arrangement engageable with the end of the tie rod.

3,667,721

BLOWOUT PREVENTER

Ado N. Vujasinovic, Fullerton, Calif., assignor to The Rucker Company, Oakland, Calif.

Filed Apr. 13, 1970, Ser. No. 27,947
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 **8 Claims**



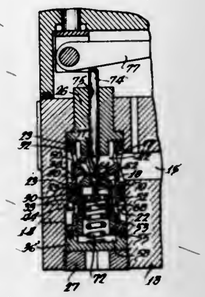
An improved blowout preventer in which a packing element having a resilient sealing means and a plurality of metallic translating means slidably moves against a curved inner surface of a housing for moving into a sealed position in which the packing element is positioned against but not connected to an actuating piston for increased sealing performance, freedom of movement, and for ease of replacement and in which the axial extent of the curved portion of the translating means is less than the curved outer surface of the packing element whereby the sealing means may circumferentially contact the curved inner surface of the housing to form a seal to provide an improved closing characteristic, and the bases of the translating means are further away from the bore whereby the sealing means on the bottom of the packing element is only slightly compressed allowing a fast response and quick adjustment of the packing element to changes in diameter and configuration of moved-through components of the drilling string.

3,667,722

PROPORTIONAL VALVE

Sherwin D. Katz, Skokie, and Joseph M. Levon, Arlington Heights, Ill., assignors to I-T-E Imperial Corporation

Filed Oct. 22, 1970, Ser. No. 83,062
Int. Cl. F16k *31/10*
U.S. Cl. 251—30 **10 Claims**



A proportional variable flow control valve including a piston type main valve member having a pilot valve slidable axially therein that controls the pressure drop across the main valve and hence the opening of the main valve. The piston type main valve forms a chamber in the main valve housing that is continuously pressurized by inlet fluid thereby tending to close the valve, and the ball valve is positioned to relieve pressure in this chamber to permit opening of the valve under a constant inlet fluid biasing force acting on the valve. An actuator is provided for the ball pilot valve that shifts the ball valve in an amount proportional to the desired flow rate through the main valve and in response to the differential pressures the main valve opens a corresponding amount.

3,667,723

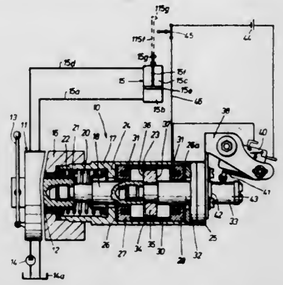
ELECTROMAGNETIC DETENT MEANS FOR SLIDING SPOOLS OF DIRECTIONAL CONTROL VALVES

Klaus Schneider, Ludwigsburg, Germany, assignor to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Dec. 3, 1970, Ser. No. 94,913
Claims priority, application Germany, Dec. 11, 1969, P 19 62 069.0
Int. Cl. F16k *31/44*
U.S. Cl. 251—68 **17 Claims**

A detent device for the sliding spool of a directional control valve wherein the spool is permanently biased to a neutral position and is movable to two operative positions. The detent device has an armature which is mounted on the spool and is movable toward a first or a second electromagnet in the valve housing in response to movement of the spool to the one or the other operative position. The electromagnets are automatically energized shortly before the spool reaches an operative position, and

at least one electromagnet can be deenergized with a fixed or variable delay following energization to permit a resetting spring to return the spool to its neutral position. Alternatively, the spool can carry an electromagnet which



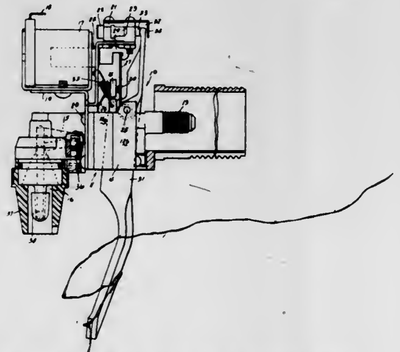
is movable against a first or a second armature in the housing when the spool moves toward its first or second operative position. The electromagnet is energized shortly before it reaches the one or the other armature.

3,667,724

SOLENOID ACTUATED DISPENSING VALVE

Richard T. Cornelius, Minneapolis, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed June 10, 1970, Ser. No. 44,925
Int. Cl. F16k *31/05*
U.S. Cl. 251—138 **5 Claims**



A dispensing device in the form of a mixing valve assembly has separate actuator arms for the fluids to be mixed, a solenoid having a plunger arranged to rock the actuator arms, and a selectively actuatable switch on the device connected in circuit with the solenoid. There is also included a manually movable lever located at the discharge nozzle for actuating the switch.

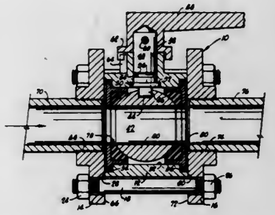
3,667,725

UNSTRESSED SEATS FOR BETWEEN FLANGE VALVES

Domer Scaramucci, Oklahoma City, Okla., assignor to Balon Corporation, Oklahoma City, Okla.

Continuation-in-part of application Ser. No. 526,936, Jan. 3, 1966, now Patent No. 3,428,292. This appplication Aug. 7, 1968, Ser. No. 750,873
Int. Cl. F16k *5/06*
U.S. Cl. 251—151 **7 Claims**

An improved valve wherein a sealing ring is disposed in a counterbore in the valve body and maintains sealing engagement between the connecting means which holds the valve in assembled relationship, and the valve body. The sealing ring is also in engagement with a valve seat, such that the sealing ring, deformed by the connecting means, biases the seat toward the valve member, thereby establishing the initial engagement between the seat and the valve member.

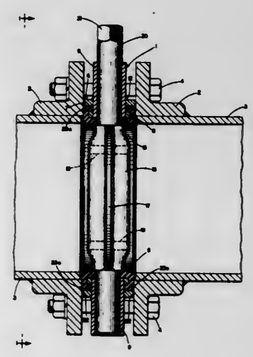


3,667,726

FABRICATED GASKETED VALVE BODY CONSTRUCTION FOR BUTTERFLY VALVES

Herman S. Church, Cuyahoga Falls, and Duane J. Clark, Kent, Ohio, assignors to Teledyne Mid-America Corporation, Hartville, Ohio

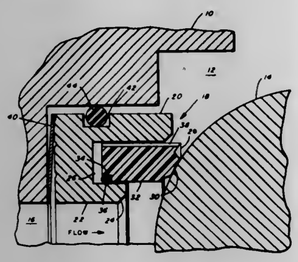
Filed Jan. 4, 1971, Ser. No. 103,505
Int. Cl. F16k *1/22*
U.S. Cl. 251—151 **10 Claims**



A fabricated plate metal valve body has spaced inner and outer metal ring members assembled concentrically. Valve operator trunnions are connected to the rings and extend in diametrically opposite directions. A rubber gasket is molded to and bonded with the metal rings within the outer ring and completely surrounding the inner ring. The gasket has annular sealing portions projecting axially in cross section beyond the planes of the ends of the outer ring to form seals engageable with the ends of pipe flanges with which the valve body is assembled. A butterfly valve is assembled with the valve body having an operating shaft extending through the trunnions and a movable valve disc connected to the shaft and adapted to be moved to a position in sealing contact throughout its periphery with a gasket interiorly of the inner ring. The inner diameter of the gasket is slightly smaller than the outer diameter of the valve disc which rotates within the valve body. Provision may be made to minimize any

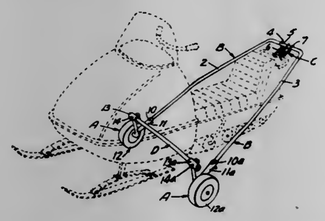
reduction in the inner diameter of the gasket incident to expansion of the gasket material from the heat of high temperature liquids passing through the valve.

3,667,727
SEAT FOR BALL OR GATE VALVES
Billy W. Bowden, P.O. Box 308, Hammond, La. 70401
Continuation-in-part of abandoned application Ser. No. 852,420, Aug. 22, 1969. This application May 10, 1971, Ser. No. 141,721
Int. Cl. F16k 5/20
U.S. Cl. 251—172 **6 Claims**



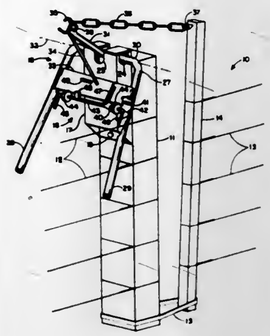
A seat for a ball or gate valve includes an insert which maintains a constant sealed contact with the ball or gate no matter what pressure differential exists between line pressure and the valve body cavity pressure.

3,667,728
SELF-LOADING DOLLY
Herbert J. Garelick, St. Paul, Minn., assignor to Garelick Mfg. Co., St. Paul, Minn.
Filed Aug. 21, 1970, Ser. No. 65,796
Int. Cl. B62b 1/06
U.S. Cl. 254—8 R **1 Claim**



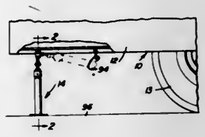
Apparatus for lifting a vehicle, such as a snowmobile, from the ground, whereby it may be transported or repositioned; said apparatus being easily operable by one person. The apparatus includes a U shaped handle assembly, the legs of which are spaced apart sufficiently far to comfortably span the width of a snowmobile. The tip of each leg is provided with a wheel assembly including an angularly formed structure which, in combination with a tie bar, functions to lift the snowmobile upwardly, when the handle assembly is depressed. In use, the apparatus is moved along the length of the snowmobile, with a wheel assembly on each side of the snowmobile. When the apparatus has been brought to a point just beyond the center of gravity of the snowmobile the tie bar is inserted through fittings on the wheel assembly. The front end of the snowmobile will then be lifted when the handle assembly is pressed downwardly. The rear end of the snowmobile may then be easily lifted and supported, off the ground, by attachment to the handle assembly.

3,667,729
GATE CLOSURE APPARATUS
Raymond J. Hinkel, Arena, N. Dak. 58413
Filed Apr. 20, 1970, Ser. No. 30,008
Int. Cl. B66f 3/00
U.S. Cl. 254—77 **5 Claims**



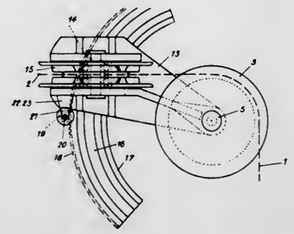
Wire gate closure and tensioning apparatus comprising a frame mounted on a stationary fence post and pivotally carrying a take-up mechanism which engages one end of a chain or cable, the other end of which joins with a moveable end of the gate. The take-up mechanism includes a handle on each side of the fence for drawing the moveable end of the gate toward the stationary post. A latch maintains the take-up mechanism in position when the gate is closed.

3,667,730
QUICK ACTION JACK
Alan F. Kollmar, 495 Graymont Drive, Santa Rosa, Calif. 95405
Filed May 8, 1970, Ser. No. 35,689
Int. Cl. B60s 9/02
U.S. Cl. 254—86 R **10 Claims**



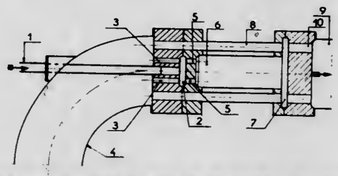
An upright support jack structure including a lower base portion and an upper screw portion partially telescoped downwardly into the upper end of the base portion. A radially expanded segmental thrust nut is supported within the upper end portion of the base portion against rotation relative thereto and the base portion includes means operative from the exterior of the base portion for radially inwardly shifting the segments of the thrust nut into threaded engagement with the screw portion of the jack. When the segments of the thrust nut are radially inwardly shifted into threaded engagement with the screw portion the thrust nut segments are supported from the base portion against downward movement relative thereto and accordingly, rotation of the upper screw portion relative to the base portion when the thrust nut is threadedly engaged with the screw portion will cause the screw portion to be elevated relative to the base portion.

3,667,731
CHAIN GUIDING APPARATUS
Jean-Louis Corgnet, Boulogne-Billancourt, France, assignor to Compagnie Francaise des Petroles, Paris, France
Filed Dec. 11, 1969, Ser. No. 884,438
Claims priority, application France, Dec. 11, 1968, 177,682
Int. Cl. B66d 1/38
U.S. Cl. 254—190 R **1 Claim**



An anchor chain guide having at least two mutually perpendicular pulleys with the bearing support of one journaled on the shaft of the other so that the central or symmetry plane of each pulley is tangent to the entry groove of the other. In one embodiment the bearing support for one of the pulleys slides on a circular track whose center coincides with the axis of the other pulley. In another embodiment the bearing support mounts a pair of tangent pulleys in the same plane and is journaled for rotation about the horizontal shaft of a third pulley. With both arrangements the anchor chain always lies in the central plane of both pulleys around which it is guided, thus eliminating lateral stresses and undue frictional wear, and preventing the chain from jumping over the pulley cheeks.

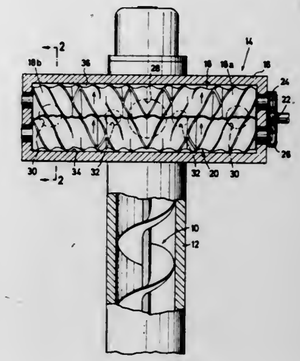
3,667,732
APPARATUS FOR PRODUCING A HOMOGENEOUS MIXTURE
Pierre Lejeune, Grenoble, France, assignor to Creusot-Loire, Paris, France
Filed Aug. 20, 1970, Ser. No. 65,363
Int. Cl. B01f 5/02
U.S. Cl. 259—4 **3 Claims**



A homogeneous mixture of two substances, for example a fluid suspension of fibres and a diluent in the manufacture of non-woven fabrics or paper pulp, is produced from a mixture of the two substances and injecting the mixture through a plurality of ducts into a dilution chamber.

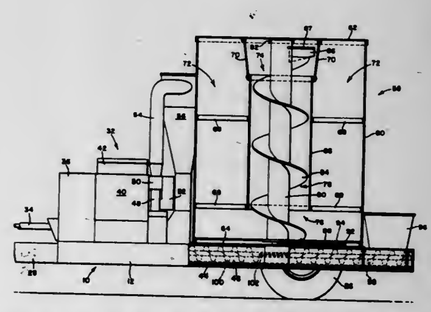
3,667,733
DEVICE FOR THE PLASTICATION OF POWDERY PLASTIC MATERIALS
Rudolf Paul Fritsch, Goslarer Str. 58, Stuttgart-Weilimdorf, Germany
Filed Jan. 27, 1971, Ser. No. 110,115
Claims priority, application Germany, Jan. 28, 1970, P 20 03 593.2
Int. Cl. B01f 7/08
U.S. Cl. 259—6 **17 Claims**

A device for the pressureless plastication of powdery plastic materials, which can be used in front of a conventional single screw extruder, and which includes two axially parallel screws, located in a housing and having an essentially identical flight gradient, which almost completely engage into each other and can be rotated in the same direction. Each screw is shaped to provide sealing ridges which close the conventional screw threads and



which engage with correspondingly shaped passageways provided in the flights of the adjacent screw, whereby the plastication can be carried out with only partially filled screw threads, and a constant sealing engagement of the screws is insured. The trapped air and the developing gases can escape through vapor outlets provided in the housing.

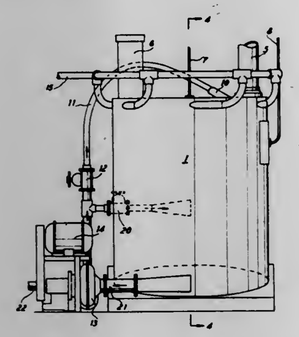
3,667,734
FEED-MIXING APPARATUS
Arnold Burton Skromme, Moline, Ill., Harold Richard Lindstrom, Des Moines, Iowa, Etlar August Henningsen, Geneseo, and Royal Lowell Beldin, East Moline, Ill., Donald Thomas Sorlie, Ankeny, Iowa, and Elmer Richard Eckert, Horicon, Wis., assignors to Deere & Company, Moline, Ill.
Filed Feb. 23, 1971, Ser. No. 118,050
Int. Cl. B01f 15/02
U.S. Cl. 259—44 **22 Claims**



Feed-mixing apparatus including a cylindrical tank having a substantially horizontal bottom, a mixing auger contained within a vertical tubular housing mounted concentrically within the tank, and a horizontal blade fixed at one end to the lower portion of the auger and having an outer end extending in close proximity to the tank wall,

the blade being operable to sweep across the bottom of the tank as the auger is rotated and thereby promote mixing of the material contained therein.

3,667,735
CENTRIFUGAL CEMENT SLURRY MIXER
Maxwell G. Hood, St. Ives, New South Wales, Australia, assignor to Fowler Rex Pty. Limited, Brookvale, New South Wales, Australia
Filed June 3, 1970, Ser. No. 43,002
Int. Cl. B28c 5/06
U.S. Cl. 259—151 5 Claims



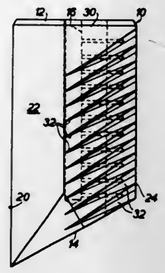
An apparatus for mixing cement-water slurry in which a tank having an annular mixing chamber is disposed about a core and a flexible hollow cylinder mounted above the core has flexible walls for the introduction of pulsating air into it. Tangentially located nozzles admit water to the upper part of the chamber. Cement is also introduced into the upper region of the chamber near the flexible pulsating wall. The slurry mixed in the chamber is recirculated from a suction outlet near the bottom of the chamber to an intermediate level via a valve which can deliver water alone or slurry from within the chamber or slurry from the suction outlet.

3,667,736
MOBILE MIXING MACHINE
Dale E. Carroll, 13864 Putney Road, Poway, Calif. 92064
Filed Aug. 28, 1969, Ser. No. 853,770
Int. Cl. B28c 5/20, 5/42, 7/06
U.S. Cl. 259—161 3 Claims



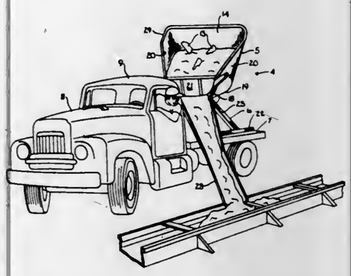
A mobile mixing machine includes a plurality of containers, one for each of the materials which are to be mixed. Superimposed conveyors are disposed below the containers, one conveyor extending rearwardly farther than the other. The outlet of one of the containers is disposed rearwardly of the rear end of the other conveyor. The conveyors move the materials toward a mixing chamber, the latter being preferably of the rotary type, the axis of which extends horizontally.

3,667,737
ENTRAINMENT OF A LIQUID MEDIUM OR OTHER ADDITIVE IN A LIQUID OR OTHER FORMULATION
Alan Colin Scott Howe, Hemel Hempstead, England, assignor to John Laing & Son Limited, London, England
Filed Nov. 28, 1969, Ser. No. 880,682
Claims priority, application Great Britain, Nov. 30, 1968, 56,951/68
Int. Cl. B28c 5/10
U.S. Cl. 259—164 2 Claims



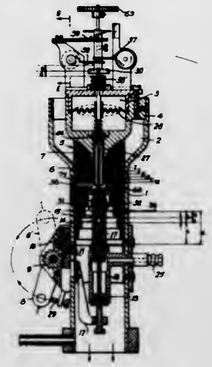
A cavitation element for inducing cavitation in, for example, a wet concrete mix. The element has a smooth upstream profile and a bluff downstream profile with formations on its upper surface which induce a corrugated shape to the envelope of the cavitation immediately downstream of the bluff profile. An inlet within the element communicates with a number of apertures opening into the bluff profile whereby a jet, or jets, of fluid or other additive are supplied through the apertures into cavitation induced by the bluff profile.

3,667,738
DUMP BODY FOR CONCRETE MIX
Glenway Maxon, Jr., Milwaukee, Wis.
Filed Mar. 11, 1971, Ser. No. 123,262
Int. Cl. B28c 5/18
U.S. Cl. 259—171 12 Claims



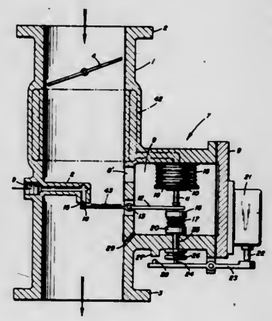
A frame structure tiltably supporting a dump body is removably mounted on a flat bed truck. The body side walls converge toward a discharge outlet at one end of the body, from a zone nearer its other end, and also converge towards said other end from said zone. Its bottom wall inclines upwardly towards the outlet from said zone. Preferably the body is mounted with its plane of symmetry oblique to the longitudinal centerline of the truck chassis, discharge outlet forwardly and at the driver's side; but means are disclosed for securing it to a truck in several orientations.

3,667,739
PROCESS AND APPARATUS REGULATING THE FUEL-AIR MIXTURE IN INTERNAL COMBUSTION ENGINES OPERATING WITH CARBURETORS
Franz Menke, Neckargemund, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany
Filed Dec. 9, 1969, Ser. No. 883,433
Int. Cl. F02m 1/10, 7/04
U.S. Cl. 261—1 15 Claims



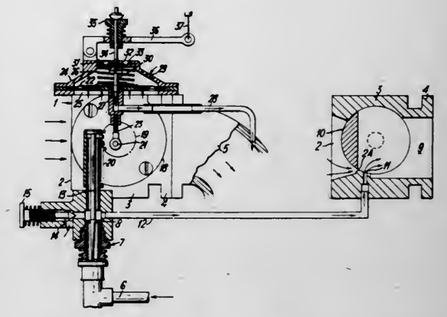
A process and apparatus for regulating a fuel-air mixture for internal combustion engines comprises a plurality of telescoped tubes defining Venturi passages for discharging air at constant velocity in the region of a variable fuel inlet. The inlet and air passages are conjointly regulated to be correspondingly varied in size to change engine operation. The size of the fuel inlet is additionally and independently regulated, in superposition with the above regulation, in response to temperature and pressure changes during variation of engine operating conditions.

3,667,740
CARBURETOR
Sten-Erik Mortstedt, Ostra Bergsgatan 11, 611 00 Nykoping, Sweden
Filed Aug. 1, 1969, Ser. No. 846,904
Claims priority, application Sweden, Mar. 14, 1969, 3,595/69
Int. Cl. F02m 1/10, 7/16
U.S. Cl. 261—39 A 6 Claims



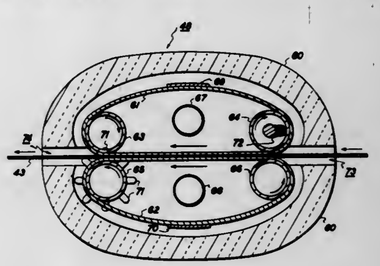
A fuel-injection type carburetor for internal combustion engines, including means for automatically varying the rate of fuel flow into the air pipe in relation to the air pressure within said pipe and including the possibility for temperature and atmospheric pressure compensation.

3,667,741
CARBURETTERS FOR INTERNAL COMBUSTION ENGINES
Peter P. Swatman, Solihull, England, assignor to British Leyland (Austin-Morris) Limited, Birmingham, England
Continuation of application Ser. No. 791,399, Jan. 15, 1969. This application Aug. 28, 1970, Ser. No. 67,988
Claims priority, application Great Britain, Jan. 25, 1968, 3,856/68; May 9, 1968, 21,917/68
Int. Cl. F02m 7/04
U.S. Cl. 261—50 A 8 Claims



A carburetter of the controllable jet, automatic variable-choke type has a single main control member (e.g. a rotatable shutter) which regulates the effective cross-sectional area of the choke and also supplants the usual throttle disc.

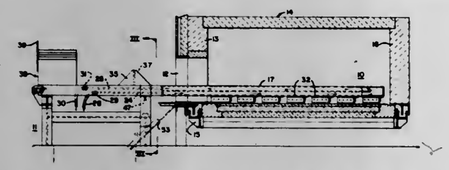
3,667,742
FIXING ARRANGEMENT
Roman C. Kamola, North Rose, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Dec. 28, 1970, Ser. No. 101,730
Int. Cl. G03g 13/20, 15/20
U.S. Cl. 263—6 E 6 Claims



Apparatus for fusing electroscopic toner images onto a support in which a pair of elastically deformable shell members of a generally cylindrical configuration are each supported in a deformed generally elliptical configuration about a pair of generally parallel spaced roller members with the roller members being biased in a direction generally along the minor axis of the respective elliptical configuration to further deform at least a portion of the elliptical surface of one of the shell members against at least a portion of the elliptical surface of the other of the shell members thereby providing an extended nip or area of contact between the shell members. A source of heat energy associated with at least one of the shell members produces a heating of the shell members to an elevated

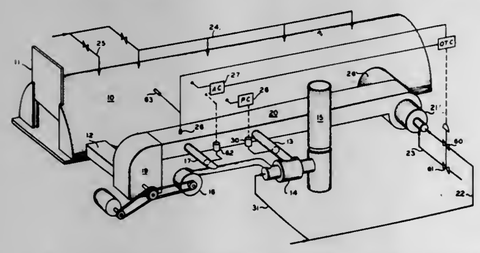
temperature and as the heated shell members are advanced about the roller members in the deformed configuration a support member having unfused electroscopic toner images thereon will be advanced therebetween to produce at least a partial melting of the toner images on the support within the extended nip area.

3,667,743
HEARTH SCRAPING DEVICE
Edward J. Kovalcik and Edward D. Dowling, Pittsburgh, Pa., assignors to Pullman Incorporated, Pittsburgh, Pa.
Filed Feb. 9, 1971, Ser. No. 113,898
Int. Cl. F27b *9/16*
U.S. Cl. 263—7 **15 Claims**



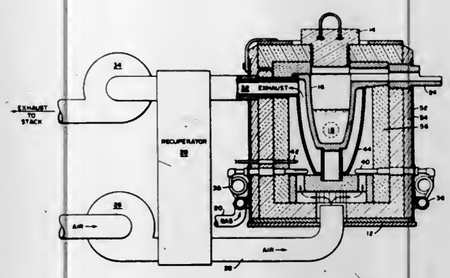
The specification discloses a hearth scraping device, particularly for rotary hearth furnaces, to level the bed of mill scale initially provided on the hearth for better seating of the work product therein and to remove excess scale derived from the work product while holding the furnace temperature sufficiently high that the mill scale is loose and manageable. The device comprises a counterbalanced cantilever type boom, carrying a series of canted scraper blades, inserted horizontally through a clean-out door into the furnace substantially along a radial line. When in installed position, the boom is hingedly supported at its outer end on a pedestal structure and raised and lowered under manual control by a jack to a position for appropriate scraping action by the scraper blades which, in cooperation with the rotation of the hearth, causes progressive movement of the scale from blade to blade radially outward through the clean-out door. The boom assembly has suitable passages provided therein for water circulation and consequent cooling to withstand exposure to heat.

3,667,744
COMBUSTION APPARATUS
Robert M. D'Arcy, James C. Birtell, and Emmery P. Hensley, Borger, Tex., and Robert C. Pryor, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Aug. 20, 1970, Ser. No. 65,533
Int. Cl. F27b *3/10*
U.S. Cl. 263—40 R **11 Claims**



An apparatus for establishing controlled temperatures and oxygen content of a gas for removal of deposits from equipment by oxidation. A chamber in which the equipment to be cleaned is positioned is adapted with gas circulating ductwork and with a burner for the introduction of hot gases of controlled oxygen content.

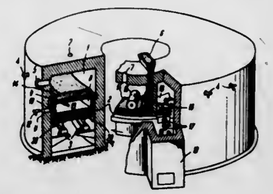
3,667,745
CRUCIBLE FURNACE
Lazaros J. Lazaridis, Lincoln, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.
Filed Apr. 15, 1970, Ser. No. 28,860
Int. Cl. F27b *14/14*
U.S. Cl. 266—33 R **7 Claims**
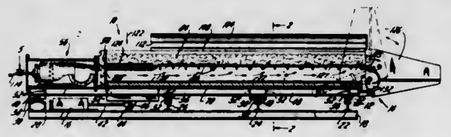


A crucible furnace for the melting of metals or other substances having high melting points which includes a refractory vessel or crucible for containing the material to be melted, the vessel being surrounded by a baffle generally conforming in shape to the vessel. External to the baffle is a chamber at the base of which fuel and combustion air, at times preheated, are separately introduced, tubulently mixed and ignited. The baffle is perforated in a pattern of holes which serve to direct combustion gases in the form of jets upon the outer wall of the vessel. This action enhances heat transfer by disrupting stagnant boundary layers of gas along the wall of the crucible, contributes to the uniformity of heat distribution in the crucible, and contributes in achieving high overall heat transfer coefficient. The products of combustion are drawn out of an annular space about the upper periphery of the crucible which is sealed so that no contact with the contents of the crucible is possible. The products of combustion may also be passed through a recuperator when preheating of the incoming combustion air is desirable to increase efficiency and flame temperature.

3,667,746
FURNACE FOR CONTINUOUS HEAT PROCESSING OF VARIOUS MATERIALS
Gleb Nikolaevich Makarov, Ulitsa Gotvalda 14, kv. 53; Boris Nikolaevich Zhitov, Trifonovskaya ulitsa 61, kv. 3; Anatoly Mikhailovich Zagorets, Nizhne-Pervomaiskaya ulitsa 3, kv. 57; Jury Germanovich Korolev, Universitetsky prospekt 6, korpus 2, kv. 68; and Konstantin Ivanovich Syskov, Federativny prospekt 6, korpus 6, kv. 47, all of Moscow, U.S.S.R.; Jury Yakovlevich Filonenko, Ulitsa Perova 45, Lipetsk, U.S.S.R.; Semen Semenovich Dvorin, Eniseiskaya ulitsa 16/21, kv. 27; and Ruvim Zinovievich Lerner, Ulitsa Marii Ulvanovoi 17, korpus 2, kv. 4, both of Moscow, U.S.S.R.; Fuat Akhtemovich Mustafin, Tagil, Gazetnava ulitsa 80/29, kv. 10; and Alexandr Semenovich Semenov, Ulitsa K. Marxa 99, kv. 52, both of Nizhny Tagil, U.S.S.R.; and Leonid Iosifovich Erkin, Ulitsa Malysheva 76, kv. 36; Nikolai Sergeevich Grayaznov, Ulitsa Malysheva 76, kv. 5; Izrail Mikhailovich Lazovsky, Ulitsa Malysheva 76, kv. 10; and Petr Yakovlevich Nefebov, Ulitsa Titova 18, kv. 7, all of Sverdlovsk, U.S.S.R.
Filed Jan. 29, 1970, Ser. No. 6,800
Int. Cl. F27b *17/00*
U.S. Cl. 266—21 **5 Claims**

A furnace for continuous heat processing of various materials comprising a ring-shaped hearth with a platform for placement of the material to be processed, the hearth being rotatable in an annular passage of the furnace. The hearth is hollow and has an inner chamber for passing combustible gases from a burner to the material via apertures in the platform.



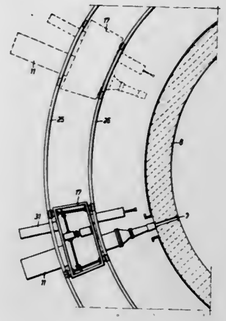
3,667,747
CONVEYOR HEATER
Robert W. Graybill, Stanley C. Reiber, and Donald W. Nace, York, Pa., and Ellis S. White, Glyndon, Md., assignors to Fecor Industries, Ltd., York, Pa.
Filed May 19, 1970, Ser. No. 38,849
Int. Cl. F27b *1/20*
U.S. Cl. 266—24 **10 Claims**



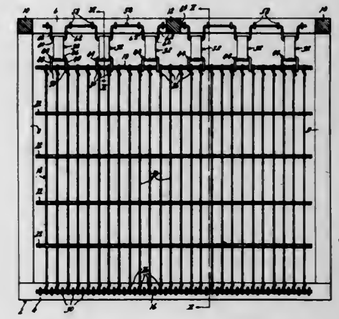
An apparatus for preheating a scrap charge before it is melted in a furnace includes a combustor and a plenum which are installed on a vibratory conveyor for movement conjointly therewith. The combustor, which has a non-refractory combustion chamber lining which is cooled by the incoming air, delivers heated air under pressure to the plenum located under the conveyor trough, from which the heated air is forced through a plurality of passageways in the conveyor surface to the scrap charge carried in the conveyor trough. After the scrap is preheated, a gate-ramp at the downstream end of the conveyor lowers to deliver the scrap to the furnace.

3,667,748
ARRANGEMENT FOR OPENING AND CLOSING TAPHOLES OF METALLURGICAL FURNACES
Herbert Dienenthal, Obersdorf-Rodgen, and Theodor Zimmermann, Siegen im Westphalia, Germany, assignors to Dango & Dienenthal Kommanditgesellschaft, Siegen im Westphalia, Germany
Filed Feb. 13, 1970, Ser. No. 11,117
Claims priority, application Germany, Feb. 25, 1969, P 19 09 326.6
Int. Cl. C21b *7/12*
U.S. Cl. 266—42 **3 Claims**

Apparatus for opening and closing tapholes of metallurgical furnaces, particularly rotatable hearth furnaces and furnaces having plural tapholes, includes a carriage or trolley, a track supporting the carriage or trolley, and a taphole drilling machine and a taphole plugging machine supported in side by side relation on the carriage or trolley. The tracks run at a uniform spacing from the wall of a furnace, and a centering arm on the apparatus cooperates with guides on the furnace, one adjacent each taphole, for proper location of the taphole drilling machine and the taphole plugging machine. The tracks may be either overhead tracks or may be ground supported tracks. The apparatus includes various arrangements for supplying electric and fluid power to the machines from stationary sources thereof.



3,667,749
SPRING DECK FOR FURNITURE
John G. Platt, Carthage, and Robert O. Isaacs, Joplin, Mo., assignors to Flex-O-Lators, Inc., Carthage, Mo.
Filed July 23, 1970, Ser. No. 57,458
Int. Cl. F16f *3/02*
U.S. Cl. 267—112 **14 Claims**

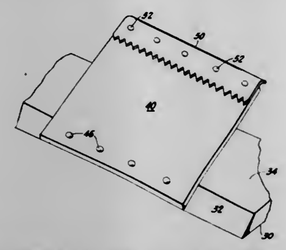


A spring deck for furniture having open rigid cushion frames, said deck consisting of a flexible sheet of material non-elastic in its own plane, an elongated mounting member extending generally parallel to and spaced apart from one edge of said sheet, and elastically extensible members extending between and interconnecting said mounting member with the adjacent edge of said sheet, said mounting member and the distal edge of said sheet being adapted to be firmly affixed to opposite sides of a furniture frame.

3,667,750
PLASTIC SPRING FEEDER PLATE
Frederick R. Kuehn, Baltimore, Md., assignor to Koppers Company, Inc.
Filed Nov. 23, 1970, Ser. No. 91,832
Int. Cl. B65h *5/16*
U.S. Cl. 271—44 R **5 Claims**

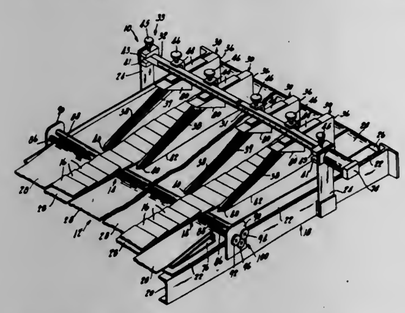
A spring feeder plate consists of a synthetic organic solid plastic that is highly resistant to ruptures induced by flexing of the plate during reciprocation of a spring

feeder bar in sheet feeding machines. In such machines, paper board sheets are fed from beneath a stack of such sheets by a reciprocating feeder bar which extends across the width of a feed table. The sheets are fed along a



substantially horizontal feed path toward adjacent processing machinery. At least one flexible plastic spring feeder plate is mounted on the feeder bar for engaging the trailing edge of each successive bottom sheet as the bar reciprocates.

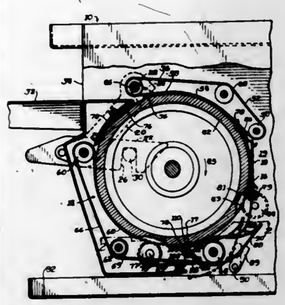
3,667,751
CARTON BLANK ALIGNING APPARATUS
Peter Zernov, Wauwatosa, Thomas H. Gabel, Menomonee Falls, and Norman C. Abler, Wauwatosa, Wis., assignors to Zerand Corporation, New Berlin, Wis.
Filed Dec. 2, 1970, Ser. No. 94,481
Int. Cl. B65h 9/04
U.S. Cl. 271—49 **16 Claims**



A carton blank aligning apparatus including a number of plows supported in a parallel spaced relation on each side of files of carton blanks being conveyed in a shingled relation on a conveyor, the plows being supported for vibratory motion on a pair of leaf springs. A vibrating device is used to vibrate the plow support to realign the edges of any canted carton blanks with the edges of the files. A ramp is provided in the conveyor to elevate the leading edge of the carton blanks as they move between the plows, and a roller is used to aid the movement of the blanks as they enter the space between the plows.

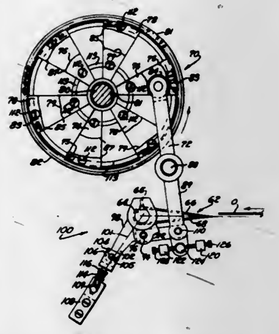
3,667,752
DOCUMENT TURNAROUND WITH IMPROVED AUTOMATIC SKEW CORRECTION
Casimir S. Samczyk, Franklin Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 855,891, Sept. 8, 1969. This application Nov. 6, 1969, Ser. No. 874,552
Int. Cl. B65h 9/06
U.S. Cl. 271—53 **4 Claims**

This invention is directed to apparatus for repeatedly transporting an original document along a straight line path through an exposure station of an office copying machine. The transport apparatus includes a movable member in the normal path of movement of the leading edge of the original document. The leading edge strikes the movable member during each cycle of the document



through the transport apparatus, causing localized buckling of the document thereby automatically correcting a skew condition which the document may acquire as a result of improper insertion into the copying machine or misalignment of the document transport members.

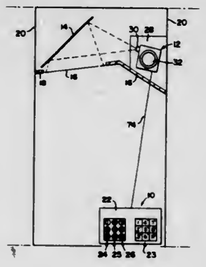
3,667,753
GATE MECHANISM FOR PROCESSING A STREAM OF ARTICLES
Robert K. Norton, Twinsburg, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Jan. 7, 1970, Ser. No. 1,257
Int. Cl. B65h 29/60
U.S. Cl. 271—64 **10 Claims**



An improved apparatus for processing a stream of articles made of sheet material includes an article classifying gate which has a first position in which it directs a flow of articles of one class to a first means for receiving the articles and a second position in which it directs the flow of the articles of another class to a second means for receiving the articles. The gate has a link associated therewith which is movable by a plurality of spaced apart cam members which move the gate between its first and second positions in a timed relationship with the flow of articles past the gate. The link is operable to move the gate when a cam follower mounted thereon engages with one of the cam members and is ineffective to control the position of the gate when the cam follower is not engaged with one of the cam members. A spring loaded toggle linkage is provided for maintaining the gate in a

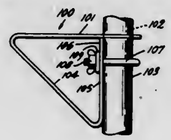
selected position to which it has been moved by the cam members during the portion of the operation of the apparatus in which the cam members are not engaged with the cam follower. This construction allows the spaced apart cam members to be moved relative to each other so as to enable the apparatus to classify many different types and sizes of articles without the necessity of long time delays and costly change-over procedures every time it is desired to classify a new set of articles which are different from the preceding set of articles which have been classified by the apparatus.

3,667,754
MULTIPLE SWITCH AMUSEMENT PROJECTION DEVICE AND METHOD
Stanley S. Coole, Cleveland, Ohio, assignor to Ohio Displays, Inc., Cleveland, Ohio
Filed Oct. 15, 1970, Ser. No. 80,997
Int. Cl. A63j 5/00
U.S. Cl. 272—8 P **8 Claims**



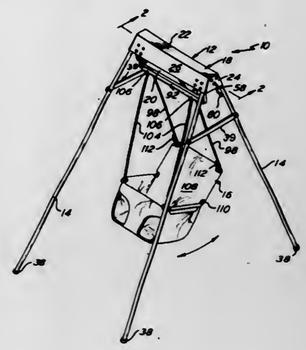
A viewing screen and a console are provided including a plurality of switches arranged in three groups of three switches in each group. Closing of one switch in each group causes a plurality of images to be projected on the screen. The device gives the appearance that the individual switches control image selection. In reality, the switches simply activate a slide change mechanism of a slide projector to project a predetermined composite image carried by a single slide onto the screen.

3,667,755
ADJUSTABLE STILT
Joseph H. Manning, 711 Beach Road, Apt. 200, Sarasota, Fla. 33581
Filed May 18, 1970, Ser. No. 38,066
Int. Cl. A63b 25/00
U.S. Cl. 272—70.1 **4 Claims**



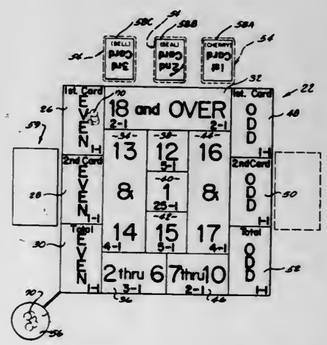
Adjustable stilts are provided each comprised of a vertical pole and a foot bracket adjustably mounted thereon by means of at least one U-bolt encompassing the pole and having its ends engaging and affixed to the bracket by means of nuts or thumbscrews, thereby safely securing the bracket to the pole and permitting rapid height adjustment of the bracket. A second U-bolt spaced from the first may be utilized to support one end of the bracket. Alternatively, in a preferred embodiment utilizing only a single U-bolt, the upper portion of the step is supported by providing an opening at the inner end of the step through which the pole is disposed.

3,667,756
MOTOR OPERATED CHILD'S SWING
Edmund Barrett, Narberth, Pa., assignor to Jenkintown Metal Products, Inc., Jenkintown, Pa.
Filed Dec. 16, 1969, Ser. No. 885,525
Int. Cl. A63g 9/16
U.S. Cl. 272—86 **9 Claims**



A child's swing operated by a spring motor. The swing includes a frame, upstanding legs supporting the frame and a swing seat suspended from the frame. The spring motor includes a coiled spring having one end secured to a ratchet wheel and the other end secured to the frame. A first pawl is pivotally mounted on the frame and a second pawl is pivotally mounted on a hanger bar which supports the swing seat. The hanger bar is freely pivotally suspended by a rod secured to the ratchet wheel. The swing is powered by the coiled spring and alternate engagement of the pawls in the ratchet wheel, thereby unwinding the spring. Sound deadening means is associated with the pawl mounted on the frame to reduce the noise of the engagement and disengagement of the pawl with the ratchet teeth.

3,667,757
BOARD GAME APPARATUS
Eugene P. Holmberg, 7755 Shoup Ave., Canoga Park, Calif. 91304
Filed Mar. 3, 1970, Ser. No. 16,061
Int. Cl. A63f 3/00
U.S. Cl. 273—135 G **5 Claims**



A game board apparatus having a plurality of visible playing regions, each including a plurality of playing

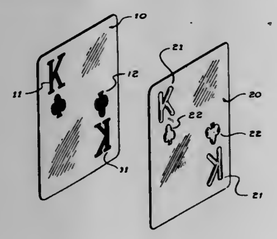
panel portions having a card display region where a particular group of cards corresponding to that player's individual hand is displayed, having a plurality of card information matching display sections and corresponding to information in various combinations which may be displayed by the group of cards (usually three) of a particular player's individual hand when displayed in the playing card display region, and with said game board also being provided with an individual alternate (or additional) type-of-play selection panel visibly marked thereon so that an individual player may place one or more playing pieces either thereon or on any of the previously mentioned playing panel portions to indicate the type of play selected by the player for the immediately subsequent hand of playing cards displayed in the playing card display region. The playing panel portions and the combination information matching display sections each bears and visibly displays correlated reward value ratio markings to indicate a corresponding return of playing pieces to the particular individual player corresponding to the game point value of the playing pieces placed by said player on the type-of-play selection panel or the playing panel portions (or both).

3,667,758
PLASTIC FINS FOR ARCHERY ARROWS
Bjorn R. Bengtsson, Box 71, S-124 21 Bandhagen 1, Sweden
Filed Aug. 6, 1970, Ser. No. 61,697
Claims priority, application Sweden, Aug. 7, 1969, 11,009/69
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 C **1 Claim**



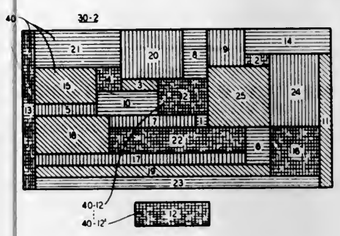
A plastic guide fin for archery arrows, the edge surface of said fin adapted to be secured to the arrow shank by gluing being shaped like a foot having narrowly spaced notches to provide a penetration of glue therethrough and an embedding of the foot portions therebetween whereby a mechanical glue joint is obtained.

3,667,759
PLAYING CARDS WITH CONVENTIONAL BAS-RELIEF INDICIA
Ruth L. Barr, 53 Webster Acres, Webster Groves, Mo. 63119
Filed June 11, 1970, Ser. No. 45,328
Int. Cl. A63f 1/02
U.S. Cl. 273—152.1 **4 Claims**



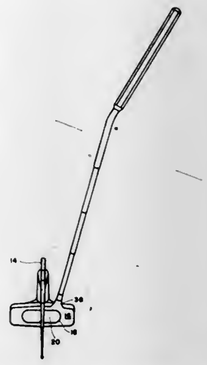
Playing cards of a deck of playing cards are made with common back surfaces and front surfaces having raised standard playing card value and suit indicia and corresponding printed indicia.

3,667,760
PUZZLE FORMING REGULAR GEOMETRIC FIGURES FROM A CHANGEABLE NUMBER OF PIECES HAVING SEQUENTIALLY INCREASING SURFACE AREAS
Winston L. Nelson, 24 Erskine Drive, Morristown, N.J. 07960
Filed Jan. 23, 1970, Ser. No. 5,331
Int. Cl. A63f 9/10
U.S. Cl. 273—157 R **10 Claims**



A puzzle having a set of pieces, said pieces having sequential unit surfaces area differences and being combinable to form a composite rectangular figure. The rectangular figure thus formed has a surface area which is one-half the total number of pieces times the sum of the beginning and ending unit areas of the pieces. An adjustable frame is provided to accommodate larger and smaller numbered sets of pieces forming corresponding larger and smaller rectangular figures. Alternative pieces having the same area but of different shape than individual ones of the pieces may be provided. Respective pieces may be of four different colors so selected that when the pieces form said rectangular figure no pieces of the same color are adjacent each other.

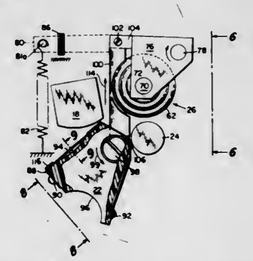
3,667,761
GOLF PUTTER WITH ALIGNING DEVICE
John J. Palotsee, % J. P. Putter & Guide Co., Box 1225, Youngstown, Ohio 44501
Filed Sept. 8, 1970, Ser. No. 70,346
Int. Cl. A63b 69/36
U.S. Cl. 273—186 A **8 Claims**



A golf putter includes an enlarged and rearwardly elongated upper portion which is provided with a device for correctly aligning the putter with a golf ball and a hole into which the ball is to be driven. The aligning device consists of an elongated rod, which may be telescoping, attached to the head of the putter and extending normal to the ball striking face of the putter. The rod

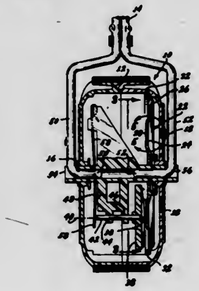
may be retained in a V-shaped groove extending across the upper surface of the elongated portion by means of a bar or rod magnet within the putter head immediately below and parallel to the groove. Alternatively, the rod may be positioned in a through bore in the enlarged portion and retained therein either by a bar magnet extending parallel to the rod or by a spring-biased ball engaging a groove in the rod. Markings may be provided on the rod to provide reference points which can be used by the golfer to determine the length of the stroke needed to drive a ball the desired distance. The elongated surface of the enlarged portion is adapted to provide an aiming aid when the rod is detached from the club.

3,667,762
MINIATURIZED TAPE RECORDER
James E. Scheld, Oxnard, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Apr. 6, 1970, Ser. No. 25,771
Int. Cl. G11b 15/29
U.S. Cl. 274—4 D **7 Claims**



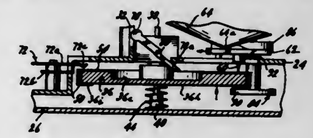
A small, rugged tape recorder especially adapted for use in biomedical research and for aircraft, missile and undersea instrumentation systems where space limitations preclude the use of standard-size equipment. A feature of the design is that tape-to-head contact is independent of tape tension. Short-term speed variations (wow and flutter) do not exceed 1.2% peak-to-peak in the frequency range of zero to 70 hertz.

3,667,763
SIMPLIFIED TALKING TOY
William F. Summerfield, Huntington Beach, and Fleet E. Nuttall, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 1, 1970, Ser. No. 77,158
Int. Cl. G11b 3/00, 3/10, 17/06
U.S. Cl. 274—9 R **3 Claims**



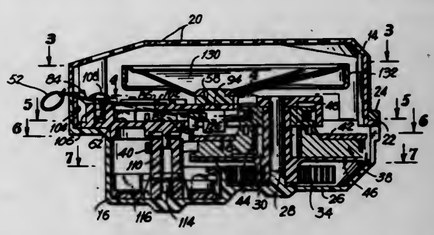
A toy phonograph which includes a speaker diaphragm that has a record groove formed in it so that a firmly supported stylus moving along the groove causes the diaphragm to vibrate and produce sounds of substantial volume. The groove is formed in a spiral and can be played by any one of several styluses located along a circle on a rotatable head. The head slowly rotates as the styluses move along the groove, and the styluses are spaced so that as one stylus is leaving the end of the spiral groove, which lies near the center of the record, the next successive stylus is entering the beginning of the groove at the periphery of the record. The diaphragm is contained in a wheel-shaped housing which is pivotally mounted on a handle that a child can use to push the wheel along the ground. The diaphragm is fixed to the inside of the wheel housing, and the stylus-holding head is fixed to an end of the handle which protrudes into the housing.

3,667,764
TOY PHONOGRAPH MECHANISM
Henry Nemeth, Massapequa, Edwin August Nielsen, Oceanside, and Harvey Berkin, Merrick, N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,694
Int. Cl. G11b 25/04, 25/06
U.S. Cl. 274—9 R **16 Claims**



A phonograph for use in dolls, toys, games and the like which includes a record member or disc having plural individual sound grooves on the surface arranged concentrically of each other and a battery-powered, motor-driven, record-playing mechanism arranged to play the messages of the individual sound grooves when the attitude or position of the phonograph is changed, and on a random basis, such that the mechanism appears to function spontaneously and produces any one of the plural messages.

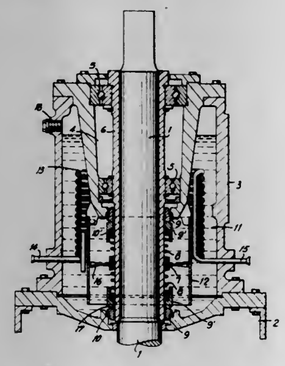
3,667,765
TOY PHONOGRAPH
Katsumi Watanabe, 376 Ozenji, Kawasaki-shi, Japan
Continuation-in-part of application Ser. No. 748,283, July 29, 1968. This application Jan. 29, 1970, Ser. No. 6,761
Int. Cl. G11b 25/04, 17/06
U.S. Cl. 274—14 **10 Claims**



A toy phonograph capable of achieving a constant rotary speed for a disk record. The record is carried by a turntable which is driven by a spring which is manually actuated to have a driving force stored therein. A pick-up has a stylus pressing against the disk record, and the pressure with which the stylus presses against the record gradually diminishes as the stylus approaches the central region of the record. The driving spring gradually runs down also as the stylus approaches the central region of

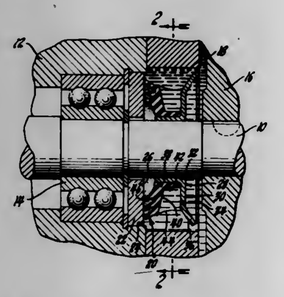
the record, so that in this way the drop in the pressure of the stylus on the record compensates for the running down of the spring to contribute toward the maintenance of a substantially constant rotary speed for the record.

3,667,766
SEALING AND GUIDING DEVICE FOR A SHAFT DRIVEN IN ROTATION
Louis Sussmeyer, Rue de Birmingham 222, 1070 Brussels, Belgium
Filed May 28, 1970, Ser. No. 41,314
Claims priority, application Belgium, Mar. 20, 1970, 86,755
Int. Cl. F16j *15/40*; F02f *11/00*
U.S. Cl. 277—22 **3 Claims**



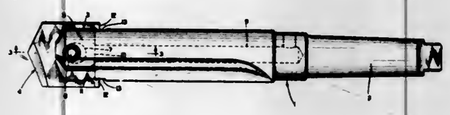
A sealing and guiding device is provided for a shaft driven in rotation and intended to operate in an enclosure under a pressure different from normal atmospheric pressure. The device comprises seals of rigid material arranged to ensure the seal-tightness of the shaft in a container which is contiguous to the working enclosure. The container is filled with a lubricant which is cooled by passing a cooling agent through a coil in the container. The container is pressurized to a value similar to that prevailing in the enclosure. The shaft is supported and guided in guide bearings arranged in a clearance between an indented portion of the container and the shaft.

3,667,767
SEAL WITH VARIABLE SEALING LIP PRESSURE
Thomas W. Bakewell, Huron, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 14, 1970, Ser. No. 71,808
Int. Cl. F16j *15/32, 15/54*
U.S. Cl. 277—95 **1 Claim**



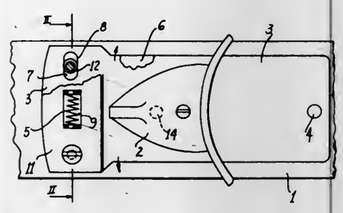
A seal for a liquid filled chamber has a radially open cavity behind a flexible wall which carries annular sealing lips. Under static conditions the cavity is filled with liquid under positive pressure and increases the sealing lip contact pressure. Under dynamic conditions the liquid is expelled from the cavity, the pressure of the liquid in the seal area is reduced, and the sealing lip contact pressure is lighter.

3,667,768
HOLDER FOR SPADE DRILL
William H. Stokey, Cleveland, Ohio, assignor to Allied Machine & Engineering Corporation, Cleveland, Ohio
Filed Apr. 9, 1970, Ser. No. 26,839
Int. Cl. B23b *27/16*
U.S. Cl. 279—83 **5 Claims**



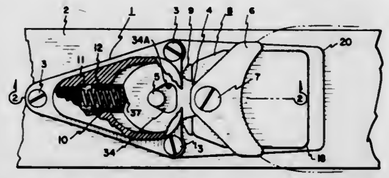
A holder for a spade drill. The holder has the usual bifurcated end for receiving the spade drill and the usual clamping screw located through the bifurcated end of the holder and through the usual relatively large aperture in the spade drill for frictionally clamping the spade drill between the furcations of the holder. A setscrew with conical end is located through a diametrically disposed tapped opening in one of the furcations, the conical end of the setscrew being received in the aperture in the blade drill, in contact with the usual bevelled edge at the rear side of said aperture, for holding the blade drill against accidental movement in the holder.

3,667,769
SAFETY SKI BINDING
Heinrich Wunder, Rothschwaige, near Dachau, Germany, assignor to Heinrich Wunder KG., Rothschwaige, near Dachau, Germany
Filed Jan. 15, 1970, Ser. No. 3,035
Claims priority, application Germany, Jan. 16, 1969, P 19 01 980.8
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **8 Claims**



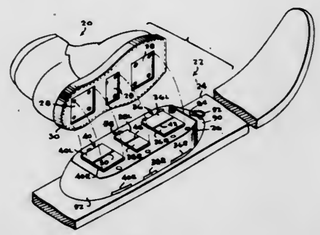
At least one boot-engaging portion, i.e. a heel-and/or toe-engaging portion, is mountable on a ski for pivotal movement under the influence of a predetermined torsional force about an upright axis from a normal operating position in which it connects the boot with the ski, to a laterally displaced release position in which it disconnects the boot from the ski. Mounting means mounts the boot-engaging portion for pivotal movement short of the release position in response to torsional forces smaller than the predetermined torsional force.

3,667,770
SKI-BINDING TOE MECHANISM
John S. Lawrence, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah
Filed Oct. 6, 1970, Ser. No. 78,500
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **10 Claims**



A toe ski safety binding comprising a base support constructed for mounting on a ski and ski boot toe holding means for releasably holding the toe end of a ski boot to said ski, the ski boot toe holding means consisting of a cam plate whose forward end is in rotary contact with a spring-loaded cam follower; the cam plate constrained to move horizontally within a predetermined area and is linked to a base-supported post. Also provided is a cam-controlled skid plate structure to releasably support the toe end of said ski boot.

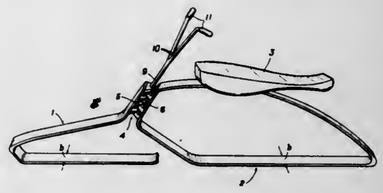
3,667,771
ADJUSTABLE MAGNETIC SKI BINDING
Richard C. Larson, 4420 Great Oak Road, Rockville, Md. 20853
Filed July 7, 1969, Ser. No. 839,584
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 M **20 Claims**



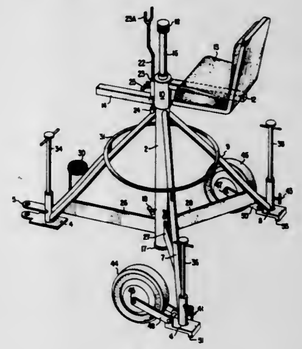
A magnetic ski binding employing a plurality of rotatable bar magnets for attracting magnetically attractable plates in the sole of a ski boot including ski mounted plunger means for rotating the bar magnets from a shunted position in which the boot is not attracted by the magnets to a boot attracting position upon the placing of a ski boot on the plunger means with the plunger means being adjustable to vary the extent of magnet rotation and consequently vary the force with which the boot is attracted to the ski wherein spring means are also provided for moving the magnets to the shunted position to enable an easy removal of the boot from the ski.

3,667,772
SINGLE-TRACK SLED VEHICLE
Heinz Eggert, Moosstrasse 11, Salzburg, Austria
Filed Mar. 25, 1970, Ser. No. 22,512
Claims priority, application Austria, Mar. 26, 1969, A 2,971/69
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **1 Claim**

The invention relates to a single-track sled vehicle with a steerable front skid and a framelike rear skid connected to it by a joint and carrying the rider's seat wherein each of the two skids is an integral springing member, preferably elastic synthetic plastic material, these skids being made rigid only in the region of the joint which connects them.



3,667,773
SURVEYOR FIELD TRIPOD
Donald J. Hess, Rte. 1, P.O. Box 268A, Wynne, Ark. 72396
Filed Nov. 17, 1970, Ser. No. 90,255
Int. Cl. F16m *11/42*
U.S. Cl. 280—30 **9 Claims**

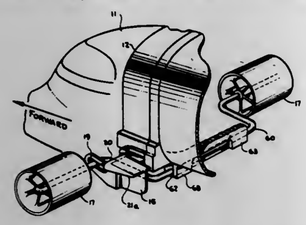


A transportable tripod for holding surveying or other instruments, including a beam frame with three support elements which rest on the ground. A central, vertical beam is hollow to slideably receive an instrument support stem and an inclined beam extends from each support element to connect with the central, vertical beam near its top. A bearing sleeve rests on the top of the vertical beam to be rotatable relative to the remainder of the frame. A seat support and a counter-balancing bracket are affixed to opposite sides of the bearing sleeve and turnable therewith. Also, an instrument guide fork is connected to the sleeve to extend upwardly parallel to the stem above the seat support. During transport, the forward support element is used as a hitch for connection to a prime mover. The rearward two support elements are linked to wheels which are pivoted to a travel position. Each of the support elements are plates with anchor means to secure the tripod to the ground.

3,667,774
HEIGHT CHANGING MECHANISM
Wilbur-Webb Selley, Maitland, Fla., assignor to Vactronics Incorporated, Orlando, Fla.
Filed Nov. 10, 1969, Ser. No. 875,436
Int. Cl. B62d *21/18*
U.S. Cl. 280—43.17 **5 Claims**

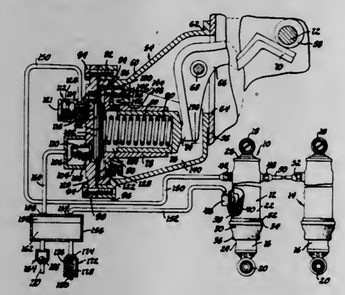
A self-locking height changing mechanism particularly adapted for use with machines, tools, vehicles or the like

equipped with a housing and having an axle whose operative position with respect to the housing is to be selectively changed. This novel mechanism includes the use of a height-controlling member associated with the axle, and



capable of sliding movement as well as rocking movement in the housing. The height-controlling member is normally locked with respect to the housing, but which is easily unlocked by the operator in the course of selectively changing the height of the machine.

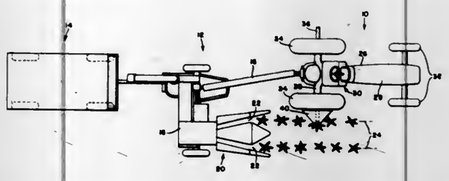
3,667,775
SEMICLOSED LOOP AUTOMATIC LEVELING SYSTEM
James E. Whelan, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 73,963
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **3 Claims**



In preferred form, a vehicle leveling system compressor operated proportional to vehicle engine speed to direct compressed air into a pressurizable air control chamber of a leveler unit. An exhaust opening from the leveler unit is controlled by an undamped on-off exhaust valve continually operated in response to normal vehicle road movements and changes in loading to effect an on-off ratio for exhaust flow from the control chamber into an air collector tank. The air collector tank serves to collect excess air dumped from the leveler unit to prevent exhaust to atmosphere during dynamic operation. An intake valve and a relief valve on the tank and a desiccant cartridge in the tank cooperate to eliminate water in the system during its operation.

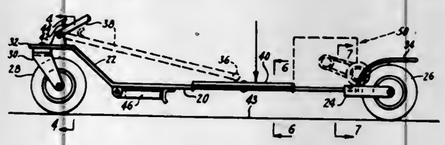
3,667,776
CROP DEFLECTOR ATTACHMENT FOR AGRICULTURAL TRACTORS
Kenneth Earl Murphy, Dike, William Marion Eubank, Waterloo, and Lamar Williams, Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.
Filed June 26, 1970, Ser. No. 50,229
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R **6 Claims**

An attachment for deflecting crops around that portion of the rear axle of an agricultural tractor projecting outwardly from the ground-engaging drive wheel mounted thereon. The attachment comprises a cone-shaped member releasably mounted on and substantially enclosing the projecting outer end portion of the axle, the member being mounted coaxially with the wheel and including a conical outer surface extending between a relatively large end portion adjacent to the wheel and a relatively small



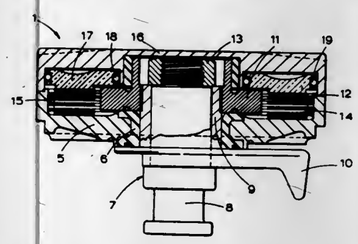
end portion adjacent to the outer end of the axle. The cone-shaped member is mounted on the axle by means of an assembly substantially enclosed by the member and releasably connectible to the axle outer end portion, the assembly including a plurality of radially extending portions on which the member is releasably mountable.

3,667,777
TOWABLE SPRING SCOOTER FOR PRODUCING UNDULATING MOTIONS
Eduardo Enriquez, 6125 Gila Drive, El Paso, Tex. 79905
Filed Dec. 9, 1970, Ser. No. 96,563
Int. Cl. B60d *1/04*; **A63g** *13/00*
U.S. Cl. 280—480 **2 Claims**



A wheeled spring body having a handle bar assembly, supporting platform, and powered drive means thereon.

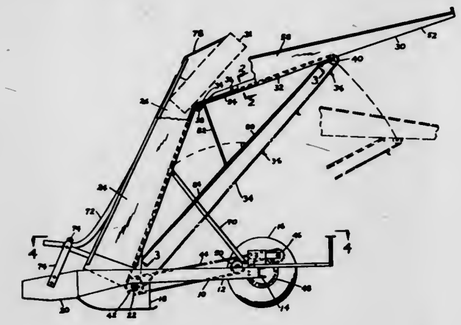
3,667,778
ANTIJACK-KNIFING COUPLING DEVICE
Frederick John Charles Hope, Datchet, England, assignor to Self Energising Disc Brakes Limited, Datchet, England
Filed June 18, 1970, Ser. No. 47,362
Claims priority, application Great Britain, June 24, 1969, 31,773/69
Int. Cl. B62d *53/08*
U.S. Cl. 280—432 **5 Claims**



A fifth wheel coupling is provided for articulated vehicles which includes means for resisting "jackknife" movement between the tractor and trailer units of the vehicle. The coupling embodies a substantially standard

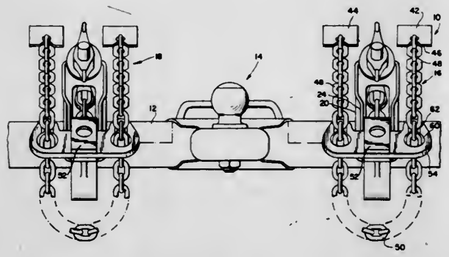
king pin engageable with a conventional fifth wheel. Rotatably mounted on the king pin is an annular member which carries a tongue engageable in the slot in the fifth wheel. Braking means are provided, acting between the annular member and the trailer unit for resisting jackknife movement of the vehicle.

3,667,779
BALED HAY LOADING APPARATUS FOR LOADING ONTO A TRANSPORT VEHICLE
Richard B. Miskin, Ucon, Idaho 83454
Continuation-in-part of application Ser. No. 610,977, Jan. 23, 1967, now Patent No. 3,467,265. This application July 31, 1968, Ser. No. 769,767
Int. Cl. B60d *1/14*
U.S. Cl. 280—473 **1 Claim**



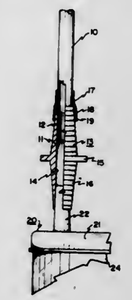
A baled hay loading machine with an upper platform that extends rearwardly and with drive means for loading bales of hay and the like upwardly and then rearwardly along the rear of the platform. The extra long platform and elevator chain means provide means for accumulation of bales along the length of the truck bed waiting for a worker to carry them to desired positions on the truck bed.

3,667,780
BUMPER HITCH ASSEMBLY TENSION EQUALIZER
John C. Abromavage, Tempe, and James W. Ryden, Phoenix, Ariz., assignors to Advanced Management Engineering & Research Company, Phoenix, Ariz.
Filed Mar. 30, 1971, Ser. No. 129,515
Int. Cl. B60d *1/14*
U.S. Cl. 280—502 **6 Claims**



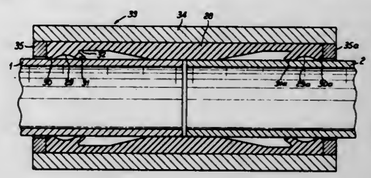
A bumper hitch assembly tension equalizer, particularly a temporary or "rental" hitch assembly which is easily fastenable to various types of automobile bumpers and particularly suited for use with bumpers that are not straight line. Such bumpers create a need for plural top hooks, two for each bumper attaching clamp, to compensate for bumper deviation from a straight line. In such a four hook hook-up, in the absence of equalizing means equal tension on all top hooks cannot be obtained. The equalizer of the present invention controls the tension on the safety chains and thereby on all top hooks using an equalizer bar pivotable about a point, and capable of shifting position to gain equal tension when a bottom attachment hook is tightened.

3,667,781
CONNECTOR MEANS FOR FLEXIBLE CONDUIT
Le Grand K. Holbrook, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah
Filed June 26, 1970, Ser. No. 50,195
Int. Cl. F16l *11/12*
U.S. Cl. 285—45 **2 Claims**



A connector means for flexible conduit, usable particularly in hospital and especially surgical contexts where tubing is to be cut to length on site. The connector means includes a connector and tube combination wherein the tube is slideable relative to the connector, yet wherein the juncture is protected against contamination. Wedging or constriction means are supplied so as to prevent inadvertent pull-out of the tube relative to the connector. Multiple connector and tube combinations may be operatively associated together in the manner below described, and the connector may be used for completing connection to a number of different, desired objects.

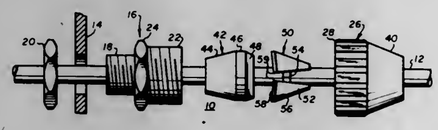
3,667,782
JOINTS FOR CONNECTING PIPES
Pierre Viazzi, Bormes-les-Mimosas, France, assignor to Societe Internationale d'Application de Procedes Industriels (S.I.A.P.I.) S.A., Panama, Republic of Panama
Filed Nov. 16, 1970, Ser. No. 89,877
Claims priority, application France, Dec. 3, 1969, 6941772; Apr. 21, 1970, 7014462; June 10, 1970, 7021340
Int. Cl. F16l *17/00*
U.S. Cl. 285—110 **12 Claims**



The invention concerns a joint for connecting smooth-ended pipes and comprising a sleeve of resilient material

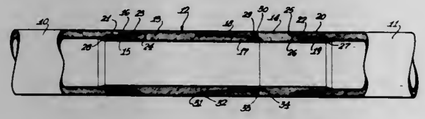
fitted on the adjacent ends of two pipes. The sleeve has, at each of its ends, a circular throat, having, in longitudinal section, a concave portion bonded by two lips. The edges of these lips are located on circles of smaller diameter than the outside diameter of the pipes to be connected and are adapted to move into contact with and to be resiliently deformed by the outer surface of the pipes. The sleeve has further at its central zone a thickened portion having an inner cylindrical surface of circular cross-section having a diameter corresponding to the outside diameter of the pipes and adapted to move into contact with that part of the pipes extending on either side of the line at which the pipes meet.

3,667,783
LIQUID TIGHT STRAIN RELIEF CONNECTOR
Thomas J. Sotolongo, Red Bank, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed July 8, 1970, Ser. No. 53,169
Int. Cl. H02g 3/18; F16l 41/00
U.S. Cl. 285—161 **7 Claims**



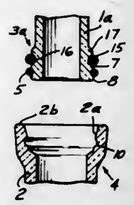
A connector for coupling an electrical conductor to an electrical enclosure providing a liquid tight coupling against moisture and providing strain relief for the conductor. The connector consists of a body member suitably threaded to receive a fastening means for fastening the connector to the electrical enclosure and also for receiving thereupon a gland nut for assembling the overall connector. The transverse passage of the body member is outwardly tapered at a first end for receipt therein of a complementary tapered deformable bushing providing a moisture seal within the connector. In contact with the bushing and housed within a gland nut having an inwardly tapered longitudinal passage is a segmented conductor gripping means having a surface configuration complementary to the inward taper of the gland nut. When assembled the interaction of the body member, gland nut, bushing and conductor grip means is to force the segments of the conductor grip means inwardly securely gripping the conductor to provide strain relief and to further provide for the deformation of the bushing to provide desired moisture sealing within the connector.

3,667,784
DRILL ROD STRUCTURE
Lyle W. Hokanson, Kirkland Lake, Ontario, and John W. McBean, Swastika, Ontario, Canada, assignors to Heath & Sherwood Drilling Limited, Kirkland Lake, Ontario, Canada
Filed Apr. 3, 1970, Ser. No. 25,479
Int. Cl. F16l 15/00
U.S. Cl. 285—173 **1 Claim**



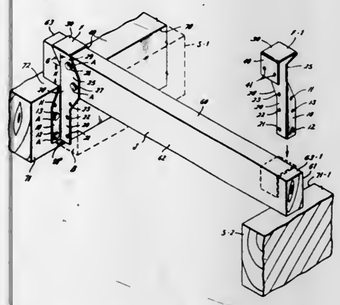
The invention relates to a drill rod structure having aluminum alloy drill pipe and steel couplings. The joints between the pipe and couplings are threaded and the drill rod has substantially uniform inside and outside diameters. The invention relates to drill rods of substantially large size, say, exceeding about two inches in outside diameter.

3,667,785
COUPLER FOR TUBULAR MEMBERS
Martin Kapeker, 41 Decker St., Copiague, N.Y. 11726
Filed May 20, 1970, Ser. No. 39,103
Int. Cl. F16l 21/02, 49/00
U.S. Cl. 285—231 **7 Claims**



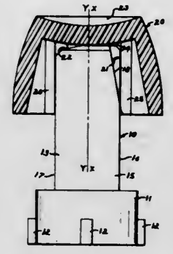
A coupler for releasably coupling two tubular members such as glass tubes without affecting substances passing through the tubes comprises an engaging coupling member in the form of an O-ring made of Teflon tightly fitted about an end of one of the tubes and a receiving coupling member in the form of a peripheral groove in the inside wall of an end of the second tube. By forcing the two tube ends into each other while holding the tubes in alignment the O-ring is caused to engage the groove with a pressure fit. Separation of the tubes is effected by slightly tilting the tube having the engaging coupling member with reference to the other tube thereby forcing the O-ring out of engagement with the groove. Airtight coupling is obtained by providing a second O-ring at the engaging coupling member.

3,667,786
FLOOR JOIST STABILIZER
Henry R. Cooper, 5302 Spencer Highway, Pasadena, Tex. 77505
Filed Apr. 27, 1970, Ser. No. 31,943
Int. Cl. F16b 7/04
U.S. Cl. 287—20.94 **6 Claims**



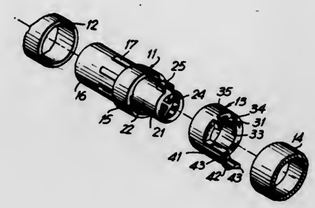
A floor joist stabilizer for affixing a joist to a sill upon which mobile homes and the like are situated to establish a simple strong connection therebetween, preventing twisting movement of the joist with respect to the sill and allowing re-use of the stabilizer. The stabilizer is self-positioning on the joist and therefore does not require hammering or any modification in the field by the user.

3,667,787
KEY TOP MOUNT
Norman F. Semour, Coeur d'Arlene, Idaho, assignor to Key Tronic Corp., Spokane, Wash.
Filed Dec. 14, 1970, Ser. No. 97,675
Int. Cl. F16d 1/06
U.S. Cl. 287—53 H **4 Claims**



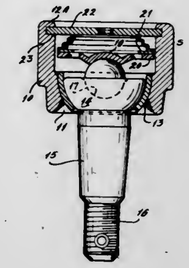
A key top mount for computer terminals or other keyboard installations. The key top recess and supporting plunger post end are complementary to one another. Inclined surfaces are provided in such fashion as to permit alternate positioning of the key top on the plunger. By turning one element 180° relative to the other, the key top can be positioned perpendicular to the post or can be angularly inclined.

3,667,788
CAM LOCK DEVICE FOR TELESCOPING TUBING
William S. Greenwood, Nutley, N.J., assignor to H & G Industries, Inc., Belleville, N.J.
Filed July 7, 1970, Ser. No. 52,903
Int. Cl. F16b 21/09
U.S. Cl. 287—58 CT **8 Claims**



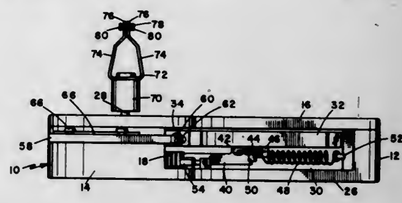
A two-piece cam lock device for telescoping tubing in which a first piece is fixed to the tubing of smaller diameter and the second piece is rotatable on the first piece between eccentric and concentric positions so as to be slideable within the tubing of larger diameter when the cam lock device is concentrically positioned and to frictionally prevent relative axial movement between the two lengths of tubing when the two pieces of the cam lock device are in eccentric relationship. Relative rotation of the tubing is effective to lock and unlock the cam lock device by rotating the two pieces between eccentric and concentric positions.

3,667,789
ASSEMBLY TOLERANCE CONTROL SPACER
James A. McNeely, Manchester, and Ernest R. Russell, Florissant, Mo., assignors to Moog Industries, Inc., St. Louis, Mo.
Filed Oct. 12, 1970, Ser. No. 79,820
Int. Cl. F16c 11/06
U.S. Cl. 287—87 **10 Claims**



An assembly tolerance control spacer to absorb or take-up space differences occurring in a product made up of a plurality of components having size or tolerance characteristics which may vary from component to component, the control spacer being included in the assembled product so as to absorb tolerance variations by collapsing more or less to result in a predictable assembly result for the product.

3,667,790
KNOT WINDER FOR TYING FISH HOOKS
John H. Taylor, 2033 Wilbur St. 92109, and Robert C. Pellman, 4505 Quantico 92117, both of San Diego, Calif.
Filed Jan. 25, 1971, Ser. No. 109,227
Int. Cl. B65h 69/04
U.S. Cl. 289—17 **8 Claims**

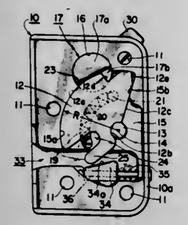


A hand held knot winding tool in which a fish hook is secured in a holder and spun rapidly by a squeeze action drive mechanism, to wind a knot around a leader attached to the hook. Only one hand is necessary to operate the tool, leaving the other hand free to guide and complete the knot.

3,667,791
DOOR LOCK MECHANISM
Kenichi Kazaoka and Takashi Jindo, Kariya-shi, Japan, assignors to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan
Filed Feb. 9, 1970, Ser. No. 9,775
Claims priority, application Japan, Feb. 13, 1969, 44/10,870
Int. Cl. E05c 3/24
U.S. Cl. 292—216 **9 Claims**

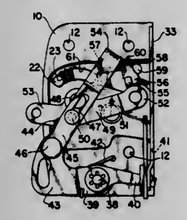
A door lock mechanism comprising a base member fixedly mounted on a door of an automotive vehicle; a recess formed on the base member and having an arc-shaped periphery defining part of the configuration of

the recess; a sector latch member pivotably mounted in the recess, the latch member formed with an arc-shaped peripheral part having the same radius as that of the arc-shaped periphery of the recess. A spring urging the latch member to rotate in one direction with a checker rotatably mounted on the base; a second spring urging the checker to rotate in a direction opposite to the one direction. A



first and a second tooth is formed on the latch member for cooperating in succession with the first and second tooth to keep the latch member in its safety latch and full latch position; and a second and substantially radially directing recess for cooperatingly receiving a striker is mounted on a stationary part of the vehicle when the door is operated in its closing direction.

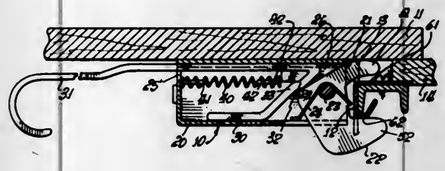
3,667,792
DOOR LOCK MECHANISM
Nozomu Torii, Kariya-shi, Japan, assignor to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan
Filed Mar. 17, 1970, Ser. No. 20,185
Claims priority, application Japan, Mar. 18, 1969, 44/20,618
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**



An improved door lock mechanism which provides fulfilment of the door lock function to be manipulated from inside of the vehicle; door lock function by key operation from outside of the vehicle; automatic release function in the case that the door should be closed following the erroneous locking of the door from inside; and keyless lock operation from outside without use of a manual key.

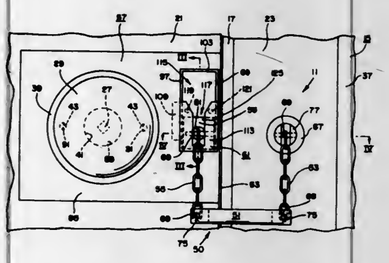
3,667,793
WEDGE-SLIDE LATCH
Andre J. Varrin, 694 Warner Parrott Road, Oregon City, Oreg. 97054; and William L. McCarter, 6420 NE. 41st St; and Henry O. Geisler, 8811 SE. Herbert Court, both of Portland, Oreg. 97232
Filed Sept. 3, 1970, Ser. No. 69,375
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **1 Claim**

A latch having a latching cam pivotally mounted on a pivot pin transverse to an elongated latch housing, the cam having a configuration such that it is rotatably driven into locked position when a closure arm portion engages a catch. The latch housing contains an internally movable slide, which slide is resiliently urged into engagement with the internal part of said cam, but is retractable therefrom by the latch handle. The cam-engaging face of said slide is a surface which is shaped to wedge under a part of the cam, when the latter is counter rotated into locking posi-



tion, against a torsion spring tending to rotate the cam into open position. Only when the slide is longitudinally retracted within the housing, by operation of the latch handle, does the cam again rotate into unlocked position, permitting the latch to be opened.

3,667,794
ANTI-INTRUSION DOOR SECURITY DEVICE
Ben C. Lentz, Jr., Memphis, Tenn., assignor to Maggie Birdell Lentz, Memphis, Tenn.
Filed May 7, 1971, Ser. No. 141,261
Int. Cl. E05c *17/36*
U.S. Cl. 292—264 **10 Claims**



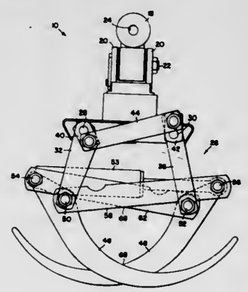
A device which may be attached to existing doors of a residence to safeguard against unwarranted intrusion while the occupants are sleeping or when answering a knock at the door, i.e., the device must be actuated by a person within the residence. The device includes a substantially indestructible tempered steel bar which bridges the crack of a door that is ajar. The bar is suspended from a pair of short chains which are inaccessible from the exterior side of the door. The free end of one of the chains is attached to a wedge which is removably received by a peculiar tamperproof receptacle. The receptacle is attached to a wraparound plate that is suitably fitted to the door panel by utilizing the existing door knob hardware to aid in the attachment thereof and for more positive reinforcement. The other chain has the opposite end attached to structure which is anchored into existing adjacent stud structure, i.e., 2" x 4" lumber or the like, so that the wall and/or the door panel would splinter before the device would become disengaged from either the wall or the door panel, irrespective of the amount of force being exerted from without. The door may be opened slightly to greet callers or guests while the device is engaged with absolute assurance that unwarranted intruders cannot break in, i.e., through the partially opened door.

3,667,795
RELEASING AND CIRCULATING OVERSHOT
Claude W. Gray, % OK Fishing and Rental Tools, Inc., P.O. Box 10131, Houma, La. 70360
Filed Dec. 8, 1970, Ser. No. 96,180
Int. Cl. E21b *31/02*
U.S. Cl. 294—86.17 **9 Claims**



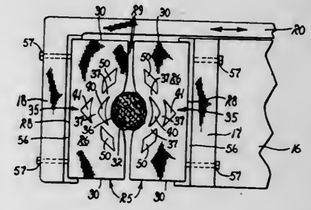
A releasing and circulating overshot with basket grapple and provided with a control spring operable, upon rotation of the overshot bowl, to urge the grapple basket into and out of contracted frictional engagement with an associated fish. The control spring is of the helical compression type and serves to maintain the basket grapple and bowl in relatively axially displaced positions with the basket grapple in its uppermost expanded "release" position while the overshot is being pulled upward past tool collars or tool joints without actuation of the basket grapple to catch the collars or tool joints. The spring also serves to allow the grapple to be set, when desired, merely by rotation of the bowl relative to the basket grapple.

3,667,796
LOGGING GRAPPLE
Welker W. Funk, Selma, Calif., assignor to Deere & Company, Moline, Ill.
Filed Oct. 30, 1970, Ser. No. 85,367
Int. Cl. B66c *1/10*
U.S. Cl. 294—88 **16 Claims**



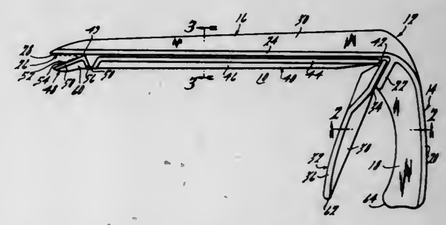
A pair of opposed arcuate tongs of a logging grapple are respectively pivoted to a pair of links, which are, in turn, pivoted to a yoke. A rotary fluid motor is supported on the yoke and is connected thereto to rotate the same through 360°. A hydraulic actuator has opposite ends pivotally connected to the tongs. Interconnecting the pair of links is a first cross-connected link and interconnecting the tongs are second and third cross-connected links, which respectively cause the pair of links and the tongs to move symmetrically upon extension and retraction of the hydraulic actuator. The various pivot points are selected such that the second and third cross-connected links cooperate with the tongs to grip logs when the actuator is extended. Also, the tong and linkage arrangement is designed so as to make it possible to pick up large bundles of logs as well as single small logs.

3,667,797
CUSHIONING DEVICE
Edward D. Kilby, Rte. 2, Box 413, Gridley, Calif. 95948
Filed Jan. 13, 1971, Ser. No. 106,057
Int. Cl. B25b *11/00*
U.S. Cl. 294—103 R **12 Claims**



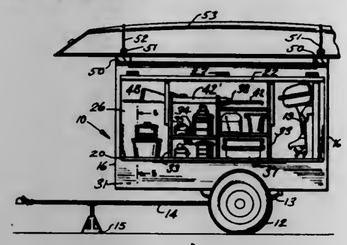
A cushioning device for the clamping jaws of a tree shaker or the like providing a substantially solid, relatively hard pad of somewhat compressible material adapted to be mounted on the jaws having an outwardly disposed tree gripping surface and means within the pad inwardly spaced from the gripping surface providing a readily compressible pocket to permit limited inward deformation of the gripping surface of the pad in intimately conforming, tightly gripping relation to a tree trunk or limb with only a minimum of jaw clamping pressure while transmitting substantially the entire shaking force from the shaker to the tree.

3,667,798
GRIPPING TOOL
John W. Rusztowicz, P.O. Box 116, Utica, Mich. 48087
Filed Feb. 27, 1970, Ser. No. 15,065
Int. Cl. B25b *7/00, 7/12*
U.S. Cl. 294—104 **3 Claims**



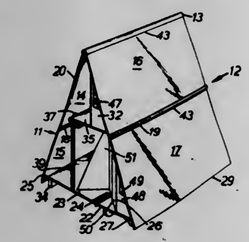
A gripping tool having a frame including an extending member with a jaw portion at one end and a handle at the other end, a bell crank connected to the extension adjacent the jaw portion having a cooperating jaw portion thereon, an actuating lever pivotally connected to the handle, and a linkage connecting the actuating lever and the bell crank for closing the jaw member. The parts of the gripping tool are integrally formed with resilient pivotal connections to reopen the jaws after each closing therof. The gripping tool is particularly suitable for use as a disgorger of fish hooks and lures.

3,667,799
CAMPER KITCHEN AND UTILITY TRAILER
Robert Stanley Shryock, 43 E. Guada Coma Drive, New Braunfels, Tex. 78130
Filed Apr. 20, 1971, Ser. No. 135,660
Int. Cl. B60p 3/32
U.S. Cl. 296—23 B 4 Claims



A trailer for camping, including partitions and shelving for the placement of utilities, chairs, bait, a sink and stove. The camper kitchen and utility trailer also provides means for guns, fishing tackle, an outboard motor, a refrigerator, and also provides shelter means.

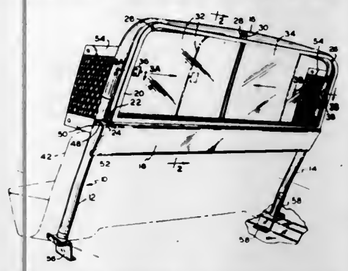
3,667,800
TRANSPORTABLE CABIN
James D. R. Cuthbert, 1 The Glade, Welwyn Garden, England
Filed Oct. 24, 1969, Ser. No. 869,296
Claims priority, application Great Britain, Oct. 25, 1968, 50,790/68
Int. Cl. B60p 3/34
U.S. Cl. 296—23 G 15 Claims



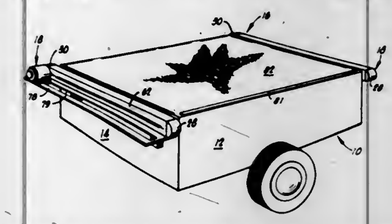
This invention is a cabin having sides formed of rigid panels which can be easily collapsed for transport, possibly being towed behind a car in which case it can be mounted on wheels and axles. The cabin can have two floors but can still be folded into a package no larger than a conventional caravan by reason of an arrangement whereby the sides fold about for-and-aft hinges.

3,667,801
AUTOMOBILE PARTITION APPARATUS HAVING HORIZONTAL SLIDING WINDOW PORTION MOUNTED ON GUARD PLATE
John R. Setina, Rte. 5, P.O. Box 522, Olympia, Wash. 98501
Continuation-in-part of application Ser. No. 758,947, Sept. 11, 1968. This application Dec. 18, 1969, Ser. No. 886,083
Int. Cl. B62d 33/04
U.S. Cl. 296—24 R 10 Claims

An automobile partition apparatus is described in which a pair of horizontal sliding partition window portions are mounted on the top of a guard plate extending across the entire width of the automobile adjacent the top of the front seat backrest. The guard plate extends parallel partly down the rear of the front seat backrest to enable such seat to be positioned at different heights. The guard plate and the partition frame are attached between the legs of a roll bar. Locks are provided for locking the partition windows closed which may be unlocked only from the front seat of the automobile. A window guideway is formed integral with the partition frame, including a pair of channels separated by a spacer which allows the two partition windows to to slide across each other in such channels without contacting.



3,667,802
COVERING STRUCTURE FOR VEHICLES
Charles E. Love, 4517 SE. 31st, Del City, Okla. 73115
Filed Feb. 18, 1971, Ser. No. 116,421
Int. Cl. B60j 11/00
U.S. Cl. 296—98 16 Claims

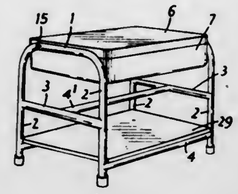


A covering structure for extending a tarpaulin over the cargo carried in a truck or trailer, including a pair of track supporting frames mounted for vertical movement on opposite sides of the bed of the truck, a pair of gear tracks mounted on said track supporting frames and extending along the sides of the bed of the truck, gears engaging the tracks on the track supporting structures, and a shaft interconnecting the gears through friction clutch elements which permit the shaft to rotate relative to the gears. A motor is drivingly connected to one end of the shaft and one edge of a tarpaulin is connected to the central portion of the shaft between the gears. When the gears are engaged through the clutches with the shaft, and the motor is energized, the tarpaulin can be rolled up to uncover the cargo in the bed of the truck or rolled out and extended across the cargo to protect it from inclement weather.

3,667,803
CONVERTIBLE FURNITURE
Edward J. Ford, 33 Mulberry Crescent, West Brayton, England
Filed Oct. 31, 1969, Ser. No. 873,004
Claims priority, application Great Britain, Nov. 22, 1968, 5,470/68
Int. Cl. A47b 85/04; A47c 7/50, 27/00
U.S. Cl. 297—119 2 Claims

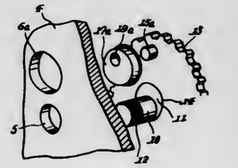
A piece of furniture comprises a support portion and an upper portion that includes a table top and a cushion arranged back-to-back, the upper portion being pivotally

mounted on the support portion so that the article can be converted from a table to a leg rest and vice versa by turning the upper portion so as to bring the table top or



cushion uppermost as required. Means are provided for locking the upper portion to the support portion when the article is to be used as a table.

3,667,804
SEAT RECLINER
Hideaki Yasui, 2–6–12 Nishi-rokugoo, Ota-ku, Tokyo, Japan, and Sukeo Tsurumi, 62–574 Niina, Mino, Osaka-fu, Japan
Filed May 27, 1970, Ser. No. 40,871
Claims priority, application Japan, June 25 ,1969, 44/59,553
Int. Cl. A47c 1/024
U.S. Cl. 297—362 1 Claim



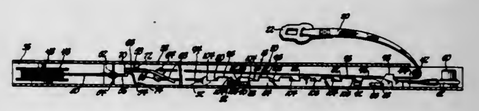
This invention relates to a seat recliner for controlling an angle of reclination of a back-rest of a seat, which is characterized, among others, by the facts that no controlling spring is used as in the conventional devices, and that a shock absorber is incorporated so as to prevent propagation of vibrations produced in the chassis floor to the back-rest, and in which an internal gear is carried on a base arm fixed to a seat and several round holes are formed in a back arm fixed to the back-rest, with a resilient packing being rotatably fitted into each of said holes, and an external gear with teeth less in number than said internal gear is coupled to and supported by said resilient packings through swingable pins. Said external gear is meshed with said internal gear, and in the center hole of said external gear is fitted a cam provided on a cam shaft, the latter carrying at its end a grip. In accordance with rotation of said grip, the external gear is also rotated in meshed relation with the internal gear through the cam, and in response to this rotating motion of the external gear, said swingable pins are swung along a constant locus within the respective round holes through the resilient packings to thereby transmit the movement of said external gear to the back arm, so as to impart an inclination to the back arm corresponding to the gear ratio between the internal gear and the external gear.

3,667,805
LIMITED MOTION DEVICE FOR SHOULDER HARNESSES AND THE LIKE
Edward W. Apri, 998 Lehigh St., Altadena, Calif. 91001
Filed Apr. 30, 1970, Ser. No. 33,188
Int. Cl. A62b 35/60
U.S. Cl. 297—385 8 Claims



A motion restraining device in which a slider carrying an acceleration sensitive detent is movable in an anchored track that has detent arrestors along the path of the slider. The slider has a pin which extends through a slot in the detent. The slot is oriented such that slow motion of the restraining device is permitted, while fast acceleration results in a force on the slot by the pin to displace the detent into engagement with the detent arrestors.

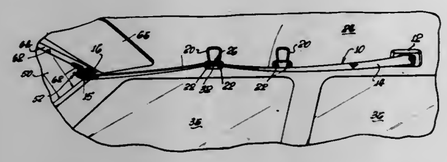
3,667,806
AUTOMATIC LOCKING RESTRAINT BELT LINEAR RETRACTOR
Raymond G. Sprecher, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 3, 1970, Ser. No. 69,363
Int. Cl. A47c 31/00; A62b 35/00; B60r 21/10
U.S. Cl. 297—388 5 Claims



An automatic locking restraint belt linear retractor includes a generally fork-like carrier that has a base with spaced pawl legs extending therefrom and spring biased toward the base wall of the retractor housing. Movement of the free end of a restraint belt outwardly of the housing moves the belt from a fully stowed position within the housing and concomitant therewith moves the carrier from a fully retracted position toward a successive series of extended positions. During movement of the carrier to the first extended position of the series from an intermediate position slightly retracted therefrom, the spring bias causes the pawl legs to engage and move respective blocking members from unblocked positions to blocked positions in which the blocking members block engagement of the pawl legs and linear ratchet walls of

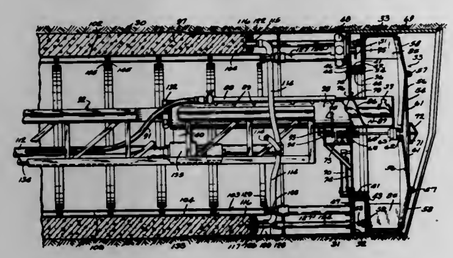
a channel-shaped linear ratchet member mounted on the base wall. With the blocking members in blocked positions, the carrier is thus free to move to any extended position of the series and upon the initial retracting movement therefrom, the pawl legs engage and move the blocking members to unblocked positions to allow engagement of the pawl legs and the ratchet walls whereupon a subsequent outwardly applied belt force pivots the base of the carrier into engagement with the cover wall of the housing to hold the carrier from further extending movement and the free end of the belt from corresponding movement outwardly of the housing.

3,667,807
SHOULDER BELT RELEASABLE HOLDING MEANS
Jacob E. Beeson, 943 Kingsley Drive, Arcadia, Calif. 91006
Filed Apr. 10, 1970, Ser. No. 27,382
Int. Cl. A26b *35/00*
U.S. Cl. 297—389 **6 Claims**



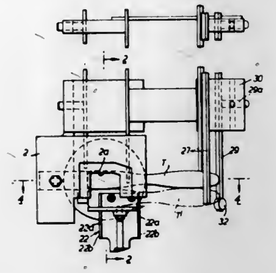
An automobile shoulder belt releasable holding means including retainer means mounted adjacent the windshield of a vehicle for releasably retaining the tongue end of said belt and maintaining the belt in a fully extended position of non-use ready for immediate release and use.

3,667,808
TUNNELING MACHINE WITH TANDEM SPOIL BARRIERS
John R. Tabor, Racine, Wis., assignor to Mining Equipment Manufacturing Corporation, Racine, Wis.
Original application July 9, 1968, Ser. No. 743,363, now Patent No. 3,561,223, dated Feb. 9, 1971. Divided and this application Feb. 24, 1970, Ser. No. 16,993
Int. Cl. E01q *3/03*
U.S. Cl. 299—33 **7 Claims**



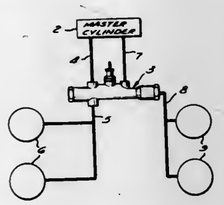
A tunneling machine for excavating through relatively muck earth strata generating fluid spoil, said machine having a shield with a fixed substantially closed bulkhead and an excavating wheel ahead of the bulkhead, said wheel having a face which can be substantially completely closed to breast fluid spoil, whereby two spoil barriers in tandem resist flow of fluid spoil. The wheel has a substantially closed front face with radially elongated openings, transversely extending pintles spanning said openings at a point intermediate the radial extent thereof and gates swingable on said pintles to selectively mucky earth strata generating fluid spoil, said machine side of the pintle moving outwardly beyond the front wall as gate portions at the other side of the pintle move inwardly of said wall.

3,667,809
APPARATUS FOR OPERATING ON BRUSH STOCKS
Harold Henry Fulcher, Havent, England, assignor to J. Evans & Son (Portsmouth) Limited, Portsmouth, England
Filed Aug. 13, 1970, Ser. No. 63,497
Claims priority, application Great Britain, Aug. 25, 1969, 42,274/69
Int. Cl. B25b *1/20*
U.S. Cl. 300—11 **9 Claims**



The invention provides apparatus for supporting and clamping brush stocks in a brush making machine comprising a releasable stop for supporting the brush stocks in a guide while a clamping device clamps one stock to be operated on by a tool, while the operation by the tool is being carried out, the stop is released to discharge one brush stock and then is repositioned to again support the brush stocks.

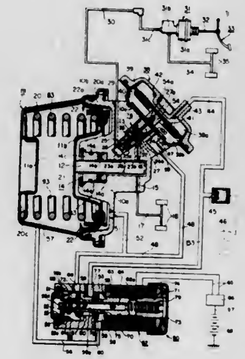
3,667,810
COMBINATION BRAKE WARNING SWITCH AND PROPORTIONING VALVE
Richard J. Silagy, Parma, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio
Filed Apr. 22, 1970, Ser. No. 30,887
Int. Cl. B60t *8/26, 11/34, 17/22*
U.S. Cl. 303—6 C **6 Claims**



A combination brake warning switch and proportioning valve includes a housing having an axial bore within which is located a switch piston and a proportioning piston at opposite ends of the bore. Fluid from two circuits of a dual brake system master cylinder is introduced to the bore on opposite sides of the switch piston which performs a switch actuating function in case of a pressure unbalance. The proportioning valve piston cooperates with a valve seat member slidably carried on the end of the switch piston to reduce the outlet pressure in one circuit

when the inlet pressure exceeds a predetermined level. In the event of failure of the other circuit, movement of the switch piston moves the valve seat member away from the proportioning piston which is then inoperable. When the proportioning valve is operative, the movable valve seat member cooperates with the proportioning piston so that the proportional relation between inlet and outlet pressures in the one circuit is maintained when the pressures are decreasing. A stop is provided to prevent the valve seat member from engaging the proportioning piston in the event of a pressure loss in the one circuit.

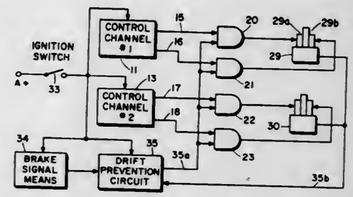
3,667,811
ANTISKID BRAKE CONTROL MECHANISM
Tosiaki Okamoto and Masami Inada, Kariya-shi, Japan, assignors to Aisin Seiki Company Limited, Kariya-shi, Aichi-ken, Japan
Filed Mar. 5, 1970, Ser. No. 16,885
Claims priority, application Japan, Mar. 8, 1969, 44/20,818; Apr. 5, 1969, 44/31,002
Int. Cl. B60t *8/04*
U.S. Cl. 303—21 F **5 Claims**



An antiskid brake pressure control mechanism being provided with a first and second pneumatically operated servo assembly, the first servo assembly comprising a diaphragm piston which is urged by a first spring for normally opening a valve in a hydraulic brake apply circuit adapted for on-off control of the fluid communication between the master cylinder and preferred wheel cylinder assemblies, with both being provided in the hydraulic brake system to be controlled by a change-off valve actuated by a skid sensor, and second servo assembly comprising a diaphraghm piston urged by a second spring and adapted for actuating a plunger upon the operation of said first servo assembly for increasing or decreasing as the case may be, the effective volume of said hydraulic brake circuit part leading to said preferred wheel cylinder assemblies for decreasing or increasing the hydraulic brake pressure prevailing therein.

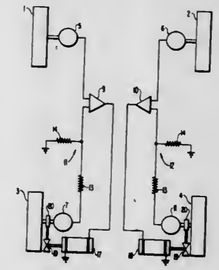
3,667,812
SKID CONTROL SYSTEM CYCLING AND CHECKING CIRCUIT, INCLUDING DRIFT PREVENTION MEANS
Ralph W. Carp, Baltimore, and Frederick O. Miesterfeld, Joppa, Md., assignors to The Bendix Corporation
Filed Dec. 7, 1970, Ser. No. 95,650
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 AF **17 Claims**

A skid control system includes at least a single control channel and a brake pressure modulating valve. Initial actuation of the system causes a temporary and false control signal to be generated due to initial charging of the control elements. This false control signal is applied to the



brake modulator to exercise the modulator. Any movement of the modulator interior parts is sensed by a switch and immediately acts through a drift prevention circuit to extinguish the effect of the false control signal.

3,667,813
INSTALLATION FOR PREVENTING SPINNING OF THE DRIVEN WHEELS OF A MOTOR VEHICLE
Manfred H. Burckhardt, Waiblingen, Hans-Jorg Florus, Goppingen, and Horst Grossner, Geradstetten, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 31, 1969, Ser. No. 872,892
Claims priority, application Germany, Nov. 2, 1968, P 18 06 671.2
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 EB **18 Claims**

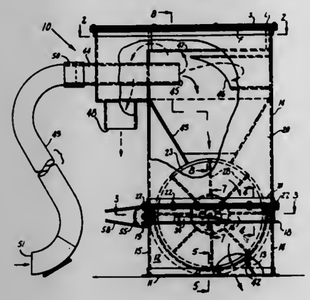


An installation for preventing the spinning of the driven wheels of a motor vehicle in which the rotational slippage between the driven and non-driven wheels is determined, and in which the rotational speed of the driven wheels is controlled in dependence on the magnitude of such slippage.

3,667,814
VACUUM LOADER
Alfred Krivda, P.O. Box 1055, Oroville, Calif. 95965
Filed Sept. 4, 1970, Ser. No. 69,602
Int. Cl. B65g *53/24, 53/40, 53/60*
U.S. Cl. 302—59 **1 Claim**

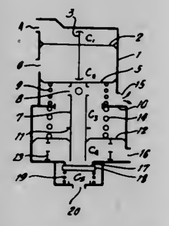
A vacuum loading apparatus for transferring dry particulate material from a storage point to a point of use or to a transport vehicle. The loader includes a pocketed wheel which is sealed against escape of air through the pockets or around the wheel. The pocketed wheel is rotated so that material drops into a pocket at the upper side of the wheel and is delivered through a discharge opening at the lower side of the wheel. A system including

a flexible hose delivers the dry material to a hopper overlying the pocketed wheel. The air flow passes through a



filter above the hopper and then to a suction fan to provide the power.

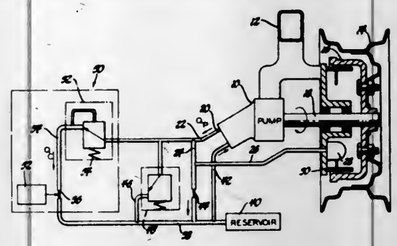
3,667,815
SERVO DISTRIBUTORS IN PNEUMATIC BRAKING SYSTEMS OF VEHICLES WITH TRAILER
Bruno Zoppi, Milan, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy
Filed Oct. 23, 1969, Ser. No. 868,861
Claims priority, application Italy, May 2, 1969, 16,306/69
Int. Cl. B60t *13/28*
U.S. Cl. 303—7 **4 Claims**



Servo distributor apparatus for rapidly increasing pneumatic pressure applied to the braking system of a towed vehicle upon initial phase of actuation of the brake pedal of the towing vehicle and for controllably increasing the pressure thereafter so that braking of the towed vehicle will occur either before or simultaneously with the braking of the towing vehicle.

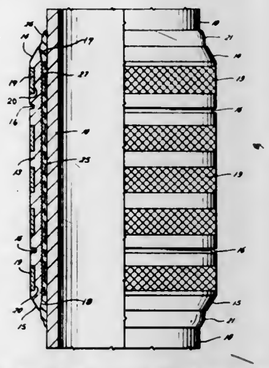
3,667,816
VEHICLE WHEEL VELOCITY CONTROL SYSTEM AND METHOD
John L. Harned, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1970, Ser. No. 11,512
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **9 Claims**

A vehicle brake system in which the wheel to be braked drives a positive displacement pump, the output fluid of which passes through a viscous orifice and also through a variable orifice in parallel flow relationship to the viscous orifice. The variable orifice is controlled to generate a pressure from the pump output through which the wheel brake is applied. A pressure reducing valve and a pressure relief valve are also provided. A modified system further uses a vehicle deceleration sensing mechanism to control the rate of wheel deceleration so that wheel deceleration is slightly greater than the synchronized deceleration obtained by control pressure feedback. The pump may be driven directly by the wheel or through a speed selector device having wheel and vehicle engine input drives, the selector



device selecting the higher of the two input speeds for the pump drive.

3,667,817
DRILL PIPE WITH WEAR SLEEVE
Jackson M. Kellner, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.
Filed May 21, 1970, Ser. No. 39,430
Int. Cl. F16c *17/00*
U.S. Cl. 308—4 A **4 Claims**

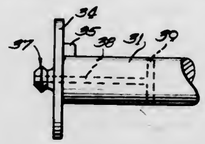


A metal drill pipe is provided with a metal wear sleeve and a fabric reinforced flexible, adhesive, plastics material insert between the wear sleeve and the pipe. The insert is built up on the pipe by applying alternate layers of liquid, uncured plastics material and fabric. The sleeve is made in sections which are clamped around the insert. The insert is then cured and thereafter the sleeve sections are welded together. The sleeve is mechanically interlocked to the insert, e.g. by a thread on the inside of the sleeve. The ends of the sleeve are internally flared to increase their flexibility and further increase in flexibility is afforded by annular grooves in the outer periphery of the sleeve adjacent the internally flared end portions. The grooves also serve as wear indicators.

3,667,818
HEAVY DUTY CASTER AXLE AND INTEGRAL FITTING
Vincent Wallace Adamski and Ernest Beatty Moore, Greenville, Miss., assignors to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Oct. 19, 1970, Ser. No. 81,644
Int. Cl. F16c *1/24*
U.S. Cl. 308—92 **4 Claims**

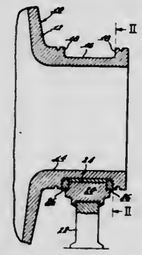
A heavy duty caster axle having an integral grease fitting formed at one end protected by a radially and forwardly extending annular flange which substantially encompasses the grease fitting. An axial passage is formed

through the grease fitting and extends into the axle to terminate in a diametrically extending passage opening to the exterior surface thereof. The axle and fitting are formed from a cylindrical blank by the steps of forming an enlarged radial flange spaced from one end of the



blank, forming the end of the blank at the flange to provide the outline of the fitting, drilling an axial passage into the formed end and shank and a transverse passage, and either forming the flange into a protective cup or attaching a protective cup onto the fitting end and flange.

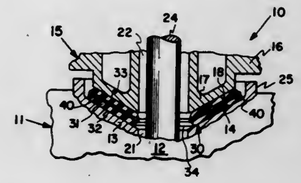
3,667,819
THRUST BEARING AND MOUNTING ARRANGEMENT THEREFOR
Raymond C. Jenness, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 17, 1970, Ser. No. 64,473
Int. Cl. F16c *17/10*
U.S. Cl. 308—135 **11 Claims**



A thrust shoe and mounting arrangement therefor particularly suitable for use as the thrust bearing for the trunnion of a rotary grinding mill or the like, in which the thrust shoe is provided with a wedgelike projection which is received in a correspondingly-shaped wedge-shaped recess machined in the end wall of the bearing insert of the upwardly open main bearing for the trunnion. The projection on the thrust shoe and the recess in which it is received typically might extend through a peripheral angle of 120 degrees. A detachable retainer member or clamp overlies the thrust shoe at each of the circumferentially spaced opposite ends thereof, to normally prevent movement of the thrust shoe relative to the bearing insert both in a circumferential as well as axial direction. The end retainer members may be removed to permit the thrust shoe to be slidably moved along the main bearing insert in a circumferential direction until the thrust shoe is free of the bearing insert, thereby permitting removal and replacement of the thrust shoe.

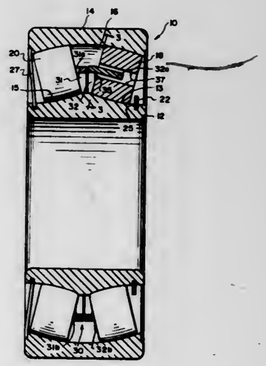
3,667,820
RAILWAY CAR HAVING RESILIENT CENTER BEARING
James W. Sherrick, Edinboro, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Dec. 11, 1970, Ser. No. 97,217
Int. Cl. F16c *17/10;* **B61f** *5/16*
U.S. Cl. 308—137 **5 Claims**

In a railway car having truck and car body center plates disposed in telescoping relation, preferably defining nested conical opposed load carrying surfaces, a unitary resilient bearing in the form of an elastomeric body is disposed between the load carrying surfaces and cooperates therewith to carry both vertical and horizontal loads between the load carrying surfaces predominately in compression while carrying torsional or turning loads predominately in shear. The compressive stiffness of the elastomeric body



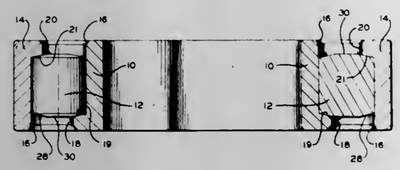
is substantially increased by the addition of a relatively nonextensible conical annular plate embedded in and bonded to the elastomeric body intermediate the load carrying surfaces without substantially affecting the shear stiffness of the body in accommodating relative angular movement between the center plates.

3,667,821
GUIDANCE AND RETENTION CAGE FOR SPHERICAL ROLLER BEARING
James A. Rader, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Nov. 4, 1970, Ser. No. 86,790
Int. Cl. F16c *25/08*
U.S. Cl. 308—212 **13 Claims**



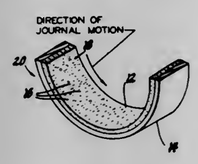
A cage device for a spherical roller bearing includes an annular ring which is positioned at one outboard axial end of the bearing or two such rings which are positioned between the rows of rolling elements in the raceway of a two-row spherical roller bearing. The annular rings have a plurality of pins or prongs extending axially outwardly therefrom. Each of the prongs extend into a bore in a respective roller. The cross-section of the prong is only slightly less than the diameter of the bore in the roller such that the prong and walls of the bore are in a close running fit in an operating installation. The prongs not only retain the rollers in the bearing raceway, but the close running fit between the prong and the bore also serves to guide the roller. In turn the rollers act to pilot the cage.

3,667,822
CONED END ROLLER BEARING
Jack W. Armstrong, Baldwinsville, N.Y., assignor to Lipe-Rollway Corporation
Filed Mar. 1, 1971, Ser. No. 119,482
Int. Cl. F16c *19/34*
U.S. Cl. 308—213 **1 Claim**



A radial type roller bearing having a relatively high axial load carrying capacity. The bearing rollers are formed with frusto-conical end faces which engage correspondingly tapered race flanges to take the thrust loads. The angle of the coned portion of the rollers is within a predetermined range that is the critical factor in obtaining the performance desired.

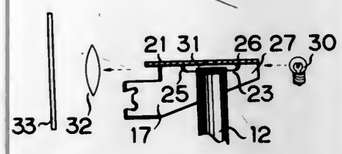
3,667,823
ALUMINUM BASED ALLOY BEARING
Fred J. Webbere, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.
Original application Oct. 29, 1968, Ser. No. 771,416, now Patent No. 3,562,884, dated Feb. 16, 1971. Divided and this application Aug. 10, 1970, Ser. No. 62,391
Int. Cl. F16c *33/12*
U.S. Cl. 308—237 **6 Claims**



In a preferred embodiment a cast strip of aluminum bearing alloy containing a minor portion of lead dispersed as small spherical particles in the aluminum matrix is rolled lengthwise, whereby the soft lead particles are flattened and lengthened in the direction of rolling. Sleeve bearing blanks are then cut from the cast and rolled strip in a direction and manner such that the longest dimension of the flattened lead particles in the finished bearing is transverse to the intended direction of rotation of a mating journal member.

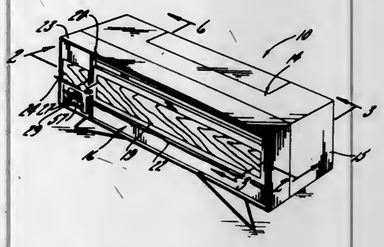
3,667,824
METHOD FOR ADJUSTING THE SPACE BETWEEN CATHODE AND FIRST PLATE GRID ELECTRODES IN AN ELECTRON GUN MEMBER
Asahide Tsuneta, Kawasaki, and Shinichi Sawagata, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Original application May 6, 1968, Ser. No. 726,765. Divided and this application Aug. 10, 1970, Ser. No. 62,594
Int. Cl. H01j *9/42, 9/44*
U.S. Cl. 316—23 **3 Claims**

In an electron gun member, a method for adjusting the space between the electron beam emitting surface plate of the cathode and a first plate grid electrode having a substantially annular protuberance thereon, comprising the steps of projecting light into a space formed between the cathode and first plate grid electrode through at least



one void area formed in part of the protuberance, presenting the resultant image of said space in an optically magnified form on a screen positioned outside of the electron gun member, and adjusting and determining the space while monitoring the optically magnified image.

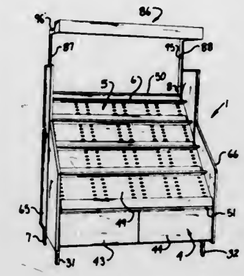
3,667,825
APPARATUS FOR DISPENSING SHEET MATERIAL
Armin B. Pagel, Janesville, Wis., assignor to Newell Mfg. Co., Freeport, Ill.
Filed Dec. 17, 1970, Ser. No. 99,043
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 **8 Claims**



A material dispenser with an outlet formed by a door which is partially opened when the dispenser is operated to dispense sheets of material. In the dispenser, a web of material is squeezed between an idler roller and a drive roller to pull the web from a roll when a power source is activated to rotate the drive roller. When the door is fully opened to load a roll of material into the dispenser, a spring acts to yieldably catch against a linkage connected to the door to hold the latter in its fully opened position until a pressure is applied to the door to overcome the effect of the spring thereby allowing the door to be returned to its closed position.

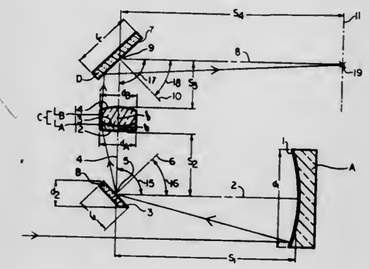
3,667,826
MERCHANDISE DISPLAY UNIT
Gerald L. Wood, Overland Park, Kans., Harvey L. Kolster, Grain Valley, Mo., and James E. Zeller, Beatrice, Nebr., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed Nov. 20, 1970, Ser. No. 91,331
Int. Cl. A47f *3/14*
U.S. Cl. 312—118 **6 Claims**

Units for displaying articles of merchandise are disclosed which each have knock-down back and base frames and a merchandise storage unit and merchandise display members for positioning articles of merchandise. Units having adjustable shelves, rotary spinners, sloping display panel with shelves thereon, stepped compartments, and



vertically spaced bars with display members thereon are disclosed as exemplary of the inventive concept.

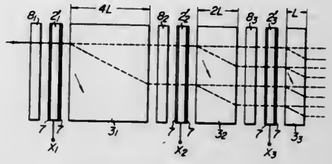
3,667,827
ASTRONOMICAL TELE-OBJECTIVE
Lawrence Monari, 1458 83rd St., Brooklyn, N.Y. 11228
Filed Mar. 16, 1971, Ser. No. 124,678
Int. Cl. G02b *17/00, 23/02*
U.S. Cl. 350—55 **18 Claims**



A tele-objective is presented in which the diffraction effects produced by the central obstruction affecting the image quality are very small. Plane and spherical optical surfaces are the only ones used. A relatively small positive achromatic doublet provides correction of aberrations of a concave spherical primary mirror. The tele-objective is compact and has a long effective focal length. The tele-objective can be used advantageously in a telescopic apparatus by the addition of a field lens.

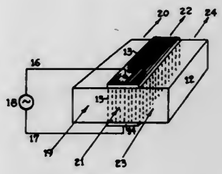
3,667,828
DIGITAL LIGHT DEFLECTOR
Hiroomi Kojima, Hachioji, Sadao Nomura, Tokyo, and Akio Kumada, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed June 12, 1970, Ser. No. 45,835
Claims priority, application Japan, June 30, 1969, 44/51,608
Int. Cl. G02f *1/20*
U.S. Cl. 350—150 **5 Claims**

A digital light deflector comprising a cascade arrangements of *n* stages of a quarter-wave irregular ferroelectric crystal and a unit constituted by a uniaxial birefringent crystal cut at its opposite surfaces with a specified angle to an optic axis thereof and a quarter-wave plate, opposite *z* surfaces of said irregular ferroelectric crystal being provided with an electrical means for apply an elec-



tric field at least equal to the coercive field of said crystal, if necessary, to deflect the light being transmitted through said unit.

3,667,829
ELECTRO-OPTIC PHASE MODULATOR
Carl N. Klahr, 678 Cedar Lawn Ave., Lawrence, N.Y. 11559
Filed Mar. 30, 1970, Ser. No. 23,696
Int. Cl. G02f *1/28, 1/36*
U.S. Cl. 350—160 **18 Claims**

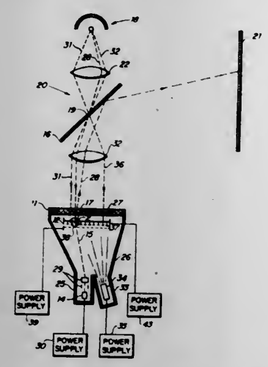


This invention is an electro-optical phase modulator comprising (a) a medium whose index of refraction can be varied by the injection of electric current following electrical breakdown; (b) appropriate electrodes for injection into the medium; (c) signal-controlled current sources for supplying current to the electrodes; and (d) a coherent optical beam whose optical path traverses the region whose index of refraction is varied by the injected current. This modulator can be used for direct phase modulation and for spatial deflection of the coherent optical beam, dependent on the spatial characteristics of the electrodes and the injected current.

3,667,830
DISPLAY SYSTEM UTILIZING A SELECTIVELY DEFORMABLE LIGHT-REFLECTING ELEMENT
Edmund H. Rottmiller, San Diego, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed Apr. 8, 1970, Ser. No. 26,687
Int. Cl. H01j *29/12*
U.S. Cl. 350—161 **8 Claims**

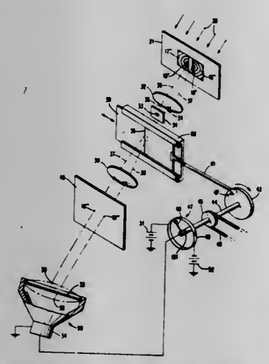
A large scale display system utilizing a deformable metal film light-reflecting surface or light valve is disclosed. A light valve is assembled consisting of a very thin metal film mounted on a support grid. An area of dielectric material is placed on the lower surface of the film within each grid opening. This assembly is placed in a cathode ray tube so that an electron beam may be caused to impinge upon the dielectric areas. In one embodiment, a conventional optical system is used to direct collimated light against the upper surface of the metal film. Light reflected from distorted portions of the metal film is transmitted to a display screen, while light reflected from undistorted portions of the metal film does not reach the screen. When the electron beam impinges upon the dielectric areas, the

areas are attracted by electrostatic attraction forces toward the adjacent grid members. This causes surface distortions or dimples in the metal film. A spot of light appears on the display screen at locations corresponding



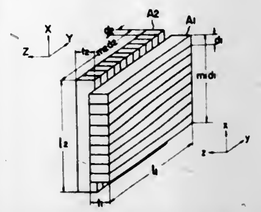
to the dimple locations. Where the dielectric areas are very small and closely spaced, an image corresponding to the areas scanned by the electron beam will appear on the display screen.

3,667,831
THREE-DIMENSIONAL ZONE PLATE GRID ENCODING AND DECODING
Keith S. Pennington, Somers, and Glenmore L. Shelton, Jr., Carmel, N.Y., and Peter M. Will, Norwalk, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,687
Int. Cl. G02b *27/38*
U.S. Cl. 350—162 SF **22 Claims**



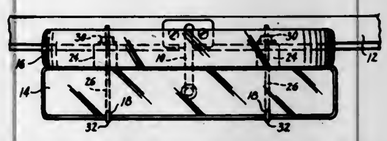
Depth of range information is extracted by projecting the image of a zone plate upon a scene and photographing the scene at a different angle from the zone plate source. A transparency of the photograph including zone plate modulation of the scene formed on planes in the scene is then filtered by a scanning slit at the zone plate focal plane and presented upon an output screen from end to end, as a function of original range, from the zone plate. The reflection of the image upon the screen in viewed in a varifocal mirror driven in synchronism with scanning by the filter. The screen and the varifocal mirror may be connected by a low-bandwidth, video channel and a channel for control signals for the mirror.

3,667,832
LIGHT-CONDUCTING STRUCTURE COMPRISING CROSSED LENTICULAR GRADIENT INDEX PLATES
Ichiro Kitano, Kobe, and Hiroyoshi Matsumura, Ashiya, Japan, assignors to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co., Ltd.), Tokyo-to, Japan
Filed July 30, 1970, Ser. No. 59,577
Claims priority, application Japan, Aug. 4, 1969, 44/61,887
Int. Cl. G02b *5/14*
U.S. Cl. 350—175 GN **5 Claims**



A light-conducting structure such as a multi-ocular lens or face plate comprising at least two sets of columinar transparent elements, each element having two side surfaces and two light-conducting surfaces, both extended in a plane parallel relation, the element having a Refractive Index distribution in a plane perpendicular to a center plane thereof varying in such a manner that the Refractive Index is gradually decreased proportionally to the second power of distance measured from the center plane, transparent elements constituting each set being assembled successively together along their side surfaces, and the two sets being combined together so that the light-conducting surfaces confront each other, and the lengthwise directions thereof intersect each other at a predetermined angle.

3,667,833
REAR VIEW MIRROR
William K. Baldwin, Sr., 5040 Jackson St., Space 22, North Highlands, Calif. 95660
Filed Sept. 25, 1970, Ser. No. 75,442
Int. Cl. G02b *5/08*
U.S. Cl. 350—303 **1 Claim**

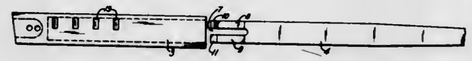


A rear view mirror having a plane and a convex portion for viewing on both sides of the vehicle in addition to the rear thereof.

3,667,834
ADJUSTABLE LENGTH TEMPLE FOR SPECTACLES
Ellison L. Davison, Gibsonia, Carl H. Brinkhoff, Pittsburgh, and Robert F. Menold, Monroeville, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 16,374, Mar. 4, 1970. This application Mar. 22, 1971, Ser. No. 126,572
Int. Cl. G02c *5/20*
U.S. Cl. 351—118 **8 Claims**

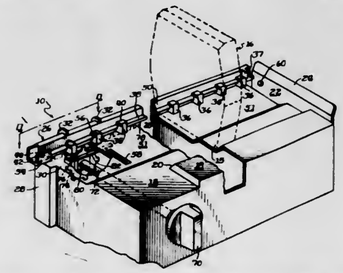
A spectacles temple is formed from a front sleeve and a rear head-engageable temple member fitting snugly in the back end of the sleeve and slidable lengthwise in it.

The front end of the rear member is provided with a slot separating it into upper and lower spring prongs. One prong is provided with a laterally projecting boss pressed



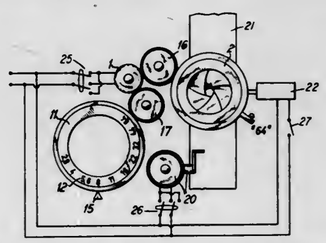
tightly against the sleeve, and the other prong is provided with a locking boss projecting into a recess in a row of longitudinally spaced recesses in the sleeve wall to normally lock the temple member and sleeve together.

3,667,835
FILM CARTRIDGE ATTACHING APPARATUS
Arthur E. Nupnau, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Apr. 15, 1970, Ser. No. 28,829
Int. Cl. G03b *21/04*
U.S. Cl. 352—72 **8 Claims**



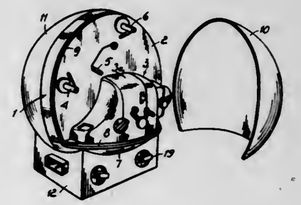
An apparatus for selectively attaching one or a group of film cartridges to a motion picture projector for moving one or more cartridges relative thereto. The apparatus includes an attaching member movably supported on the projector and having a plurality of hooks, one for each cartridge, positionable over a ledge in a cartridge, and a manually operable lever for moving the cartridge or cartridges into engagement with each hook.

3,667,836
MOTION PICTURE CAMERA WITH MEANS PRODUCING A DISSOLVING EFFECT
Heinz Thiele, Leinfelden, near Stuttgart, and Konrad Franke and Dietrich Becker, Stuttgart-Mohringen, Germany, assignors to Zeiss Ikon Aktiengesellschaft, Stuttgart, Germany
Filed Apr. 16, 1970, Ser. No. 29,202
Claims priority, application Germany, Apr. 22, 1969, P 19 20 438.7
Int. Cl. G03b *19/18*
U.S. Cl. 352—91 **3 Claims**



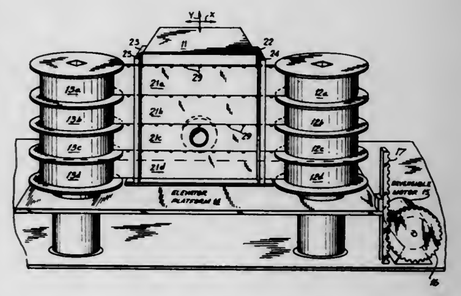
A motion picture camera with a motor operated diaphragm and suitable for producing a dissolving or fading effect at the end of a scene photographed. Separate motors are provided for the film moving gripper and the film wind-up spindle, which latter is equipped with a non-reversing lock. During the dissolving procedure the film gripper moves the film forwardly a predetermined length while the wind-up spindle is stopped, so that this length of film forms a loop in the film space around the wind-up spindle whereupon the film gripper moves the film rearwardly back upon the delivery spool. During the same period of time the film is moved in this manner, the diaphragm is varied from the actual exposure aperture to its smallest aperture and then is opened again to its exposure aperture.

3,667,837
CINEMATOGRAPH PROJECTOR PARTICULARLY FOR SUBSTANDARD FILMS
Eugenio Agrati, Via A. da Baggio 20/5, and Ennio Sala, Via A. da Baggio 20/13, both of Milan, Italy
Filed June 8, 1970, Ser. No. 44,223
Claims priority, application Italy, Oct. 10, 1969, 23,199/69
Int. Cl. G01n *21/14*
U.S. Cl. 352—242 **1 Claim**



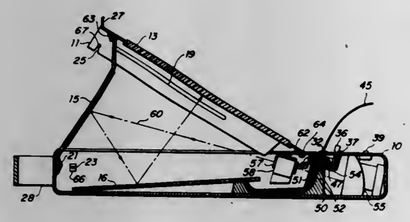
A cinematograph projector having a spherical upper casing slidably supported on a cradle-like support base and controlled by means of a rack and pinion arrangement.

3,667,838
UPDATABLE FILM APPARATUS FOR A MICROFILM RETRIEVAL SYSTEM
William Wadsworth Wood, 235 Peruvian Ave., Palm Beach, Fla. 33480
Filed Nov. 17, 1969, Ser. No. 877,266
Int. Cl. G03b *23/12*
U.S. Cl. 353—26 **3 Claims**



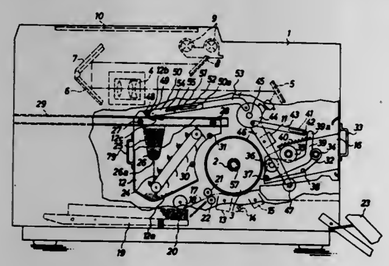
A plurality of reels coaxially positioned in adjacent relation are driven in synchronism with each other. Each of a plurality of strips of film is wound on a separate one of the reels so that any of the reels may be removed for updating without preventing the driving of the remainder of the reels.

3,667,839
MICROFICHE VIEWER
Maurice H. Artaud, Spring Valley, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed May 4, 1970, Ser. No. 34,199
Int. Cl. G03b 23/08
U.S. Cl. 353—27 9 Claims



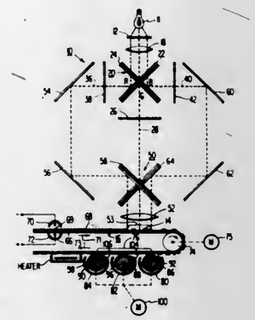
A compact portable projection viewer for microimages is disclosed. The viewer includes a projection lamp, means for positioning a selected microfiche image in a projection station, and an optical system movable between a compact storage position and a viewing position in which the image is projected on a viewing screen. A simple, effective focusing system is included. In one embodiment, a parallel rotatable roller system is provided for moving a microfiche sheet, through the projection station in a first direction. Means are provided for moving the roller assembly, with the microfiche, in a direction perpendicular to the first direction. Thus, any selected microimages on the sheet may be located at the projection station.

3,667,840
ELECTROPHOTOGRAPHIC COPIER WITH REMOVABLE DRUM
Herbert Engel, Munich, Karl Hartwig, Unterhaching, and Gunther Schnall, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 10, 1970, Ser. No. 96,939
Claims priority, application Germany, Dec. 10, 1969, P 19 61 836.1
Int. Cl. G03g 15/00
U.S. Cl. 355—3 10 Claims



A xerographic carrier is mounted in a housing for travel in a predetermined direction and has an exposed photoconductive layer which is adapted to be uniformly charged in preparation for transfer of latent images to the layer. The carrier can be withdrawn from the housing in a predetermined path. It is usually a drum mounted on a stationary shaft in the housing. A developer device is mounted in the housing and can move substantially radially of the drum between a position engaging the drum for discharging onto the same electroscopic developer material which forms on the charged layer powder images, and a withdrawn position remote from the carrier. A cleaning device is also provided which can similarly be moved radially of the drum between a position engaging the latter and removing residual electroscopic developer material from the layer and a radially withdrawn position. A moving arrangement is provided for moving one or both of these devices between their respective positions. The moving arrangement includes a pivoting crank and a lever for pivoting it located adjacent to the accessible end of the drum. When the moving arrangement is in a location in which the one or both devices are in their operating positions, the lever will block withdrawal of the drum from the housing.

3,667,841
METHOD OF AND APPARATUS FOR REPRODUCING A COLORED IMAGE BY ELECTROPHOTOGRAPHIC MEANS
Donald Alexander Ross, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 26, 1970, Ser. No. 22,912
Int. Cl. G03g 15/00, 13/00
U.S. Cl. 355—4 10 Claims

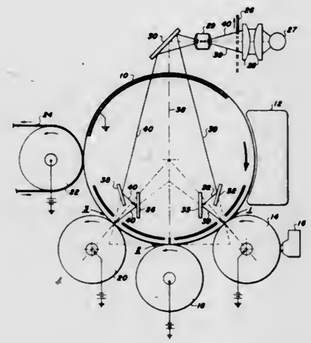


An electrophotographic recording element is exposed with three differently colored and differently oriented banded images in register. The resultant banded latent image of each of the color-banded images is developed selectively with a different toner of a complementary color for a subtractive process. The novel apparatus comprises dichroic reflectors and three differently oriented line screens for simultaneously projecting three illumination patterns of the colored image to be reproduced with lights of three primary colors. At least two rotatable screw-type toner applicators are provided for developing the bands of two of the color-banded images that slant in different directions.

3,667,842
IMAGING APPARATUS
Armistead Wharton, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 17, 1970, Ser. No. 46,948
Int. Cl. G03g 15/04
U.S. Cl. 355—8 12 Claims

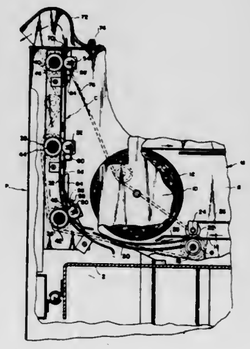
A scanning optical system using one lens that projects multiple distinct images of portions of a single object at predetermined positions along the path of a moving nonplanar receptor. The lens projects light rays that are divided by strategically placed reflecting surfaces. The input can be transparent or opaque and is projectable at various magnifications. Varying processing equipment is operatively placed along the path of the moving image receptor.

In a machine for automatically producing images from photoelectrophoretic suspensions using a cylindrical transparent image receptor which is exposed and re-exposed



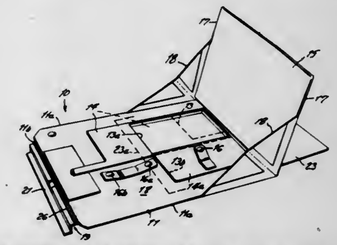
during one cycle of rotation, imaging electrodes are placed at the predetermined positions where the multiple images are projected from the object.

3,667,843
CONVEYOR AND PRINTER MECHANISM
George K. Czarnikow, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,577
Int. Cl. G03b 29/00
U.S. Cl. 355—29 9 Claims



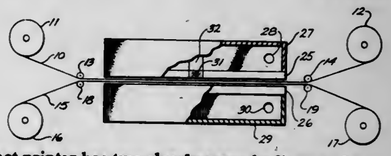
An interlock is provided between a paper advance roller on a print module, which print module is slidable into a chassis of a larger unit, such as a reader-printer, and a conveyor within the chassis for conveying a finished print from the print modulate to an exit slot. The interlock comprises a pair of similar rotatable couplers which have extending lugs that are engageable with each other when the print module is in position within the chassis. One of the couplers is spring-biased on its rotational axis to provide relative movement if the lugs engage each other head-on during movement of the print module into the chassis. The conveyor provides a path from the paper advance device to the exit slot and includes a fixed plate through which drive rollers extend and a removable plate parallel thereto through which pressure rollers extend which are spring-biased against the drive rollers.

3,667,844
MULTIPLE MASKING ATTACHMENT FOR PHOTO EASEL
Loyd W. Pittman, St. Louis, Mo., by Ruth Pittman, surviving spouse and heir of said Pittman, deceased
Filed Apr. 8, 1970, Ser. No. 26,663
Int. Cl. G03b 27/58
U.S. Cl. 355—54 8 Claims



An attachment for a photo easel, the device comprising a unit incorporating a plurality of different sized windows so that the device may be used as a masking attachment for exposing only preselected confined portions of a sheet of photographic paper for printing photographic reproductions.

3,667,845
APPARATUS FOR HOLDING TWO FILMS IN INTIMATE CONTACT WITH EACH OTHER
Minard A. Leavitt, Sepulveda, and Poul B. Roulund, El Toro, Calif., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Continuation-in-part of application Ser. No. 27,690, Apr. 13, 1970. This application June 15, 1970, Ser. No. 46,430
Int. Cl. G03b 27/20
U.S. Cl. 355—91 5 Claims

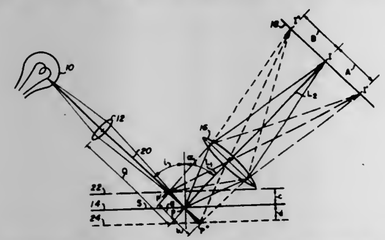


A contact printer has two closely spaced adjacent platens with dissimilar patterns of fluid passages. Fluid is forced through the passages to form between the platens and the adjacent film surfaces fluid cushions that hold the films in intimate contact with each other. The passages are sufficiently concentrated and so arranged to support the films between the platens without appreciable lateral movement. In the preferred embodiment, the platens are slabs of microporous material. In another embodiment, the platens are slabs of nonporous material having discrete holes.

3,667,846
OPTICAL SURFACE INSPECTION APPARATUS
Charles Nater, 1519 Brookvale Drive, San Jose, Calif. 95125, and Willard E. Buck, 1951 Poplar, Lake Havasu City, Ariz. 86403
Filed July 28, 1969, Ser. No. 845,163
Int. Cl. G01b 11/30
U.S. Cl. 356—120 9 Claims

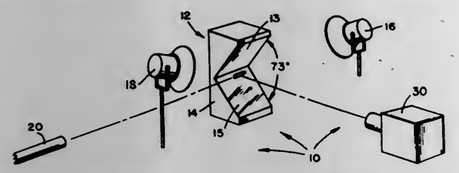
An apparatus for optically detecting microscopic irregularities or relative elevational variations in or of a material surface comprising a means for illuminating a microscopic area of the surface to be monitored or evaluated, an optical detector means which produces an output signal responsive to the position of a light spot cast thereupon, and an optical lens system for imaging the illuminated surface area onto the detector means. Preferably, both the illuminating means and the imaging lens system have their

optical axes angularly disposed relative to the work surface so that a change in the elevation of the illuminated



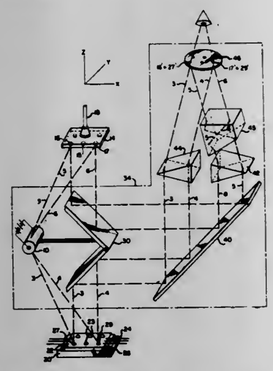
surface area will produce a shift in the position of the spot imaged onto the detector.

3,667,847
METHOD AND APPARATUS FOR INVESTIGATION OF PROJECTILE FLIGHT
William C. Griffin, Ridgecrest, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Aug. 24, 1970, Ser. No. 66,368
Int. Cl. G01b *19/34*
U.S. Cl. 356—138 **1 Claim**



A device comprising two intersecting planar mirrors is placed adjacent to the flight path of a projectile with the line of intersection of the two mirrors normal to the line of sight of a camera. The angle at which the mirrors intersect is chosen to provide five separate images visible in a single photograph made of the projectile by the camera.

3,667,848
SEMICONDUCTOR CHIP BONDING METHOD
John O. Percival, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Feb. 2, 1970, Ser. No. 7,648
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **1 Claim**



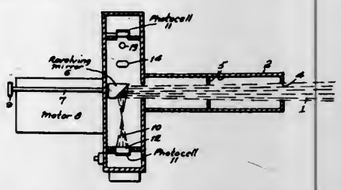
The present invention relates to a method and apparatus for aligning and bonding a semiconductor flip chip to a semiconductor flip chip substrate. An alignment device which has an approximately right-angle set of mirrors is inserted between the solder balls of the semiconductor flip chip and the bonding pads of the semiconductor flip chip substrate, so as to align the solder balls of the semiconductor flip chip in relation to the bonding pads of the semiconductor flip chip substrate. Optical means is provided within the alignment device so as to present the super-positioning of the images of the solder balls of the semiconductor flip chip in relation to the bonding pads of the semiconductor flip chip substrate. After the solder balls of the semiconductor flip chip have been aligned in relation to the bonding pads of the semiconductor flip chip substrate, the alignment device is removed from therebetween. Subsequently, the solder balls of the semiconductor flip chip may be pressed against the bonding pads of the semiconductor flip chip substrate.

3,667,849
LASER PLUMMET LEVEL
Robert L. Appler, Ellicott City, and Hubert H. Hoehn, Laurel, Md., assignors to Optic Sciences Corporation, Columbia, Md.
Filed Oct. 28, 1969, Ser. No. 871,922
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **5 Claims**



A precision surveying instrument which projects orthogonal laser beam as datum references, the beams being perpendicular and parallel respectively to the local gravity vector to provide fixed horizontal and/or vertical references from which measurements can be made. Sensors of many forms, depending on the accuracy required, can probe these beams along their lengths to align a series of components or to measure deviations therefrom. No operator handling is necessary after the initial set-up and inadvertent compromise of the datum is avoided.

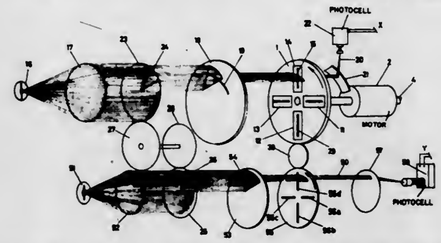
3,667,850
FLARE RADIOMETER
Chester L. Smith, Lake Hopatcong, and Louis R. Szabo, Landing, N.J., assignors to the United States of America as represented by the Secretary of the Army
Filed Nov. 23, 1970, Ser. No. 91,896
Int. Cl. G01j *3/50*
U.S. Cl. 356—186 **5 Claims**



A compact, inexpensive radiometer analyzes incoming light from a flare or other source and gives a rapid read-

out as to the output of the light source in all of the various bands and pass-bands of the spectrum.

3,667,851
MEASURING SYSTEM FOR AN ANALYTICAL CENTRIFUGE
Rasmus Strande Alm, Osteras, Norway, assignor to Norsk Hydro-Elektrist Kvaelstofaktieselskao, Oslo, Norway
Filed Jan. 6, 1970, Ser. No. 970
Claims priority, application Norway, Jan. 6, 1969, 39/69
Int. Cl. G01n *15/04*
U.S. Cl. 356—197 **10 Claims**



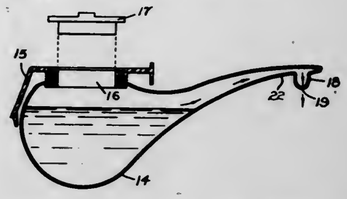
A measuring system for an analytical centrifuge having a rotor with two or more preferably swinging sedimentation cells to be scanned by light passage. The scanning means has a preferably adjustable and preferably curved optical slit through which the light passes to reach the rotor and traverses a radially extending slit located in front of each sedimentation cell. A cathode ray tube with a vertical deflection system has applied thereto signals generated by the light beam passing through the sedimentation cells. A synchronizing means causes the horizontal deflection in the cathode ray tube according to the light scanning of each separate cell during the rotation of the rotor. Trigger means has one or more members rotating with the rotor cooperating with one or more stationary members making possible simultaneous observation or registration of the measuring curve for two or more arbitrarily chosen sedimentation cells on the cathode ray tube.

3,667,852
CAR WASHING ASSEMBLY WITH PRESSURIZED WATER SUPPLY
Frank E. Mayden, Springfield, Ill., assignor of a fractional part interest to Theresa E. Mayden, Springfield, Ill.
Filed Oct. 1, 1970, Ser. No. 77,294
Int. Cl. A41l *13/23*
U.S. Cl. 401—263 **4 Claims**



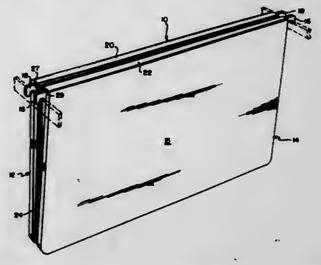
A fountain type wand defining a handle at one end and having a panel-like head at its other end of greater length than width and disposed transverse to the longitudinal axis of the wand. The head is mounted on the wand for oscillation about an axis extending transversely of the wand and generally paralleling the longitudinal center line of the head. An endwise outwardly opening U-shaped frame is supported from the end of the wand remote from the handle and the head is oscillatably supported between the free ends of the legs of the U-shaped frame. A soft cover is provided for the head and is constructed of a material through which fluids may pass and which is capable of retaining a given quantity of fluids in the manner of a sponge. The cover not only covers the head but also one side of the supporting frame and the head is in the form of a manifold to which cleaning fluids under pressure may be supplied and includes outlet openings opening outwardly of the side of the frame which is covered by the soft cover. Further, the cover is provided with an opening in registry with the outlet openings in the head whereby water and other cleaning fluids may be discharged from the manifold in jet fashion without passing through the material of the cover.

3,667,853
LIQUID FEED CONTROL FOR CLEANING APPARATUS
Donald N. Smyth, South Plympton, South Australia, Australia, assignor to S.A. Brush Company, Limited, Albert Park, South Australia, Australia
Original application Aug. 13, 1968, Ser. No. 752,284, now Patent No. 3,583,818, dated June 8, 1971. Divided and this application Oct. 28, 1970, Ser. No. 84,638
Claims priority, application Australia, Aug. 25, 1967, 26,399/67
Int. Cl. A46b *11/04*
U.S. Cl. 401—291 **4 Claims**



A liquid feed control for liquid shampoo apparatus wherein the liquid shampoo is fed to the cleaning members from a liquid shampoo container whose outlet is formed as a weir situated above the normal level of liquid in the container so that during shampooing operations the inertia of the liquid causes flow of liquid over the weir onto the cleaning members.

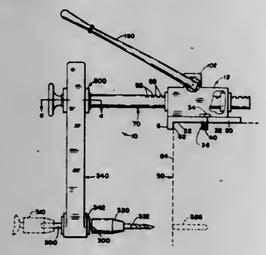
3,667,854
BINDER FOR A SUSPENSION FILE
Frank D. Jonas, Oyster Bay, N.Y., assignor to Oxford Pendaflex Corporation, Garden City, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,321
Int. Cl. B42f *3/00, 15/00*
U.S. Cl. 402—17 **1 Claim**



A binder for retaining loose pages is adapted to be stored in a conventional suspension file when the binder is not in use. Hook shaped members project outwardly

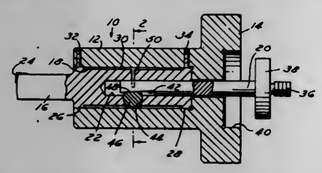
from the spine of each leaf of the binder for engaging parallelly extending suspension rails.

3,667,855
PORTABLE DRILL GUIDE
Allan O. Douglass, 5635 Kansas Ave. 68110, and Robert F. Douglass, 5708 Willit St. 68152, both of Omaha, Nebr.
Filed Sept. 29, 1970, Ser. No. 76,469
Int. Cl. B23b *45/14*
U.S. Cl. 408—114 **6 Claims**



A portable drill guide comprising attachment means adapted to be anchored to a work-piece and on which a hand lever control rack and pinion is mounted, an elongated frame means attached to the outer end of the rack bar in a manner for the adjustable positioning of the frame means so that a far end thereof can be fixed in a position closer or farther from the rack bar and so that the frame means can be positioned anywhere in a plane at a right angle to the rack bar, the far end of the frame means rotatably supporting and guiding a power drill assembly.

3,667,856
SMALL POINT RETRACTABLE BORING TOOL
Robert W. Walker, Detroit, Mich., assignor to The Valeron Corporation
Filed May 18, 1970, Ser. No. 38,152
Int. Cl. B23b *29/034*
U.S. Cl. 408—158 **9 Claims**



A boring tool with means for adjusting a single point boring bar to change its cutting diameter and which includes a housing support receptive of the tool shank therewithin, spaced bearing supports, and means acting on the bar between the bearing supports to flex the shank and change the relative location of its cutting point, particularly including a linear actuating rod adapted to effect the change through actuation from the supported end of the tool and while it is in service.

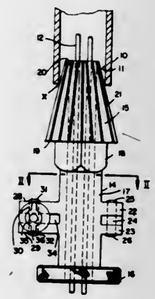
3,667,857
COMBINED DRILL AND REAMER CONSTRUCTION
Milo W. Shaner, Bridgeport, and Robert S. Cave, Bay City, Mich., assignors to National Twist Drill & Tool Co., Rochester, Mich.
Filed Oct. 30, 1970, Ser. No. 85,625
Int. Cl. B23b *51/08*
U.S. Cl. 408—230 **13 Claims**

A rotary cutting tool combining the characteristics of a drill and a reamer has a cylindrical body provided with spade-like drilling edges at one end thereof from which spiraling grooves extend toward the other end to provide helical cutting edges circumferentially spaced from one another by the grooves. Two diametrically opposed grooves are deeper than the remaining grooves, and all



grooves spiral in the same direction and at the same pitch. The cutting edges are interrupted by notches spaced longitudinally of the cutting edges to form cutting teeth, the notches spiraling about the tool body in the same direction as the grooves, but at a steeper pitch.

3,667,858
CONDUIT REAMING MEANS
Andrew Bain, 2440 Greenwich St., San Francisco, Calif. 94123
Filed Oct. 19, 1970, Ser. No. 81,659
Int. Cl. B23d *77/12*
U.S. Cl. 408—229 **10 Claims**

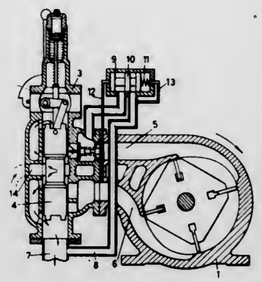


Means are provided for reaming out a hollow elongated conduit containing wires extending therethrough and out one end thereof. The means includes a housing having a hollow cavity and separable into two parts so that the wires can be placed along the cavity and the two parts locked together. The housing includes a conically-shaped reaming portion which is then extended into the conduit and the inner wall of the conduit can be reamed without removing the wires therefrom.

3,667,859
HYDRAULIC SYSTEMS
Inge Kore Dragsund and Erling M. Naas, Brattvag, Norway, assignors to A/S Hydraulik Brattvaag, Brattvag, Norway
Filed July 24, 1970, Ser. No. 58,083
Claims priority, application Norway, July 25, 1969, 3,076/69
Int. Cl. F04d *27/00*; F04b *49/00*
U.S. Cl. 415—148 **8 Claims**

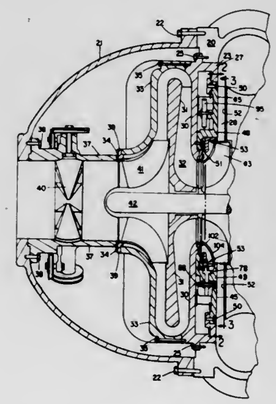
Hydraulic systems of the low pressure type which comprise a pump driving a motor, the working medium

supply and discharge of which is controlled by a hand-operated control valve, said systems being provided with



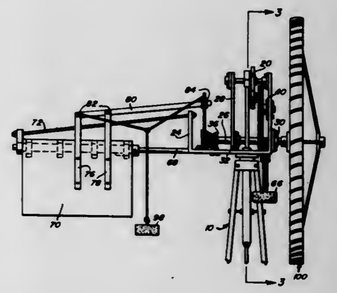
an automatically controlled by-pass passage from motor to pump. The passage opening in said by-pass passage is controlled by pressure of oil in an area between the slide of the control valve and the motor.

3,667,860
DIFFUSER VALVE MECHANISM FOR CENTRIFUGAL GAS COMPRESSOR
James W. Endress, Syracuse, Edson H. Byrns, Fayetteville, and Carl M. Anderson, Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,200
Int. Cl. F04d *15/00, 27/00*
U.S. Cl. 415—150 **7 Claims**



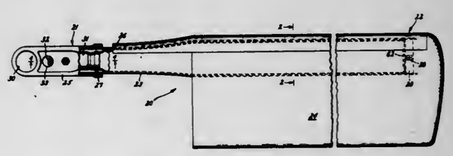
An annular support member is fixedly mounted concentrically of the impeller and has an annular surface forming one side wall of the diffuser passage. A sleeve valve is mounted at the bore of the support member for movement transversely of the diffuser passage. A valve actuating mechanism is carried by the support member and operable exteriorly of the machine casing for moving the valve transversely of the diffuser passage. The valve actuating mechanism includes a plurality of crankshafts journaled for rotation in the support. A drive shaft is provided to effect rotation of the crankshafts in unison, the drive shaft having an end portion extending exteriorly of the machine casing.

3,667,861
WIND VANE CONTROLLING DIRECTION AND BRAKE MEANS
Albert A. Parish, Earth, Tex., assignor to K.M.P. Lake Pump Mfg. Co., Earth, Tex.
Filed May 1, 1970, Ser. No. 33,590
Int. Cl. F03b *7/00*
U.S. Cl. 416—14 **2 Claims**



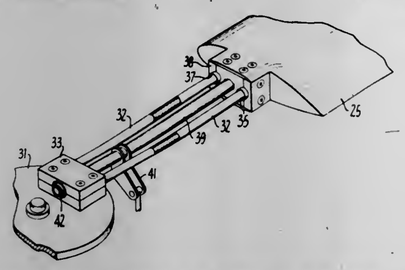
A windmill including a base and a rotary blade structure journalled from the base for rotation about a horizontal axis. The base includes a rearwardly displaced upstanding tail vane depending and journalled from a shaft paralleling and spaced to one side of the blade structure axis of rotation. The base is supported for rotation about an upstanding axis laterally spaced to the other side of the axis of rotation of the rotary blade structure, and is provided with brake structure operable on the blade structure and actuated by the tail vane upon swinging of the tail vane from a vertical position toward a horizontal position.

3,667,862
BLADE INSPECTION SYSTEM AND METHOD
Robert A. Parr, Linwood, Pa., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 9, 1970, Ser. No. 96,419
Int. Cl. B64c *27/46*
U.S. Cl. 416—61 **11 Claims**



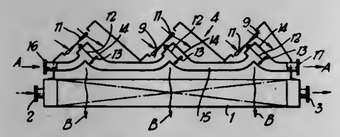
There is disclosed a method and system for inspecting a rotor blade to detect the presence of a crack in the blade spar. A liner, preferably made of a material of low permeability and in the shape of a sleeve or bag is placed inside the spar. The sleeve is spaced from the spar along its entire length by means of a bleeder cloth and means are provided for evacuating the area occupied by the bleeder. A pressure sensitive device is hermetically coupled to the evacuated area for testing and monitoring the pressure within that area. If a crack develops in the spar, air will enter the evacuated area resulting in a loss of vacuum which will be detected by the pressure sensitive device.

3,667,863
ROTOR HUB AND BLADE ATTACHMENTS
Gerald L. Breuner, 50 Melody Lane, Orinda, Calif. 94563
Filed Feb. 3, 1970, Ser. No. 8,232
Int. Cl. B64c *27/38*
U.S. Cl. 416—138 8 Claims



This invention relates to an improved attachment for a rotor blade in a rotating wing aircraft having a semi-rigid rotor system. More particularly, the invention provides a low cost, lightweight, low maintenance rotor system embodying all of the desired characteristics of the semi-rigid hub but with a minimum chance of fatigue or failure.

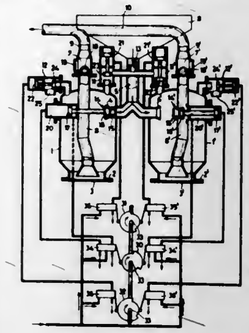
3,667,864
AIR- OR GAS-MOVING EQUIPMENT FOR USE WITH HEAT EXCHANGE AND/OR GAS-SCRUBBING APPARATUS
Edmund Murphy, La Spezia, Italy, assignor to Cooling Development Ltd., Lucerne, Switzerland
Filed May 7, 1970, Ser. No. 35,357
Claims priority, application Great Britain, May 14, 1969, 24,507/69
Int. Cl. F04b *17/00, 35/00;* F24h *3/02*
U.S. Cl. 417—53 13 Claims



Air- or gas-moving equipment for a heat exchange or gas-scrubbing apparatus comprises a plurality of air- or gas-moving units, each comprising a fluid operated turbine and a fan coupled to, so as to be driven by, the turbine, the turbines being connected in series for operation by a common operating fluid supply. The equipment may comprise a number of independent sets of series-connected units, the sets either being connectible in series to a common operating fluid supply, or each set connectible independently to a common operating fluid supply or each set connectible to a separate independent supply or two or more sets may be series-connected to one fluid supply and another set or sets to another fluid supply.

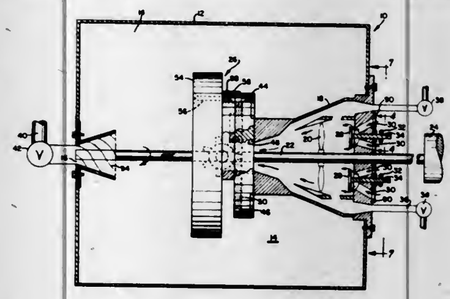
3,667,865
COMPRESSED AIR PUMP, PARTICULARLY FOR CONCRETE
Giovanni Faldi, Vía Por S. Maria 4, Florence, Italy
Filed Jan. 13, 1970, Ser. No. 2,512
Claims priority, application Italy, Jan. 24, 1969, 11,982/69
Int. Cl. F04b *15/02;* F04f *3/36;* F16k *3/36*
U.S. Cl. 417—122 6 Claims

A pump for concrete operated by compressed air comprises two chambers (1, 1') in each of which the concrete is fed through a valve port (4, 4') in the upper part of the chamber, which port is sequentially opened and closed by a valve plug member (14, 14') including a portion (16, 16') adapted to close the orifice and a softer portion (15, 15') adapted to penetrate into said port



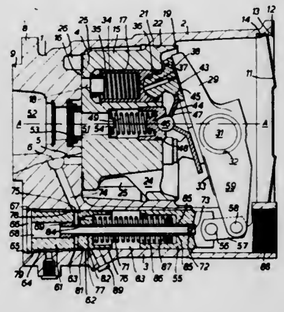
for keeping it clean from concrete particles, said valve plug member being moved in time sequence with respect to valves for introducing compressed air in said chambers and discharging concrete therefrom.

3,667,866
AIR COMPRESSOR
Lewis Richter, 1414 E. 29th St., Des Moines, Iowa 50317
Filed Mar. 4, 1970, Ser. No. 16,524
Int. Cl. F04b *23/14*
U.S. Cl. 417—203 10 Claims



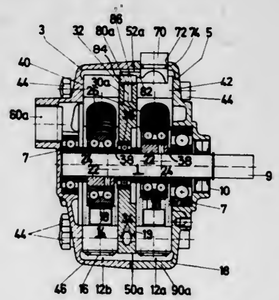
A powered shaft having a propeller, draws air into a passageway through which the shaft extends and the passageway has an outlet in communication with a compressed air chamber. Air is moved through the passageway outlet by an air transfer means which includes a stationary plate having circularly arranged teeth covered by a plate on the shaft which includes a rotatable gear registering with the teeth. An opening through the two plates communicates at times with at least one of the teeth cavities which is sealed as the rotatable plate moves over the cavity whereupon it is then exposed to the compressed air chamber and forced out by the teeth on the gear which then leaves a vacuum in the cavities to receive additional air from the opening communicating with the passageway whereupon the cycle is repeated. The air may be totally drawn into the passageway by the propeller or may enter as a result of external pressures for which appropriate inlet openings are provided. A flywheel may also be provided on the powered shaft to assist in the rotation thereof and in the sealing of the rotatable plate. Vanes may also be provided on the powered shaft in the outlet opening of the compressed air chamber to further assist in the turning of the shaft as air is released from the chamber.

3,667,867
HYDRAULIC APPARATUS
Kenneth Raymond Boydell, Bredons Hardwick, near Tewkesbury, and John Christopher Eglington Flint, Chalford Hill, Stroud, England, assignors to Dowty Technical Developments Limited, Brockhampton Park, Brockhampton, Cheltenham, England
Filed Sept. 19, 1969, Ser. No. 859,297
Claims priority, application Great Britain, Sept. 21, 1968, 44,989/68
Int. Cl. F04b *1/26;* F01b *13/04*
U.S. Cl. 417—222 10 Claims



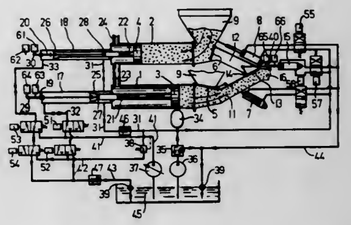
A variable-displacement pump or motor including a displacement-varying member on which a restoring force operates to urge it to one displacement limit, a hydraulic servo-cylinder containing a piston and a control unit, the piston being connected to adjust the displacement varying member and the control unit fitting into the servo-cylinder to co-operate with a high pressure port in the servo-cylinder and operating to generate a control pressure in the working space to cause adjustment of the displacement varying member.

3,667,868
RADIAL PISTON PUMP
Rudolf Brunner, Baldham, Germany, assignor to Messrs. Heilmeier & Weinlein, Munich, Germany
Filed Feb. 4, 1970, Ser. No. 8,681
Claims priority, application Germany, Feb. 11, 1969, P 19 06 773.3; Switzerland, Jan. 28, 1970, 1,202/70
Int. Cl. F04b *1/04, 23/06*
U.S. Cl. 417—273 13 Claims



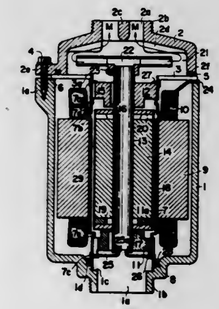
A rotary piston pump is adapted to pump hydraulic fluid. A shaft, having eccentric cams, is rotated in bearings. The cams act against pistons acting within cylinder blocks. The pistons may be spring-loaded. The cylinder blocks are arranged in rows forming an asterisk (star) shape about the shaft. Two rows sandwich a base plate having an outlet manifold. The casing members are clamped by bolts and the casing members clamp the rows of cylinder blocks and base plate.

3,667,869
DUAL CYLINDER-CONCRETE PUMP
Karl Schlecht, 91 Echterdingerstrasse, D–7024 Bernhausen-Stuttgart, Germany
Filed Feb. 26, 1971, Ser. No. 119,182
Claims priority, application Germany, Mar. 4, 1970, P 20 10 112.6
Int. Cl. F04b *17/00, 35/00, 23/04, 41/06, 15/02*
U.S. Cl. 417—346 8 Claims



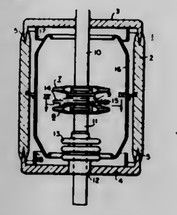
There is disclosed a dual cylinder-concrete pump in which each of the two conveying cylinders is operatively associated with a positively controlled three-way valve operatively associated with each conveying cylinder for the selective connection of each such conveying cylinder with a filling funnel and a conveying conduit or line. According to the invention a third three-way valve is arranged between the discharge openings of both three-way valves associated with the conveying cylinders and the aforesaid conveying conduit.

3,667,870
MOTOR DRIVEN PUMP
Yuji Yoshida, Neyagawa, and Noriyosi Asada and Takao Funatsu, Hirakata-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 4, 1971, Ser. No. 103,368
Claims priority, application Japan, Jan. 9, 1970, 45/3,059; Feb. 19, 1970, 45/14,674, 45/14,675, 45/14,676, 45/14,678, 45/14,679, 45/14,681, 45/14,682
Int. Cl. F04b *17/00, 35/04;* H02k *1/32, 9/00*
U.S. Cl. 417—357 12 Claims



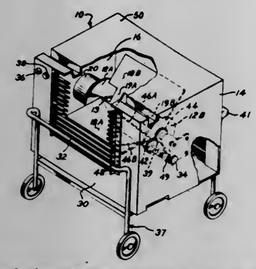
A motor driven pump comprising a stator chamber and a rotor chamber separated from each other by means of a cylindrical sleeve, a hollow rotor shaft carried by a bearing block fixed in said cylindrical sleeve, and a pump impeller secured to the tip end of said hollow rotor shaft, the hollow interior of said rotor being communicating with main liquid flow.

3,667,871
CONTACT STRUCTURES FOR VACUUM-TYPE CIRCUIT INTERRUPTERS HAVING RADIALLY OUTWARDLY-EXTENDING SPOKES
Richard L. Hundstad, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 10, 1969, Ser. No. 797,930
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 12 Claims



The contact structure of a vacuum-type circuit interrupter is provided with radially-outwardly extending spokes, or contact bars, extending outwardly from a central primary contact region. The arc is initiated at the primary contacting surfaces adjacent the central point of the separable contact structure, and, because of the provision of the outwardly extending spokes, the arc is moved outwardly to the arc-dissipation surfaces which extend to the outer periphery of the contacts. The arc is rapidly moved outwardly, and the primary arcing surfaces are thereby prevented from becoming eroded.

3,667,872
AIR CIRCULATING DEVICE
Harry B. Norman, 7803 S. Saginaw Ave., Chicago, Ill. 60649
Filed Jan. 7, 1971, Ser. No. 104,651
Int. Cl. F01d 1/02; F04b 17/00, 35/04
U.S. Cl. 417—423 6 Claims



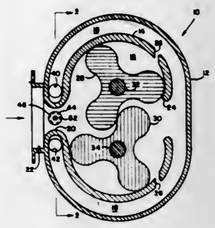
An air circulating device having a single electric motor to rotate blades connected perpendicular to and between two parallel rotating plates driven by the motor. The blades intersect on one edge to define a centerline about which the blades rotate. An enclosure is provided to enclose the air circulating device. The enclosure has an air inlet at the lower rear of the enclosure and a manually or automatically adjustable air outlet at the top of the front of the enclosure.

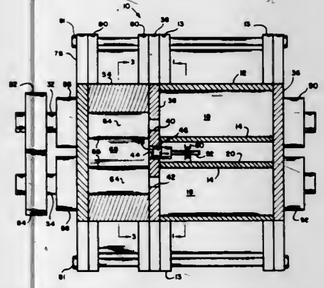
3,667,873
WATER MOVING APPARATUS FOR DESTRATIFICATION, ICE REDUCTION AND BARNACLE CONTROL
Roy A. Cramer, Jr., % Anchormatic, 1020 E. 79th Terrace, Kansas City, Mo. 64131
Filed Nov. 2, 1970, Ser. No. 85,898
Int. Cl. B01f 5/12; E02b 3/00; F04b 17/00
U.S. Cl. 417—424 9 Claims

A water moving apparatus for destratification, ice reduction and barnacle control in a body of water includes an elongated column member suitably mounted on a support and extending downwardly into a body of water and having a diffusing member, a submersible motor and an upwardly directed propeller associated with the motor, all being mounted adjacent a lower end of the column member whereby operation of the propeller and the diffusing member effect an upwardly and outwardly diffused flow in the body of water thereby moving warmer subsurface water to the surface and effecting a circulation that provides aeration thereof and decreasing stratification and more uniform temperature of the body of water and the water is moved with a velocity of flow sufficient to substantially eliminate adherence of barnacles to surfaces within the body of water.



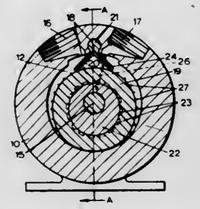
3,667,874
TWO-STAGE COMPRESSOR HAVING INTER-ENGAGING ROTARY MEMBERS
Roger C. Weatherston, Williamsville, and George R. Duryea, Buffalo, N.Y., assignors to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
Filed July 24, 1970, Ser. No. 58,009
Int. Cl. F01c 1/18, 1/30
U.S. Cl. 418—9 3 Claims





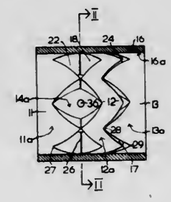
A two-staged Roots type compressor having a housing separated into two compartments by a partition, each compartment containing a working chamber having rotary mating impellers therein, inlets to each chamber and outlets from each chamber, passages in the partition communicating the outlet of one chamber with the inlet of the other chamber, a valved passage in the partition communicating the inlets of each chamber, the impellers of each chamber being mounted on common shafts.

3,667,875
PUMP
Chan Yuen Lik, Lot 5030, Hong Kong
Filed Jan. 6, 1970, Ser. No. 939
Claims priority, application Great Britain, Jan. 7, 1969, 950/69
Int. Cl. F04c 1/02
U.S. Cl. 418—56 1 Claim



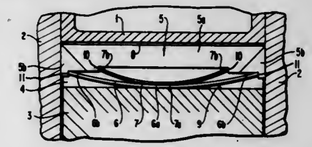
The invention provides a pump having a pumping action similar to that of a sliding vane rotary pump, but which has a non-rotary pumping element. The pump comprises a cylindrical pump chamber having an inlet port and an outlet port, a cylindrical pumping element disposed within said pump chamber said pumping element being of a diameter less than that of the pump chamber, a tongue engaged within a recess formed in the periphery of said pump chamber between said inlet and outlet ports said tongue being in operative association with said pumping operation, a cam or eccentric rotatably engaged within a bore of said pumping element, and a drive shaft carrying said cam or eccentric journalled in bearings of the pump chamber.

3,667,876
ROTARY FLUID FLOW MACHINES
Michael David Boyd, Flat 3, 136 Anderson St., South Yarra, Victoria, Australia
Continuation-in-part of application Ser. No. 826,046, May 2, 1969. This application Dec. 21, 1970, Ser. No. 99,975
Int. Cl. F02b 53/00
U.S. Cl. 418—68 22 Claims



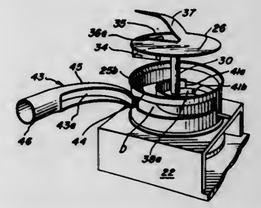
A rotary fluid flow machine comprising a body, an axial member or shaft rotatable relative to the body, and a generally annular member mounted for axial reciprocation and rotation in a generally annular cavity defined between the body and the shaft. The axial member and the body are relatively rotatable, and the annular member is provided with undulating end surfaces. The axial cavity is defined by spaced concentric inner and outer cylindrical surfaces and by a pair of axially spaced end surfaces of undulating configuration, each cooperating with a separate one of the undulating surfaces of the annular member, whereby the annular member is constrained by engagement between the two end surfaces for movement in the cavity of the type involving a first axial rotational component of motion and a second axial reciprocatory component. Between each pair of cooperating end surfaces, a plurality of chambers is defined, the volumes of which undergo cyclic variation when the annular member undergoes such movement. The annular member is affixed to a cylindrical sleeve which defines two axial cylindrical extensions to the member, one to either axial side thereof, one cylindrical surface of the sleeve slidingly engaging one cylindrical surface of the axial member. The body is provided with ports defined by root portions of the undulating surfaces on the body and cooperating transverse edges of the sleeve extensions, and communication between the ports and the respective chambers is controlled by the sleeve during reciprocating motion thereof.

3,667,877
RADIAL SEAL FOR A ROTARY PISTON INTERNAL COMBUSTION ENGINE
Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Oct. 24, 1969, Ser. No. 869,097
Claims priority, application Germany, Oct. 25, 1968, P 18 05 040.3
Int. Cl. F01c 19/02; F03c 3/00; F04c 27/00
U.S. Cl. 418—121 2 Claims



A radial seal for a rotary piston internal combustion engine in which a sealing bar, possibly constructed of several parts, is arranged in each groove provided in the piston corners; each sealing bar is urged in the radially outward direction by a spring means that consists of two leaf springs having different radii of curvature, with the leaf spring of larger radius of curvature abutting directly against the groove bottom while the leaf spring with smaller radius of curvature rests on the curved surface of the leaf spring with the larger radius of curvature.

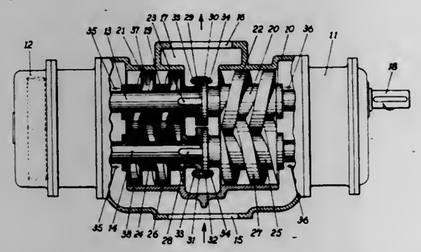
3,667,878
PUMP CONSTRUCTION
Leo C. Reeve, Lombard, Ill., assignor to Portland Cement Association, Skokie, Ill.
Filed Jan. 8, 1971, Ser. No. 104,856
Int. Cl. F01c 1/00, 11/00; F04b 15/02
U.S. Cl. 418—173 20 Claims



A pump is provided which is capable of handling a flowable product such as plastic concrete or the like. The pump includes two moving parts both of which are driven from a single power source. One moving part comprises

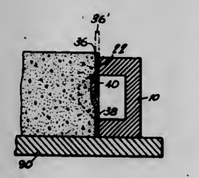
a rotating wall which cooperates with a stationary arcuate wall to form a cavity in which is disposed an impeller. The impeller is carried by the rotating wall and moves therewith. The second moving part is a substantially cylindrical member disposed within the cavity and rotatable about an axis offset but parallel to the axis of the rotating wall. The cylindrical member is provided with an opening through which the impeller extends. The cylindrical member is rotated by the impeller. The stationary arcuate wall is provided with a product discharge port and the rotating wall is provided with a product infeed port disposed rearwardly of the impeller.

3,667,879
SCREW PUMP
Orazio Cerpelli, 4 Via Giotto, Viareggio, Italy
Filed Feb. 10, 1970, Ser. No. 10,209
Claims priority, application Italy, Feb. 12, 1969, 34,901/69
Int. Cl. F01c *1/16*; F03c *3/00*; F04c *1/10*
U.S. Cl. 418—202 **3 Claims**



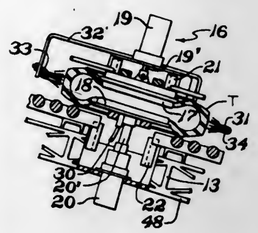
A pump of the screw type having a pair of screws of opposite pitch and means for securing together each screw as a pair on the same shaft so that axial thrust is withstood by said securing means.

3,667,880
EDGE FORM ASSEMBLY FOR PRESSING OF ARTICLES
Michael Anley Malet and David Leslie Hills, Watford, England, assignors to National Research Development Corporation, London, England
Filed Nov. 25, 1969, Ser. No. 879,879
Claims priority, application Great Britain, Nov. 26, 1968, 56,110/68
Int. Cl. B28b *3/00*
U.S. Cl. 425—3 **16 Claims**



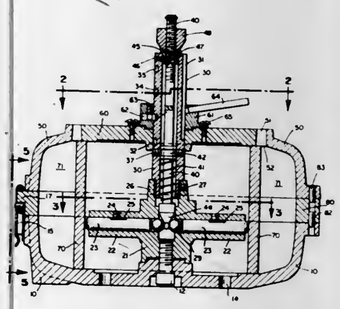
An apparatus for use in the pressing of articles comprising a vertically displaceable edge form component for the mould walls which component can be held magnetically to a locating structure during pressing. In some embodiments of the invention, the component is associated with a stationary edge form component also providing part of the mould walls. The magnets may be permanent magnets, permanent electromagnetic chucks, switchable permanent magnetic chucks or electromagnets.

3,667,881
TIRE COOLING
Francis J. Cimprich, Canton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Continuation of application Ser. No. 660,162, July 31, 1967, which is a continuation-in-part of abandoned application Ser. No. 623,415, Mar. 15, 1967. This application Mar. 3, 1971, Ser. No. 120,700
Int. Cl. B29h *5/02, 17/00*
U.S. Cl. 425—28 **7 Claims**



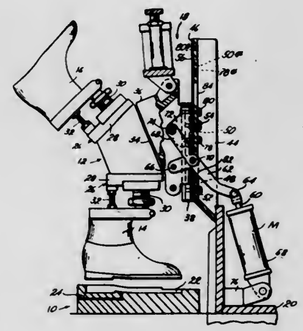
Post cure inflation tire apparatus having a ring which circumferentially encompasses the tire which is subject to being held by a pair of axially spaced movable rim flanges wherein the ring directs coolant against the periphery of such tire to cool such tire to a uniform temperature.

3,667,882
INDUSTRIAL TIRE MOLD
Donald H. Ross, Chalfont, Pa., assignor to Super Tire Engineering Company, Camden, N.J.
Filed Jan. 19, 1971, Ser. No. 107,746
Int. Cl. B29c *5/00*; B29d *27/00*; B29h *11/00*
U.S. Cl. 425—117 **6 Claims**



A mold for industrial tires and wheels of polyurethane and the like has a lower portion, an open-top upper portion, a cover for the upper portion, and provision for spacers between the lower and upper mold portions for adjusting the height of the mold to accommodate tires or wheels of different axial dimensions. The mold receives an annular hub to the surface of which a polyurethane or like solid tire is to be molded. The lower mold has a spindle having hollow radial arms with pins therein which may be cammed radially outwardly. A sleeve extends upwardly from the spindle through the lid of the upper mold portion. A stem within said sleeve has a cam at its lower end and a nut at its upper end. Turning the nut causes the stem to move downwardly and cams the radial pins outwardly to press against the inner surface of the annular hub thereby to maintain the hub centered about the axis of the mold. The mold cover has a hub portion having therein cam followers which engage cam slots in the outer surface of the sleeve so that by moving the lid rotationally the lid is cammed downwardly into closed position.

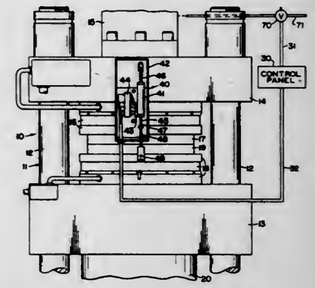
3,667,883
SHOE BOTTOM MOLDING APPARATUS
Herbert Ludwig, deceased, late of Uesen, near Bremen, Germany, by Friedrich Koch, Achim, near Bremen, and Hans Loewe, executors, Frankfurt am Main, Germany, assignors to Desma-Werke GmbH, Bremen, Germany
Filed June 10, 1968, Ser. No. 740,427
Int. Cl. B29h *5/12, 7/08*
U.S. Cl. 425—119 **18 Claims**



Injection molding apparatus embodying an open-top mold, a rotatable support for mounting two lasts for alternate disposition at a predetermined distance above the open top of the mold, a carriage mounting the rotatable support for movement vertically with respect to the mold to bring the bottom of the last located above the mold into engagement therewith for injection of bottom-forming material, and means supporting the carriage on a column for heightwise adjustment relative to the mold to accommodate lasts of different height.

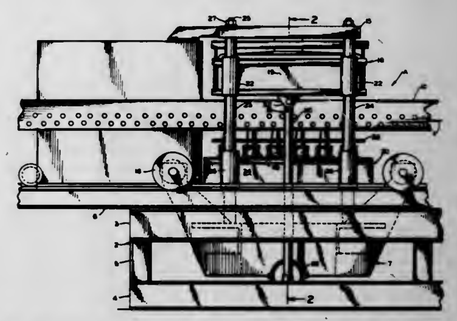
3,667,884
CONTROL APPARATUS FOR INJECTION MOLDING PRESS
Nyles V. Reinfeld, 610 Treeside Drive, Akron, Ohio 44313
Continuation-in-part of application Ser. No. 791,372, Jan. 15, 1969. This application Nov. 25, 1969, Ser. No. 879,853
Int. Cl. B29c *3/06*
U.S. Cl. 425—149 **2 Claims**

The new control for an injection molding press includes an electric signal or voltage supply means that is operatively secured to one of two relatively movable press platens, and has a member associated therewith for changing the signal produced. A contact means is operatively secured to the other of the relatively movable platens and positioned to contact the signal means when the mold sections are adjacent or in contact and vary the signal dependent upon the relative positions or movement of the mold sections on the platens. A controllable variable second signal or voltage generating or supply means is provided and electric circuit means are present to measure and compare the signals and provide an output signal under predetermined conditions, which output signal is



used for terminating actuation of the injection means in the press when the mold sections are starting to be separated.

3,667,885
MOLDING MACHINES
Richard K. Shelby, 1320 Sandburg Terrace, Chicago, Ill. 60610
Filed Nov. 5, 1970, Ser. No. 87,024
Int. Cl. B29c *17/04*
U.S. Cl. 425—155 **24 Claims**

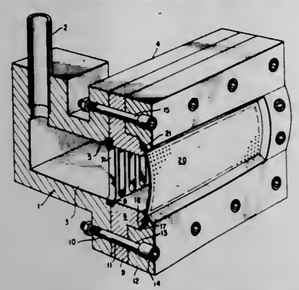


A driving mechanism for molding machines, presses and the like, where a platen is shifted with respect to a thermoplastic web. The drive mechanism includes a rotating crank which shifts a drive bar through a path where it causes a drive link to shift the platen to and from a molding position. The crank arm and an oscillating link which is connected to the other end of the drive bar creates a path of movement for the drive link which includes a dwell period sufficient for the platen to remain in the molding for a preselected amount of time.

3,667,886
MAN-MADE FILAMENT SPINNERET AND EXTRUDER HEAD
Charles Gauthier, Lyon, and Jean-Marie Vincent, Le Coteau, France, assignors to CTA-Compagnie Industrielle de Textiles Artificiels et Synthetiques, Paris, France
Filed Aug. 21, 1969, Ser. No. 851,800
Claims priority, application France, Aug. 21, 1968, 163,686
Int. Cl. D01d *3/00*
U.S. Cl. 425—192 **7 Claims**

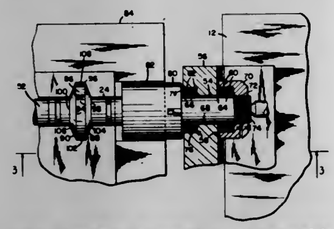
A spinneret for use in extrusion of man-made fibers and a novel extruder head equipped with the spinneret. The

spinneret is rectangular and arcuate along its width with the marginal edges of the spinneret of substantially the same arcuate configuration as the spinneret face through-



out. The spinneret is adapted to be clamped to a mating arcuate marginal portion of the extruder head to thereby assure an impervious connection between the head and the spinneret.

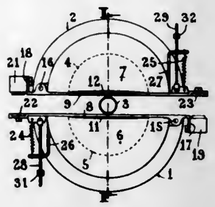
3,667,887
CORE PIN MOUNTING MEANS FOR INJECTION MOLDING APPARATUS
Oscar Reiss, Great Neck, N.Y., assignor to APL Corporation, Brooklyn, N.Y.
Filed Nov. 6, 1969, Ser. No. 874,662
Int. Cl. B29c *17/07;* **B29f** *1/022*
U.S. Cl. 425—242 **3 Claims**



Mold core pins are mounted on a turntable so that they can be indexed to four stations in sequence. Each core pin is formed with a peripheral annular flange that extends radially outwardly from the core pin and that has a radial taper. Partible injection and blow molds each having at least two sections are engageable with the core pins at selected stations. The molds cooperate with the core pins to form mold cavities. Each section of each mold is formed with a recess, and each of the recesses is tapered complementally to the core pin flanges. When the mold sections are closed about the core pins, the flanges enter the recesses. The connection between each core pin and the turntable is resilient so that the core pins when engaged are positioned by the interaction of the flanges and recesses. At all other times, the core pins are positioned by their resilient connections to the turntable.

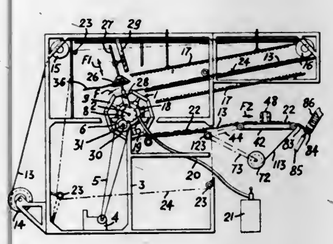
3,667,888
DEVICE FOR REMOVING BOTTOM SCRAPS OF EXTRUSION-BLOWN HOLLOW THERMOPLASTIC BODIES
Hunert Blanchard, Le Havre, France, assignor to Sidel, Le Havre, France
Filed June 12, 1970, Ser. No. 45,727
Claims priority, application France, June 18, 1969, 6920326
Int. Cl. B29d *23/03*
U.S. Cl. 425—307 **14 Claims**

This invention relates to the moulding of thermoplastic articles by the so-called extrusion-blowing process and provides a device for separating in a mould the bottom scrap formed in the mould bottom, this device comprising in at least one of the mould halves, at the level of said bottom scrap, a member on which said scrap is adapted to be crushed during the mould closing movement and said member is also adapted, during the mould opening



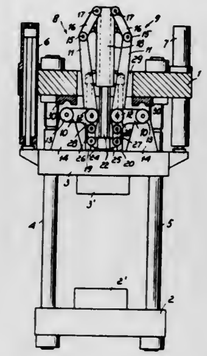
movement, to produce a displacement of said scrap in relation to the bottom of the blown hollow body retained in the mould-half provided with said member. This invention is applicable to the removal of moulding scraps, wastes and like useless projections formed during the moulding of hollow articles.

3,667,889
VACUUM MOULDING MACHINE
Nerio Martelli, 6 Via Cavaloni, Bologna, Italy
Filed Aug. 14, 1970, Ser. No. 63,857
Claims priority, application Italy, Aug. 25, 1969, 7,274/69
Int. Cl. B29c *17/04*
U.S. Cl. 425—314 **24 Claims**



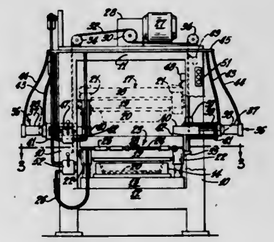
A vacuum moulding machine for forming unilaterally directed projecting moulds in continuous webs of thermoplastic synthetic material, comprising a driven rotatable drum, a plurality of suction moulds disposed peripherally around the drum, an automatically controlled vacuum distributor device connecting the suction moulds to a vacuum, and an endless cutting band traversing the web with its cutting portion parallel and adjacent to the web on the side of the projecting mouldings with its cutting edge directed in the opposite direction to the direction of movement of the web, the web passing around and held by suction in contact with the moulds on a portion of the drum periphery while the moulds are formed unilaterally in the web and the cutting device cuts the moulded portions from the web. The cutting band is askew to the direction of web movement and guides are provided for the band cutting portion. A support is provided for the web adjacent to the cutting band and thrust rollers press the web edges against the support. Stacking means are provided for stacking the moulds severed from the web.

3,667,890
PRESS
Sergio Rusmini, Via Bodio 16, Milan, Italy
Filed May 5, 1970, Ser. No. 34,687
Claims priority, application Italy, Apr. 16, 1969, 19,696/69
Int. Cl. B29f *1/00;* **B30b** *1/16*
U.S. Cl. 425—406 **8 Claims**



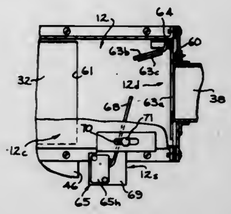
A press having two stationary plates arranged spaced from each other. This press includes a mobile plate arranged between said stationary plates and a plurality of toggles. Each of these toggles includes a shorter arm pivotally connected to the mobile plate and a longer arm which is hinged on its free end to a guide member.

3,667,891
MOLDING PRESS
Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Aug. 13, 1969, Ser. No. 849,671
Int. Cl. B30b *5/02;* **B29c** *3/00*
U.S. Cl. 425—408 **5 Claims**



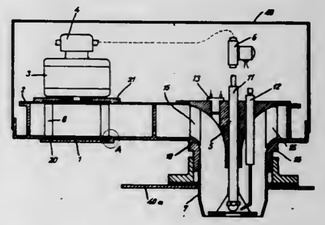
A low-cost, high-speed press for molding plastic articles having a movable upper platen and a fixed lower platen with opposed matching dies attached thereto. The upper platen is moved between a remote upper position to a lower molding position at high speed by a motor-driven suspension system. When the upper platen is in the lower molding position, a plurality of platen stops are moved into locking position to prevent upward movement of the upper platen and molding force is applied by means of a fluid-filled pressure bag positioned between the die plates and one of the platens. The platen stops are adjustable in height to compensate for variable heights in the dies used with the press and vertical platen guides assure mold alignment throughout the range of movement by the upper platen.

3,667,892
CONTROL MEANS FOR PRESSURIZED GAS-FIRED SPACE HEATER
Richard C. Barnett and James D. Boucher, Tyler, Tex., assignors to General Electric Company
Filed Sept. 2, 1970, Ser. No. 69,043
Int. Cl. F23n *5/00*
U.S. Cl. 431—31 **3 Claims**



This invention provides means for controlling the supply of combustion air and fuel gas to gas-fired space heater means employing pressurized combustor means including a fuel gas-air mixing area having a valved source of fuel gas and a source of pressurized combustion air fluid-connected to it. The present invention interposes movable damper means between the combustion air source and the gas-air mixing area and switch means actuatable by movement of the damper means in response to combustion air flowing between the combustion air source and the gas-air mixing area to control the opening and closing of the fuel gas source valve such that fuel gas is not admitted to the gas-air mixing area unless the flow of combustion air is sufficient to move the damper means to actuate the switch means to open the fuel gas source valve.

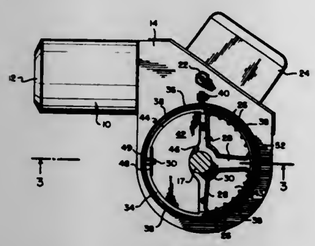
3,667,893
OIL OR GAS BURNER WITH A CROSS-CURRENT BLOWER HAVING RETURN FLOW MEANS
Kurt Zenkner, Hertzstrasse 12, Ettlingen, Germany
Filed Apr. 1, 1968, Ser. No. 717,698
Claims priority, application Germany, Mar. 31, 1967, Z 12,777
The portion of the term of the patent subsequent to Aug. 27, 1985, has been disclaimed
Int. Cl. F23n *5/08*
U.S. Cl. 431—79 **35 Claims**



An oil or gas burner has a casing formed by a lower casing member and a cover plate forming an elongated casing with rounded ends. A blower rotor is located in an opening in one of the ends, the casing wall adjacent the opening forming a guide plate at the intake side of the rotor. The angle between the tangent to the casing wall at the beginning of the guide plate and the tangent to the casing wall at the other end of the rounded end portion is less than 90°, preferably 30°–60°. There is provided at the other side of the rotor from the guide plate, where the rotor is slightly spaced from the longitudinal wall of the casing, a vortex baffle-plate which tapers

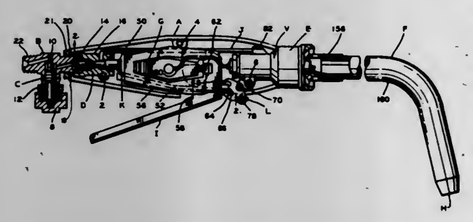
in cross-section towards the periphery of the rotor, and between which and the end portion of the longitudinal wall one or more passages are formed through which some of the air fed by the rotor can be returned from the pressure-side to the suction-side.

3,667,894
OIL BURNER
Norman E. Flournoy, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,651
Int. Cl. F23d *11/00*
U.S. Cl. 431—114 4 Claims



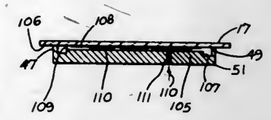
A gun type oil burner provided with a baffle plate between the blower and air inlet, combined with sound deadening material so arranged as to materially lessen the fan noise.

3,667,895
ELECTRICALLY IGNITED GAS TORCH WITH LAMINAR GAS FLOW IN REMOVABLE TIP
Albert Ross, Willowick, Ohio, assignor to Harris Calorific Company, Cleveland, Ohio
Filed Sept. 18, 1970, Ser. No. 73,577
Int. Cl. F23q *3/00*
U.S. Cl. 431—255 14 Claims



A plumber's gas torch has a conventional flame-adjustment valve; in series with that valve, an on-off valve is lever-operated and is latched open automatically on operation of the lever. An electric igniter is actuated by the lever to ignite the torch simultaneous with opening of the on-off valve. Another series valve is automatically closed when the torch tip is unscrewed and is reopened as another tip is attached. A trigger releases the latch and allows the on-off valve to close under spring pressure. The electric igniter has a grounded metal frame, and the torch handle and connected parts are electrically conductive. The voltage generated by the ignition device is transmitted to a spark gap in the torch tip near the flame end thereof by a series of conductors insulated from the handle and torch tip, and including an insulated conductor wire lying in the torch tip adjacent the wall. Several diameters upstream of the spark gap and also the flame end, the insulated conductor leaves its position against the torch tip wall and is spaced therefrom so as not to interfere with laminar flow of the combustible gas and air mixture approaching the flame, thus avoiding an unstable flame which would result from turbulent flow.

3,667,896
APPLYING FILM OF STAIN TO TISSUE MOUNTED ON A MOVING SLIDE
James Benjamin McCormick, La Grange, and Leighton Clifford Johnson, Westmont, Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Application June 7, 1965, Ser. No. 461,613, now Patent No. 3,431,886, which is a continuation-in-part of application Ser. No. 379,822, July 2, 1964. Divided and this application Oct. 21, 1968, Ser. No. 822,752
Int. Cl. D06p *3/00*
U.S. Cl. 8—3 1 Claim



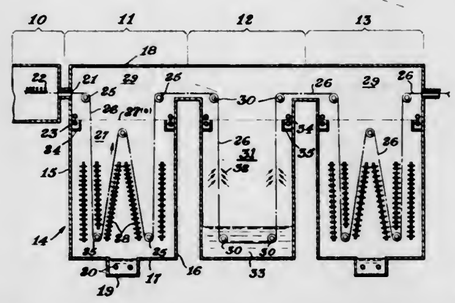
Apparatus and the method of operation thereof is described for conveying objects, such as microscope slides, over a flat liquid applying surface and injecting a treating liquid into the space between the object and the surface.

3,667,897
UNIFORMLY DYED YELLOW TO NAVY BLUE WATER SWELLABLE CELLULOSIC FIBERS
John Blackwell, Kennett Square, Pa., and Masuo Toji, Stratford, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 25, 1969, Ser. No. 879,899
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C 5 Claims

Water swellable cellulosic fibers, for example, cotton, or blends or mixtures thereof with synthetic fibers, for example, polyester fibers, uniformly dyed to yellow to navy blue shades with essentially water insoluble, monoazo or disazo disperse dyes, for example, 2-chloro-4-nitro-4' - [N,N - bis(benzoyloxyethyl)amino]azobenzene, said dyed fibers being fast to washing, drycleaning and crocking and having a reflectance color value (S') after scour of at least about 2.

3,667,898
PROCESS FOR DYEING TEXTILE MATERIALS FROM ORGANIC SOLVENT MEDIA
Sylvester Bergman, Midland, Mich., and Ross R. Dawson, Buffalo, N.Y., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 670,433, Sept. 25, 1967. This application May 26, 1969, Ser. No. 827,620
Int. Cl. D06p *1/68*
U.S. Cl. 8—94 19 Claims

The present invention concerns a method for dyeing textile fibers, particularly in their woven, yarn or loose mat state, employing dyestuffs dissolved or dispersed in organic solvents, particularly chlorinated hydrocarbon solvents, for fixing the dyestuff into the fiber during the process and for recovering substantially completely the solvent from the dyed fabric. The technique of the present invention employs compositions comprising hydrophobic organic solvents alone and/or in admixture with co-solvents, swelling agents and fixatives which are compatible with the solvent and the soluble and/or dispersible organic dyestuffs. The novel method comprises applying solvent compositions of dyestuffs to textiles, diffusing



and fixing the dyestuff into the textile fibers while maintaining the textile fiber in a zone filled with the vapors of a solvent boiling between about 40° C. and the softening point of the fiber, and recovering the solvent either contemporaneosuly with said fixation or in a rinse step following said fixation.

3,667,899
DYEING OF POLYACRYLONITRILE TEXTILE MATERIALS WITH CATIONIC DYES IN THE PRESENCE OF AROMATIC ESTERS
James J. Hartnett, Newark, and Robert Feigin, West Orange, N.J., assignors to Sybron Corporation, Rochester, N.Y.
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,578
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 25 Claims

Esters of the monocarboxylic and/or dicarboxylic aromatic acids and derivatives thereof are used as leveling agents in the dyeing of polyacrylonitrile-containing materials with cationic dyes. Level dyeing of polyacrylonitrile moieties are achieved without loss of color yields or bulking effects.

CHEMICAL

3,667,900
METHOD OF DYEING NATURAL AND SYNTHETIC FIBERS
Averal T. Trimble, Jr., Charlotte, N.C., assignor to CaroChem Corporation, Charlotte, N.C.
No Drawing. Filed Nov. 10, 1969, Ser. No. 875,557
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 2 Claims

A textile dyeing process wherein a methyloxolane is employed as a carrier alone and in combination with other known carriers.

3,667,901
METHOD OF PRODUCING ORTHOVANADATES OF RARE-EARTH METALS
Vsevolod Semenovich Krylov, Ulitsa Tereshkovoi 2, kv. 65; Ivan Nikolaevich Popkov, Ulitsa Tereshkovoi 2, kv. 14; Robert Leonidovich Magunov, Ulitsa Ostrovidova 30, kv. 16; and Mikhail Nikolaevich Puring, Ulitsa Tereshkovoi 2, kv. 37, all of Odessa, U.S.S.R.; Khachatur Saakovich Bagdasarov, Ulitsa Garibaldi 59, korpus 2, kv. 42, Moscow, U.S.S.R.; Raisa Fedorovna Sagina, Ulitsa Tereshkovoi 2, kv. 28, Odessa, U.S.S.R.; and Viktor Innokentievich Popov, Ulitsa Lenina 24, kv. 16, Fryazino Moskovskoi Oblast, U.S.S.R.
No Drawing. Filed Aug. 21, 1970, Ser. No. 66,143
Int. Cl. C22b *59/00*
U.S. Cl. 23—19 V 2 Claims

A method of producing orthovanadates of rare-earth metals, consisting in that aqueous solutions of nitrates of rare-earth metals are prepared with pH=5.5–6.2, and an aqueous solution of ammonium metavanadate is prepared with pH=9.8–11, whereupon said solutions are interacted under dynamic conditions with Re=1000–6000, till the pH of the medium becomes equal to 9.5–10.5. The resulting precipitate of the orthovanadate of a rare-earth metal is separated from the solution, dried at a temperature of 80–120° C., and then calcined at a temperature of 900–1200° C.

The present method makes it possible to preclude the formation of polyvanadates and to obtain chemically and granulometrically homogeneous desired products, adequate to meet the requiremens of various branches of engineering and industry, such as quantum electronics, analytical chemistry, color television.

3,667,902
MANUFACTURE OF SODIUM CARBONATE
Joseph Kay and Ernest Blumenthal, Northwich, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 12, 1970, Ser. No. 2,371
Claims priority, application Great Britain, Jan. 23, 1969, 3,944/69
Int. Cl. C01d *7/12*
U.S. Cl. 23—63 11 Claims

A process for the manufacturer of sodium carbonate monohydrate which comprises the step of reacting an aqueous solution of sodium hydroxide with an aqueous suspension of sodium sesquicarbonate at an elevated temperature in the presence of an excess of bicarbonate ions.

3,667,903
PROCESS FOR PRODUCING POLYMERIC ALUMINUM-AMIDO-POLYPHOSPHATE
Ernest Stossel, 203 W. 81st St., New York, N.Y.
No Drawing. Filed Oct. 16, 1968, Ser. No. 768,188
The portion of the term of the patent subsequent to Dec. 3, 1985, has been disclaimed
Int. Cl. C01b *25/00*
U.S. Cl. 23—105 7 Claims

Polymerization products are obtained from aqueous solutions of reactants which are polymerizable at an elevated polymerization temperature above the boiling point of water and which during polymerization become highly viscous or rigid so that mixing of, and uniform heat transfer within, the polymerizing mass are impeded, by subjecting a concentrated aqueous solution of the reactants, which may contain foaming and foam stabilizing agents, to foaming so that a foam consisting of a dispersion of a gas in a continuous liquid phase is formed, the liquid phase consisting of the solution of the reactants being present in the form of thin foam lamellae. The thus-formed foam is then maintained at polymerization temperature until the desired degree of polymerization of the reactants has been reached within the lamellae, and during this polymerization the foam bubbles of the foamed mass are continuously displaced relative to each other. It is acheived thereby that the reaction mixture, due to being in foamed condition, remains easily stirrable and this facilitates relative displacement of the foam bubbles and thereby uniform heat transfer throughout the entire foam mass. Furthermore, the polymerization of the

lamellae-forming reaction mixture will take place at an elevated pressure caused by the expansion of the dispersed gas within the individual foam bubbles during the heating of the foam to polymerization temperature.

3,667,904
PROCESS FOR THE SEPARATION OF MIXTURES OF PHOSPHORIC AND NITRIC ACID
Andre Roche and Robert Amanrich, Toulouse, and Gilbert Cousserans, Portet, France, assignors to Azote et Produits Chimiques S.A., Toulouse, France
Continuation-in-part of application Ser. No. 698,829, Jan. 18, 1969. This application Apr. 13, 1970, Ser. No. 28,118
Claims priority, application France, Jan. 26, 1967, 92,529; Aug. 17, 1967, 118,085
Int. Cl. C01b *25/28*
U.S. Cl. 23—107 **5 Claims**

This invention is directed to a process for the preparation of monoammonium phosphate by ammoniation of mixtures of phosphoric and nitric acids in the presence of at least partially water-miscible C_1 to C_8 alkanol characterized in that the alcoholic solution to be ammoniated contains 16 to 8% of water.

3,667,905
CONTINUOUS PRODUCTION OF ALUMINIUM SULPHATE
George H. Jennings, 23 Crimea St., St. Kilda, Victoria, Australia
No Drawing. Filed July 29, 1970, Ser. No. 59,325
Claims priority, application Australia, Aug. 6, 1969, 59,156/69
Int. Cl. C01f *7/00*
U.S. Cl. 23—123 **6 Claims**

A continuous process for the production of aluminium sulphate, either as alum crystals or alum solutions in commercial concentrations at ambient temperature, in which sulphuric acid at concentrations of 20–100% and dry alumina hydrate or bauxite or other form of aluminium hydroxide, together with diluent feed water as may be required depending upon the concentration of the sulphuric acid used, are separately fed to the inlet of a multi-pass heat-exchange tubular reactor, the mixture of reactants being at a temperature of 70–120° C. when fed into said reactor and being rapidly brought to a temperature of 110–120° C. after entering said reactor and being maintained at a temperature of 110–120° C. in traversing said reactor to the outlet.

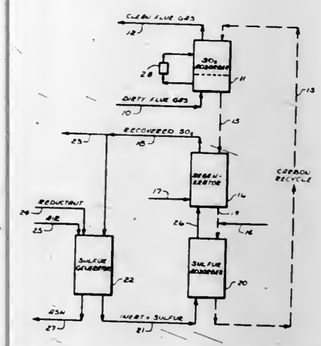
3,667,906
METHOD FOR PRODUCING MANGANESE DIOXIDE CONTAINING LESS POTASSIUM
Seiya Sasaki, Yamagata, Japan, assignor to Tekkosha Co., Ltd., Tokyo, Japan
No Drawing. Filed May 11, 1970, Ser. No. 36,417
Claims priority, application Japan, May 15, 1969, 44/36,995
Int. Cl. C01g *45/02*; B01k *1/00*
U.S. Cl. 23—145 **3 Claims**

An ore containing a decreased amount of potassium is obtained by reducing-roasting manganese oxide ores containing potassium, thereby converting manganese components in the ores into MnO, and removing potassium components from the reduced-roasted ores by extracting them with water at elevated temperatures. Into the resulting ore containing the decreased amount of potassium is added an acid to extract the manganese components and, furthermore, by oxidizing the manganese components in the second extract thus obtained electrolytically or with an oxidizing agent, manganese dioxide containing less potassium can be obtained.

3,667,907
MANUFACTURE OF HYDROGEN CYANIDE
John Derek Rushmere, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 4, 1970, Ser. No. 34,577
Int. Cl. C01c *3/02*
U.S. Cl. 23—151 **4 Claims**

An improvement in the Andrussow process for the manufacture of hydrogen cyanide is provided. The improvement comprises the use of steam in the synthesis mixture in place of nitrogen which is present in air. Preferably, a synthesis mixture containing by volume methane/ammonia/steam/oxygen within the range of 1–2:1:1:1 to 1–2:1:4:1 is employed.

3,667,908
REMOVAL AND RECOVERY OF SULFUR OXIDES FROM GASES
Samuel L. Torrence, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 724,777, Apr. 29, 1968. This application Nov. 27, 1970, Ser. No. 93,485
Int. Cl. C01b *17/60*
U.S. Cl. 23—178 **3 Claims**



A process for removing sulfur dioxide and sulfur trioxide from a gaseous stream whereby sulfur dioxide is oxidized to sulfur trioxide and the sulfur trioxide is adsorbed onto an activated carbon adsorbent having elemental sulfur adsorbed thereon; thereafter the adsorbent is regenerated producing sulfur dioxide and activated carbon adsorbent with a minimal loss of adsorbent due to burnoff; elemental sulfur is adsorbed onto the regenerated adsorbent and the adsorbent is then recycled to contact the gaseous stream and the sulfur dioxide produced during regeneration is recovered.

3,667,909
METHOD FOR THE PREPARATION OF ULTRA HIGH PURITY SiO_2 IN A POROUS BEAD FORM
Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc.
No Drawing. Filed Aug. 6, 1970, Ser. No. 61,843
Int. Cl. C01b *33/00*
U.S. Cl. 23—182 R **22 Claims**

There is disclosed the preparation of high purity, silicon oxide in the form of porous beads of a high surface area by hydrolyzing a silicon alkoxide dissolved in a hydroxyl containing organic solvent with less than a stoichiometric amount of water so as to provide a partially hydrolyzed soluble intermediate product. The resulting partially hydrolyzed intermediate product is then treated with an immiscible organic medium so as to form a discontinuous phase of liquid partially hydrolyzed intermediate product dispersed in a continuous phase of organic medium. The dispersed intermediate product is then treated with a base and a quantity of water sufficient to hydrolyze residual alkoxy groups in the dispersed intermediate product. The resulting mixture is stirred until the dispersed intermediate is converted to firm, hard, solid, porous beads of silicon oxide. The beads are typically recovered by filtration and evaporation of non-solid residues or by like method.

3,667,910
PROCESS FOR REMOVING SULFUR OXIDES FROM WASTE GAS
Yoshitomo Eguchi, Takarazuka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Aug. 27, 1969, Ser. No. 853,440
Claims priority, application Japan, Aug. 27, 1968, 43/61,322; May 13, 1969, 44/36,774
Int. Cl. C01b *17/56, 17/60*
U.S. Cl. 23—178 **4 Claims**

In the process for removing sulfur oxides from waste gases with employment of activated carbon as the adsorbent, the chemical exhaustion of activated carbon and the lowering of its ability for adsorbing sulfur oxides in the regeneration step can be remarkably prevented by regenerating the sulfur oxides-adsorbing activated carbon with the desorbent containing carbon monoxide gas and/or hydrogen gas in a concentration at least about 40% at a temperature from about 230° C. to about 450° C. The most advantageous results can be attained by employing vanadium oxide-supporting activated carbon as the adsorbent.

3,667,911
METHOD OF TREATING SOLIDS WITH HIGH DYNAMIC PRESSURE
Anthony S. Balchan and George R. Cowan, Woodbury, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 4, 1969, Ser. No. 804,194
Claims priority, application Great Britain, June 28, 1968, 31,117/68
Int. Cl. C01b *31/06, 21/06*
U.S. Cl. 23—209.1 **7 Claims**

A process for treating solid materials with controlled, very high, dynamic pressures all or a portion of the total pressure rise occurring in a shock compression and any remaining portion occurring as a smooth, rapid (nonshock) compression, the pressure being released smoothly to ambient conditions, comprising subjecting the lateral boundaries of a body of a solid material to a pressure pulse moving at practically constant velocity in the direction of the body's axial dimension and having practically uniform magnitude and duration over the lateral boundaries, the magnitude and duration being sufficient to sustain a shock wave of substantially uniform intensity spanning a major portion of the body between the lateral boundaries. The process is useful in converting nondiamond carbon to diamond and hexagonal boron nitride to cubic and wurtzitic boron nitride and in compacting solid materials such as silicon carbide powder.

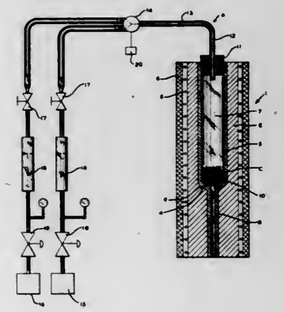
3,667,912
CHEMICAL PRODUCTION OF CHLORINE
Daniel J. Jaszka, Tonawanda, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,463
Int. Cl. C01b *7/02, 11/02*
U.S. Cl. 23—219 **12 Claims**

Substantially pure chlorine is produced under reaction conditions commonly employed for chlorine dioxide production, involving reaction of a chlorate, chloride and a mineral acid, by catalyzing the reaction with hexavalent molybdenum.

3,667,913
CHROMIUM-DIOXIDE-CATALYST
Franz Hund, Krefeld-Bockum, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of application Ser. No. 660,690, Aug. 15, 1967. This application May 4, 1970, Ser. No. 33,148
Int. Cl. C01b *7/04*
U.S. Cl. 23—219 **6 Claims**

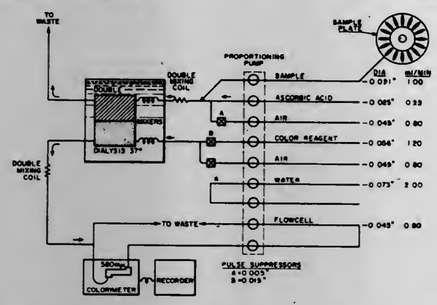
Chromium-dioxide of rutile-type crystal-structure and modified chromium-dioxide containing oxides and/or fluorides of cations which have radii in the range between 0.46 and 0.91 A. can be used as catalysts with high and permanent activity to promote oxidation-processes such as oxidation of hydrogen-chloride to chlorine and water, conversion of sulfur-dioxide to sulfur-trioxide oxidation of carbon-monoxide to carbon-dioxide, oxidation of ammonia to nitric oxides, oxidation and oxychlorination of hydrocarbons, combustion of hydrogen or alcohols and the like. The chromium-dioxide or the modified chromium-dioxide can be used as such or together with carriers. Furthermore it is possible to combine the chromium-dioxide catalysts with other catalytically active materials.

3,667,914
APPARATUS AND PROCESS FOR TESTING EXHAUST GAS CATALYST SYSTEMS
Charles R. Penquite, Ballwin, and George E. Barker, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 3, 1970, Ser. No. 86,549
Int. Cl. G01n *7/00, 9/32*
U.S. Cl. 23—230 PC **22 Claims**



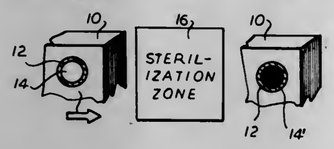
An apparatus and process for testing catalytic systems used in the treatment of exhausts from hydrocarbon combustion engines. The apparatus comprises a system which includes a reactor system holding a sample tube. The sample tube is provided with a diametrally reduced portion having a glass wool plug therein and the catalyst to be tested is disposed upon this plug. The sample tube is inserted in an electric resistance heater or furnace. A predetermined exhaust gas mixture or mixtures is passed through the catalyst bed at a desired test temperature. Periodically, without removing the catalyst sample from the sample tube, a pressure drop measurement is made across the sample tube in order to determine the degradation of the catalyst bed. The exhaust gas mixtures are passed through the catalyst bed at a predetermined rate designed for laboratory scale equipment. However, when the pressure drop measurement is made, a carefully controlled and precisely reproducible gas flow rate appropriate for measuring catalyst degradation by pressure drop measurement is used.

3,667,915
COLORIMETRIC METHODS AND COMPOSITIONS FOR DETERMINING IRON IN BLOOD
Bernard Klein, New Hyde Park, N.Y., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation-in-part of application Ser. No. 764,616, Oct. 2, 1968. This application Apr. 28, 1970, Ser. No. 32,755
Int. Cl. G01n *21/26, 31/22, 33/18*
U.S. Cl. 23—230 B 6 Claims



A diagnostic kit is described comprising as a first reagent a reducing agent and, as a second reagent, a buffered 5-(pyridyl)-2H-1,4-benzodiazepine, or a water-soluble acid addition salt thereof. The enzodiazepine is buffered with a buffer pair comprising a water-soluble salt of acetic acid and either ascorbic acid or acetic acid. Also described is a method of utilizing these reagents in aqueous solution in a continuous flow quantitative analysis of the iron in serum.

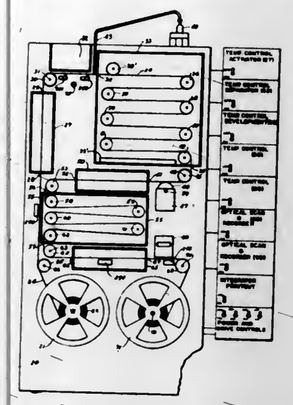
3,667,916
STERILIZATION INDICATOR
Martin E. Sliva and Roderic P. Kwok, Chicago, Ill., assignors to Johnson & Johnson
Filed Nov. 17, 1970, Ser. No. 90,238
Int. Cl. G01k *11/12, 11/20*; G01n *3/22*
U.S. Cl. 23—230 R 11 Claims



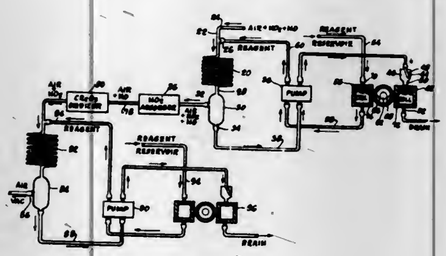
Low-cost telltale composition, which changes from a substantially light color to a substantially dark color under either steam or ethylene oxide sterilization conditions but is otherwise substantially insensitive to normal ambient environmental conditions including daylight, comprises a solution or dried solution of silver nitrate and a buffering quantity of a nitrate preservative selected from the group consisting of nitric acid, sodium nitrate or potassium nitrate. The telltale composition in aqueous alcoholic solution is printable on any substrate without imparting substantial color thereto, but is selectively colorable by the addition of desired pigments or dyes.

3,667,917
CHROMATOGRAPHY APPARATUS AND METHOD
Marcus K. Brandt, Easton, Pa., assignor to J. T. Baker Chemical Company, Phillipsburg, N.J.
Filed Nov. 27, 1970, Ser. No. 93,064
Int. Cl. B01d *15/08*; G01n *31/08*
U.S. Cl. 23—230 R 20 Claims

Method and apparatus for automatically performing manipulations in thin layer chromatography, whether it be horizontal or vertical, continuously, including coordinated mechanism for automatically applying sample to chromatographic test areas in sequence on a unitary base, mechanism for moving such test areas continuously into contact with solvent, and mechanism for activation of developing, color reaction, delay, drying, and densitometric analysis, as well as feed and take-up, the apparatus including means responsive at intervals to indicia on the base related to the chromatogram to activate and deactivate portions of the apparatus and to relate the chromatographic operations to the progress of the chromatographically active areas through the machine.

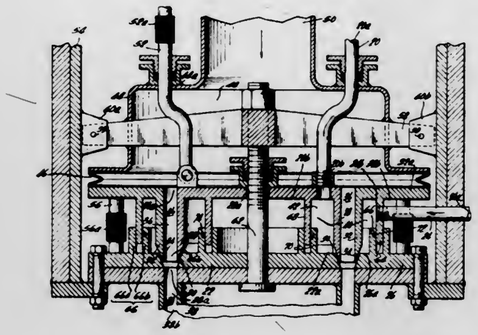


3,667,918
METHOD AND APPARATUS FOR ANALYSIS OF NO AND NO_2
Norman A. Lyshkow, Chicago, Ill., assignor to Pollution Monitors, Inc., Chicago, Ill.
Filed Feb. 17, 1971, Ser. No. 116,188
Int. Cl. G01n *31/06, 21/06*
U.S. Cl. 23—232 R 14 Claims



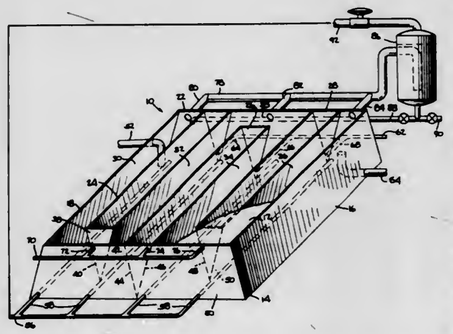
Method and apparatus for determining the concentration of NO and NO_2 in gas sample in which a gas sample containing NO and NO_2 is first passed through a scrubber in which the sample is contacted with a reagent solution capable of development of color in response to contact with NO_2, with the intensity of the color thus developed being a measure of the NO_2 content of the gas sample, and then the unabsorbed gases are treated to remove residual amounts of NO_2 and the NO in the sample is oxidized to NO_2 which is absorbed in a second scrubber with a reagent solution capable of development of color in response to contact with NO_2, with the intensity of color developed in the second scrubber being a measure of the NO content of the gas sample.

3,667,919
SULFONATION REACTOR HEAD OF IMPROVED ADJUSTABILITY
Rudolph E. Denzler, Stirling, and Charles F. Fischer, Jersey City, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,237
Int. Cl. B01j *1/00*; C07b *13/06*
U.S. Cl. 23—285 7 Claims



A reactor head for a sulfonation reactor in which the feed gap for the inner orifice ring is adjustable and the feed gap for the outer orifice ring is separately adjustable, the adjusting mechanisms for the inner and outer rings are calibrated so that an operator may at all times be aware of the size of the gap. The inner and outer gaps may range from zero gap to as large a gap as may be desired.

3,667,920
MIXING TRAYS
Ernest Koref, Panama City, Republic of Panama, and Elijah E. Petty, Mount Zion, Ill., assignors to M. Neumunz & Son, Inc., New York, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,452
Int. Cl. B01j *9/16*; C11c *3/12*
U.S. Cl. 23—288 E 22 Claims

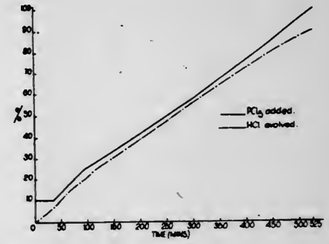


Method and apparatus for agitating a liquid, promoting a reaction between a liquid, a solid and/or a gas or maintaining or changing the temperature of a liquid. The liquid is passed along the length of an inclined side wall and the gas for agitation and/or mixing is passed upwardly along the inclined surface of the side wall to mix with the liquid.

3,667,921
FLUX GROWTH OF RARE EARTH FLUORIDES
William H. Grodkiewicz, Murray Hill, and Le Grand G. Van Uitert, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 7, 1969, Ser. No. 848,285
Int. Cl. B01j *17/04*; C01f *17/00*
U.S. Cl. 23—300 7 Claims

Rare earth fluorides are grown from a liquid phase which includes a flux ingredient such as beryllium fluoride. Improved effectiveness of the product as an up-converting phosphor is attributable in part to the gettering action of the flux ingredient for oxygen.

3,667,922
PRODUCTION OF CYCLIC PHOSPHONITRILIC CHLORIDE POLYMERS
James Ernest Proctor, London, England, Norman Lovelace Paddock, Vancouver, British Columbia, Canada, and Harold Trevor Searle, Streetly, England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Continuation-in-part of application Ser. No. 185,389, Apr. 5, 1962, which is a continuation-in-part of application Ser. No. 807,749, Apr. 21, 1959, now abandoned. This application Sept. 15, 1969, Ser. No. 871,406
Int. Cl. C01b *21/52, 25/10*
U.S. Cl. 23—357 3 Claims



In the production of phosphonitrilic chlorides by the reaction of phosphorus pentachloride and ammonium chloride in an inert solvent the proportion of trimeric phosphonitrilic chloride is greatly increased by adding at least a major proportion of the phosphorus pentachloride to the ammonium chloride slowly and evenly during a period of time corresponding to about 50 to about 100 percent of the total time during which the reaction takes place.

3667,923
PREPARATION OF LITHIUM, SODIUM AND QUATERNARY AMMONIUM CYANOBORO-HYDRIDES
Robert C. Wade, Ipswich, Mass., assignor to Ventron Corporation, Beverly, Mass.
No Drawing. Filed June 16, 1969, Ser. No. 833,722
Int. Cl. C01c *3/08*; C01b *35/00*
U.S. Cl. 23—358 4 Claims

The invention relates to the preparation of lithium, sodium and quaternary ammonium cyanoborohydrides. These compounds are prepared by mixing substantially anhydrous hydrogen cyanide with a substantially anhydrous lithium or sodium or quaternary ammonium borohydride at a temperature between 0° C. and 100° C. in a substantially anhydrous solvent, such as tetrahydrofuran, glyme, diglyme, triglyme or dimethyl formamide or mixtures of these at atmospheric pressure. If desired, to avoid loss of hydrogen cyanide, a pressure of from about 1 to 5 pounds per square inch may be used. Preferably, the preparation is carried out in two stages (1) initially at a temperature between about 10° to about 35° C. until substantially all hydrogen has ceased to be

evolved and (2) then at a temperature between about 35° C. and the boiling point of the solvent until all the intermediate products have been converted to the desired cyanoborohydride.

3,667,924

STRESS RELIEVED WELDED STEEL COMPOSITE

William T. De Long and Paul T. Corcoran, West Manchester Township, York County, Pa., assignors to Teledyne Inc., Los Angeles, Calif.

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,320
Int. Cl. B23b 15/00; B23p 3/00
U.S. Cl. 29—196.1 **1 Claim**

A low alloy high strength steel weld deposit of high toughness and superior resistance to thermal degradation and which, after a stress relief consisting of a 16-hour soak at 1025° F. followed by cooling at a rate of 200° F. per hour, has Charpy V-notch impact strength of at least 20. ft.-lbs. at −60° F. at yield strength levels which are selectable between about 90K s.i. and about 145K s.i., the deposit consisting essentially of

Element	Percent by Weight	
	Broad	Preferred
Carbon	[1].12	[1].10
Manganese	.25-.9	.35-.75
Silicon	.20-.70	.25-.55
Chromium	.2-2.0	.2-1.35
Nickel	2.0-4.5	3.0-4.0
Molybdenum	.2-1.2	.35-1.0
Phosphorus	[1].020	[1].012
Sulfur	[1].020	[1].012
Iron	Balance	Balance

[1] Maximum.

also a low alloy steel weld deposit having a yield strength of at least 130K s.i. and Charpy V-notch energy absorption at −60° F. of at least 20 ft.-lbs. after being stress relieved by soaking for 16 hours at 1025° F. followed by cooling at a rate of 200° F. per hour, the deposit consisting essentially of

Element	Percent by Weight		
	Broad	Preferred	Specific example
Carbon	.05-.12	.07-.10	.08
Manganese	.25-.9	.35-.75	.5
Silicon	.20-.70	.25-.55	.4
Chromium	.6-2.0	.75-1.35	1.0
Nickel	2.0-4.5	3.0-4.0	3.5
Molybdenum	.3-1.2	.5-1.0	.75
Phosphorus	[1].020	[1].012	<.01
Sulfur	[1].020	[1].012	<.01
Iron	Balance	Balance	Balance

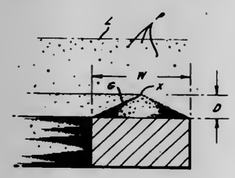
[1] Maximum.

3,667,925

METHOD FOR BONDING WITH DEPOSITED PARTICULATE GLASS

John E. Sheppard, Cornwells Heights, and Vincent J. Pellechia, Lansdale, Pa., assignors to General Instrument Corporation, Newark, N.J.

Filed Feb. 19, 1970, Ser. No. 12,679
Int. Cl. C03c 29/00
U.S. Cl. 65—43 **7 Claims**



A process for applying glass to frame-like spacers for glass-sealing the spacers to lids and for thereby closing flat packs. The spacers are submerged in a liquid suspension of enough glass powder to settle such powder onto each spaced in the form of a mound. The base width of the spacer elements determines the depth of the mound. This in turn facilitates accurate dimensioning of the space provided inside the flat pack.

3,667,926

METHOD FOR COATING GLASS

Larry Q. Green, Wilmington, Del., and Larry L. Light, Kinnelon, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,690
Int. Cl. C03c 17/10
U.S. Cl. 65—60 **12 Claims**

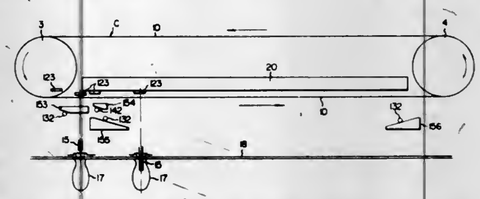
Method of producing scratch resistance on glass by contacting it while hot with (a) an aqueous solution of a water-stable titanium composition and (b) an aqueous dispersion of a surface lubricating composition, the glass temperature being high enough to cause immediate and substantially complete vaporization of the water content of the solution and dispersion.

3,667,927

APPARATUS FOR BLOW MOLDING GLASS BULBS

Takaaki Kurokawa, Chigasaki-shi, Junji Yamada, Odawara-shi, and Makoto Wada, Kawasaki-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan

Filed July 23, 1969, Ser. No. 843,991
Claims priority, application Japan, July 31, 1968, 43/54,077, 43/54,079, 43/54,080
Int. Cl. C03b 9/12
U.S. Cl. 65—185 **13 Claims**



An improved apparatus for blowing molding glass bulbs comprising a plate link for conveyor feeding a ribbon of semifused glass, a blow head link conveyor disposed on one side of a running surface of the plate link conveyor and adapted to support a series of blow heads moved in synchronism with the plate links and in the same direction therewith, and a mold link conveyor disposed on the other side of the running surface of the plate link conveyor and adapted to support a series of molds moved in synchronism with the blow heads and in the same direction therewith, said apparatus being provided with pressurizer apparatus for which this invention provides improved blow heads having air blast pipes adapted to blow air into formed bulbs and fed in synchronism with the bulbs and in the same direction as the feed passage of the glass ribbon having bulbs blow-molded between the blow head links and the mold links. Furthermore, there is described herein a structure of the pressurizer heads with improved operating mechanism.

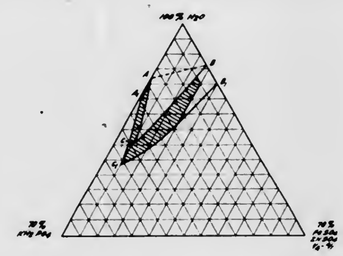
3,667,928

INCREASED COMPONENT CONCENTRATION OF NUTRIENT SOLUTIONS OF TRACE METALS

Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Nov. 12, 1969, Ser. No. 875,741
Int. Cl. C05b 7/00
U.S. Cl. 71—34 **6 Claims**

A solution suitable for application to plants and soil to correct a plurality of trace metal deficiencies is described which comprises an aqueous solution of the sulfate salts of two or more of iron, zinc and manganese together with mono-potassium or mono-ammonium hydrogen orthophosphate having an acidic pH value from about 1.5 to about 4, and wherein the components of the solution manifest a mutually increased solubility.



3,667,929

METHOD OF EFFECTING DISSOLUTION OF SOLUTES IN WATER AND COMPOSITIONS THEREFOR

George W. Fleming, Jr., P.O. Box 10372, Charlotte, N.C. 28201

No Drawing. Continuation-in-part of application Ser. No. 382,950, July 15, 1964. This application July 30, 1969, Ser. No. 846,274
Int. Cl. A01n 11/04; A61k 27/00; C05c 5/02
U.S. Cl. 71—67 **6 Claims**

Aqueous solutions of uniform concentration throughout a vessel are produced without substantial agitation by providing a composition including a solute and an effervescent reaction mixture in finely divided form uniformly coated with a thin film of a slowly dispersible material, whereby upon addition to a vessel of water the mixture effervesces and the gas is entrapped to exert a buoyant effect whereby the bulk of the solute is dissolved in the upper reaches of the vessel and disperses throughout the vessel by gravity, yielding a solution of uniform concentration throughout the vessel. The method and composition therefore find particular utility in the field of veterinary medicines and agricultural chemicals which are employed in the form of aqueous solution.

3,667,930

3-AMINO-5-HALOGENATEDARYLOXYMETHYL-1,2,4-OXADIAZOLES

Herman Breuer, Regensburg, Germany, assignor to Olin Mathieson Chemical Corporation

No Drawing. Application Oct. 9, 1967, Ser. No. 673,977, now Patent No. 3,564,606, dated Feb. 16, 1971, which is a continuation-in-part of application Ser. No. 566,480, July 20, 1966. Divided and this application Dec. 24, 1969, Ser. No. 888,206
Int. Cl. A01n 9/22
U.S. Cl. 71—92 **6 Claims**

A series of 3-amino-5-halogenatedaryloxymethyl-1,2,4-oxadiazoles are provided by the reaction of selected acyl carbodiimides with hydroxylamine or salts thereof to provide an intermediate N-acylsubstituted-N'-hydroxyguanidine which is converted to the substituted-1,2,4-oxadiazoles by treatment with base. The substituted-1,2,4-oxadiazoles are useful agricultural chemicals, and it has been found that they are particularly outstanding selective herbicides.

3,667,931

BISXANTHATE RICE HERBICIDES

Kenneth L. Viste, Warminster, and Marvin H. Fleischfresser, Warrington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,742
Int. Cl. A01n 9/12
U.S. Cl. 71—102 **9 Claims**

Weeds in rice are controlled by applying a bisxanthate compound of the formula



wherein R and R' are ethyl or n-propyl and R'' is a divalent (C_1–C_4) alkylene radical. The bisxanthates and herbicidal compositions containing them are useful for the control of weeds in both direct seeded and transplanted rice.

3,667,932

METHOD OF MAKING A DISPERSION-HARDENED FERROUS ALLOY

Horace Pops, Edgewood Borough, Pa., assignor to United States Steel Corporation

No Drawing. Filed Aug. 20, 1964, Ser. No. 390,992
The portion of the term of the patent subsequent to Dec. 6, 1987, has been disclaimed
Int. Cl. C21d 1/00
U.S. Cl. 75—.5 BC **9 Claims**

1. A process for producing dispersion-hardened ferrous alloys comprising making a mixture of ferrous metal and aluminum oxide, randomly distributing said aluminum oxide throughout said ferrous metal by passing induced current supplied by a high-frequency power source through the mixture to melt the metal and stir the mixture and cooling the mixture to produce a solidified body containing a fine dispersion of aluminum oxide.

3,667,933

ROTARY KILN REDUCTION OF IRON OXIDES WITH PNEUMATIC FEEDING OF A PORTION OF THE CHARGE

Guenter Heitmann, Frankfurt-Niederrad, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany, and The Steel Company of Canada Limited, Hamilton, Ontario, Canada, fractional part interest to each

No Drawing. Continuation of application Ser. No. 559,065, June 21, 1966. This application Jan. 12, 1970, Ser. No. 1,952
Claims priority, application Germany, June 23, 1965, M 65,693
Int. Cl. C21b 13/08; C22b 23/02
U.S. Cl. 75—33 **3 Claims**

Improvements of an ore treating process, wherein the ore and the treating agent are both fed to a rotary kiln which operates at a temperature and pressure sufficient to carry out such treatment, wherein the ore is fed to the treating zone in such a manner that all of it is fed at a given point and that the feeding is carried out under such conditions that the ore being fed is distributed throughout at least a portion of the rotary kiln with the larger particles of ore being deposited the furthest distance from the discharge end of the kiln and the smaller particles, of ore being deposited most proximate to the discharge end of the kiln so that the deposition point of the ore particles distance from the discharge end is proportional to the size of the particles being deposiited, whereby providing a residence time of the particles in the kiln proportional to the size of the particles.

3,667,934

REFINING OF ZINC

Leslie Jack Derham, deceased, late of Avonmouth, England, by Michael Gordon Derham, legal representative, and Glen Owen John, Bristol, England; said John assignor to Imperial Smelting Corporation (Alloys) Limited, London, England

No Drawing. Filed Oct. 15, 1969, Ser. No. 867,120

Claims priority, application Great Britain, Oct. 23, 1968, 50,378/68, 50,379/68, 50,380/68

Int. Cl. C22b *19/32, 9/10*

U.S. Cl. 75—86 8 Claims

Zinc which contains aluminium as an impurity is purified by treating the molten metal with chlorine, in free or combined form, under a molten flux formed from sodium chloride and aluminium chloride.

3,667,935

PROCESS FOR PREPARING NITROGEN-FREE PLATINUM POWDERS

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 756,394, Aug. 30, 1968. This application Feb. 4, 1971, Ser. No. 112,789

Int. Cl. C22b *11/04*

U.S. Cl. 75—109 1 Claim

Nitrogen-free platinum powders are prepared by precipitation from an aqueous platinum chloride solution, with zinc and hydrochloric acid. This nitrogen-free platinum powder is relatively coarse and can be used in the production of various electrical circuit structures.

3,667,936

DENTAL ALLOY

Michel Katz, Forest Hills, N.Y., assignor to Aurium Research Corporation, New York, N.Y.

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,381

Int. Cl. C22c *5/00*

U.S. Cl. 75—134 N 5 Claims

A precious alloy for use in dental frames on which ceramic coverings are formed by baking. Palladium is used in an amount ranging between 8 and 50 weight percent and indium is used in an amount ranging between 3 and 12 weight percent. The remainder of the alloy consists primarily of gold, or gold and silver, and small amounts of trace metals. With such an alloy, there is no need for the use of platinum as in the prior art dental alloys having the same desirable characteristics.

3,667,937

DENTAL FILLING

Clyde E. Ingersoll, Tonawanda, and Reginald V. Williams, Sr., deceased, late of Buffalo, N.Y., by John A. Williams and Elizabeth P. Williams, executors; said Ingersoll assignor to Williams Gold Refining Incorporated, Buffalo, N.Y.

No Drawing. Filed Oct. 7, 1970, Ser. No. 78,990

Int. Cl. C22c *5/00*; A61k *5/02*

U.S. Cl. 75—165 2 Claims

A metal alloy dental filling consisting of about 99.7 to 99.95 parts pure gold alloyed with about .05 to .30 part calcium is condensed in a prepared tooth cavity. The addition of calcium to pure gold results in a significantly harder filling.

3,667,938

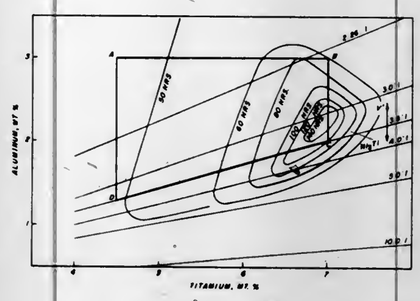
NICKEL BASE ALLOY

William J. Boesch, Utica, N.Y., assignor to Special Metals Corporation, New Hartford, N.Y.

Continuation-in-part of application Ser. No. 675,468, Oct. 16, 1967. This application May 5, 1970, Ser. No. 34,743

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 6 Claims



An alloy consisting essentially of 12 to 20% chromium, 13 to 19% cobalt, 4.5 to about 7% titanium, 1.3 to 3% aluminum, 2 to 3.5% molybdenum, 0.5 to 2.5% tungsten, the combined molybdenum and tungsten content being 3 to 6%, 0.05 to 0.15% carbon, 0.005 to 0.03% boron, the titanium and aluminum content being balanced so as to provide a titanium to aluminum ratio within a specified relationship and a combined titanium and aluminum content of 6.5 to 9%, the balance of the alloy being essentially nickel with up to 0.75% manganese, up to 0.2% yttrium, up to 0.2% other rare earth elements such as cerium or lanthanum and up to 0.5% iron.

3,667,939

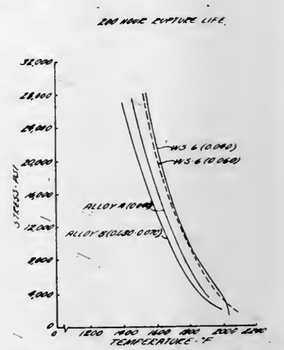
HIGH TEMPERATURE COBALT-BASE SHEET ALLOY

Ralph J. Hecht, West Palm Beach, and Richard J. Fenton, Palm Beach Shores, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 30, 1971, Ser. No. 102,747

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 3 Claims



A superior wrought cobalt-base alloy for high temperature use is provided at the nominal composition, by weight, of 0.9 percent carbon, 25 percent chromium 0.9 percent titanium, 1 percent iron, 15 percent nickel, 7.7 percent tungsten, 0.4 percent zirconium, 1 percent columbium, 2.7 percent tantalum, balance essentially cobalt.

3,667,940

COLUMBIUM BASE ALLOY

William K. McDonald, Salem, Oreg., assignor to Teledyne, Inc., Albany, Oreg.

No Drawing. Filed Apr. 10, 1969, Ser. No. 815,219

Int. Cl. C22c *27/00*

U.S. Cl. 75—174 9 Claims

A columbium base alloy is disclosed having high strength and oxidation resistant properties particularly at elevated temperatures and also adequate low temperature ductility. The alloy contains 20 to 33% hafnium, 11 to 20% tungsten and 0.5 to 2% zirconium, and may contain small amounts of one or more other elements including aluminum, iron, carbon and titanium to modify the properties of the alloy for various applications, and may also contain up to about 4% of tantalum without materially effecting the properties of the alloy except to increase its density.

3,667,941

METALLIC ALLOY FOR BEARINGS

Aldo Dacco', Milan, Italy, assignor to Liasa del Dott. Aldo Dacco', Milan, Italy

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,506

Claims priority, application Italy, Nov. 14, 1968, 23,736/68

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AC 5 Claims

Metallic alloy of the Zn-Al-Cu type, in particular for the manufacture of bearings, comprising 2–8% of electrolytic copper, 12–42% of pure aluminum, the remainder zinc with a high degree of purity, and including an addition of cobalt in the range of 0.02 to 0.35%.

3,667,942

METHOD OF POWDER ROLLING NICKEL-IRON-COBALT ALLOYS

Jerry C. LaPlante, Hempstead, and Thomas A. Poole, Setauket, N.Y., assignors to Alloys Unlimited Inc., Melville, N.Y.

No Drawing. Filed June 9, 1970, Ser. No. 44,854

Int. Cl. B22f *1/00*

U.S. Cl. 75—214 9 Claims

The alloy 29 Ni, 17 Co, balance iron is prepared as a fine powder in the fully annealed condition and is rolled without added binders into a green strip of about 80% density. After sintering at about 1800°–1900° F. for an hour, it is reduced by rolling about 18 to 20%, after which it is resintered. By controlling coil and roll diameters, edge breaking, curling and cracking are prevented. A uniform foil as thin as 0.004 in. can be prepared in this way. The present invention is an improvement over the method described and claimed in my previous U.S. Pat. No. 3,396,015, issued Aug. 6, 1968.

3,667,943

QUINACRIDONE PIGMENTS IN ELECTROPHOTOGRAPHIC IMAGING

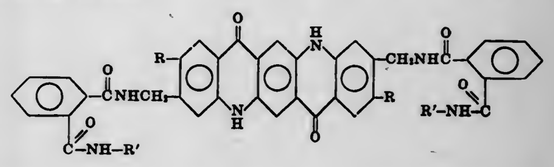
Lester Weinberger, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Aug. 22, 1968, Ser. No. 754,726

Int. Cl. G03g *5/06*

U.S. Cl. 96—1 PC 6 Claims

An electrophotographic plate including a photoconductive layer comprising a novel quinacridone pigment in a binder material, said quinacridone pigment having the formula:



wherein R=CH_3, C_2H_5, OCH_3, OC_2H_5 or a halogen and wherein R′=an aromatic, heterocyclic, alicyclic or aliphatic group is disclosed. Methods of preparing said plate and of using said plate in electrophotographic processes are also disclosed.

3,667,944

QUINACRIDONE PIGMENTS IN ELECTROPHOTOGRAPHIC RECORDING

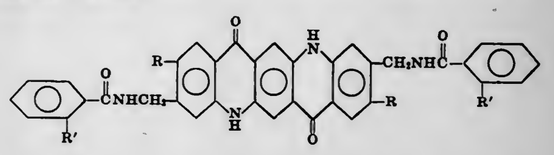
Lester Weinberger, Brighton, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,842

Int. Cl. G03g *5/06*

U.S. Cl. 96—1 PC 6 Claims

An electrophotographic plate including a photoconductive layer comprising a novel quinacridone pigment in a binder material, said quinacridone pigment having the formula:



wherein R=CH_3, C_2H_5, OCH_3, OC_2H_5 or a halogen and wherein R′=COOH, COOCa/2, SO_3H, or $SO_3Ca/2$ is disclosed. Methods of preparing said plate and of using said plate in electrophotographic processes are also disclosed.

3,667,945

QUINACRIDONE PIGMENTS IN ELECTROPHOTOGRAPHIC IMAGING

Vsevolod Tulagin, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Continuation of application Ser. No. 469,143, July 2, 1965. This application June 20, 1969, Ser. No. 842,769

Int. Cl. G03g *5/06*

U.S. Cl. 96—1 PC 9 Claims

An electrophotographic method which employs quinacridone pigments as the photoconductor in the imaging plate.

3,667,946

SURFACE TREATMENT OF PHOTOPOLYMER FILM USED FOR RECORDING HOLOGRAMS

Eugene J. Sturdevant, Wilmington, Del., assignor to Holotron Corporation, Wilmington, Del.

Filed Sept. 23, 1970, Ser. No. 74,590
Int. Cl. G03c 5/12
U.S. Cl. 96—35.1 13 Claims

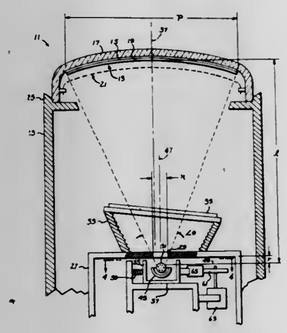
Techniques for treating and handling photopolymer film utilized to record in the visible or near visible range an electromagnetic radiation pattern such as a holographic interference pattern. Prior to exposure of a photopolymerizable film material to the radiation pattern, the film is polymerized at its surface primarily to improve mechanical rigidity of the film. A process of manufacturing elongated photopolymerizable recording film includes extruding a liquid monomer composition onto a substrate and polymerizing the monomer composition at least at its surface before the material is rolled or otherwise subjected to mechanical stresses. A technique for copying a master holographic movie onto photopolymerizable film includes extruding a liquid monomer composition onto the holographic movie, exposing the monomer layer to the holographic information recorded on the master film, polymerizing the remaining monomer and then separating the now hardened polymerized film from the master movie film.

3,667,947

COLOR CRT SCREEN EXPOSURE METHOD

Lefler H. McKee, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Original application Nov. 1, 1967, Ser. No. 679,869, now Patent No. 3,559,546, dated Feb. 2, 1971. Divided and this application Sept. 4, 1970, Ser. No. 69,815
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 6 Claims



A method for light forming a cathode ray tube patterned screen utilizing unattenuated radiant energy of the light source. A photosensitive phosphor-containing coating disposed on the screen panel is exposed, through an adjacently positioned negative mask, by radiant energy of substantially constant intensity from a substantially unattenuated direct light source oriented within an apertured light enclosure. Since the utilized area of the light source is smaller than the discrete aperture area, the light source is moved in a predetermined manner relative to the aperture to effect a simulated light source area equalling the aperture area.

3,667,948

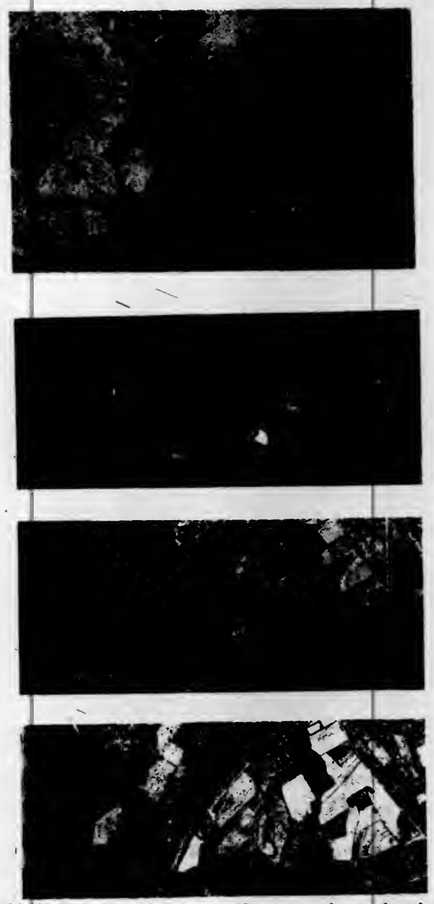
TOPOGRAPHIC MAP AND PROCESS FOR SYMBOLIZING PHOTOGRAPHS

Mylon Merriam, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Army

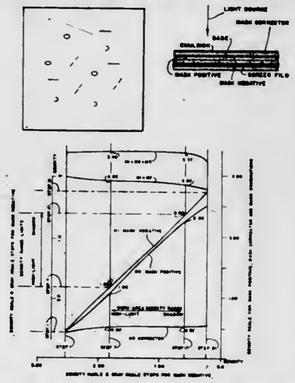
Continuation-in-part of abandoned application Ser. No. 472,371, July 15, 1965. This application June 6, 1969, Ser. No. 831,193
Int. Cl. G03c 5/00; G03f 1/02
U.S. Cl. 96—44 8 Claims



PRIOR ART



This invention relates to a uniform tone image bearing photographic film screen and the method of preparing the film screen from a photograph. The film screen is subsequently utilized in making a map in which cartographic symbols are displayed as alterations in the tone of the images from the film screen, while maintaining the texture of the photographic image.



3,667,949

IMAGEWISE PHOTOCHROMIC PROCESS UTILIZING SPIROPYRAN COMPOUNDS AND HALOGENATED HYDROCARBON PHOTOACTIVATORS

Eiichi Inoue, Isamu Shimizu, and Hajime Kobayashi, Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Mar. 6, 1969, Ser. No. 805,004
Claims priority, application Japan, Mar. 12, 1968, 43/15,712, 43/15,987
Int. Cl. G03c 1/52
U.S. Cl. 96—48 2 Claims

A stable colored image is obtained by using a spiropyran compound and an ionic compound in a coexistent state, applying image-wise radiation thereto.

The colored state can be eliminated by neutralizing the ionic compound.

Thus, the photochromic image formation can be repeatedly effected.

3,667,950

BLEACH-FIXING SOLUTION FOR COLOR PHOTOGRAPHY

Hiroyuki Amano, Haruhiko Iwano, and Kazuo Shirasu, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,881
Claims priority, application Japan, Dec. 16, 1969, 44/101,115
Int. Cl. G03c 5/32
U.S. Cl. 96—60 12 Claims

A single bleach-fixing solution for color photographic light-sensitive materials comprising a ferricyanide and a thiocyanate and containing at least one compound having an aldehyde group or a methylol group is disclosed.

3,667,951

PHOTOGRAPHIC STABILIZING BATHS INHIBITED AGAINST CORROSION WITH POLYALKYLENE GLYCOLS

Henry J. Fassbender and Nelson S. Case, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 3, 1969, Ser. No. 803,937
Int. Cl. G03c 5/38
U.S. Cl. 96—61 15 Claims

Stabilizing baths which are utilized in rapid access processing of photographic elements and which comprise a thiocyanate stabilizing agent and an aluminum salt which functions as a hardening agent for photographic emulsion are rendered less corrosive to processing equipment by incorporation therein of a minor amount of a polyalkylene glycol.

3,667,952

COLOR STABILIZATION PROCESSING

Henry J. Fassbender, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,177
Int. Cl. G03c 5/38, 7/30
U.S. Cl. 96—61 5 Claims

The use of carbonyl-bisulfite adducts, e.g., formaldehyde bisulfite, in color stabilization processes which involve treating an imagewise exposed, incorporated coupler, multilayer, silver halide sensitized photographic element in a developer to form silver and color images and then treating the developed element with a thiosulfate stabilizer to stabilize the nondeveloped silver, prevents objectionable stain which otherwise results in background areas. The carbonyl-bisulfite adduct is desirably incorporated into a thiosulfate stabilizer composition.

3,667,953

COLOR PHOTOGRAPHIC POSITIVE MATERIALS

Shigeru Watanabe, Yukio Yasuda, and Kazuya Sano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 25, 1970, Ser. No. 22,468
Claims priority, application Japan, Oct. 9, 1969, 44/80,987
Int. Cl. G03c 1/76
U.S. Cl. 96—74 7 Claims

Multi-layer color photographic light-sensitive positive material incorporating, in addition to cyan, magenta and yellow dyes in the light-sensitive emulsion layers thereof, at least one of a red or blue dye-forming coupler capable of forming a dye or dyes having absorption maximums at 460–520 nm. and 570–640 nm., respectively. Such red and blue dye couplers are selected such that the dyes are formed selectively in high density images areas and result in the production of images possessing excellent reproduction of both colors and black.

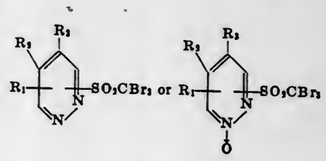
3,667,954

TRIBROMOMETHYL SULFONYL PYRIDAZINE OR PHTHALAZINE PHOTOACTIVATORS

Kohei Itano, Masashi Nakano, and Mitsuru Hashimoto, Tokyo, Japan, assignors to Keuffel & Esser Company, Morristown, N.J.

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,974
Claims priority, application Japan, Apr. 21, 1969, 44/30,278
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—90 6 Claims

A light-sensitive printing material comprising a photo-activator capable of forming a free radical by action of light and a discoloring agent showing a visible color change by action of said free radical, characterized by using as the photo-activator a pyridazine or phthalazine derivative which is represented by the general formula

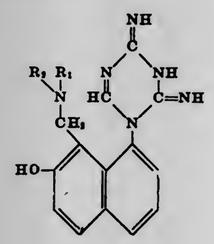


wherein R_1, R_2 and R_3 are individually a hydrogen atom, a hydroxy group, a lower alkyl group, an alkylsulfonyl

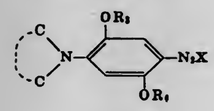
group, an alkoxy group or an alkoxycarbonyl group, provided that R_2 and R_3 may form a benzene ring and, in the case of an N-oxide type compound, R_3 may be a tribromomethyl sulfonyl group.

3,667,955
TWO-COMPONENT DIAZOTYPE PHOTOSENSITIVE MATERIAL
Shigeaki Yoshida, Yokohama-shi, Kanagawa-ken, and Tadashi Saito, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
No Drawing. Filed June 6, 1969, Ser. No. 831,202
Claims priority, application Japan, June 15, 1968, 43/41,288
Int. Cl. G03c 1/58, 1/54
U.S. Cl. 96—91 R **8 Claims**

Two-component diazotype photosensitive material containing a coupling component of the following general Formula 1 and a diazocompound of the following general Formula 2 gives a navy blue or dark blue dye-image having high density and fastness by developing in an alkaline solution or vapor.



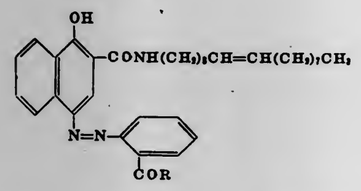
(1)



(2)

3,667,956
LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS CONTAINING CYAN COUPLERS
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,476
Claims priority, application Japan, Feb. 24, 1969, 44/13,216
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **4 Claims**

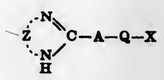
A compound of the general formula



wherein R is a lower alkyl group, a lower alkoxy group, or a phenoxy or aralkoxy group which may have a substituent selected from alkyl, alkoxy and halogen is found to be useful as a cyan coupler providing auto-masking mechanism for light-sensitive color photographic materials so as to compensate the deficient color reproductivity of said materials.

3,667,957
PHOTOGRAPHIC MATERIAL WITH A STABILIZER ANTIFOGGANT BIDENTATE COMPOUND
Jozef Frans Willems, Wilrijk, Frans Clement Heugebaert, Kontich, and Robert Joseph Pollet, Vremde, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
No Drawing. Filed Feb. 13, 1969, Ser. No. 799,097
Claims priority, application Great Britain, Feb. 22, 1968, 8,652/68
Int. Cl. G03c 1/34
U.S. Cl. 96—109 **7 Claims**

Photographic materials are provided which comprise in a light-sensitive silver halide emulsion layer or in a water-permeable layer adjacent thereto a compound of the formula:



wherein:

Z represents the atoms necessary to close a heterocycle,
Q stands for sulphur or selenium,
A stands for alkylene which may be interrupted by one or more hetero atoms, S-alkylene which may be interrupted by one or more hetero atoms, or arylene,
X stands for alkyl, alkenyl or aryl, or
A and X together represent the atoms necessary to complete a saturated heterocycle,

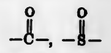
the said compound comprising directly or indirectly linked to the group Z and/or X a —COOM or —SO_3M group wherein M is hydrogen, ammonium, a metal atom or organic ammonium. These materials have reduced fogging tendency, even under conditions of high humidity and heat, and their sensitivity is substantially unaffected by the presence of the aforesaid compound.

3,667,958
PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENTS, COMPOSITIONS AND PROCESSES
Francis J. Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,105
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 **27 Claims**

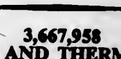
A reducing agent combination of a polyhydroxybenzene reducing agent with a reducing agent which is a hydroxylamine, a reductone and/or a hydrazine, in a photosensitive and thermosensitive element, composition and/or process employing an oxidation-reduction image forming combination provides greater image discrimination or resolution, with an increase in relative speed and improved black tone. Such a reducing agent combination can be employed in an image reproduction sheet in which a radiation sensitive heavy metal salt can be reduced to free metal and form the image components in an oxidation reduction reaction combination by producing a visible color change with an organic silver salt.

3,667,959
PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENT, COMPOSITIONS AND PROCESS
Stanley M. Bojara and Richard A. de Mauriac, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,966
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 **27 Claims**

A non-aqueous, polar, organic solvent, such as a compound containing a



or —SO_2— moiety, in a photosensitive and thermosensitive element suitable for dry processing with heat, provides improved maximum image densities and reduced exposure and processing time in some cases. A combination of a non-aqueous, polar, organic compound, such as one containing a

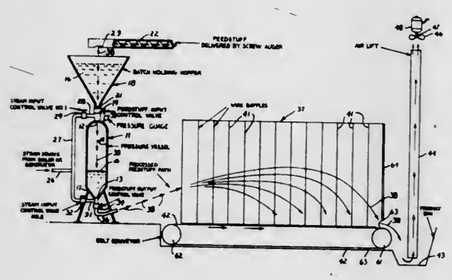


or —SO_2— moiety, in conjunction with a stable source of silver for physical development are useful in photosensitive elements for dry processing. The element can contain a sensitizing dye and a photosensitive silver halide, or other suitable photosensitive metal salts.

3,667,960
SPECTRALLY SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION
Keisuke Shiba, Sato Akira, and Motohiko Tsubota, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Mar. 27, 1970, Ser. No. 23,122
Claims priority, application Japan, Mar. 27, 1969, 44/23,320
Int. Cl. G03c 1/14
U.S. Cl. 96—124 **15 Claims**

Supersensitization of silver halide photographic emulsions by employing a combination of specific sensitizing dyes, one containing a heterocyclic nucleus selected from the group consisting of naphthoselenazole and naphthoxazole and the other of which containing a 2-quinoline nucleus. The particular combination of spectral sensitizing dyes employed provide a high degree of supersensitization over the entire visible range.

3,667,961
PROCESS FOR IMPROVING DIGESTIBILITY OF FEEDSTUFFS FOR RUMINANT ANIMALS
John W. Algeo, Santa Ynez, Calif., assignor to Santa Ynez Research Farm, Santa Ynez, Calif.
Filed Sept. 22, 1967, Ser. No. 674,050
Int. Cl. A23k 1/00
U.S. Cl. 99—2 R **22 Claims**



The invention comprises a rapid process and relatively economical equipment for increasing nutrient availability of ruminant animal feedstuffs, which includes the irreversible rearrangement of initial molecular bond structures of such feedstuffs to different molecular bond structures with concomitant degradation of relatively indigestible molecular structures to shorter chain length more digestible carbohydrates by subjecting ruminant animal feedstuffs in a closed vessel to high pressure steam for relative short time intervals and thereafter rapidly releasing the thus subjected feedstuffs to atmospheric conditions, together with means for successively collecting and storing the thus subjected feedstuffs, and which also includes reducing in the ingested resulting feedstuffs of the proportion of acetic acid in the rumen while increasing the total steam volatile fatty acid output by the rumen microflora.

3,667,962
CARBONATED DRINK BASE FOR MAKING CARBONATED BEVERAGES BY ADDITION TO WATER
Edward L. Fritzberg, Minneapolis, Minn., and Donald C. Fellenz, Westfield, N.Y., assignors to The Pillsbury Company, Minneapolis, Minn.
No Drawing. Filed July 14, 1969, Ser. No. 841,613
Int. Cl. A23l 1/26
U.S. Cl. 99—78 **9 Claims**

A dried base which forms a carbonated beverage when added to water. The base consists of two porous friable bodies, one containing a soluble, thermoplastic, amorphous saccharide and an edible acid, the other a soluble, thermoplastic, amorphous saccharide and an edible carbonate which will react with the acid when placed in water to evolve carbon dioxide. Premature reaction between acid and carbonate is prevented by their physical separation.

3,667,963
METHOD OF MAKING PIZZA
Raymond G. Katter, 2833 Banbury Road, and Joseph L. Katter, 6818 South 2030 East, both of Salt Lake City, Utah 84121
Filed Dec. 17, 1969, Ser. No. 885,750
Int. Cl. A21d 13/00
U.S. Cl. 99—86 **6 Claims**

A pizza or similar food product is prepared by slicing a baked roll, applying a sealing layer of margarine to the soft interior surface of the roll, applying a liquid sauce over the sealing layer, and baking the resulting combination.

3,667,964
ESTERS OF 1,3 DIOLS AND 1,3,5 x-POLYOLS AS ADDITIVES FOR BAKED GOODS
John W. Frankenfeld, Atlantic Highlands, N.J., and Marcus Karel, Newtonville, and Theodore P. Labuza, North Tewksbury, Mass., assignors to Esso Research and Engineering Company
No Drawing. Filed Apr. 1, 1970, Ser. No. 24,796
Int. Cl. A21d 2/16
U.S. Cl. 99—90 P **10 Claims**

Baked food additives which comprise certain esters of polyalcohols, such as esters of 1,3-diols and 1,3,5 x-polyols, are excellent dough conditioners, anti-staling agents and preservatives. The present invention is concerned generally with high quality baked food compositions and is more specifically concerned with additive materials for addition to baked foods, which materials comprise particular esters of particular diols and polyols.

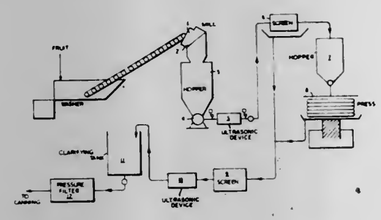
3,667,965
BAKED FLOUR COMPOSITIONS CONTAINING ALIPHATIC DIOLS
John W. Frankenfeld, Atlantic Highlands, N.J., and Marcus Karel, Newtonville, and Theodore P. Labuza, North Tewksbury, Mass., assignors to Esso Research and Engineering Company
No Drawing. Filed Jan. 20, 1970, Ser. No. 4,427
Int. Cl. A21d 2/14
U.S. Cl. 99—90 P **11 Claims**

This invention relates to baked flour compositions which comprise certain aliphatic polyalcohols such as 1,3-diols and 1,3,5, x-polyols. These baked flour compositions containing aliphatic diols have excellent anti-staling properties and greatly improved storage properties due to mold inhibition. In addition, since they are energy dense compounds which are rapidly and completely metabolized, they improve the nutritional qualities of the product.

3,667,966
YEAST RAISED BAKED PRODUCTS AND PREPARATION THEREOF
Albert Peter Centolella, Edwardsburg, Mich., and Billy Gene Razor, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,712
Int. Cl. A21d 2/14
U.S. Cl. 99—91 12 Claims

A yeast raised baked product and a method for preparing such a baked product utilizing a dough additive comprising a polyester of citric acid and sorbitol which imparts improved characteristics to the dough and the baked product resulting therefrom.

3,667,967
PROCESS FOR IMPROVED APPLE JUICE EXTRACTION
Michael L. Coltart, Winfield, British Columbia, and David Paton, Kelowna, British Columbia, Canada, assignors to Sun-Rype Products Ltd., Kelowna, British Columbia, Canada
Filed Apr. 1, 1969, Ser. No. 811,794
Claims priority, application Canada, Dec. 6, 1968, 37,047
Int. Cl. A23l 1/02, 3/30
U.S. Cl. 99—105 5 Claims



A process and apparatus for improving the yield of juice which may be extracted from a vegetable or fruit pulp. The process subjects the pulp to ultrasonic vibrations in the frequency range between 20 and 300 kc/s at a sound intensity of up to about 20 watts/sq. cm. It has also been found advantageous to treat expressed juice, which has been produced by ultrasonic means or otherwise, with ultrasonic vibrations, in order to improve the quality and filterability of the juice. Although ultrasonic vibrations may be generated in many ways it has been found particularly suitable to employ a sonic whistle which may be placed in line in continuous production equipment.

3,667,968
CHEESE FLAVORS
Robert L. Kasik, Oak Lawn, and Anthony J. Luksas, Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 824,250, May 13, 1969. This application May 13, 1969, Ser. No. 824,259
Int. Cl. A23c 19/02, 19/12; A23l 1/26
U.S. Cl. 99—140 R 34 Claims

Cheese flavors and cheese flavored products are produced in a short time by growing a combination of one member of the genus Bacillus and one member of the genus Streptococcus in an aqueous medium containing a protein and a carbohydrate to produce a ferment. The resulting ferment is inoculated with specific cheese flavor organisms such as *Penicillium roquefortii* and further fermented. The product is then formed into a cheese or dried to a powder, as desired.

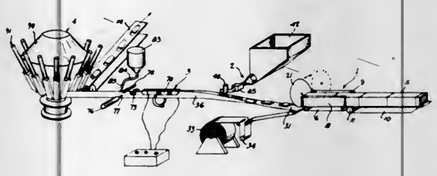
3,667,969
ARTIFICIAL SWEETENING COMPOSITION
Paul Kracauer, New York, N.Y., assignor to American Sweetener Corp., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 808,984, Mar. 20, 1969. This application Sept. 28, 1970, Ser. No. 76,216
Int. Cl. A23l 1/26
U.S. Cl. 99—141 A 10 Claims

The bitter after-taste characteristic of artificial sweetening compositions is eliminated by a composition comprising a major amount of saccharin and minor amounts of d-galactose. The flavor of the sweetening composition may be further improved by the addition of small amounts of sodium chloride and/or calcium hydroxide.

3,667,970
PROCESS FOR PRESERVING MEAT
Juergen Scheide, Holzminden, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Continuation-in-part of abandoned applications Ser. No. 822,290 and Ser. No. 822,291, both May 6, 1969. This application June 3, 1971, Ser. No. 149,813
Claims priority, application Germany, May 10, 1968, P 17 67 438.3, P 17 67 439.4
Int. Cl. A23b 1/00, 3/00
U.S. Cl. 99—169 9 Claims

The surface of fresh meat is treated with a mixture of from 2–30% by weight of a monoglyceride and from 98–70% by weight of a di- or triglyceride of paraffinic or olefinic carboxylic acids with from 8–22 carbon atoms to form a coherent film over the meat surface to improve the storageability and quality of the meat.

3,667,971
METHOD OF FORMING AND WRAPPING FOODSTUFFS
Fred William Brunner, Eugene, Oreg., assignor to Manning's Inc., San Francisco, Calif.
Filed July 13, 1970, Ser. No. 54,115
Int. Cl. B65b 25/06
U.S. Cl. 99—171 R 6 Claims



A method for forming and wrapping foodstuffs such as tamales whereby a foodstuff is deposited on a wrapping material, the foodstuff and wrapping material being formed into a U-shape and then heat sealed across the upwardly extending edges after depositing filling material into the foodstuff. The wrapping material is then heat sealed between adjoining foodstuffs.

3,667,972
CHEMICAL NICKEL PLATING BATHS
Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation of application Ser. No. 687,470, Dec. 4, 1967. This application June 11, 1970, Ser. No. 48,836
Int. Cl. C23c 3/02
U.S. Cl. 106—1 8 Claims

Acidic electroless plating solution comprising nickel ions, hypophosphite ions, and an ion of the group of

sulfamate, fluoborate and mixtures thereof for improved solution stability and providing electroless plates characterized by lower internal stresses so as to provide improved adhesion. Stability is further improved by the addition of glycolate ions and acetate ions. Boric acid is used to further improve characteristics of the plating bath.

3,667,973
SPONTANEOUS FLUORIDE OPAL GLASSES WITH THERMALLY REVERSIBLE OPACITY
James E. Flannery, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Oct. 9, 1970, Ser. No. 79,501
Int. Cl. C03c 3/04
U.S. Cl. 106—54 2 Claims

This invention relates to the manufacture of spontaneous alkali metal fluoride opal glasses containing opacity densifying agents and exhibiting thermally reversible opacity; that is, they may be heated to clearness and cooled to opacity without deformation of the glass being heated. Operative compositions include glasses consisting essentially, by weight on the oxide basis, of 70–80% SiO_2, 1–3% Al_2O_3, 7–14% B_2O_3, 1.5–4% Li_2O, 0–10% R_2O, wherein R_2O is at least one alkali metal oxide selected from the group consisting of K_2O and Na_2O, 3–6% F, and a total of 1–3% of an opacity densifying agent selected from the group consisting of MoO_3, WO_3, and As_2O_3.

3,667,974
PROCESS FOR PREPARING A MOLDED PITCH-POWDER GRANULE SYSTEM WITH AN IMPROVED BONDING MATERIAL AND PRODUCTION PRODUCED THEREFROM
Kaoru Umeya, Sendai-shi, Akira Watanabe, Okayama, and Shinpei Gomi, Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, and Kyushu Taika Renga Kabushiki Kaisha, Okayama, Japan
No Drawing. Filed June 12, 1969, Ser. No. 832,812
Claims priority, application Japan, June 12, 1968, 43/39,898
Int. Cl. C04b 35/02, 35/04
U.S. Cl. 106—58 7 Claims

A refractory which is high in compressive strength at both room temperature and at high temperatues in softening point under load, and in resistance to slags can be economically obtained by compression molding as a first embodiment a mixture comprising 100 parts of powder granules 1 to 30 parts of a special pitch prepared by heating any hydrocarbon containing crude oil at 700° to 2300° C. for a short time and further heat treating the resulting tarry materials at 150° to 550° C. As a second embodiment 100 parts of powder granules are admixed with special pitch and less than 70% of an aromatic tar which has been likewise heated at 700° to 230° C. for a short time, and then further heated at 150° to 550° C.

3,667,975
EXTRUDABLE REFRACTORY FIBROUS MATERIAL
Dwight Maxwell Teague, Birmingham, William F. Bertrand, St. Clair Shores, Philip J. Willson, Royal Oak, and Frank E. Ammermann, Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,900
Int. Cl. C04b 35/10
U.S. Cl. 106—65 4 Claims

A refractory fibrous product composed of refractory fibers coated with a lubricating layer of aluminum metahydroxide whereby the coated fibers form an injectable and extrudable paste, and process for producing same.

ERRATUM
For Class 106—90 see:
Patent No. 3,668,150

3,667,976
COLORED CEMENT
Theodore F. Tanner, Houston, Tex., assignor to General Portland Cement Co., Dallas, Tex.
No Drawing. Filed June 30, 1970, Ser. No. 51,361
Int. Cl. C04b 7/10
U.S. Cl. 106—97 17 Claims

Cement, and particularly portland cement, can be colored to a variety of different hues by admixing selected metals with the raw materials from which the cement is made prior to or during burning of the raw materials. The metals can be introduced in elemental or combined form. Generally, the metals are introduced in amounts from 0.2 to 2.0% by weight expressed as the oxide of the metal based on the total amount of dry raw materials which are introduced into the kiln. Burning temperatures at which the raw materials and coloring agent are reacted are conventional.

3,667,977
EXPLOSION-PROOF ASBESTOS-CEMENT SHAPES
James E. Harbison, Ambler, Pa., assignor to Certain-Teed Products Corporation, Ardmore, Pa.
No Drawing. Filed Feb. 6, 1970, Ser. No. 9,423
Int. Cl. C04b 31/08
U.S. Cl. 106—99 3 Claims

Asbestos-cement shapes are formed from a furnish containing a small quantity of vegetable fibers distributed therein, the shapes being formed by screw extrusion, thereby providing articles or shapes in which fibers extend randomly from the exterior surface of the shapes into the interior regions thereof and thus provide "bleed" channels through which vapor formed in the interior may escape when the shapes are subjected to heating, with consequent substantial elimination of tendency to explode.

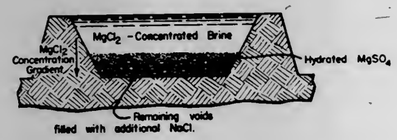
3,667,978
LIGHT-WEIGHT HIGH-STRENGTH CEMENT COMPOSITIONS
Anatole N. Vassilevsky, deceased, late of West Haven, Conn., by Irene Vassilevsky, executrix, West Haven, Conn., and Adolf Renke, Lincolndale, N.Y.; Said Irene Vassilevsky assignor to V.R.B. Associates, Inc., Lincolndale, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 570,743, Aug. 8, 1966, which is a continuation-in-part of application Ser. No. 306,702, Sept. 5, 1963. This application May 26, 1969, Ser. No. 829,158
Int. Cl. C04b 7/00, 9/00, 9/14
U.S. Cl. 106—105 4 Claims

A hydraulic cement binder consisting of magnesium oxide, magnesium sulfate and calcium chloride in proportion such that a magnesium oxychloride/magnesium oxysulfate/calcium sulfate hardenable mass is produced upon addition of water and setting. The binder is combined with organic matter which is treated to partially hydrolyze the cellulosic material and thereafter neutralize it. For decreased brittleness and increased waterproofing characteristics, the binder contains sodium silicate and silicofluoride.

3,667,979
INVESTMENT CASTING WAX
John C. Merges, Jr., Glen Mills, and Richard E. Ware, Trainer, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Apr. 30, 1971, Ser. No. 139,243
Int. Cl. C08h 9/10
U.S. Cl. 106—268 16 Claims

An improved investment casting wax composition consisting essentially of about 35–65 weight percent refined petroleum wax, solid chloronated polyphenyl, acid type montan wax and stearic acid. Said composition has the advantage of low shrinkage, low penetration and rapid set up.

3,667,980
STRONG SALT FLOOR COMPRISING HALITE CRYSTALS, MAGNESIUM SULFATE AND POTASSIUM
Ulrich E. G. Neitzel and David S. Butts, Ogden, Utah, assignors to Great Salt Lake Minerals & Chemicals Corporation, New York, N.Y.
Filed Sept. 24, 1968, Ser. No. 761,961
Int. Cl. C08h 17/24
U.S. Cl. 106—286 10 Claims



A reinforced, sodium chloride floor for a solar pond is developed. First, a brine is evaporated under conditions which deposit a sodium chloride layer, containing a high volume-percent of voids, on the pond bottom. The sodium chloride layer is then covered with brines of preselected compositions such that first hydrated magnesium sulfate and then additional sodium chloride is deposited in the voids. There results a floor which is stronger and more compact than sodium chloride floors developed by prior art methods.

3,667,981
UPGRADED CAST REFRACTORY PRODUCTS
Marc Roland Gilbert Esnoult, Le Pontet, and Michel Louis Ayme-Jouve, Sorgues, France, assignor to L'Electro-Refractaire, Paris, France
No Drawing. Filed Dec. 23, 1969, Ser. No. 887,774
Claims priority, application France, Dec. 27, 1968, 181,380
Int. Cl. E04g 23/02, 21/00
U.S. Cl. 117—2 R 6 Claims

The invention relates to cast refractory products having dispersed shrinkage cavities or voids, these products being characterized in that said cavities or voids are filled with a suitable grout comprising powdered refractory materials.

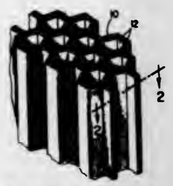
3,667,982
PLASTICS COATED MATERIAL
Edwards Bukalders, Barnsley, England, assignor to Bukflex Processes Limited, Barnsley, England
No Drawing. Filed June 29, 1970, Ser. No. 50,912
Int. Cl. B44c 1/02, 5/00
U.S. Cl. 117—10 11 Claims

The invention comprises a method of producing a grained effect on the face of a layer of thermoplastic material coated on to a sheet of pliable carrier material, in which a protective film is applied to the surface of said layer, and the material is tumbled or crumbled to distort the layer to produce the grained effect.

3,667,983
FLEXIBLE COLOUR PRINTED LAMINATE AND METHOD OF MAKING SAME
Robert H. Haggas, 9 Southway, Eldwick, and John S. Haggas, 4 Stoney Ridge, Cottingley, both of Bingley, England
No Drawing. Continuation-in-part of application Ser. No. 626,937, Mar. 30, 1967. This application Dec. 4, 1969, Ser. No. 882,275
Claims priority, application Great Britain, Apr. 7, 1966, 15,551/66
Int. Cl. B44d 1/32; B44m 1/24
U.S. Cl. 117—15 8 Claims

A colour printing process which enables conventional lithographic and letterpress inks and techniques to be employed for printing on classes of flexible thermoplastic sheet material, to which such inks, being polymerisable, do not normally adhere readily, so as to provide a durable print. The problem of obtaining an enduring bond between such inks and base sheet, is overcome by the use of a synthetic lacquer which permeates the printwork and serves both as a bonding agent and as a protective coating. The resulting colour prints are more delicate than those produced by the silk screen process which has hitherto normally been used for such base materials.

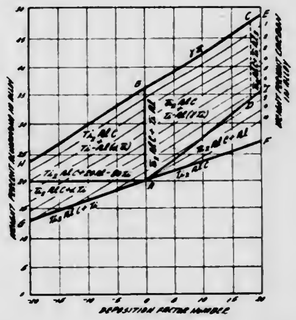
3,667,984
COATED POROUS STRUCTURES AND METHOD FOR FORMING THEM
Whitney R. Adams, Wilmington, Del., assignor to Scott Paper Company, Delaware County, Pa.
Application Aug. 16, 1968, Ser. No. 756,344, which is a continuation-in-part of application Ser. No. 491,612, Sept. 30, 1965. Divided and this application July 14, 1969, Ser. No. 870,692
Int. Cl. B44d 1/094
U.S. Cl. 117—21 11 Claims



Porous structures such as cellular honeycombs and reticulated foams coated wtih organic resins of the thermoplastic or thermosetting type, and structures in which the internal material comprising the structure being coated is removed as by leaching or hydrolysis to leave only the coating material as an integral structure. Processes for forming the above structures in which the surface of the porous structure is treated to temporarily attach a coating material in the form of powder, as by wetting the surface with a liquid or an adhesive and dusting the surface with the powder, heated to melt the powder into a smooth contiguous coating, and, in some instances, subjected to hydrolysis to remove the material comprising the original structure being coated so as to leave only the structure formed by the coating material.

3,667,985
METALLIC SURFACE TREATMENT METHOD
David J. Levine and Moses A. Levinstein, Cincinnati, Ohio, assignors to General Electric Company
Original application Dec. 14, 1967, Ser. No. 693,691, now Patent No. 3,540,878. Divided and this application Apr. 23, 1970, Ser. No. 43,289
Int. Cl. B44d 1/094, 1/34
U.S. Cl. 117—22 4 Claims

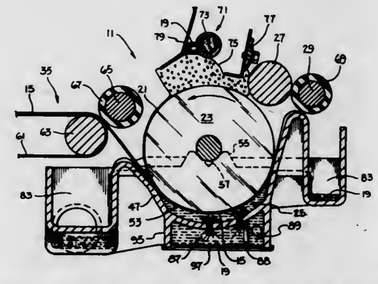
The metallic powder produced from a ternary alloy of Ti, Al and C, having a dispersion of Ti_3AlC complex carbide in a matrix of Ti or Al or their alloys, preferably the binary Ti_3Al with the Ti within the gamma range of the Ti-Al phase diagram and avoiding detrimental amounts of $TiAl_3$, allows accurate control of the deposition of either or both Al and Ti or their alloys in a diffusion pack-type method for coating an article. Deposition is brought about through the use of a halide salt activator preferably in the fluoride or chloride class.



3,667,986
OPAQUE COMPOSITION FOR FORMING A WINDOWED WEB IN A CATHODE RAY TUBE SCREEN STRUCTURE
Robert A. Hedler, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
No Drawing. Filed May 28, 1970, Ser. No. 41,530
Int. Cl. B44d 1/02, 5/00; C03c 17/00
U.S. Cl. 117—33.5 CM 5 Claims

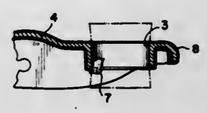
An improved opaque composition which is formulated to be utilized in a minimal step process for forming a uniform opaque interstitial pattern for a color cathode ray tube screen structure. The opaque composition, containing a high percentage of an organic solvent, is disposed in a manner to form an opaque interstitial web having multitudinous windows therein wherein phosphor pattern elements are subsequently disposed.

3,667,987
METHOD OF DEVELOPING LATENT ELECTROSTATIC IMAGES
George J. Miller, Skokie, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,393
Int. Cl. G03g 13/10, 15/10
U.S. Cl. 117—37 LE 6 Claims



A latent electrostatic image on a surface of a carrier is developed into a visible image by moving the carrier along a developing path with the image-bearing surface contacting a developing liquid in effective field control spacing with an electrically conductive surface of an image intensifier moving along the developing path. Developing liquid is supplied to the surface of the image intensifier by a porous wiper wetted with developing liquid, and an incoming image-bearing carrier is guided along the developing path in contact with the developing liquid by ridges extending along the developing path on an upwardly concave wall which forms a trough through which the image intensifier moves. As the carrier moves through the developing trough, the image-bearing surface is pressed into effective field control spacing with the image intensifier over an elongated distance of the developing path by developing liquid which is received into a chamber and directed against the back side of the carrier by orifices formed in the upwardly concave wall. After passing through the trough, the carrier is guided through a pair of cooperating squeegee rollers which remove excess developing liquid from the carrier.

3,667,988
MASKING IN SURFACE TREATMENT OF ARTICLES
Seinosuke Horiki, Nagoya-shi, Japan, assignor to Nagoya Yukagaku-Kogyo Kabushiki Kaisha, Takai-shi, Aichi-ken, Japan
Filed June 30, 1970, Ser. No. 51,141
Claims priority, application Japan, July 9, 1969, 44/54,378; May 25, 1970, 45/44,692
Int. Cl. B44d 1/02, 1/52
U.S. Cl. 117—38 6 Claims

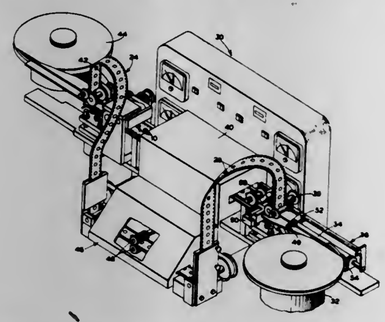


A method of masking for protecting a specified area of surface of articles from coating or plating characterized in that protecting elements made of synthetic resin foam in the shape of a column, doughnut, ball, truncated cylinder, prism, cube, cap or ring are used and wherein said synthetic resin foam is stable and restrains elasticity at normal temperature, but when heated above a predetermined temperature rapidly contracts in its volume, thereby said area being effectively masked during coating or plating and during heat-treatment of the coated or plated article the protecting element is contracted in volume and freely removed from the article.

3,667,989
METHOD FOR SELECTIVELY COATING ARTICLES
John M. Keating, Muhlenberg Park, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Original application Dec. 26, 1968, Ser. No. 787,040, now Patent No. 3,587,524, dated June 28, 1971. Divided and this application Aug. 6, 1970, Ser. No. 61,786
Int. Cl. B44d 1/18, 1/52
U.S. Cl. 117—38 3 Claims

Articles to be selectively coated, are conveyed through a coating station by a tape which serves also to mask areas of the articles where coating is not desired. The tape is in the form of an endless belt and coating material is continuously removed from the tape so that each article to be coated is presented with a cleaned portion of the tape as a mask. Automatic apparatus is provided to al-

ternately raise and lower sections of the tape over a support track for the articles in coordination with feed-



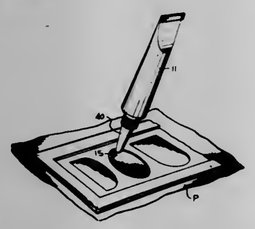
ing and accumulating devices to bring parts into and out of engagement with the tape.

3,667,990

PRODUCTION OF INDICIA UPON SURFACE

Murray K. Rogers, deceased, late of Somerset, Ky., by May B. Rogers, executrix, Somerset, Ky., assignor to Mi-Marker Corporation, Ferguson, Ky.

Filed June 18, 1969, Ser. No. 834,620
Int. Cl. B05c *1/16, 5/00;* B44d *1/09, 1/52*
U.S. Cl. 117—38 8 Claims



A stenciling system including method and apparatus for marking indicia on a surface wherein the dispensing nozzle of a flexible tube of marking material is applied directly to said surface while being guided by said stencil. Regulation of the flow of ink is accomplished through manual pressure on the sides of the tube. A stencil assembly is disclosed having a unitary frame with bent-over edges to hold individual stencil members in position to form a composite display. A package is included in the kit for storing two stencils and two tubes of ink, said stencils bisecting the package to form compartments for the tubes.

3,667,991

PROCESSES FOR NICKEL PLATING METALS

George A. Miller, South Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,014
Int. Cl. B44d *1/092;* C23c *3/02*
U.S. Cl. 117—50 8 Claims

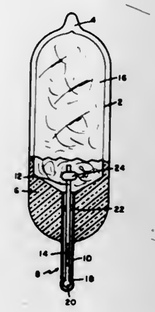
Aluminum metals having nickel coatings plated directly thereon may be prepared by electroless deposition of nickel from an aqueous plating solution containing nickel ions, dimethylaminoborane, a carboxylic acid complexing agent and a stress reducer. Nickel plated magnesium metals and beryllium metals may be similarly prepared. The metal surface is rendered susceptible to plating by initially contacting it with a novel activating solution containing ammonium bifluoride and either dimethylaminoborane or nitric acid, and then rinsing if nitric acid is used. Where dimethylaminoborane is used in the activating solution, the metal surface is thereafter stabilized with an aqueous stabilizing solution of dimethylaminoborane. Electroless plating is then carried out, producing a stress free hermetically sealed nickel coating of substantially uniform thickness directly on the aluminum metal, magnesium metal, or beryllium metal surface. Once such a coating is established, further plating with copper, nickel or other metals may be effected by electrolytic or electroless means. The nickel coated surface is preserved in a proper state for any such additional plating by holding it in an aqueous preservative solution of dimethylaminoborane.

3,667,992

FULMINATING MATERIAL APPLICATION TECHNIQUE

Stephen V. Brown, Williamsport, Thomas B. McDonough, Allenwood, and John W. Shaffer, Williamsport, Pa., assignors to Sylvania Electric Products Inc.

Filed Oct. 22, 1970, Ser. No. 83,135
Int. Cl. B44d *1/14*
U.S. Cl. 117—69 8 Claims



A method of applying fulminating material on the primer anvil wire of a percussive-type photoflash lamp in which: the anvil wire is dipped into an aqueous slurry containing red phosphorus to provide a coating thereof on the wire; the coating is dried; and then the coated wire is dipped into an aqueous solution of sodium chlorate so as to permeate the phosphorus containing coating with the chlorate solution.

3,667,993

METHOD FOR COATING A SUBSTRATE WITH A HEAT CURABLE SILICONE RUBBER AND RESULTING PRODUCT

Joseph Eugene Stevenson, Adrian, Mich., assignor to Stauffer-Wacker Silicone Corporation

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,341
Int. Cl. B32b *25/20;* B44d *1/14*
U.S. Cl. 117—72 3 Claims

Substrates are coated with heat curable silicone rubbers using alkenyl acyloxysilanes as primers.

3,667,994

TEXTURED RELEASE PAPER

Franklin J. Ward, South Portland, Maine, assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Filed July 24, 1970, Ser. No. 58,175
Int. Cl. B32b *29/00;* B44d *1/14*
U.S. Cl. 117—76 P 4 Claims

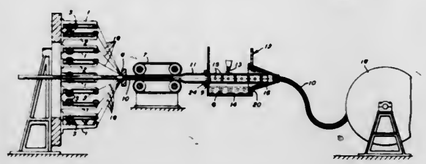
A textured release paper is made by first coating a base paper with a mineral pigment coating having a smooth surface, then applying an alcoholic solution of a polyamide which forms a textured surface upon drying and curing. Polyvinyl chloride plastisols are applied to the release paper, dried and cured, and when stripped off as self-supporting films exhibit the same embossed texture of the polyamide surface. The release coating may contain a thermosetting resin which provides hardness and solvent resistance to the release coating.

3,667,995

METHOD FOR COATING A REINFORCED HOSE

Robert H. Kaufman, Temple, and Donald Richardson, Wyomissing, Pa., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 5, 1970, Ser. No. 87,062
Int. Cl. B44d *1/08, 1/06*
U.S. Cl. 117—94 5 Claims



An improved method for manufacturing strand reinforced flexible hose comprising moving a strand covered hose carcass through a coating stage in such a manner that substantially only compressive forces are present in the hose carcass in the direction parallel to its longitudinal axis at the time the hose is wound on a reel for storage. The hose is ridded of any excess coating material and stored on a reel or other suitable storage device at a rate not greater than the rate at which the hose is exiting from the coating operation. The apparatus comprises means for moving the hose through the coating operation with substantially only compressive forces as aforesaid, and means for coating the strand reinforced hose.

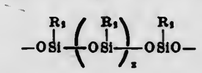
3,667,996

HYDROXYLATED COPOLYMERS COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS

Robert C. Antonen, % Dow Corning Corporation, Midland, Mich. 48640

No Drawing. Original application Feb. 25, 1969, Ser. No. 802,217, now Patent No. 3,632,798, dated Jan. 4, 1972. Divided and this application Oct. 27, 1970, Ser. No. 84,486
Int. Cl. B44d *5/00, 5/12*
U.S. Cl. 117—97 7 Claims

Hydroxylated copolymers of $(C_6H_5)_2SiO$ units and $CH_3SiO_{1.5}$ units are disclosed. The diphenylsiloxane units are present in an amount of 20 to 50 mol percent and are bonded to monomethylsiloxane units which contain the hydroxyl groups. Also disclosed are the above hydroxylated copolymers modified by linking segments of



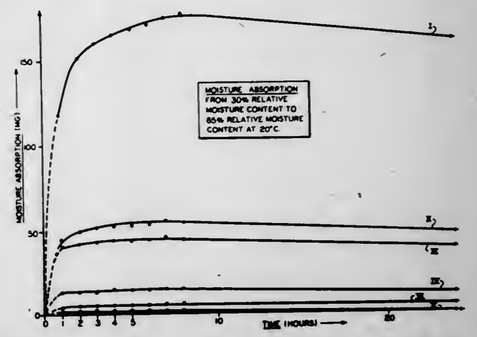
where x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments are present in amounts of 1 to 50 weight percent. The hydroxylated copolymers and the modified hydroxylated copolymers are resins useful in protective coatings, laminates, release coatings and molding resins.

3,667,997

PROCESS FOR THE MANUFACTURE OF OPEN-PORE POLYVINYL CHLORIDE FOAMS HAVING HYDROPHILIC QUALITIES WHICH ARE CAPABLE OF A REVERSIBLE ABSORPTION AND YIELDING OF MOISTURE

Otto Fuchs, Oberlar, Germany, assignor to Dynamit Nobel AG., Troisdorf, Bezirk, Cologne, Germany

Filed Jan. 2, 1969, Ser. No. 789,083
Claims priority, application Germany, Jan. 2, 1968, P 16 69 997.1
Int. Cl. B32b *27/08*
U.S. Cl. 117—98 5 Claims



Production of polyvinyl chloride foam form articles which are hydrophilic and have reversible absorption and desorption of moisture characteristics by impregnating previously formed foams of polyvinyl chloride with about 4 to 20 weight percent polyvinyl alcohol. The polyvinyl alcohols as used in an acetyl content of less than about 5% and are impregnated as an aqueous solution thereof.

3,667,998

PROCESS FOR APPLYING COHERENT COATINGS

Heinz Esser, Burscheid, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,502
Claims priority, application Germany, Sept. 28, 1968, P 17 96 270.8
Int. Cl. B44d *1/08, 1/12*
U.S. Cl. 117—105.5 6 Claims

Process for the production of a coherent coating on a support by the method of simultaneously spraying a dispersion of rubber or synthetic resin and/or an emulsion of bitumen or tar or tar pitch, with a precipitating agent for the emulsion or dispersion, on to the support in which process a dispersion or emulsion is used which contains 5 to 85% by weight of an inorganic, non-fibrous filler, based on its total solids content.

3,667,999

FLAME RETARDANT CELLULOSIC MATERIALS

Francis Raymond Stoveken, Scotch Plains, and Warren Clifford Mayer, Somerville, N.J., assignors to Johnson & Johnson

No Drawing. Filed Apr. 15, 1969, Ser. No. 816,414
Int. Cl. C09k *3/28;* C09d *5/18;* D21h *1/28*
U.S. Cl. 117—137 6 Claims

Flame retardant materials having excellent tensile strength, good tear resistance and elongation, improved drape and softness comprising a cellulosic base structure, a self cross-linked polymeric acrylic resin, ammonium bromide, and a weakly basic, water-soluble aliphatic organic, nitrogenous compound containing an amino group; and methods of making the same by simplified single-bath procedures.

3,668,000

ANTI-SOILING POLYESTER TEXTILE MATERIAL

Alex S. Forschirm, Lake Hiawatha, and Louis E. Trepasso, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 845,039, July 25, 1969. This application Apr. 2, 1970, Ser. No. 22,140
Int. Cl. B23b 27/06; D06m 15/04
U.S. Cl. 117—138.8 F 3 Claims

There is provided a method of preventing wet-soil redeposition and improving the stain-release characteristics of textile materials comprised of from about 20 to about 100 percent (by weight) of polyester comprising the step of incorporating into said textile material from about 0.0001 to about 10 percent (by weight of polyester fiber in said textile material) of hydroxypropyl methyl cellulose prior to the time said textile material is laundered.

3,668,001

FIBROUS STRUCTURE HAVING DURABLE ELASTICITY AND CREASE-RESISTIVITY AND ITS MANUFACTURE

Kenjiro Hosokawa, Osaka, Masao Matsui, Takatsuki, and Noria Endo, Michio Ishikawa, and Susumu Tokura, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 29, 1969, Ser. No. 829,135
Claims priority, application Japan, Mar. 28, 1969, 44/23,608
Int. Cl. D06m 15/00
U.S. Cl. 117—139.4 29 Claims

A fibrous structure such as yarns, fabrics, clothes and the like, having durable elasticity and crease-resistivity, particularly ladies hosiery having excellent smoothness, softness and stretchability, which is manufactured by applying homogeneously to a fibrous structure at most 10% by weight, based on the structure, of polyorganosiloxane prepolymer in the form of its non-aqueous solution together with catalyst for polymerization thereof and then by heating the structure at 50–200° C. to polymerize prepolymer thereon into polyorganosiloxane having an elongation at break of at least 50%, a tensile strength at break of 1–50 kg./cm.² and a hardness of 5–50°.

3,668,002

SHADOW MASK HAVING FOCUSING FUNCTION AND METHOD OF MAKING SAME

Tadao Okabe, Hachioji-shi, Makoto Tanaka, Musashino-shi, Shozo Tamura and Masakazu Fukushima, Hachioji-shi, and Mitsuru Oikawa, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 25, 1969, Ser. No. 836,519
Claims priority, application Japan, July 1, 1968, 43/45,085; Dec. 6, 1968, 43/88,980
Int. Cl. H01j 29/46
U.S. Cl. 117—210 6 Claims



A method of making a shadow mask having a focusing function comprising the steps of preparing an insulator having the form of a paste prepared by mixing powdered glass in a dispersion medium, thinly coating the insulator on a shadow mask electrode having electron beam holes, subjecting the insulator to heat treatment, and disposing a shadow mask lens electrode on the insulator.

3,668,003

PRINTED CIRCUITS

Ralph William Furness, Ealing, London, England, assignor to Cirkitrite Limited

No Drawing. Filed Nov. 26, 1969, Ser. No. 880,362
Int. Cl. C23c 3/02
U.S. Cl. 117—212 10 Claims

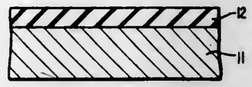
A method is provided for forming a conductive pattern on a printed circuit board. A non-conductive substrate is first sensitized over an entire region and an activating agent is applied as a pattern within the sensitized region. The activated substrate is then immersed in an electroless plating solution to deposit a metal layer on the activated pattern. A heavier layer of metal may then be applied to the conductive pattern by an electrolytic process.

3,668,004

SEMICONDUCTIVE DEVICE FOR AND METHOD OF MANUFACTURING THE SAME

Masayuki Yamamoto, Hisashi Toki, and Hideo Shibuya, Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original application Aug. 30, 1967, Ser. No. 664,461. Divided and this application Aug. 29, 1969, Ser. No. 871,103
Claims priority, application Japan, Sept. 2, 1966, 41/57,558; Sept. 12, 1966, 41/59,837; Mar. 24, 1967, 42/17,991
Int. Cl. B44d 1/16, 1/18
U.S. Cl. 17—215 8 Claims



This specification discloses a semiconductor device comprising a silicon substrate, an insulating film containing silicon oxide and phosphorus oxide which is formed on the surface of said silicon substrate, and a protective coating containing aluminum oxide which is formed on the insulating film.

In the semiconductor device of this invention, said protective coating containing aluminum oxide serves to prevent said insulating film containing silicon oxide and phosphorus oxide from reacting with any moisture in the external atmosphere, thereby improving the water resisting property of the semiconductor device and stabilising the semiconductor surface characteristics of the latter.

3,668,005

PROCESS FOR THE COATING OF ELECTRODES

Guy Sluse, Rixensart, and Gustave Joannes, Abolens, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,628
Claims priority, application Luxemburg, Jan. 9, 1970, 60,168
Int. Cl. B44d 1/18
U.S. Cl. 117—215 13 Claims

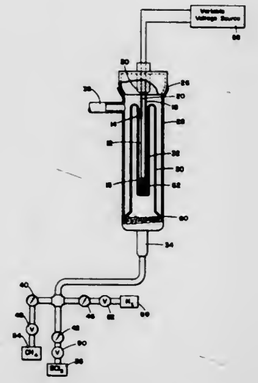
Electrodes coated with ruthenium dioxide are manufactured by applying an anchoring layer containing at least one compound oxidizable by ruthenium tetroxide to the area of an etched metal support wherein the ruthenium dioxide is to be fixed, exposing the thus coated support to ruthenium tetroxide in the gaseous state, which is decomposed to ruthenium dioxide upon contact with the anchoring layer on which it is preferentially fixed and then heating the thus treated support. Electrodes produced in this manner have an adherent coating of ruthenium dioxide which is resistant to electrolyte corrosion and support high current densities.

3,668,006

FORMATION OF HIGH-STRENGTH HIGH-MODULUS COATED FILAMENTS

John B. Higgins, Philadelphia, and Arno Gatti, Norristown, Pa., assignors to General Electric Company

Continuation of application Ser. No. 483,978, Aug. 31, 1965. This application June 2, 1969, Ser. No. 834,194
Int. Cl. C23c 13/04
U.S. Cl. 117—231 1 Claim



A substrate of core filament, of relatively small diameter, is heated to at least 900° C. in the presence of hydrogen, methane and boron trichloride in preselected proportions to produce a strong, stiff, relatively large diameter filament which, apart from the core, comprises a 21–35% carbon, remainder boron, compound essentially free of faults, cracks, grain boundaries, etc. Preferably a tungsten substrate filament about 1 mil in diameter is heated to 900° C. and then 1200° C. in the presence of an atmosphere comprised, in mole fractions, of the following: 0.605–0.686 hydrogen, 0.076–0.185 methane, and 0.210–0.238 boron trichloride. After several minutes filamentary diameters on the order of 4–7 mils are attained with filament properties approaching those of amorphous boron carbide.

3,668,007

SYRUP FRACTIONATION PROCESS

Carl Thomas Egger, Gerald Bernard Pfundstein, and Donald Lee Gillenwater, Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,302
Int. Cl. B01d 13/00; C13k 1/06, 1/08
U.S. Cl. 127—38 5 Claims

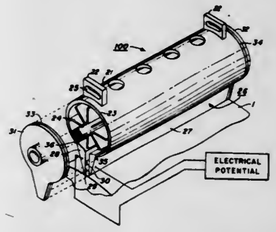
Starch is subjected to hydrolysis with an acid to convert the starch to hydrolyzate product which is then fractionated under applied pressure by means of membrane separation to recover a lower conversion product and a higher conversion product.

3,668,008

IONIZED AIR CLEANING DEVICE

Gerard T. Severynse, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 4, 1969, Ser. No. 830,337
Int. Cl. G03g 13/00, 15/00; B08b 5/00
U.S. Cl. 134—1 8 Claims



Method and apparatus for cleaning a residual toner powder image bearing surface after transfer of substantially all of a charged toner image therefrom to a support medium. A flow of ionized air is directed to the surface and neutralizes any charge on the residual particles remaining on the surface after image transfer to allow the particles to be readily removed. A nozzle is utilized to direct the flow against the surface and ionizes the air flowing therethrough by applying a potential between two electrically insulated opposite sides of the nozzle.

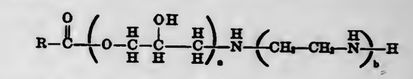
3,668,009

CLEANING METHOD

Fred Norman Teumac, South Bend, Ind., and Lester W. Harriman, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,079
Int. Cl. C23g 1/16; B08b 3/08
U.S. Cl. 134—2 7 Claims

Improved method of cleaning a ferrous metal surface having a hardness deposit by contacting it with an aqueous alkaline cleaning solution containing about 0.1 to 40 weight percent of an ammoniated polycarboxylic acid complexing agent. The improvement involves including with the solution in an amount of from 0.0005 to 0.1 weight percent a corrosion inhibiting compound of the formula:



wherein R is an alkyl or alkenyl group containing from 12 to 18 carbon atoms, *a* is 1 or 2 and *b* is 1–5.

3,668,010

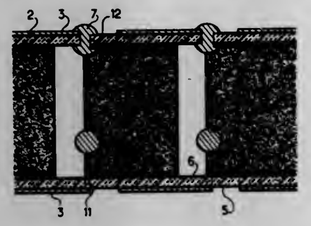
FUEL CELLS AND FUEL CELL BATTERIES OPERATING AT HIGH TEMPERATURE AND PROCESS OF MANUFACTURE THEREOF

Jacques Fally, Orsay, Yvon Lazennec, Saint-Michel-sur-Orge, and Claude Lasne, Antony, France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed May 15, 1970, Ser. No. 37,641
Claims priority, application France, May 16, 1969, 6915968; Oct. 1, 1969, 6935500
Int. Cl. H01m 27/16
U.S. Cl. 136—86 F 19 Claims

A solid electrolyte fuel cell operating at a high temperature, comprising several elements electrically connected in series. These elements are supported by one electrolyte

tube, and one end of the external electrode of an element protrudes slightly above the internal electrode of the following element. This enables simplified assembly and a reduction in the weight and the cost price of the fuel cell.



3,668,011

GALVANIC CELL BATTERY WITH GAS DIFFUSION ELECTRODES

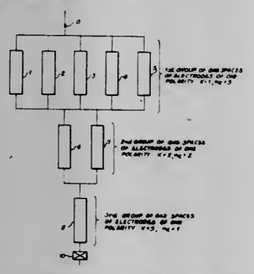
Horst Grune and August Winsel, Kelkheim, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 8, 1968, Ser. No. 751,097

Claims priority, application Germany, Aug. 19, 1967, V 34,280

Int. Cl. H01m 27/02

U.S. Cl. 136—86 R **11 Claims**



Galvanic cell battery having a plurality of gas diffusion electrodes of one or both polarities wherein the gas chambers of all the electrodes of one polarity are arranged in a plurality of groups such that, with respect to the flow of operating gas through the gas chambers, all the gas chambers in one group thereof are connected in parallel with one another and all the groups of gas chambers of the electrodes of the same polarity are connected together in series with one another and the number of gas chambers in the respective groups decreases continuously from the first to the last of the series of groups.

3,668,012

ELECTRODE FOR ELECTROCHEMICAL DEVICES AND METHOD OF ITS MANUFACTURE

Margarete Jung, Kelkheim, Taunus, and Hans H. von Doehren, Frankfurt am Main, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 325,567, Nov. 22, 1963. This application Nov. 13, 1968, Ser. No. 791,827

Int. Cl. H01m 27/04

U.S. Cl. 136—86 D **7 Claims**

An electrode especially suitable for use in electrochemical cells, like in a fuel cell with alkaline electrolyte in which the catalytically active metal is Raney metal, Raney iron or Raney cobalt partically coated with copper, mercury, silver, or alloy or a mixture thereof. The fuel cell comprising conventional elements, an alkaline electrolyte and said electrode. The electrodes have improved catalytic activity, especially improved load capacity and an improved rest potential.

3,668,013

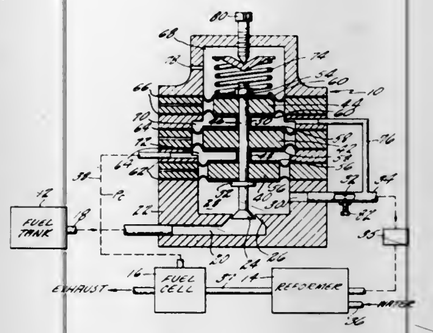
FUEL CELL SYSTEM WITH PNEUMATIC FUEL FLOW CONTROL

Thomas C. Franz, Bolton, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 21, 1969, Ser. No. 817,697

Int. Cl. H01m 27/02; G05d 11/02

U.S. Cl. 136—86 B **5 Claims**



A control is disclosed for automatically metering fluid flow as a function of the difference between two pressures or of a single pressure. A restriction is disposed in the fluid outlet line so that the metered flow will depend upon pressure differential across the restriction. The pressure upstream of the restriction is regulated by a valve in the supply line activated by a computing diaphragm assembly consisting essentially of three spaced interconnected disc elements responsive to the difference between the two pressures or a single control pressure when one of the pressures is fixed.

3,668,014

ELECTRODE AND METHOD OF PRODUCING SAME

Emanuel G. Katsoulis, Long Island City, and William S. Pryor, Roslyn Estates, N.Y., assignor to Leesona Corporation, Warwick, R.I.

No Drawing. Filed June 10, 1968, Ser. No. 735,581

Int. Cl. H01m 35/00

U.S. Cl. 136—120 **10 Claims**

A mat of polyfluorocarbon fibers having controlled pore size and hydrophobicity is impregnated with a catalytic substance to form a light-weight catalytic mass having a low, uniform loading of the catalytic substance. This catalytic mass, particularly when combined with an electrically-conducting element, and/or a continuous hydrophobic polymer membrane is suitable for use as an electrode in an electrochemical cell, e.g. as a fuel or oxidant

electrode in a fuel cell or as the cathode in a metal-air battery, wherein it provides high current densities at relatively constant voltages over a long period of time.

3,668,015

HIGH VERSATILE RADIOISOTOPE THERMOELECTRIC GENERATOR

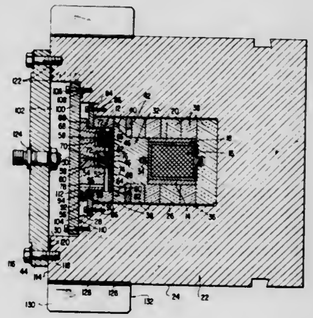
Alan J. Streb, George S. Stivers, and Howard R. Kelly, Baltimore, Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed May 15, 1967, Ser. No. 638,367

Int. Cl. H01v 1/04, 1/30; G21h 1/10

U.S. Cl. 136—202 **10 Claims**

An improved thermoelectric generator assembly including a radioisotopic heat source capsule, thermal insulation in the form of an open-ended cup surrounding the capsule and directing the heat axially toward the open end, shielding means including an open-ended corrosive resistant cylindrical casing for receiving the cup-shaped insulation and the heat source capsule in nested fashion. Thermoelectric converter means are positioned within the open end of the cup-shaped insulation, thermally coupled to the heat source capsule, and a first highly heat conductive cover overlies the thermoelectric converted means



with its periphery contacting a portion of the open-ended casing. A second corrosive resistant cover overlying the first cover, sealed to the cylindrical casing and forming therewith a highly corrosive resistant assembly.

3,668,016

PROCESS FOR PRODUCING COLD-ROLLED STEEL PLATE HIGH IN THE COLD-FORMABILITY

Mineo Shimizu, Hiroshi Takechi, Hiroyuki Kajioka, and Minoru Kawaharada, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

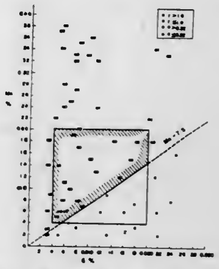
Filed Mar. 3, 1969, Ser. No. 803,669

Claims priority, application Japan, Mar. 2, 1968, 43/13,459

Int. Cl. B22d 25/06

U.S. Cl. 148—2 **1 Claim**

Cold-rolled steel having excellent cold-formability is made by pouring into a mold a molten steel having a composition of C≦0.07 wt. percent, 0.04 to 0.20 wt. percent Mn, 0.004 to 0.020 wt. percent S, the ratio of Mn to S being at least 7, not more than 0.0030% N, and the balance iron and impurities. The molten steel is allowed to rim in the mold for a time interval. Then the core of the molten steel is killed by adding Al to the molten steel after the time interval, such that the acid-soluble Al in the remaining molten steel is more than 0.010% to obtain an ingot. The ingot is then subjected to hot-rolling, cold-rolling recrystallizing and annealing.



3,668,017

TUNGSTEN BORIDE-CONTAINING ARTICLES AND PRODUCTION THEREOF

Daniel Paul Henri Mandineau, Ponthierry, Michele Yvonne Christiane Mourey, and Georges Philippe Henri Pizzini, Paris, and Jacques Constant Poulain, Antony, France, assignors to Ecole Nationale Superieure des Mines de Paris, and Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A., both of Paris, France

No Drawing. Filed Dec. 5, 1969, Ser. No. 882,713

Claims priority, application France, Dec. 10, 1968, 177,408

Int. Cl. C23c 11/08

U.S. Cl. 148—6.3 **2 Claims**

Articles, preferably of filamentary form, containing or consisting essentially of tungsten boride have improved mechanical properties when the tungsten boride W_2B_5 constitutes at least 80% of the tungsten boride content. When the article consists of a tungsten boride core with an outer layer of boron, the latter is preferably amorphous.

3,668,018

METHOD OF AUTOMATICALLY CONTROLLING THE LOCATION OF A NOZZLE IN HEAT TREATMENTS BY HOT GAS FLAMES

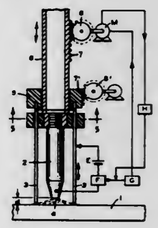
Yoshiaki Arata, Amagasaki, and Katsunori Inoue, Ashiyashi, Japan, assignors to Iwatani & Co. Ltd., Osaka, Japan

Filed Feb. 24, 1969, Ser. No. 801,286

Claims priority, application Japan, Apr. 30, 1968, 43/28,902

Int. Cl. B23k 7/00

U.S. Cl. 148—9.5 **4 Claims**



The distance between a gas flame nozzle used in heat treating and the work is automatically controlled so that

the heat is transferred most effectively to the work. Electrodes adjacent to the nozzle project down toward the flame and detect any variation in electrical characteristics of the flame, the detected values being transmitted in the form of control signals to an automatic control system which maintains the nozzle at optimum distance from the work.

3,668,019

ALUMINUM ELECTRICAL CONDUCTOR WIRE

Harold Y. Hunsicker, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,313
Int. Cl. C22c 21/00; C22f 1/04
U.S. Cl. 148—11.5 A 8 Claims

Electrical conductor wire in a strain-hardened condition suited for use in stranded conductors for above-ground power transmission and composed of an aluminum base alloy containing 0.04 to 0.3% magnesium and up to 0.5% copper, the balance being aluminum with certain maximum limits on other elements and impurities. This wire and stranded conductor produced therefrom exhibits a highly useful combination of conductivity, strength and resistance to creep.

3,668,020

METHOD OF MAKING STEEL WIRES

Wilbert A. Lucht, Orange, Conn., assignor to United States Steel Corporation

No Drawing. Original application Mar. 18, 1968, Ser. No. 714,074. Divided and this application Nov. 9, 1970, Ser. No. 88,132
Int. Cl. C21d 9/52
U.S. Cl. 148—12 6 Claims

The method of making a high strength ductile cold drawn wire from hot rolled rods made from commonly used steels including .65 to 1.00% carbon, .25 to 1.20% manganese, .35% maximum silicon, .20% maximum aluminum, .05% maximum sulphur, .012% maximum nitrogen, and .05% maximum phosphorus, but with the addition of .03 to .15% vanadium and .20% maximum molybdenum. The hot rolled rod is drawn to finished size using only one patenting step with the reduction in area being at least approximately 60%.

3,668,021

HEAT-STABLE RUST INHIBITORS

Carlyle E. Shoemaker, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Oct. 29, 1969, Ser. No. 872,091
Int. Cl. C21d 1/00; C23c 3/04; B44d 1/20
U.S. Cl. 148—12.1 5 Claims

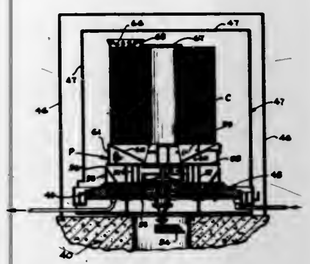
In a process for inhibiting formation of rust on cold rolled ferrous strip, the strip, either during the rolling operation or subsequent to it, but prior to annealing, is treated, as by spraying, with an aqueous suspension of calcium hydroxide. The heat-resistant solid component of the suspension dries on the strip as a semi-adherent coating, and protects the strip from rusting during storage and shipping.

3,668,022

METHOD OF TREATING AN ALLOY STEEL FOR ENAMELING

John P. Novak, Homewood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 686,618, Nov. 29, 1967. This application Oct. 26, 1970, Ser. No. 83,946
Int. Cl. C21d 1/74
U.S. Cl. 148—16 7 Claims



A method of treating a cold rolled sheet of low carbon steel containing titanium in order to prevent the occurrence of objectionable shadow lines normally appearing on the surface thereof after applying a single or multiple coating of a vitreous enamel which comprises heat treating the cold rolled sheet in a reducing non-oxidizing atmosphere containing carbon monoxide gas having a concentration between about 0.50% and 1.50% by volume and with a controlled amount of moisture so that the treating atmosphere remains non-oxidizing to the steel at heat treating temperature. The sheet is treated in either a continuous normalizing apparatus or in an open-coil annealing apparatus. The required amount of carbon monoxide gas can be provided in the treating atmosphere and the treating atmosphere maintained non-oxidizing to the steel by passing at least a portion of a reducing non-oxidizing treating atmosphere comprised of a mixture of hydrogen and nitrogen with a small amount of moisture through a porous bed of charcoal disposed within the treating zone.

3,668,023

TANTALUM-CONTAINING PRECIPITATION-STRENGTHENED NICKEL-BASE ALLOY

Peshotan Sohrab Kotval, 4923 Media Drive, Indianapolis, Ind. 46208

No Drawing. Filed June 20, 1969, Ser. No. 835,211
Int. Cl. C22c 19/00
U.S. Cl. 148—32.5 5 Claims

Tantalum-bearing precipitation-strengthened hot-workable nickel-base alloys also containing chromium and molybdenum and having an intermetallic phase of stoichiometry A_3M wherein M consists essentially of Ta and wherein A consists essentially of nickel.

3,668,024

METHOD OF ANNEALING METAL POWDER

Milton Johnson, Waukesha, Wis., assignor to A. O. Smith-Inland Inc., Milwaukee, Wis.

Continuation-in-part of application Ser. No. 671,290, Sept. 28, 1967. This application Oct. 7, 1969, Ser. No. 868,269
Int. Cl. B22f 1/00
U.S. Cl. 148—126 12 Claims

The invention relates to a process for annealing steel powder. The powder is continuously passed through an annealing furnace and heated to a temperature in the range of 1450° F. to 2100° F. while exposed to a reducing gas. The dew point of the furnace atmosphere is maintained at a value slightly below the equilibrium value throughout the length of the heating zone by adjustment of the rate of flow of the reducing gas to the furnace.

By maintaining the dew point of the furnace atmosphere within precise limits, a substantially complete reduction of the carbon content of the steel particles is obtained and welding of the particles is prevented, so that the sintered cake of particles can be readily broken up after annealing to restore the as-atomized particle size and thereby provide an increased density for the compacted and sintered part.

3,668,025

METHOD FOR ALLOYING METALS IN THE PRESENCE OF REACTIVE MATERIALS

Joseph M. Blum, Yorktown Heights, and Jan P. Hoekstra, Putnam Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 745,009, July 15, 1968. This application May 6, 1971, Ser. No. 140,941
Int. Cl. H01l 7/46
U.S. Cl. 148—178 31 Claims



The invention involves a process for alloying a metal such as aluminum into a semiconductor such as germanium in the presence of reactive insulating material such as silicon dioxide. A layer of an organic material is deposited on the surface of the insulating material prior to alloying and heated for a time and temperature sufficient to leave a residue of the organic material at the surface of the insulating material. The organic material is removed by spraying with an organic solvent such as trichloro-ethylene while the materials are still hot. Alloying of the metal with the semiconductor is then carried out and any reaction between the aluminum and the silicon dioxide which might be expected to occur is minimized.

3,668,026

CASTABLE PYROTECHNIC COLORED SMOKE COMPOSITION

Joseph E. Flanagan, Woodland Hills, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,177
Int. Cl. C06d 3/00
U.S. Cl. 149—19 12 Claims

A castable pyrotechnic composition for colored smoke production comprising iodoform in an amount sufficient to generate a colored smoke, an inorganic oxidizer in an amount sufficient to oxidize the composition and a suitable polymeric fuel binder in an amount sufficient to bind the ingredients of the smoke producing composition into a cohesive castable mass.

3,668,027

METHOD OF MAKING NITROCELLULOSE-NITROGLYCERINE WATER-BEARING EXPLOSIVE COMPOSITIONS

Gordon M. Gay, Tacoma, Wash., assignor to Comercial Solvents Corporation, New York, N.Y.

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,490
Int. Cl. C06b 5/04
U.S. Cl. 149—95 2 Claims

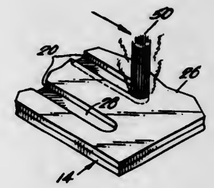
Water-bearing explosive compositions characterized by high detonation velocity comprising a mixture of an inorganic oxidizer salt, nitroglycerine and/or other nitrate esters, nitrocellulose, water and a water thickening agent. The water-bearing explosive compositions, gels and slurries, are prepared by first pregelling nitroglycerine and nitrocellulose followed by adding the remaining ingredients of the explosive composition.

3,668,028

METHOD OF MAKING PRINTING MASKS WITH HIGH ENERGY BEAMS

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 10, 1970, Ser. No. 45,157
Int. Cl. B41c 1/14
U.S. Cl. 156—3 9 Claims

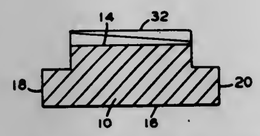


A stencil mask suitable for printing electronic circuits and the like is made by applying a beam of high-energy emissions such as an electron beam or a laser beam to an original blank comprising two layers of different volatilizability in response to impingement by the beam. The beam is applied to the layer which is more readily volatilized to form a groove therethrough bottoming at the inner surface of the second layer. Perforations extending entirely through the blank are produced where desired by increasing the beam energy applied to selected points along the bottom of the groove. Because the second layer is less readily volatilized, uncontrolled variations in the depths of the grooves and the danger of having a groove break entirely through the blank where this is not desired are minimized.

3,668,029
CHEMICAL MACHINING PROCESS

Raymond B. Blossick, Lancaster, and Robert A. Meier, Stevens, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 9, 1969, Ser. No. 865,100
Int. Cl. C23f 1/02
U.S. Cl. 156—11 1 Claim

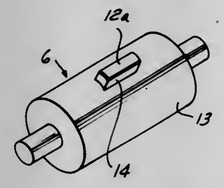


A process for chemically machining metals, particularly steels and steel alloys, to depths greater than 0.010 inches by using a chemical etching solution. The metal is coated with an etch-resist, exposed to an energy source to harden and bond a predetermined area of the resist to the metal and then developed to remove the unhardened and unbonded resist. The metal is then recoated with resist, again exposed to an energy source to harden and bond the second resist layer to the first resist layer at the aforesaid predetermined area and then developed to remove the unhardened and unbonded resist. The metal is then passed through a chemical etching solution to chemically machine those areas of the metal unprotected by the double layer of resist.

3,668,030
METHOD OF MAKING MATING MALE EMBOSSING ROLLS

Frank W. Broderick, 52 Pittsford Way, New Providence, N.J.

Filed Sept. 8, 1970, Ser. No. 70,434
Int. Cl. B44n 3/02
U.S. Cl. 156—14 20 Claims



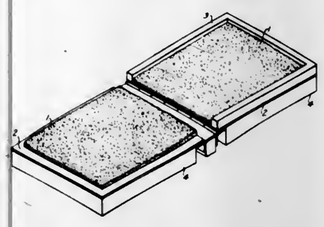
A method for manufacture of a male embossing roll which registers exactly with another male embossing roll, which comprises forming in the second roll a mating female pattern, filling the female pattern depressions with resist, and then etching, thereby to produce a male design corresponding to the female design. The filling of the preliminarily formed female design by a resist comprising chrome plating is a preferred embodiment, the entire roll being chrome plated after the formation of the female design, the chrome plate then being removed from the surface of the roll except in those areas corresponding to the depressions in the female pattern previously formed therein.

3,668,031
METHOD OF MAKING FOAM CORE SANDWICH PANEL

Bernard J. Bast, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Mar. 3, 1970, Ser. No. 16,179
Int. Cl. B32b 5/18
U.S. Cl. 156—79 3 Claims

A method of making a foam core sandwich panel suitable for use in the building industry by spreading two horizontal panels with a polyurethane foamable resin, allowing the resin to expand partially, then bringing the panel sections with their foam faces together sandwich style, to a vertical position and allowing the foam to complete expansion, coalesce and gel in this vertical position.



3,668,032
METHOD OF MAKING A FLEXIBLE LETTERPRESS MAT

Charles W. Bunting; David P. Groeber, and Louis W. Pettlo, all of Dayton, Ohio, assignors to McCall Corporation, New York, N.Y.

Original application Aug. 28, 1967, Ser. No. 663,858, now Patent No. 3,568,595, dated Mar. 9, 1971. Divided and this application Oct. 26, 1970, Ser. No. 83,737
Int. Cl. B29c 17/04
U.S. Cl. 156—215 4 Claims

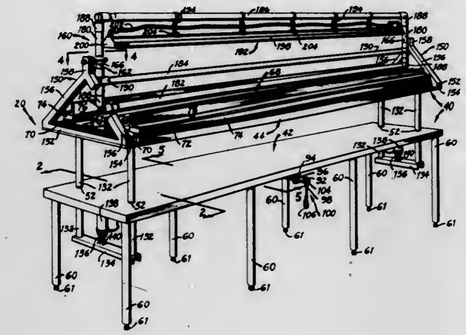
A first portion of a sheet of thermoplastic material is placed on the face of an engraved master plate, and the plate and sheet are positioned between the platens of a hydraulic press. The first portion of the sheet and the master plate are pre-heated and are then pressed together to mold an impression of the face within the first portion of the sheet. The master plate and sheet portion are cooled while the pressure is maintained, after which the pressure is released and the sheet is shifted laterally a precise predetermined distance relative to the master plate while maintaining the angular orientation of the sheet, to position a second portion of the sheet over the face of the master plate. The steps of pre-heating, pressing, cooling and releasing are then repeated to produce a flexible mat having a pair of identical impressions in precise spaced relation and corresponding angular orientation. One or more metal layers are electrolytically deposited on the mat, and the resulting thin sheet of deposited metal is separated from the mat and laminated to a pre-curved reinforcing plate which is trimmed along its edge.

3,668,033
LAMINATING METHOD AND APPARATUS

Ralph M. Evans, Glendale, Ariz., assignor to Royal Industries, Pasadena, Calif.

Continuation-in-part of application Ser. No. 510,597, Nov. 30, 1965, now abandoned. This application Oct. 14, 1966, Ser. No. 586,803
Int. Cl. B29c 17/04
U.S. Cl. 156—212 12 Claims

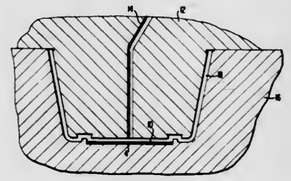
A method and apparatus for making a configurated, laminated workpiece, the apparatus being comprised of a forming press having a lower, stationary platen and an upper reciprocable platen which cooperate to apply pressure to selected portions of the laminated workpiece. Movable edge members are hingedly attached to the upper platen and are adapted to be manually rotated to bend veneer into a generally contiguous configuration with a base component. Alternatively, a latch mechanism may be used to forcibly rotate each edge member and bend the veneer. A heater is pivotally supported above the upper platen and upon a carrier frame or turnstyle which is freely, arcuately swingable through all or nearly all of 360° so that it may be easily positioned in the most effective location to accommodate softening of the veneer immediately prior to bending. A stationary heating element may be supported near the upper edge of the lower platen to aid the pivotal heater in the softening process.



3,668,034
METHOD FOR MAKING A DECORATIVE PLASTIC LAMINATE

Arthur S. Nicholas, and Sarkis M. Kassouni, both of Grand Rapids, Mich., assignors to U. S. Industries, Inc.

Original application Mar. 26, 1968, Ser. No. 716,140. Divided and this application Aug. 5, 1970, Ser. No. 61,215
Int. Cl. B29c 19/00
U.S. Cl. 156—245 11 Claims



This disclosure relates to plastic laminates, preferably in the nature of an article, having an outer metalized layer, an intermediate bonding layer of a relatively low melting point, and a backing layer formed of a synthetic thermoplastic material whose melting point is at least as high and preferably higher than the melting point of the intermediate layer. The laminate is formed by bonding the outer metalized layer to the intermediate layer, preferably by heat fusion, placing the laminate of the metalized layer and the intermediate layer into a mold and injecting the backing material into the mold to form an article and to bond the backing material to the intermediate layer.

3,668,035
PROCESS FOR ADHESIVE BONDING OF POLYVINYL CHLORIDE MATERIALS

Alois Felden, Munich, Germany, assignor to Stahlgruger Otto Gruber & Co., Munchen, Germany

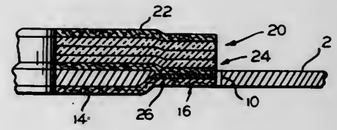
Filed Apr. 24, 1969, Ser. No. 819,101
Claims priority, application Germany, Apr. 25, 1968, P 17 69 245.4
Int. Cl. B32b 31/00
U.S. Cl. 156—249 27 Claims

A process for the adhesive bonding of PVC materials includes preparing at least of the bonding surfaces by purifying and/or roughening and coating with the adhesive, while the other surface which was provided with a completely dry adhesive coating is applied to and pressed against the moist adhesive surface.

3,668,036
METHOD FOR ATTACHING GASKET AND/OR INSULATOR MEMBERS TO PLATE STRUCTURES

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co.

Filed Jan. 26, 1970, Ser. No. 5,734
Int. Cl. B32b 31/20
U.S. Cl. 156—252 11 Claims



A method of securing top and bottom members to intermediate plate structures by providing spaced apertures in the plate, positioning members on either side of the plate at least one of which is provided with mating portions such that the mating portions are within the spaced apertures in engaging relationship with the other member and providing an adhesive on at least those portions of the members in mating engagement to thereby form a unitary structure of somewhat rigid stability. The products formed by the disclosed methods will find application for use in conjunction with carburetor assemblies wherein the plate structure is metal so as to act, for example, as a heat dissipator between the carburetor manifold and carburetor throttle body. The method may be used in many other types of assemblies wherein the assembly of three parts is difficult to accomplish at high speed with complete reliability.

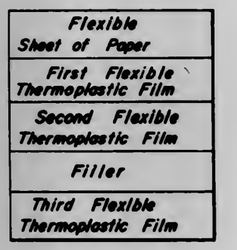
3,668,037
METHOD FOR MAKING TABLETS

Boyd C. Blair, Topeka, Kans., assignor to Brackett Stripping Machine Co., Inc., Topeka, Kans.

Original application Jan. 15, 1968, Ser. No. 697,685, now Patent No. 3,560,311. Divided and this application Aug. 14, 1970, Ser. No. 63,815
Int. Cl. B32b 31/00
U.S. Cl. 156—267 4 Claims

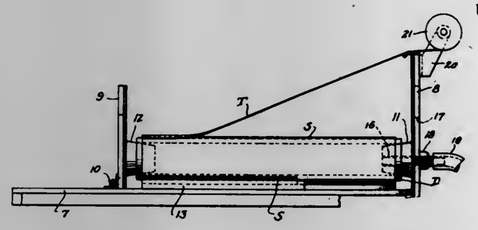
A method for making tablets and including arranging a plurality of sheets into a set, registering edges of the sheets in the set, moving sets in a defined path, adjusting the spacing between sets, holding the set in a pressed together condition, grinding one edge of the set and applying a hardenable quick drying adhesive to said one edge of the set, said method including maintaining the edges of the set in registry during grinding the one edge and applying adhesive thereto, said method including applying a strip having adhesive to the one edge, folding opposite margins of the strip to engage exterior sheets, and cutting the strip adjacent opposite ends of the one edge.

3,668,038
PROCESS FOR PREPARING A FLEXIBLE PACKAGING MATERIAL
Charles C. Kirk, Laurel; Thomas E. Ferington, Sandy Spring, and Razmic S. Gregorian, Silver Spring, all of Md., assignors to W. R. Grace & Co., New York, N.Y.
Original application Feb. 2, 1970, Ser. No. 692,240, now Patent No. 3,539,437. Divided and this application Feb. 2, 1970, Ser. No. 12,493
Int. Cl. B32b 33/00
U.S. Cl. 156—276 5 Claims



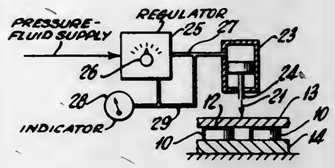
This invention is directed to a process for preparing self-supporting laminate films having low permeability to gases and to the films prepared by said process, all as described hereinafter.

3,668,039
METHOD FOR JACKETING FIBROUS DUCTS
David Waksman, Roeland Park, Kans., and James R. Stewart, Kansas City, Mo., assignors to Certain-Teed Saint Gobain Insulation Corporation, Bala Cynwyd, Pa.
Filed Apr. 14, 1970, Ser. No. 28,369
Int. Cl. B29c 17/07
U.S. Cl. 156—287 6 Claims



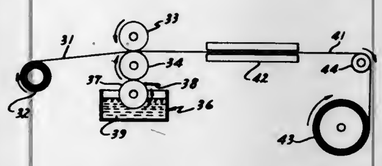
A method and apparatus for applying a jacket sheet to an open ended porous fibrous duct, by wrapping the sheet around the duct, applying end closures to the ends of the duct, at least one such closure having a vacuum connection so that by reduction of pressure in the interior of the duct, the external atmospheric pressure will serve to hold the jacket sheet snugly against the duct, and interconnecting the adjacent edges of the jacket sheet while it is being held snugly against the exterior of the duct under the influence of the reduced internal pressure and the external atmospheric pressure.

3,668,040
METHOD AND MEANS FOR BONDING BEARING LINERS
Gordon J. Clark, Bristol, Conn., assignor to Textron Inc., Providence, R.I.
Filed Nov. 3, 1969, Ser. No. 873,161
Int. Cl. B32b 31/20
U.S. Cl. 156—294 12 Claims



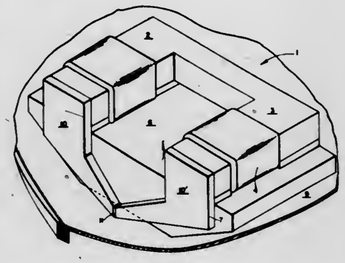
The invention contemplates maintenance of uniform controlled pressure and temperature at the zone of bonding a fabric or the like liner to a bearing ring or the like, the pressure and temperature being at the levels required for optimum curing of the particular thermosetting material involved. The pressure is developed by axial compression of an elastomeric plug, which is so constrained that radial loading of the lining on the bearing element necessarily results from hydrostatic deformation of the plug. The heat supplied for curing also causes the plug to expand, but the invention provides for automatic compensation for plug expansion so as to maintain substantially constant pressure loading on the liner in the course of a curing cycle. Means are disclosed for the bonding of a plurality of lined bearing elements in a single batch processing cycle.

3,668,041
METHOD FOR MAKING A FIRE-RETARDANT INSULATION CONSTRUCTION
Thor J. G. Lonning, Suffield, Conn., assignor to Monsanto Company, St. Louis, Mo.
Original application Mar. 25, 1968, Ser. No. 715,892. Divided and this application Feb. 27, 1970, Ser. No. 18,393
Int. Cl. C09j 7/00
U.S. Cl. 156—309 3 Claims



A method for making a fire-retardant, faced, low density insulation construction from a preformed facing layer comprising vinyl chloride polymer and flame retardant plasticizer composition therefor; a preformed bat comprising a matrix of siliceous fibers bound together with a thermoset aminoplast modified phenolic resin adhesive, and a preformed solid adhesive layer comprising vinyl chloride polymer resin adhesive having a heat softening temperature below the heat softening temperature of said facing layer, said method comprising the steps of heat fusing a said facing layer to a said adhesive layer and heat fusing the laminate comprising such facing layer and such adhesive layer to a said bat.

3,668,042
PROCESS FOR PRODUCING MAGNETIC TRANSDUCER WITH NARROW SENSING TIP
William A. Farrand, Fullerton, Calif., assignor to North American Rockwell Corporation
Original application Mar. 15, 1967, Ser. No. 623,385, now abandoned. Divided and this application July 14, 1969, Ser. No. 851,534
Int. Cl. C09j 5/00
U.S. Cl. 156—309 1 Claim



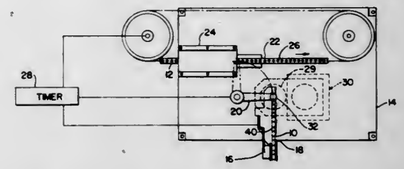
A process for producing magnetic transducer comprising a relatively thin portion forming a sensing tip connected to a relatively thicker core portion including conductors wound around the core portion. The thin portion is separated in the region of its tip by a narrow gap filled with a material for forming a magnetic flux insulator.

3,668,043
METHOD OF BONDING POLYPROPYLENE TO RUBBER AND THE METHOD OF MAKING INSULATED ELECTRICAL CONDUCTORS THEREFROM
Gordon J. Mulse, Westboro, Mass., assignor to United Steel Corporation
Original application Sept. 20, 1969, Ser. No. 801,188, now Patent No. 3,592,728. Divided and this application Nov. 17, 1970, Ser. No. 90,473
Int. Cl. C09j 5/00; B32b 25/08
U.S. Cl. 156—321 2 Claims

The method of the invention comprises the steps of providing an electrically conductive metal core, covering the core with a polyolefin insulating layer, heating the insulating layer to a temperature of 400° to 500° F., then applying a suitable adhesive composition to the insulating layer while it is in the temperature range of 400° to 500° F., then applying a second application of the adhesive composition to the polyolefin-adhesive covered conductor, and then applying an elastomer sheath to the polyolefin-adhesive covered conductor after the second application of adhesive composition has been applied thereto.

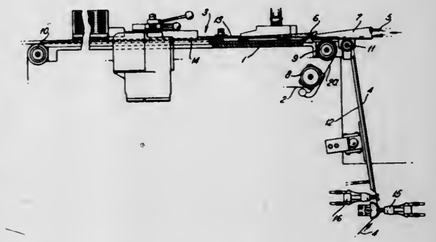
3,668,044
APPARATUS FOR BONDING SEMI-CONDUCTIVE DEVICES
Mordechai Wiesler, Lexington, and John S. Macintyre, Lynnfield, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.
Filed Apr. 9, 1970, Ser. No. 26,838
Int. Cl. B32b 31/20
U.S. Cl. 156—366 11 Claims

Semi-conductive devices are assembled and bonded to package bases on an automatic basis. The devices are transferred one at a time from a tape indexing unit onto an indexing carrier which convey package assemblies through a heating zone prior to receipt of the dice. The tape indexer includes a drive mechanism adapted to feed a tape carrying a plurality of longitudinally spaced dice past a pick-off point where a vacuum transfer arm moves an individual die from the tape to a pre-positioned and pre-heated package unit on



the carrier. The transfer arm includes a vibratory tip to produce a scrubbing motion between the die and the lead to enhance the bonding action between the parts.

3,668,045
APPARATUS FOR PRODUCING ROD-LIKE ARTICLES
Desmond Walter Molins, London, England, assignor to Molins Machine Company Limited, London, England
Filed Apr. 17, 1970, Ser. No. 29,478
Claims priority, application Great Britain, Apr. 18, 1969, 20,001/69
Int. Cl. B65h 81/00
U.S. Cl. 156—441 1 Claim

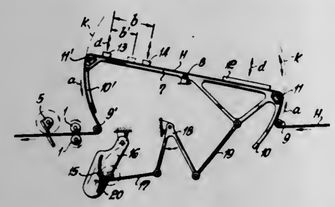


In the production of a continuous wrapped rod, e.g. of filter material for subdivision into filter rods, the continuous wrapper web is provided along each of its marginal portions, but on opposite sides, with a line of heat-sensitive polyvinyl acetate which is dried before the marginal portions are foled on each other, and is then reactivated by heat.

3,668,046
APPARATUS FOR PERFORMING WELDING OR HOT GLUING OPERATIONS ON CONTINUOUSLY MOVED WEBS
Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany
Filed Apr. 22, 1970, Ser. No. 30,867
Claims priority, application Germany, May 14, 1969, P 19 24 730.4
Int. Cl. B32b 31/20, 31/08
U.S. Cl. 156—553 7 Claims

In flat bag-making machines, a web which is thermoplastic or coated with a thermoplastic layer is withdrawn from a supply roll and continuously advanced, formed into a tubing in a tube-making device, whereafter the tubing is processed to form flat bags in that welded or hot glued seams are formed and the tubing is transversely cut. The apparatus comprises a carrier, which supports the web and on which the heated welding or hot gluing jaws are mounted to be reciprocable to and from the carrier, whereas the carrier it-

self is reciprocable relative to the web in the direction of travel thereof in such a manner that the movement of the carrier relative to the web is zero for a time which is sufficient for the welding or gluing operation. The carrier consists of a rocker, which is pivoted on an axis that is transverse to the direction of travel of the web and extends through the



transverse center plane of the rocker, the latter is pivotally movable within a loop which is formed in the web by means of two stationary guide rollers, and the rocker is provided with drive means which impart to the rocker a rocking motion at a peripheral velocity which is temporarily equal to the velocity of travel of the web.

3,668,047

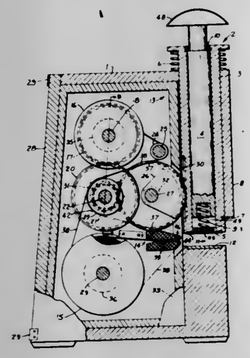
BONDING MACHINE

Kenneth G. Heller, 335 Palomar Drive, Redwood City, Calif.

Filed Nov. 20, 1969, Ser. No. 878,514

Int. Cl. B32b *31/06*; **B65c** *9/18*

U.S. Cl. 156—541 **11 Claims**



A bonding machine for adhesively joining sheets of paper or the like, having as its principal elements a housing, and within it an anvil, an actuating mechanism, and a tape system. When the machine is idle there exists a gap between the anvil and the surface of the actuating mechanism facing it. Sheets to be bonded are placed into this gap. When the actuating mechanism is depressed it moves down toward the anvil, thus compressing the sheets. Upon releasing the actuating mechanism it moves away from the anvil and picks up the topmost sheet by vacuum action. At the same time the tape system transports a two-sided adhesive sticker between the separated sheets. When the actuating mechanism is again depressed, the sheets are recompressed but this time over the sticker, thus making a bond. The bonded sheets may be withdrawn as soon as the actuating mechanism is released again. The cycle may be repeated several times if more than two sheets are to be bonded together. The tape system, preferably in cartridge form, consists of two-sided adhesive stickers stored on a supply spool between cover films. A takeup spool reels in spent cover films. Gears, drive sprockets, and clutches transmit and synchronize motions of actuating mechanism, tape, and spools, so that the stickers are fed into the gap at the correct moment, and to the correct depth, and so that the proper tension in tape and spent films is maintained at all times.

3,668,048

PLASTIC EGG PACKAGE SPOT WELDING APPARATUS

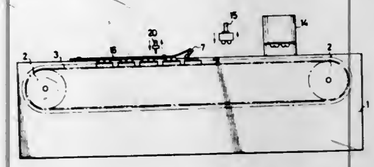
Hikoji Noguchi, and Yoshinobu Miyazato, both of Tokyo, Japan, assignors to said Noguchi, by said Miyazato

Filed Nov. 14, 1969, Ser. No. 876,906

Claims priority, application Japan, Feb. 14, 1969, 44/10912, 44/10913; Dec. 23, 1968, 43/112452, 43/112453, 43/112454; Dec. 28, 1968, 44/501, 44/502, 44/503; Jan. 7, 1969, 44/2071; Feb. 5, 1969, 44/10035; Feb. 8, 1969, 44/11044; Feb. 13, 1969, 44/12583; Feb. 14, 1969, 44/12584, 44/12585; Mar. 19, 1969 44/24608

Int. Cl. B30b *15/34*; **B29c** *27/04*

U.S. Cl. 156—583 **13 Claims**



Apparatus for continuously sealing the flange of the cover to the flange of the body of a plastic egg package with a plurality of spot welds using intermittently moving receiving boxes adapted to hold the body of the egg package with the flange of the body resting thereon with the cover thereof protruding outside thereof and means for closing the cover tightly against the body for spot welding the flanges.

3,668,049

LAMINATED PACKING MATERIAL WITH SPACED PARALLEL REINFORCING MEMBERS

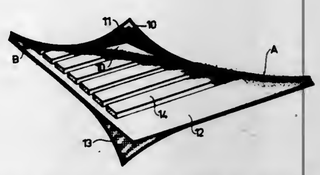
Ade William Silfverlin, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandvikens, Sweden

Continuation of application Ser. No. 783,478, Dec. 13, 1968, now abandoned. This application June 17, 1971, Ser. No. 154,198

Claims priority, application Sweden, Dec. 19, 1967, 17384/67

Int. Cl. B32b *3/10*

U.S. Cl. 161—38 **6 Claims**



A laminated packing material consisting essentially of two outer, layer-like members and an intermediate array of spaced, parallel, stiffening rib members secured to said outer members. At least one of said outer members may comprise two layers of paper with an intermediate layer of fabric. The rib members may be in the form of relatively short, flat, strips of wood fiber board whose abutting ends are staggered from rib to rib.

3,668,050

SURGICAL DRAPE

Harold F. Donnelly, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 9, 1970, Ser. No. 17,431

Int. Cl. A61f *13/00*; **B32b** *3/26, 27/40*

U.S. Cl. 161—39 **15 Claims**

Disposable surgical drape comprising a fibrous base sheet having a primary operative area; a sheet of fluid impervious plastic film, such as polypropylene film, laminated to the base sheet in the primary operative area; and a sheet of fluid absorbent plastic foam material, such as a thin sheet of



polyurethane foam, laminated to the outer surface of the film.

3,668,051

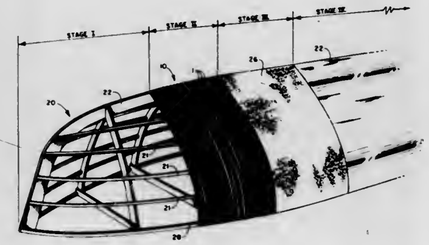
COMPOUND-CURVED STRUCTURE

William H. Seemann, III, 1320 6th St., New Orleans, La.

Filed May 29, 1969, Ser. No. 829,067

Int. Cl. D03d *17/00*

U.S. Cl. 161—77 **10 Claims**



A method of constructing boat hulls by fiberglass or ferrocement techniques utilizing a surface defining base material of a pliable sheeting material of, for example, a loosely woven fabric or elastic mesh reinforced with springy rods of, for example, fiberglass or steel; the base material is attached to a skeleton framework and readily and easily assumes and forms the compound-curved surface of the hull, and a resin or concrete is subsequently added and allowed to harden.

3,668,052

CORRUGATED ARCUATE MEMBER

Richard D. Pratt, Cincinnati, Ohio, assignor to General Electric Company

Filed Mar. 20, 1970, Ser. No. 21,405

Int. Cl. B32b *1/00, 3/28*

U.S. Cl. 161—117 **2 Claims**



A corrugated arcuate member having a plurality of generally circumferentially disposed substantially rigid corrugations is provided with improved formability as a result of a plurality of generally transverse slots disposed along a radially outer portion of the corrugations. Arc-holding means is secured with the member to hold the member in arcuate shape.

3,668,053

ARTICLE FOR PREVENTING EDGE DEFECT IN COMPRESSION STRETCHED ACRYLIC SHEET

Ronald L. Ayres, Saugus, Calif., assignor to Fortin Plastics, Inc., Saugus, Calif.

Original application Sept. 9, 1968, Ser. No. 758,395, now Patent No. 3,562,383, dated Feb. 9, 1971. Divided and this application May 25, 1970, Ser. No. 48,691

Int. Cl. B32b *3/02, 3/30*

U.S. Cl. 161—118 **4 Claims**



An article for preventing edge defects in compression-stretched acrylic sheets comprising providing the circumferential end surfaces of an acrylic blank to be stretched with a groove substantially continuous therewith, the depth of the groove being greater than 5 percent and, preferably, being greater than about 10 percent of the initial thickness of the acrylic blank. The groove may have various configurations, e.g., V- and U-shaped configurations. Preferably, the center line of the groove lies in the plane bisecting the blank in the thickness direction.

3,668,054

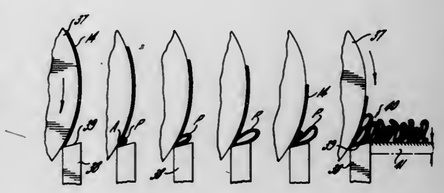
HIGH BULK CORRUGATED NONWOVEN FABRIC

Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 31, 1970, Ser. No. 24,197

Int. Cl. D04h *1/00, 3/00*

U.S. Cl. 161—128 **5 Claims**

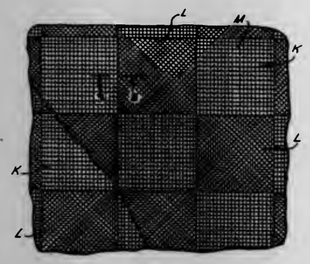


A tough, high bulk, flexible fabric is provided which has a grainy wrinkled texture with a multiplicity of transversely discontinuous furrows and ridges. The fabric is somewhat elastic, especially in the machine direction, and comprises a corrugated web of initially alined textile fibers implanted in a continuous thin film of thermoplastic adhesive, the fiber-adhesive web thereafter being corrugated into a multitude of furrows and grooves with irregularly root- and side-connected convolutions. The fabric is produced by implanting the fibers into the thermoplastic adhesive film, adhering the resulting web onto an abherent heated surface, and advancing the surface against a gathering blade to corrugate the web and form irregularly root- and side-connected sinusoidal convolutions.

3,668,055
SUPERIMPOSED EMBOSSED PACKING SHEETS

George Gerard, Point Pleasant, N.J., assignor to Jiffy Manufacturing Co., Hillside, N.J.

Continuation of application Ser. No. 676,573, Oct. 19, 1967, now abandoned. This application Sept. 1, 1970, Ser. No. 68,745
Int. Cl. B32b *3/00, 7/00*
U.S. Cl. 161—136 2 Claims



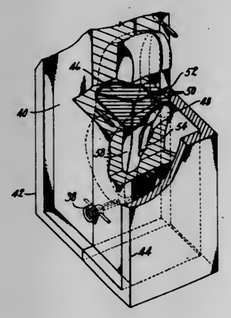
The disclosure of the present application relates to embossment between engraved rollers of a series or plurality of sheets of relatively heavypaper or similar matted fibrous materials to obtain varying patterns of rows of mound-like embossments which are arranged in successive areas, usually successive squares, longitudinally and then diagonally in respect to the main axis of the paper sheets. After embossment the sheets are passed through shorter or longer paths of travel before again being assembled so that their matching mounds and recesses will be offset in such a manner that they will no longer match.

The disclosure further relates to the composite packing material and to a method and apparatus for making the same.

3,668,056
INTEGRAL MICROPOROUS ARTICLE AND PROCESS OF MAKING

Stanley I. Hayes, Jr., Hamilton, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Dec. 12, 1969, Ser. No. 884,571
Int. Cl. B29d *27/04*; B32b *3/26*
U.S. Cl. 161—159 18 Claims



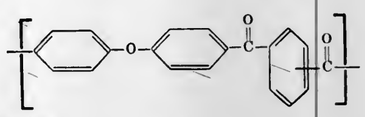
A one-piece microporous clothing article such as a shoe upper or glove is formed by molding a solidifiable liquid emulsion of fine droplets of an organic liquid in a continuous phase comprising reactive material convertible through reaction to solidified resilient condition. The emulsion is caused to gel and solidify with said droplets held in the solidified material, the solidified material in the form of a shoe upper or glove is removed from engagement with the molding surface and the liquid is removed without expanding the solidified material leaving pores and discontinuities in the solidified material to constitute passageways for air and vapor.

3,668,057
LAMINAR STRUCTURES OF METAL AND CRYSTALLINE COPOLYKETONES AND METHOD OF FORMING SAME

Franco Agolini, and Rudolph John Angelo, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 10, 1970, Ser. No. 45,235
Int. Cl. B32b *15/08*
U.S. Cl. 161—165 16 Claims

A laminar structure is provided which is characterized by at least one layer of a metal bonded to at least one layer of a crystalline copolyketone having the following recurring structural unit:



wherein the



moiety is either



(T moiety) or



(I moiety), and the T:I ratio varies from 90:10 to 50:50; said laminar structure being useful for printed circuit applications.

3,668,058
MATRIX MATERIAL FOR PRODUCTION OF PLASTIC PRINTING PLATES

Nicholas J. Pappadakis, Lincroft, N.J., assignor to Tenneco Chemicals, Inc.

Filed July 31, 1969, Ser. No. 846,341
Int. Cl. B41b *5/02*
U.S. Cl. 161—165 9 Claims

A matrix material comprises a sheet of fibrous cellulosic material impregnated with a thermosetting resin, a coating of a thermosetting resin on one surface of said sheet, and a precast sheet of polypropylene film affixed to the coated side of the impregnated cellulosic sheet with an adhesive.

3,668,059
HIGH MODULUS BORON NITRIDE FIBERS

James Economy, Eggertsville, and Ruey-Yuan Lin, Williamsville, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,129
Int. Cl. C01b *21/06*; C01g *57/00*; B32b *15/02*
U.S. Cl. 161—170 6 Claims

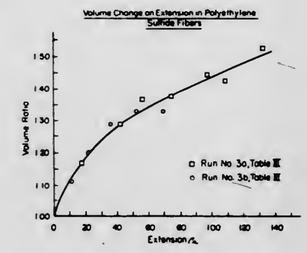
Boric oxide fibers having a maximum diameter of about 10 microns are heated in an ammonia atmosphere under such

conditions as to produce partially nitrided fibers consisting essentially of B, N, O and H wherein the N is present to the extent of from about 35 percent to about 55 percent. The partially nitrided fibers are then heated in an inert atmosphere at a temperature of at least about 1800°C while simultaneously subjecting the fibers to sufficient longitudinal tension as to at least prevent longitudinal shrinkage of the fibers and preferably to cause elongation of the fibers during heating. The resulting fibers, consisting essentially of boron nitride, are of high purity and are characterized by a relatively high Young's modulus of elasticity, which renders them especially suitable for reinforcing plastic, ceramic or metal matrices in the preparation of fiber reinforced composites.

3,668,060
FILAMENTS AND FILMS OF POLYMERS OF ALKYLENE SULFIDES

Walter J. Polestak, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Original application Aug. 29, 1966, Ser. No. 575,722, now Patent No. 3,539,676. Divided and this application Apr. 10, 1970, Ser. No. 31,447
Int. Cl. D01d *5/22*; B29d *27/00*
U.S. Cl. 161—173 8 Claims



Hard stretch filaments and films produced by extruding a heat softened or molten polymer of alkylene sulfide, such as polyethylene sulfide, having an inherent viscosity of about 0.5 or greater, through a shaping orifice to form the filament or film and taking up the product at a linear rate of from 20 to 3,000 meters per minute at a drawdown ratio of from 100:1 to 4000:1. A filament which spontaneously develops helical crimps along its length produced when a drawdown ratio greater than 1200:1 is used. Open-celled filaments or films produced from the hard stretch filaments and films by stretching the filaments or films in a range of from about 50 percent of the unstretched length up to about 90 percent of the breaking elongation and stabilized by heating the filament or film while in the stretched state to a temperature in the range from about 80°C. to a temperature below the melting point of the polymer.

3,668,061
TEAR STRING FOR SHRINK FILM PACKAGES

Harold M. Forman, 151 East 10th St., Conshohocken, Pa.

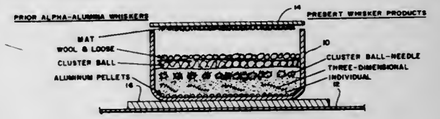
Filed Nov. 5, 1970, Ser. No. 87,238
Int. Cl. B65d *17/20*
U.S. Cl. 161—175 10 Claims

A tear string having particular utility in connection with packages overwrapped with heat sealable shrink film comprises an elastic core, one or more textile covers wrapped around the core and an outer coating of a fused thermoplastic synthetic resin. The core is in tension and, additionally, the outer coating may be axially oriented. Thus, when the string is heated to the thermoplastic temperature of the resin coating, the stored tensile forces in the core are released and tend to make the string contract toward its original dimensions. This effect is enhanced if the coating is axially oriented, due to the heat shrinking phenomenon. Such a tear string has various advantages in shrink film wrapped packages.

3,668,062
THREE-DIMENSIONAL CRYSTAL WHISKERS AND METHOD FOR PREPARATION THEREOF

James J. Shyne, Caldwell, and John V. Milewski, Saddle Brook, both of N.J., assignors to General Technologies Corporation, Reston, Va.

Continuation-in-part of application Ser. No. 479,111, Aug. 12, 1965, now abandoned. This application Sept. 8, 1969, Ser. No. 856,066
Int. Cl. C23c *13/00*; C01f *7/02*
U.S. Cl. 161—177 7 Claims



The invention disclosed is for three-dimensional crystal whiskers, a method for preparation thereof, and products containing such crystal whiskers. In one embodiment, the three-dimensional whiskers include a principal, rigid, elongated single crystal whisker fiber having a plurality of secondary, relatively shorter length, single crystal whiskers appended along the length of each of the principal whiskers and disposed in a direction generally transverse the axis of each of the principal whiskers. In a second embodiment, the crystal whiskers may be characterized as a cluster ball of needle-like whiskers.

3,668,063
REMOVAL OF ENTRAINED AIR FROM CELLULOSE PULP BEFORE BLEACHING OF THE PULP

Hans-Erik Engstrom, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Sundsvall, Sweden

Continuation of application Ser. No. 771,593, Oct. 29, 1968, now abandoned. This application Apr. 1, 1971, Ser. No. 130,504
Claims priority, application Sweden, Nov. 10, 1967, 15463/67
Int. Cl. D21c *3/26*
U.S. Cl. 162—19 5 Claims

Preliminary to being delivered by a "thick stock pump" means to a generally vertical bleaching vessel there is added to a cellulose pulp a fluid, such as steam, oxygen or a gaseous bleaching agent to flow countercurrent to the pulp in such manner that any air in the pulp is displaced and is replaced by bleaching agent before bleaching of the pulp in the bleaching vessel.

3,668,064
COMPOSITION BOARD AND METHOD OF MAKING IT

Leonard J. Kucera, Box 82 Rogers Route, International Falls, Minn.

Filed Jan. 28, 1970, Ser. No. 6,590
Int. Cl. D21h *3/00, 3/06*
U.S. Cl. 162—171 8 Claims

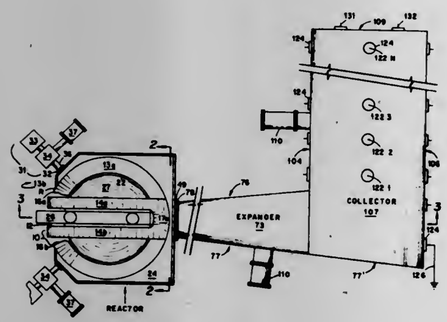
This invention relates to a structural composition board and method of making it. The board is made from finely divided ligno-cellulose material and pulverized additives such as asphaltites and pulverized pine wood pitch. The pulverized material or materials are intimately mixed with the finely divided ligno-cellulose material in a liquid suspension. A board-like product is formed from the liquid suspension of ligno-cellulose and pulverized material; the board-like product is dried; dried board is subjected to pressure to consolidate and bond the board-like product while internal heat is above the softening point of the pulverized material in the

board-like product. At least about 5 percent of the asphaltites is employed in the board-like product.

3,668,065
APPARATUS FOR THE CONVERSION OF HIGH TEMPERATURE PLASMA ENERGY INTO ELECTRICAL ENERGY

Ralph W. Moir, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 15, 1970, Ser. No. 72,294
Int. Cl. G21b *1/00*
U.S. Cl. 176—3 **10 Claims**



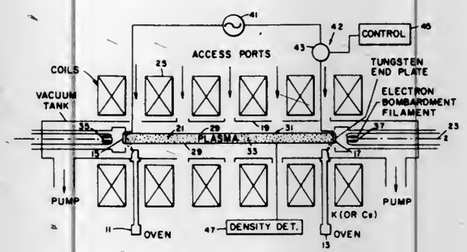
High temperature plasma is produced in a controlled thermonuclear reactor and a plasma beam is directed therefrom through an expander having a decreasing intensity magnetic field to provide an ion beam in which the ions have substantially only translational kinetic energy. The ions of the beam are then directed, by application of an E × B field, into an offset collector system having collectors arranged in a zig-zag pattern while the electrons are separated from the ions. The collectors situated in an E × B field have progressively lower retarding potentials applied thereto so that ions having a kinetic energy exceeding that of a particular stage are collected in successively lower energy groups to produce an electrical current therein. An advantage is obtained in that ions in a beam having a wide energy spread are collected at an electrode where there is a low energy differential between the effective retarding potential of the particular collector electrode and the group of energetic ions collected thereat making for efficient conversion of the kinetic energy of the particles into electrical energy.

3,668,066
DYNAMIC STABILIZER FOR PLASMA INSTABILITIES TO IMPROVE PLASMA CONFINEMENT AND TO INCREASE PLASMA DENSITY

Hans W. Hendel, W. Princeton; Chu, Tsu-Kai, and Thomas C. Simonen, both of Princeton, all of N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Feb. 18, 1970, Ser. No. 12,310
Int. Cl. G21b *1/00*
U.S. Cl. 176—5 **4 Claims**

Method and apparatus for dynamic stabilization of plasma instabilities for improving plasma confinement and for increasing plasma density independent of the phase of the instabilities. The method comprises confining the plasma column between ionizing plates which supply energetic particles to the plasma in a direction parallel to the axis of the plasma column and interacting the plasma in a predetermined direction with externally supplied radio-frequency

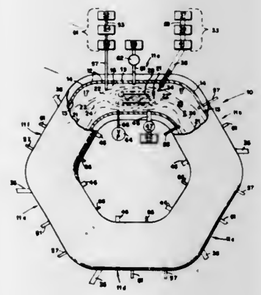


fields having a selectively variable power level amplitude and a sufficiently high frequency range.

3,668,067
POLYGONAL ASTRON REACTOR FOR PRODUCING CONTROLLED FUSION REACTIONS

Nicholas C. Christofilos, Hayward, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 16, 1969, Ser. No. 867,035
Int. Cl. G21b *1/02*
U.S. Cl. 176—5 **10 Claims**

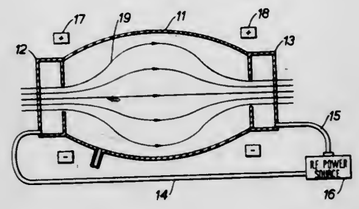


An Astron reactor including a plurality of linear magnetic field regions joined by intervening curved magnetic fields and arranged in a polygonal configuration. Energetic charged particles are introduced and trapped in the linear sections to form cylindrical sheaths, i.e., E-layers, of charged particles rotating about the axis of each section with the magnetic field thereof interacting with the linear magnetic regions to produce a closed system of magnetic field lines defining a containment zone for charged particles. Fuel materials introduced into the field are ionized and heated to form a high temperature plasma trapped in said zone. The ratio of the lengths of the linear and curved field regions is regulated to offset Bohm diffusion losses. A high molecular weight initiator plasma may also be introduced to heat the fuel to fusion temperatures.

3,668,068
PLASMA CONFINEMENT APPARATUS

Christopher John Hamilton Watson, Merton College, Oxford, England, assignor to United Kingdon Atomic Energy Authority, London, England

Filed Jan. 21, 1969, Ser. No. 792,573
Claims priority, application Great Britain, May 22, 1968, 24,456/68
Int. Cl. G21b *1/00*
U.S. Cl. 176—7 **1 Claim**

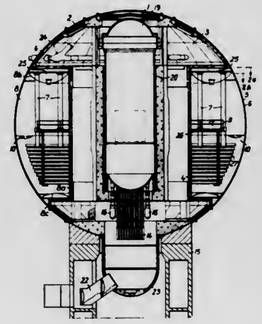


Loss of plasma from the loss regions of a static magnetic field confinement system is reduced by localizing in the loss region a radio frequency electromagnetic radiation which is nearly but not exactly in resonance with the ion cyclotron frequency and is arranged to reflect back into the confined plasma ions moving out of the static magnetic field through the loss regions.

3,668,069
PRESSURE SUPPRESSION CONTAINMENT FOR A LIQUID-COOLED NUCLEAR REACTOR

Walter Ullrich, Neu-Isenburg; Karl-Heinz Lohse, Frankfurt am Main; Jochen Leuteritz, Bruchkobel; Gunter Zeitzschel, Frankfurt am Main, and Robert Fassl, Munich, all of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 9, 1968, Ser. No. 766,049
Int. Cl. G21c *9/00*
U.S. Cl. 176—38 **16 Claims**

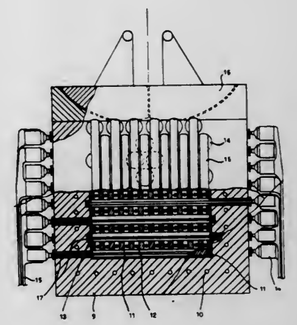


Containment apparatus and a pressure suppression system for a liquid-cooled nuclear reactor. The apparatus includes a safety container formed by a spherical pressure shell and a condensation chamber filled with water arranged within the safety container. The condensation chamber, which is annular in shape, is bounded on the outside by the safety container, on the inside by a cylindrical wall within the container, and at the top and bottom by annular ends respectively connecting the top and the bottom of the cylinder with the safety container. A plurality of condensation tubes are provided to pass through the upper end and extend into the water in the condensation chamber. The reactor pressure vessel of the nuclear reactor is located within the cylindrical wall and surrounded by a cylindrical biological shield. The diameter of the shield is less than the diameter of the cylindrical wall so as to form an annular passageway between the shield and the cylindrical wall from the calotte-shaped region of the safety container above, to the calotte-shaped region of the safety container below, the condensation chamber.

3,668,070
NUCLEAR REACTOR WITH HEAT PIPES FOR HEAT EXTRACTION

Peter Fiebelmann, Besozzo, and Helmut Neu, Travedona, both of Italy, assignors to European Atomic Energy Community (Euratom), Brussels, Belgium

Filed May 12, 1969, Ser. No. 823,681
Claims priority, application Germany, May 21, 1968, P 17 64 347.9
Int. Cl. G21k *14/00*
U.S. Cl. 176—40 **3 Claims**



A nuclear reactor with a heat extraction system comprising two groups of heat pipes which extend through the reactor core and which deliver heat to heat sinks disposed outside the core. All pipes of one group being parallel, the two groups are arranged in a mutual right angle relation and they intersect each other.

3,668,071
PROCESS FOR PRODUCING INOSINE

Takashi Nara, Tokyo; Masanaru Misawa, Kawasaki-shi, and Toshio Komuro, Machida-shi, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 565,105, July 14, 1966, now abandoned. This application July 12, 1968, Ser. No. 744,295
Claims priority, application Japan, July 20, 1965, 40/43402
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **12 Claims**

An improvement in a fermentation process for producing inosine. A microorganism belonging to Brevibacterium or Corynebacterium is cultured in an aqueous nutrient medium containing hypoxanthine or natural substances containing the same.

3,668,072
FERMENTATION PROCESS FOR THE PRODUCTION OF L-ORNITHINE

Kunio Ando, Kawasaki-shi, and Hideo Oishi, Tokyo, both of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 724,299, Feb. 5, 1968, now abandoned, which is a continuation of application Ser. No. 469,307, July 2, 1965, now abandoned. This application Jan. 2, 1969, Ser. No. 788,659
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 4 Claims

L-ornithine can be produced by cultivating an auxotrophic mutant of Escherichia coli which requires arginine or citrulline, but not ornithine for the growth in a cultivation medium containing assimilable carbon, nitrogen sources, inorganic ions and arginine or citrulline, phosphate ion of said medium being limited to about 0.5 – 3.5μ mole/ml, under aerobic condition.

3,668,073
PREPARATION OF L-LEUCINE BY FERMENTATION

Sumio Kurihara; Kazumi Araki; Hiroyuki Ueda, and Masahiko Ikumo, all of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha

Filed Jan. 9, 1969, Ser. No. 790,177
Claims priority, application Japan, Jan. 11, 1968, 43/1089
Int. Cl. C12b *1/00*
U.S. Cl. 195—29 7 Claims

L-leucine is prepared by culturing a L-leucine-producing microorganism of the genus Corynebacterium in a culture medium containing a carbon source, a nitrogen source, inorganic material, nutrients and an isoleucine, methionine, phenylalanine or valine promoter. Mixtures of the promoters may also be employed. *Corynebacterium glutamicum* ATCC 21,301 and 21,335 are particularly suitable microorganisms for use in the process. L-leucine is an essential amino acid and is useful as a nutrient additive in food and feedstuffs for human and animals, respectively.

3,668,074
PROCESS FOR ISOLATION BY CRYSTALLIZATION OF THE MO-FE PROTEIN OF THE ENZYME NITROGENASE

Richard Charles Burns, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1969, Ser. No. 885,909
Int. Cl. C07g *7/02*
U.S. Cl. 195—62 6 Claims

Disclosed is a process for obtaining crystals of the Mo-Fe protein fraction of the enzyme nitrogenase. This fraction is essential in the fixation of atmospheric nitrogen by certain microorganisms.

3,668,075
GROWTH INHIBITIONS OF SELECTIVE MYCOPLASMAS

Thomas Cekoric, Jr.; George Evans, both of Hopatcong, and Ronald Searcy, Upper Montclair, all of N.J., assignors to Hoffman-LaRoche, Inc., Nutley, N.J.

Continuation-in-part of application Ser. No. 676,976, Oct. 20, 1967, now abandoned. This application Oct. 4, 1968, Ser. No. 765,028
Int. Cl. C12k *1/06*
U.S. Cl. 195—103.5 10 Claims

The use of certain heparinoid compounds to selectively inhibit the growth of mycoplasmas is described.

The invention provides a practical means for facilitating the selective identification of mycoplasmas. The identification of mycoplasmas isolated from man is especially useful as a diagnostic aid in prescribing treatment for diseases caused by these microorganisms.

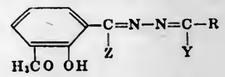
Additionally, the invention provides a means of preventing the growth of mycoplasmas in culture media especially media used for tissue cultures in which mycoplasmas frequently occur as undesirable contaminants.

3,668,076
DIAGNOSTIC AGENT

Hans-Georg Rey; Hans Wielinger, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed June 17, 1969, Ser. No. 834,178
Claims priority, application Germany, July 15, 1968, P 17 73 839.5
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R 9 Claims

Diagnostic agent suitable for use in carrying out rapid analytical determinations of the presence and/or concentration of hydroperoxides, substances which react with the liberation of hydrogen peroxide, peroxidase or peroxidate active substances, comprising a chromogen which is oxidized by hydroperoxide in the presence of peroxidase or peroxidate active substances to form a dyestuff, the color intensity of which is dependent on the quantity of peroxide, peroxidase or peroxidate active substance present in the test sample, wherein the chromogen is a compound having the formula:

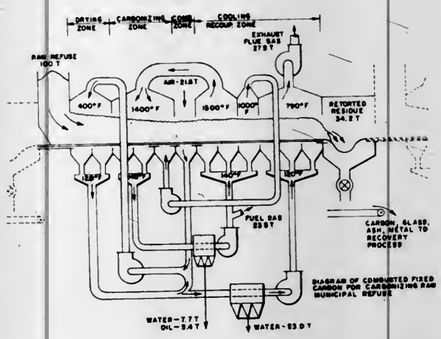


wherein Y is hydroxyl, mercapto, or amino, Z is hydroxyl, wherein Y AND Z together can represent oxygen, and R is hydrogen, mercapto, amino, lower alkyl, pyridino, morpholino, piperazinyl, arylpiperazinyl, phenyl, or phenyl substituted by one or more of hydroxyl, nitro, alkyl or alkoxyl.

3,668,077
PROCESS FOR CONVERSION OF MUNICIPAL WASTE

Thomas E. Ban, South Euclid, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed June 19, 1970, Ser. No. 47,713
Int. Cl. C01b *49/06*
U.S. Cl. 201—29 10 Claims

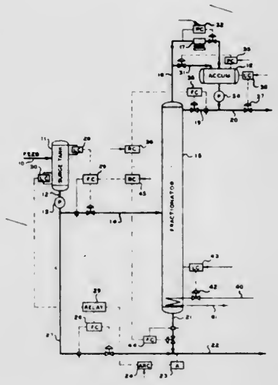


There is provided a process for treating municipal solid waste or the like characterized by disposing such material as a burden on a traveling grate, passing hot gases through the burden to carbonize carbonizable fractions thereof, and separating gas-entrained materials, e.g. water and organic materials, from the gases issuing from the burden. The unvolatilized solid material is composed largely of glass and metallics which may be further processed as desired. The process is characterized in that it is adaptable to continuous treatment of solid waste material, e.g. rubbish.

3,668,078
FRACTIONAL DISTILLATION BYPASS CONTROL PROCESS

Eric O. Holland, Borger, Tex., assignor to Phillips Petroleum Company

Filed Apr. 25, 1969, Ser. No. 819,145
Int. Cl. B01d *3/42*
U.S. Cl. 203—3 5 Claims

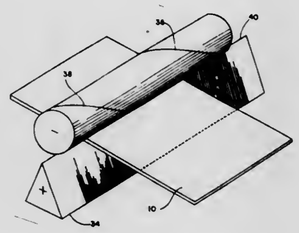


The composition of the overhead or bottoms product of a distillation is analyzed and a portion of the feed is passed directly to a recovery step when an analyzer output indicates a predetermined composition of the overhead or bottoms product.

3,668,079
ELECTROLYTIC RECORDING MEDIUM

Arthur S. Diamond, Palos Verdes Peninsula, and David E. Carr, Playa Del Rey, both of Calif., assignors to Telautograph Corporation, Los Angeles, Calif.

Filed May 13, 1971, Ser. No. 142,902
Int. Cl. B21h *1/20*
U.S. Cl. 204—2 12 Claims

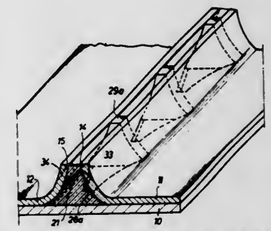


An improved electrolytic recording medium for use with dissolving electrode type of facsimile recording apparatus is disclosed comprising a porous sheet impregnated with an aqueous medium including a marking compound, an electrolyte and an effective amount of a compatible, fluorescent brightening agent.

3,668,080
METHOD OF PRODUCING SEPARATING NOZZLES

Klaus Weber, Pforzheim; Erwin Becker, Karlsruhe, and Werner Grosstuck, Pforzheim, all of Germany, assignors to Klaus D. Weber, Pforzheim, Germany

Filed Feb. 18, 1970, Ser. No. 12,265
Claims priority, application Germany, Feb. 21, 1969, P 19 08 693.2
Int. Cl. C23b *7/02*; B21d *53/00*; B01d *57/00*
U.S. Cl. 204—9 30 Claims



A method of producing separating nozzles with slot-shaped nozzle-channels of a very high degree of accuracy for separating gaseous or vaporous substances into particles of different molecular weights, this method consisting of first producing a thin molding bar which consists of a material which may be easily melted or chemically dissolved and is made of a size and shape exactly corresponding to those of the inner surfaces of two walls of the nozzle channel which consist of strips of a very thin sheet metal which are applied upon and thus molded to the shape of this bar. Small partitions of sheet metal are also inserted into the molding bar which, when the nozzle walls are completed and the material of the molding bar is completely removed, remain between and thereby reinforce the nozzle walls.

3,668,081
PRODUCTION OF ELECTROLYTIC METAL

William Gerard Borner, Ringwood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,423
Int. Cl. C23b *7/02*; B01k *1/00*; C23b *7/00*
U.S. Cl. 204—12 12 Claims

Metals such as nickel are electroformed upon a matrix or mandrel having an epoxy resist pattern thereon to provide foraminous or dividable electrodeposited metal separable from the matrix wherein the matrix is prepared by depositing from 2 to 30 microinches of standard chromium thereon and the desired resist pattern is applied to the chromium-plated surface in the form of a thermoset epoxy ink or paint containing dicyandiamide as a heat-curing agent and then heat curing the resist pattern to provide a repeatedly reuseable matrix.

3,668,082
METHOD FOR STRONGLY ADHERING A METAL FILM ON EPOXY SUBSTRATES

Glenn V. Elmore, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,939
Int. Cl. C23b *5/64*
U.S. Cl. 204—30 7 Claims

An epoxy board is prepared for metal plating by dipping the same in a molten eutectic comprising 60% KOH and 40% NaOH. The epoxy board is then rinsed and neutralized, after which it is sensitized and activated conventionally and immersed in an electroless deposition bath for metal plating thereon. The resultant metal film is found to be strongly bonded to the epoxy board.

3,668,083

PROCESS OF ELECTROPLATING RHENIUM AND BATH FOR THIS PROCESS

Andre Meyer, Geneva, Switzerland, and Donald Gardner Foulke, Passaic, N.J., assignors to Sel-Rex Corporation, Nutley, N.J.

Continuation of application Ser. No. 739,165, June 24, 1926, now abandoned. This application Oct. 27, 1970, Ser. No. 84,505

Claims priority, application Switzerland, July 3, 1967, 9470/67

Int. Cl. C23b 5/32, 5/24

U.S. Cl. 204—43 10 Claims

The invention relates to a bath for electrodepositing low-stress rhenium and its alloys of the perrhenate type and is characterized by the addition of ions which make up one or more of the following salts: magnesium sulfate, magnesium sulfamate, aluminum sulfate and aluminum sulfamate. The invention also relates to the process of electroplating from said bath.

3,668,084

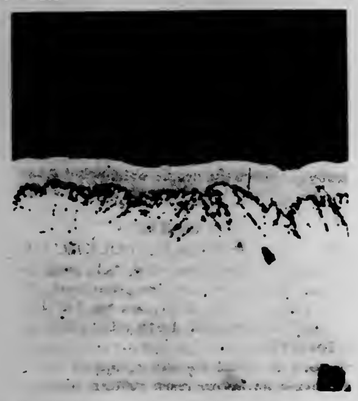
PROCESS FOR PLATING URANIUM WITH METAL

George S. Petit, and Ralph R. Wright, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed June 10, 1970, Ser. No. 45,085

Int. Cl. C01g 43/00

U.S. Cl. 204—1.5 7 Claims



A process for providing a uranium metal article with a tenaciously adhering metal plating deposited from aqueous solution. Prior to plating, oxides and other contaminants are removed from the surface of the article. The article then is heated in vacuum under selected conditions to form thereon a very thin and highly protective oxide film which is non-wettable by water. The surface of the oxide-coated article is made wettable by water by contacting the article with a basic wetting solution. The resulting wettable, oxide-coated article is then electroplated with metal in an aqueous metal-plating bath.

3,668,085

METHOD OF ELECTROLYTICALLY COATING LEAD DIOXIDE ON THE SURFACE OF VARIOUS MATERIALS

Shinzo Kiyohara, and Yasuichi Shibazaki, both of Yokohama, Japan, assignors to Isomura Sangyo Kaisha, Ltd., Tokyo, Japan

Filed Aug. 21, 1969, Ser. No. 852,074

Claims priority, application Japan, Aug. 24, 1968, 43/60211

Int. Cl. C23b 11/00

U.S. Cl. 204—57 2 Claims

Lead dioxide is coated on the surface of a base electrode by electrolyzing an acidic aqueous lead nitrate solution containing a small amount of copper nitrate at a temperature not lower than 70° C. and with a current density of anode not higher than 4 A/dm².

3,668,086

ELECTROCHEMICAL GENERATION OF SOLUBLE NICKEL(O) CATALYSTS

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed July 28, 1970, Ser. No. 59,018

Int. Cl. B01k 3/00

U.S. Cl. 204—59 R 4 Claims

A method of generating soluble zero-valent nickel catalyst consisting of electrochemically reducing suitable nickel(II)-ligand complexes wherein said electrochemical reduction can be achieved with or without the presence of an electrolyte.

3,668,087

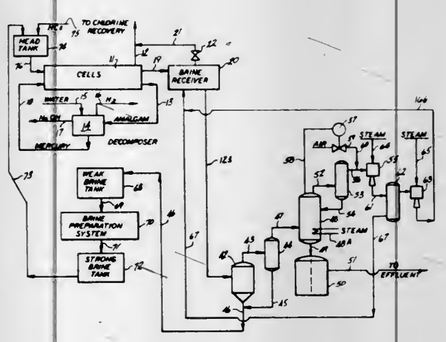
BRINE DECHLORINATION

Leonard A. Fabiano, Trumbull, Conn., assignor to Olin Corporation

Filed Feb. 3, 1971, Ser. No. 112,316

Int. Cl. C01d 1/08; B01k 1/00

U.S. Cl. 204—99 4 Claims



In the vacuum dechlorination of acidic alkali metal chloride brine effluent from a mercury cathode electrolytic cell, chlorine is recovered and an effluent environmentally acceptable is produced using steam jet vacuum with rectification to remove chlorine to acceptable amounts in the aqueous effluent.

3,668,088

METHOD OF PRODUCING COLLOIDAL SILICA BY ELECTRODIALYSIS OF A SILICATE

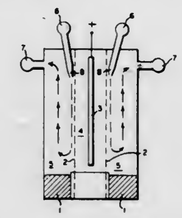
Ralph K. Iler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1969, Ser. No. 881,371

Int. Cl. B01k 1/00

U.S. Cl. 204—101 4 Claims

Silica sol is made by electrodialysis of a solelectrolyte containing an aqueous silica sol, aqueous sodium or potassium silicate, and a supplementary electrolyte such as sodium or potassium carbonate or sulfate. Temperature is maintained at 50° to 100° C. A source of non-siliceous anion is added as needed to maintain normality of the supplementary electrolyte between 0.01 and 0.15, and silicate is added as necessary to maintain pH between 8.0 and 9.5. After the electrodialysis, most of the sodium ions and the anions of the supplementary electrolyte are removed by treatment with ion exchange resins, then the sol is concentrated to 30 or 40 percent silica.



3,668,089

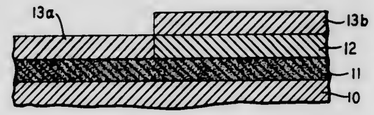
TIN OXIDE ETCHING METHOD

Eugene W. Chase, West Orange, and Harold J. Robinson, South Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 10, 1969, Ser. No. 875,258

Int. Cl. B23p 1/00; C23f 1/00

U.S. Cl. 204—143 R 4 Claims



Tin oxide (SnO_2) is etched by forming a layer of a metal such as aluminum on the portions of the SnO_2 surface to be etched, and then contacting the metal with an aqueous solution of hydrochloric acid. Passage of a current through the tin oxide-metal composite as cathode while in contact with the solution as electrolyte may be employed to speed up removal of SnO_2.

3,668,090

METHOD FOR THE ELECTROLYTIC REMOVAL OF DRAWING OR ROLLING LUBRICANTS ON STEEL STRANDS

Richard L. Sallo, Greensburg, and Charles D. Stricker, Monroeville Borough, both of Pa., assignors to United States Steel Corporation

Filed Apr. 20, 1970, Ser. No. 30,358

Int. Cl. C23b 1/04

U.S. Cl. 204—145 R 5 Claims

A one-step method for the removal of drawing or rolling lubricants from metal strands is described, in which the strands are subjected to an electrolytic treatment at a current density of 30–60 amps/in² in an aqueous bath which contains about 6 to 16 wt. percent NaOH, .5 to 6% $Na_4P_2O_7$ and .5 to 5% Na_2CO_3.

3,668,091

ULTRAVIOLET LIGHT BLEACHING OF CARBOXYLIC ACID ESTERS AND EPOXY COMPOUNDS

William H. French, St. Paul, and Oliver A. Ossanna, Bloomington, both of Minn., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Feb. 2, 1971, Ser. No. 112,067

Int. Cl. B01j 1/10

U.S. Cl. 204—158 R 17 Claims

A process of bleaching carboxylic acid esters and/or epoxy compounds by irradiating the esters and/or epoxy compounds with ultraviolet light in the presence of ketone. The preferred compounds bleached are the epoxidized higher fatty acid esters. Benzophenone, acetophenone, and acetone are examples of some suitable ketones.

3,668,092

BLEACHING OF CARBOXYLIC ACID ESTERS AND/OR EPOXY COMPOUNDS EMPLOYING ULTRAVIOLET LIGHT

William H. French, St. Paul, and Oliver A. Ossanna, Bloomington, both of Minn., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Feb. 2, 1971, Ser. No. 112,088

Int. Cl. B01j 1/10

U.S. Cl. 204—158 R 16 Claims

A process of bleaching carboxylic acid esters and/or epoxy compounds by irradiating the esters and/or epoxy compounds with ultraviolet light in the presence of a peroxy compound. The preferred compounds bleached are the epoxidized higher fatty acid esters. Hydrogen peroxide and peracetic acid are examples of suitable peroxy compounds.

3,668,093

PHOTOINITIATION OF VINYL POLYMERIZATION BY TRIAROYLPHOSPHINES

Thomas Albert Rettig, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 6, 1971, Ser. No. 140,987

Int. Cl. C08d 1/00; C08f 1/16

U.S. Cl. 204—159.23 13 Claims

Acyl phosphines of the formula

$$R^1-P(-R^2)-R^3$$

wherein R^1, R^2 and R^3, alike or different, are aryl or aroyl groups having up to 13 carbon atoms and such aryl or aroyl groups substituted with halogen of atomic number 9–35, alkyl of up to six carbon atoms, or alkoxy of up to six carbon atoms, with the proviso that at least one of R^1, R^2 and R^3 is aroyl, are effective as photoinitiators for photopolymerization of ethylenically unsaturated compounds. Compositions containing such an acyl phosphine and an ethylenically unsaturated compound are useful in preparing photoimaging compositions, adhesives, coating compositions and the like.

3,668,094

NOVEL GLASSY COMPOSITIONS ZINC AND ALPHA HYDROXY DIPHOSPHONIC ACIDS

George Birdseye Hatch, Allison Park, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 16, 1970, Ser. No. 81,559

Int. Cl. C02b 5/06; C23f 11/16, 14/02

U.S. Cl. 252—180 11 Claims

Novel alkali metal zinc and ammonium zinc glasses of alpha hydroxy diphosphonic acids are disclosed along with the use of these glassy compositions in small concentrations to inhibit corrosion and scale formation in aqueous systems.

3,668,095

METHOD OF MANUFACTURING A METALLIC OXIDE FILM ON A SUBSTRATE

Hisao Katto; Kazunari Kobayashi, both of Hachioji; Yasushi Koga, Mitaka, and Machiko Koyama, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1970, Ser. No. 22,908

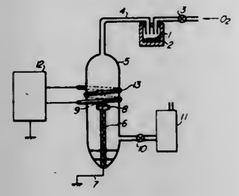
Claims priority, application Japan, Mar. 31, 1969, 44/23791; Feb. 16, 1970, 45/12660

Int. Cl. B01k 1/00; B32b 15/04; B32f 17/00; B32b 15/04; B22b 17/00

U.S. Cl. 204—164 15 Claims

A method for manufacturing a thin, highly pure metallic oxide film by the use of glow discharge on a substrate includ-

ing the steps of preparing a mixture gas of oxygen and a metallic halide with controlled pressure in an evacuated chamber into which a substrate is placed, applying a high al-



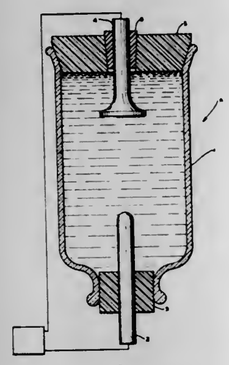
ternating electrical field of a frequency higher than 1 KHz to the chamber to produce the glow discharge adjacent to the substrate, thereby causing the required chemical reaction for the formation of the metallic oxide.

3,668,096

METHOD AND APPARATUS FOR CONTROLLING POLYMERIZATION REACTIONS

William H. Cook, Upper Montclair, N.J., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 13, 1968, Ser. No. 775,236
Int. Cl. B01k *1/00*
U.S. Cl. 204—165 5 Claims



A technique is disclosed for initiating and accelerating the reaction of polymerizable media, particularly thermosetting materials, through application of a suitably imposed electric field under conditions which lead to electrokinetic activity in filled systems. The process greatly facilitates the preparation of composites by permitting long gel time and rapid cure.

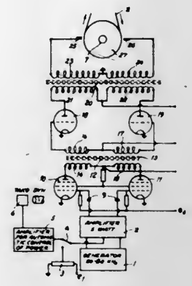
3,668,097

METHOD FOR TREATING SURFACES OF WORK PIECES TO IMPROVE THE ADHESION OF PRINTING INKS AND ADHESIVES THERETO

Axel Verner Elsby, Carl Ploughsvej, Kolding, Denmark

Continuation-in-part of application Ser. No. 572,959, Aug. 17, 1966, now abandoned. This application Apr. 15, 1969, Ser. No. 816,369
Int. Cl. B01k *1/00*
U.S. Cl. 204—165 7 Claims

The invention relates to a method for treating plastic work pieces, in general, and foil surfaces, in particular, to improve the adhesion of printing inks to at least one of the foil surfaces and wherein the foil is passed over a counter electrode and is subjected to electric high-frequency voltages having a



frequency of 20–80 kc transmitted to the foil by means of electrodes directed towards its surface.

3,668,098

COATING COMPOSITIONS

Wolfgang Daimer, and Heinrich Lackner, both of Graz, Austria, assignors to Vianova Kunstharz Aktiengesellschaft, Wien, Austria

Filed Nov. 13, 1968, Ser. No. 775,531
Claims priority, application Austria, Nov. 20, 1967, A 10401/67
Int. Cl. B01k *5/00*; C23b *13/00*
U.S. Cl. 204—181 10 Claims

A water-dilutable coating composition particularly adaptable for electro-deposition comprising water, a water-miscible solvent, and an ammonia or amine soap of a condensation product of an adduct of an α,β-ethylenically unsaturated dicarboxylic acid and an ester of a hydroxyl-free drying or semi-drying oil, unmodified or modified with rosin, is described. The condensation product will comprise from 10 to 25 percent by weight of a dienophilic compound, 75 to 90 percent by weight of the hydroxyl-free ester of a drying or semi-drying oil prepolymerized to a viscosity 3 to 30 times its initial value.

3,668,099

APPARATUS FOR MEASURING OXYGEN CONTENT OF A FLUID

Robert S. Rittiger, Allegheny Township, and Charles K. Russell, Franklin Township, both of Pa., assignors to United States Steel Corporation

Filed Feb. 16, 1971, Ser. No. 115,509
Int. Cl. G01n *27/30*
U.S. Cl. 204—195 S 12 Claims

Apparatus for measuring oxygen content of fluids at elevated temperatures includes a sensor or probe which comprises a Cr_2O_3 tube and a solid electrolyte button sealing that end of the tube that contacts the fluid. A solid oxygen reference material in the tube made of chromium or a chromium alloy contacts the button and the other end of the tube is sealed with a molybdenum cap. A thermocouple and a lead wire pass through the cap into the tube. A quartz tube surrounds the Cr_2O_3 tube and button with its outer end in sealing engagement with the button. An electronic conductor has one end extending into the fluid. In one embodiment the conductor is a tube surrounding the quartz tube and in another it is a separate rod or tube. In both embodiments the conductor is preferably a mixture of Al_2O_3 and molybdenum. The lead wire and the other end of the conductor are connected to a voltage measuring means.

3,668,100

ELECTROPHORETIC COATING OF METAL SUBSTRATES USING ELEVATED PRESSURES

Lincoln J. Frost, La Salle, and Arnd J. Stadler, Park Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 1, 1970, Ser. No. 51,692
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 5 Claims

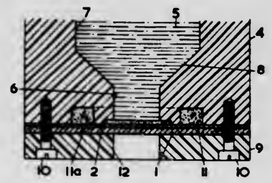
In a process of electrophoretic coating of electrically conductive surfaces with organic resins, the amount of resin deposited is substantially increased by conducting the electrophoretic deposition at pressures above atmospheric.

3,668,101

MEMBRANE ELECTRODES AND CELLS

Imanuel Bergman, Sheffield, England, assignor to National Research Development Corporation, London, England

Filed July 22, 1968, Ser. No. 746,436
Int. Cl. G01n *22/46*
U.S. Cl. 204—195 2 Claims



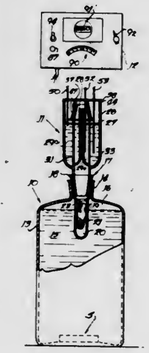
A three component membrane electrode for use in electrical cells having in sequence, a gas-permeable membrane, an electrically conductive layer and a protective layer acting as a diffusion barrier to gas dissolved in the electrolyte. The gas permeable membrane preferably is a plastic material and the electrically conductive layer is preferably laid down on the gas permeable membrane in the form of minute non-coalescing globules of gold and/or silver.

3,668,102

SYSTEM FOR MEASURING BOD BY ELECTROLYSIS

James C. Young, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 13, 1969, Ser. No. 849,742
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 B 9 Claims



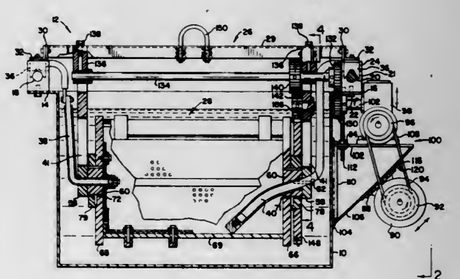
A system for measuring BOD by the electrolysis method has a reaction vessel containing the sample. A container of material for absorbing CO_2 is received in the mouth of the vessel and is provided with an adaptor. An electrolysis cell storing the electrolyte is received in the adaptor. A cap is placed on the electrolysis cell with an upper circular covering flange spaced from the walls of the cell thus providing an annular space communicating with the electrolyte to permit venting of hydrogen while minimizing evaporation of the electrolyte. When the level of the electrolyte falls below a predetermined minimum, indicating a low O_2 pressure in the vessel, a sensing switch energizes a regulated dc current source to start the electrolysis process to replace the O_2 consumed by the sample. The system is insensitive to changes in line voltage and electrolyte strength over a design range. Apertures in the cap member and the cell may be selectively aligned by twisting the cap to equalize the pressure in the cell with atmospheric pressure before starting.

3,668,103

HANGER BRACKET AND DRIVING APPARATUS FOR PLATING BARRELS

Albert Singleton, 7360 Brookside Parkway, Middleburg Heights, Ohio

Filed Nov. 20, 1970, Ser. No. 91,394
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 10 Claims

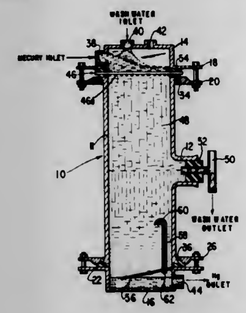


The specification and drawings disclose a plating barrel assembly which comprises a barrel member mounted for rotation about its longitudinal axis. The barrel is supported from generally vertically extending hangers formed from metal reinforced plastic and are carried by a horizontally extending frame adapted to removably rest on the upper edge of the plating tank. Means are provided for rotating the barrel and the means include a shaft rotatably carried on the horizontal frame and connected through a gear train with a gear connected to an end of the drum. At least one end of the horizontal shaft extends outwardly of the frame for releasable engagement with a drive assembly. The drive assembly is mounted on one end of the plating tank and includes a first support frame mounted for vertical adjustment and including a horizontally extending portion and an inclined portion. A motor is adjustably mounted on the inclined portion and is drivingly connected with a gear reducer unit carried on the horizontal portion. The gear reducer is positioned with its output shaft extending horizontally and carrying a gear adapted to releasably engage a gear on the shaft member. The entire drum assembly has a low total height so that it can be easily lifted from the plating tank.

3,668,104
DRIPPING MERCURY CIRCUIT BREAKER

Richard E. Loftfield, Chardon; Warren R. Bailey, Painesville, both of Ohio, and John C. Doolittle, Jr., Houston, Tex., assignors to Oronzio De Nora Impianti Elettrochimici, S.A.A., Milan, Italy

Filed Sept. 17, 1969, Ser. No. 858,580
Int. Cl. B01k 3/04
U.S. Cl. 204—279 11 Claims

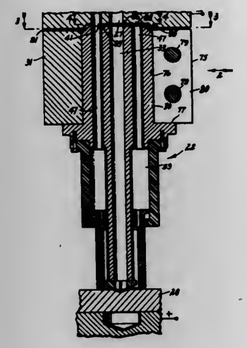


A circuit breaker for fluent electrical conductors, such as mercury, which consists of a chamber with a perforated plate at the top, a mercury and water inlet, a mercury outlet at the bottom and a water outlet located at an intermediate point. Mercury and water are introduced onto the perforated plate and are allowed to drip through the perforations into the chamber below. Electrical circuit through the mercury is broken when mercury is allowed to drip through the perforated plate in a discontinuous stream of drops. In the chamber, mercury being heavier than water, settles in a layer on the bottom, and water settles on the top of the mercury layer. Withdrawal of mercury is controlled by a trap in the mercury outlet line to maintain the desired level of mercury in the chamber. The method and apparatus can be used on single or multiple mercury streams and to break the amalgam circuit in a mercury amalgam denuder.

3,668,105
QUICK-CHANGE HOLDER FOR ECM TOOLS

Ronald C. Abt, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Original application Dec. 19, 1968, Ser. No. 785,226, now Patent No. 3,594,298. Divided and this application Mar. 12, 1971, Ser. No. 123,564
Int. Cl. B23p 1/00; C23b 5/70; B23r 9/16
U.S. Cl. 204—297 R 4 Claims

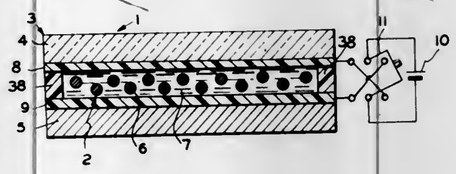


A cavity is provided in the platen of an ECM machine for receiving the mounting portion of the electrode tool. Part of the cavity takes the form of an arm extending around the tool for clamping it in the cavity. The tool is thereby held accurately in place on the platen and a large area of contact is provided between the tool and the platen for efficiently conducting the heavy machining current which flows therethrough during machining operations. Means is also provided for effecting a fluid-tight seal between the machining fluid passages in the tool and the corresponding passages in the platen when the tool is inserted in the cavity. This prevents machining fluid from entering the interface between the tool and the cavity and corroding the joint through which the machining current must flow.

3,668,106
ELECTROPHORETIC DISPLAY DEVICE

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 9, 1970, Ser. No. 26,874
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—299 25 Claims

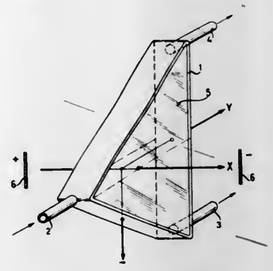


An electorphoretic display and/or recording device in which an electrophoretic suspension layer including a dispersion of at least one electrophoretic material in a finely divided powder form suspended in a suspending medium is interposed between a pair of electrodes. An electric field is imposed across the electrophoretic suspension layer to change the optical reflective property of the suspension layer by changing the spatial distribution of the electrophoretic material in the suspending medium electrophoretically.

3,668,107
DIAPHRAGM CELL FOR THE ELECTROPHORESIS OF SUBSTANCE MIXTURES

Franz Lappe, Hofheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Mar. 10, 1970, Ser. No. 18,128
Claims priority, application Germany, Mar. 17, 1969, P 19 13 411.3
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204—301 3 Claims

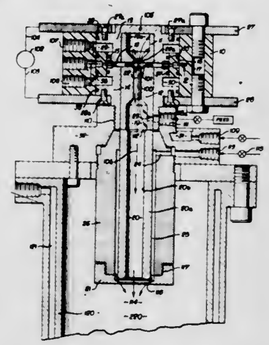


For the electrophoresis of electrically charged particles in a solvent mixture diaphragm cells are used which are characterized by a special arrangement of the inlet and outlet openings.

3,668,108
SOLIDS ARC REACTOR APPARATUS AND METHOD

John Houseman, Newport Beach, Calif., assignor to Hercules Incorporated, New Castle County, Del.

Original application Nov. 15, 1966, Ser. No. 594,598, now Patent No. 3,533,756. Divided and this application June 20, 1969, Ser. No. 843,273
Int. Cl. C22d 7/08
U.S. Cl. 204—323 12 Claims

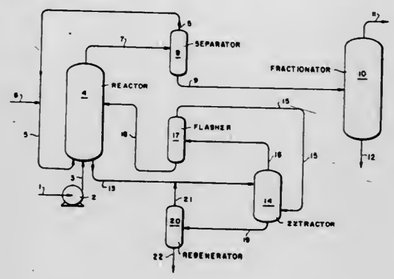


This invention concerns method and apparatus useful in carrying out hot plasma gas treatment of divided solid materials as well as other chemical reactions. According to the process, a solid particle feed is contacted with hot plasma gas, the food and gas are caused to flow through an elongated residence zone under conditions such as to enhance vaporization of the feed, and the vaporized feed is condensed in the form of a finely divided powder product. The apparatus includes anode and cathode elements forming passages for reception of an arc discharge pattern penetrating these elements end of passing gas flow through one element while blocking gas flow through the other element, together with means to establish the arc discharge pattern. The structure typically forms an elongated vaporization zone to receive the feed and gas from the one element, and being of sufficient length to assure enchanced vaporization of the feed in that zone.

3,668,109
PROCESS FOR HYDROCONVERSION OF ORGANIC MATERIALS

Thomas E. Klovsky, El Sobrante, and Milton M. Wald, Walnut Creek, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,203
Int. Cl. C10g 1/06, 13/02
U.S. Cl. 208—10 5 Claims



A process for hydroconversion or organic materials, particularly solid or very high boiling organic materials, by contacting such materials under hydrogen pressure and at elevated temperature with a continuous liquid phase catalyst containing gallium trichloride, gallium tribromide, gallium triiodide, mercuric bromide, mercuric iodide, stannic bromide, stannic iodide, stannous chloride, stannous bromide, stannous iodide, zirconium tetrachloride, zirconium tetrabromide, zirconium tetraiodide, titanium tetrabromide, titanium tetraiodide, titanium triiodide, cuprous chloride, cuprous bromide, cuprous iodide, hafnium tetrachloride, hafnium tetrabromide, or hafnium tetraiodide.

3,668,110
PITCH TREATMENT MEANS

Frederick L. Shea, 806 Wedgewood Rd.; Louis A. Joo, 208 Chicksaw Dr., both of Johnson City, Tenn., and Thomas W. Martin, P.O. Route 6, Elizabethton, Tenn.

Filed Oct. 28, 1970, Ser. No. 84,883
Int. Cl. C01b 1/07; C10c 3/08
U.S. Cl. 208—45 6 Claims

A spinnable pitch, useful in the manufacture of carbon filaments of continuous lengths, is prepared by the multiple solvent extraction of pitch, first by trituration of pitch particles with a low-boiling, aromatic solvent in which the bulk of pitch particles is essentially insoluble — then by dissolution of the pitch in a solubilizing solvent, filtration, and evaporation of the solvent.

3,668,111
FOULING RATE REDUCTION IN HEATED HYDROCARBON STREAMS WITH DEGRADED POLYISOBUTYLENE

Louis M. Dvoracek, Brea, and Amir M. Sarem, Yorba Linda, both of Calif., assignors to Union Oil Company of California

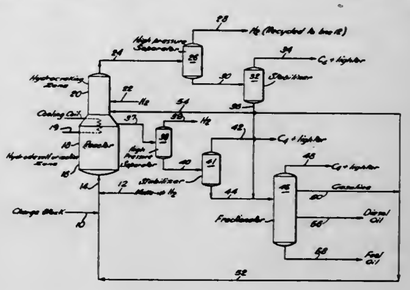
Filed July 16, 1970, Ser. No. 55,594
Int. Cl. C10g 9/16, 9/36; C23f 14/00
U.S. Cl. 208—48 AA 8 Claims

The deposition of fouling deposits within process equipment operated at elevated temperatures in the presence of hydrocarbons is reduced by combining with the liquid hydrocarbon a foulant inhibiting amount of mechanically degraded polyisobutylene.

3,668,112
HYDRODESULFURIZATION PROCESS

Levi C. Parker, Port Arthur, and Odes B. Robertson, Groves, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,788
Int. Cl. C10g 23/00
U.S. Cl. 208—89 4 Claims



Low sulfur diesel oil and low sulfur fuel oil are produced by a process which permits the minimum production of materials boiling in the gasoline range. A catalytic hydrodesulfurization process reduces the sulfur content of the portion of the feed charge which is subsequently fractionated into the desired diesel fuel and fuel oil. Hydrocar-

bons produced in the desulfurization process boiling within the motor fuel boiling range are catalytically cracked to yield substantial quantities of C_1 to C_4 hydrocarbons.

3,668,113

HYDROCATALYTIC PROCESS FOR NORMAL PARAFFIN WAX AND SULFUR REMOVAL

Bernard Whiting Burbidge, Leatherhead; Ian Montgomery Keen, Harrow, and Christopher Ronald Pout, Sunbury, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Sept. 22, 1969, Ser. No. 860,082
Claims priority, application Great Britain, Nov. 7, 1968, 52,813/68
Int. Cl. C10g *37/06*
U.S. Cl. 208—97 5 Claims

Hydrocarbon fractions, particularly petroleum fractions of 30–650° C boiling range and containing 0.1 – 3.0 percent wt. sulphur 5–50 percent wt. n-paraffin wax, are reduced in sulphur and n-paraffin wax content by hydrocatalytic treatment at 260°–482° C and 50–3,000 psig, first over a catalyst of a Group VI or VIII hydrogenating component on a mordenite of reduced alkali metal content to remove n-paraffin wax and then over a catalyst of a Group VI or VIII hydrogenating component and a refractary inorganic oxide to remove sulphur. Diesel fuels or fuel oils are separated from the desulfurized product.

Preferred catalysts are Pt on decationized mordenite and CoMo on alumina used respectively in amounts of 10–90 and 90–10 percent vol., preferably 20–60 and 80–40 percent vol. The feedstock must contact the mordenite catalyst first since this is sensitive to H_2S and if gas is recycled from the sulphur removal to the n-paraffin wax removal stage this should be treated to remove H_2S.

3,668,114

STABILIZED AMORPHOUS SILICA-ALUMINA CATALYTIC CRACKING CATALYSTS

William H. O'Keefe, Creve Coeur, Mo.; James H. Colvert, Houston; Gerald V. Nelson, Nederland, and Douglas J. Youngblood, Groves, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 728,617, May 13, 1968, now abandoned. This application Dec. 28, 1970, Ser. No. 102,238
Int. Cl. C10g *11/02*; B01j *11/40*
U.S. Cl. 208—120 10 Claims

There is provided a method for improving the attrition resistance and heat stability of a silica-alumina fluid catalytic cracking catalyst where the catalyst contains up to 35 weight percent alumina by treating the catalyst with steam such that the catalysts stability factor is increased to a value of at least 12.5. The above treatment provides an improved fluid catalytic cracking catalyst for utilization for the cracking of a hydrocarbon charge under the catalytic cracking conditions.

3,668,115

PROCESS FOR CHARGING CATALYST

George A. Uhl, Markham, and Lloyd A. Baillie, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Mar. 27, 1970, Ser. No. 23,489
Int. Cl. C10g *23/02*
U.S. Cl. 208—143 24 Claims

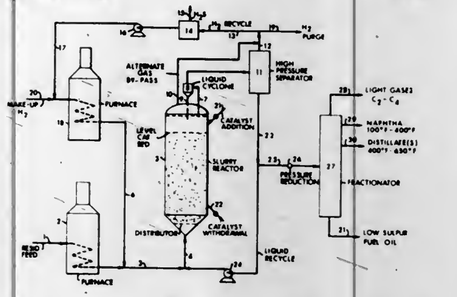
An improved process for charging a solid catalyst, such as an extruded catalyst, to a fixed bed reactor by charging the catalyst at a rate of fill of the reactor of up to about 17 inches per minute and in a manner such that the average orientation of catalyst particle lengths in the catalyst bed is substantially horizontal.

3,668,116

SLURRY HYDRODESULFURIZATION OF A HEAVY PETROLEUM OIL

Clark E. Adams, Baton Rouge, and William T. House, East Baton Rouge Parish, both of La., assignors to Esso Research and Engineering Company

Continuation of application Ser. No. 710,344, Mar. 4, 1968, now abandoned. This application Oct. 16, 1970, Ser. No. 81,541. The portion of the term of the patent subsequent to Apr. 28, 1987, has been disclaimed.
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 17 Claims



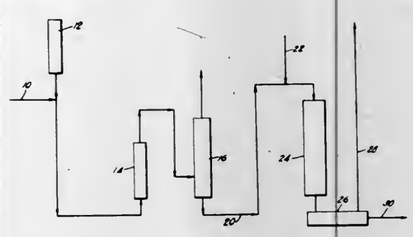
A heavy petroleum oil is treated in a slurry reactor with hydrogen and with a catalyst containing the oxide or sulfide of a Group VI B metal and the oxide or sulfide of a Group VIII metal deposited on a support of silica-stabilized alumina at reaction temp. of 600°–850° F and 500–5,000 psig. The catalyst is characterized by a maximum of catalyst surface area in pores having pore diameters of 30–70 Angstroms and a minimum of the total pore volume having diameters of over 100 Angstroms. The catalyst is employed in the hydrodesulfurization zone at a concentration of 15–45 pounds/cu.ft., preferably at a concentration of 20 to 30 pounds/cu.ft.

3,668,117

DESULFURIZATION OF A PREOXIDIZED OIL

Jitendra A. Patel, Beacon; Sheldon Herbstman, Spring Valley; Reese A. Peck, and Raymond F. Wilson, both of Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 17, 1970, Ser. No. 20,286
Int. Cl. C10g *19/00*
U.S. Cl. 208—228 3 Claims



A sulfur-containing oil is initially preoxidized with an oxidant, such as, an organic peroxide, an organic hydroperoxide, air or an organic peracid in the presence of a Group IV—B, Group V—B or VI—B metal catalyst, water is then added to the preoxidized oil and desulfurization is carried out with sodium oxide, potassium oxide or calcium oxide catalyst on an alumina support. Water is added to the oil prior to desulfurization at a concentration ranging from 1 to 20 percent by weight.

3,668,118

OIL MOP AND METHOD OF USING SAME

Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop International, Inc.

Filed July 6, 1970, Ser. No. 52,448
Int. Cl. E02b *15/04*
U.S. Cl. 210—30 9 Claims



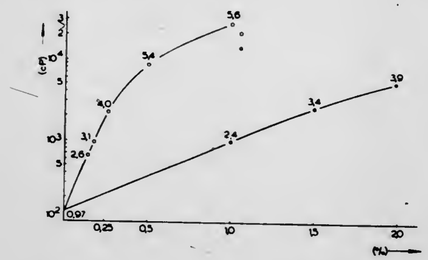
The present disclosure is directed to a method of removing oil from the surface of a body of water with an oil mop made of thin gauge narrow strips of polypropylene or similar material passed through the oil on the surface of water and then through wringers and/or water or chemical sprays or both to remove the oil from the mop, depositing the oil in a receptacle and returning the non-oil ladened mop back into the oil covered water to pick up more surface oil.

3,668,119

PROCESS FOR OBTAINING AN ASBESTOS-FIBER MATERIAL OF A HIGH DEGREE OF SEPARATION

Dietrich Bauer, Kahl, Main, and Helmut Fratzscher, Grossauheim, both of Germany, assignors to Deutsche Gold-und Silber-Scheidean-stalt Vormals Roessler, Frankfurt am Main, Germany

Filed Feb. 4, 1971, Ser. No. 112,680
Claims priority, application Germany, Feb. 5, 1970, P 20 05 226.0
Int. Cl. B01d *37/00*
U.S. Cl. 210—42 13 Claims



A colloidal solution of Chrysotile asbestos which is obtained from a pre-purified aqueous suspension of crude Chrysotile asbestos by means of a shearing action is subjected to filtration or centrifuging to eliminate therefrom incompletely separated colloidal matter. Subsequently, the asbestos is precipitated from the refined solution and subjected to further processing.

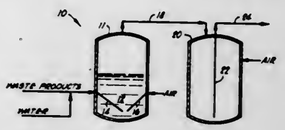
3,668,120

TREATMENT OF ORGANIC WASTE PRODUCTS

Wayne A. Patterson, 4932 N.W. 31st Street, Oklahoma City, Okla.

Filed Apr. 22, 1971, Ser. No. 136,435
Int. Cl. C02c *5/04*
U.S. Cl. 210—60 9 Claims

A process for the treatment of human organic waste products or the like whereby harmless inoffensive gases are produced. In the process, the organic waste products are combined with water to form a fine particle slurry. The slurry is introduced below the surface of a body of suitable molten metal contained in a primary combustion vessel to produce



carbon dioxide, water vapor and other gases. The carbon dioxide, water vapor and other gases are introduced into a heated secondary combustion vessel to further oxidize the gases and produce harmless, inoffensive gases which may be vented to the atmosphere.

3,668,121

INTUMESCENT FIRE-RETARDING COMPOSITION COMPRISING AMMONIUM DERIVATIVES OF GLYOXYLIC ACID

Philip X. Masciantonio, Penn Township, Westmoreland County, and Edward L. Mihelic, Penn Hills Township, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Aug. 10, 1970, Ser. No. 62,721
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 252—8.1 7 Claims

Water-soluble mono- and diammonium derivatives of glyoxylic acid are prepared and used as intumescent fire-retarding and heat-insulating materials.

3,668,122

DRILLING FLUID PREPARATION

Claud D. Branscum, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 28, 1969, Ser. No. 853,937
Int. Cl. C10m *3/02, 3/22*
U.S. Cl. 252—8.5 A 7 Claims

A method of preparing an improved drilling fluid of an inorganic salt and a carboxyalkylcellulose is disclosed in which the carboxyalkylcellulose is dissolved in the water and the inorganic salt is added to the solution thereafter.

3,668,123

DISPERSANTS FROM SPENT SULFITE LIQUOR

John Charles Steinberg, and Kenneth Russell Gray, both of Shelton, Wash., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of application Ser. No. 688,264, Dec. 5, 1967, now Patent No. 3,505,243, which is a continuation of application Ser. No. 432,761, Feb. 15, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 95,190, Mar. 13, 1961, now abandoned, and 174,595, Feb. 20, 1962, now abandoned. This application Dec. 11, 1969, Ser. No. 884,246
Int. Cl. C10m *3/48*
U.S. Cl. 252—8.5 C 2 Claims

A drilling mud composition is produced having a dispersant composition therein. The dispersant composition is prepared by incorporating a soluble sulfurous acid salt of sodium, potassium or ammonia into an aqueous solution containing soluble-base spent sulfite liquor. The spent sulfite liquor includes the reducing sugars from the sulfite pulping of wood. This solution is heated for a period of time sufficient to produce a product having a viscosity such that after complexing with a chromium salt it exhibits dispersant properties in drilling muds.

3,668,124
COMPOSITION AND METHOD FOR TREATING DRY-CLEANABLE SOIL-RESISTANT LEATHERS
Vincent Joseph Cassella, Jr., Audubon, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed May 13, 1970, Ser. No. 37,019
Int. Cl. C14c 5/00, 9/00
U.S. Cl. 252—8.57 5 Claims

A fat liquor composition useful for leather treatment comprises a mixture of alkenyl substituted succinic acid or succinic acid anhydride, sulfated fatty oil, and an amine or amide. The leather is treated with an aqueous emulsion of the fat liquor composition and then with an aqueous solution of the chromium coordination complex of perfluoroalkyl-containing carboxylic acid to provide a soil and water-repellent leather that is resistant to loss of lubricity when dry cleaned.

3,668,125
BLOCK COPOLYMERS AS VISCOSITY INDEX IMPROVERS FOR LUBRICATING OILS
William S. Anderson, Oakland, Calif., assignor to Shell Oil Company, Houston, Tex.
Filed Dec. 12, 1969, Ser. No. 884,720
Int. Cl. C10m 1/18
U.S. Cl. 252—59 6 Claims

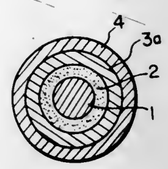
Certain hydrogenated or saturated block copolymers having at least three blocks are highly effective viscosity index improving additives for mineral oils and are especially effective at elevated temperatures.

3,668,126
METHOD OF PRODUCING ELECTROPHOTOGRAPHIC LIQUID DEVELOPERS HAVING VERY FINE COLORING MATERIAL
Yasuo Tamai, and Satoru Honjo, both of Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
Filed Jan. 22, 1968, Ser. No. 699,365
Claims priority, application Japan, Jan. 20, 1967, 43/13908
Int. Cl. G03g 9/04
U.S. Cl. 352—62.1 9 Claims

An electrophotographic liquid developer composed of a carrier liquid with a volume resistivity of over $10^{9}\Omega$cm and specific dielectric constant of below 3.5, colored material in fine powder form, a charge control agent selected from the group consisting of a vinyl chloride polymer and nitrocellulose which is insoluble in said carrier liquid, a material selected from the group consisting of resin, oil and mixtures thereof, having high compatability with said charge control agent and being soluble in said carrier liquid, a liquid which dissolves said charge control agent and is compatible with said carrier liquid, and a dispersion stabilizer accounting for less than 20 percent (by weight) and more than 0.5 percent (by weight) of the whole.

3,668,127
LIQUID DEVELOPER FOR ELECTROPHOTOGRAPHY
Hazime Machida, and Zenjiro Okuno, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed June 25, 1969, Ser. No. 836,246
Claims priority, application Japan, July 1, 1968, 43/45135
Int. Cl. G03g 9/04
U.S. Cl. 252—62.1 6 Claims

A liquid developer for use in electrophotography, wherein a toner comprising pigment particles and a resinous layer coated on said pigment particles is dispersed in a carrier liquid of high electric resistance and low dielectric constant, said developer being characterized by the fact that the pigment particles are coated with a resinous layer consisting of at least two layers of which the first layer is directly coated on the particles and is comprised of a resin insoluble in said carrier liquid while the outermost layer comprises a resin capable of somewhat swelling up in said carrier liquid.



3,668,128
ELECTRICAL INSULATING OIL, AND TO ELECTRICAL APPARATUS INCORPORATING THEM
John Kenneth Anderson, Bexley, England, assignor to British Insulated Callender's Cables Limited, London, England
Filed Jan. 2, 1970, Ser. No. 461
Claims priority, application Great Britain, Jan. 9, 1969, 1,298/69
Int. Cl. H01b 3/00
U.S. Cl. 252—63 17 Claims

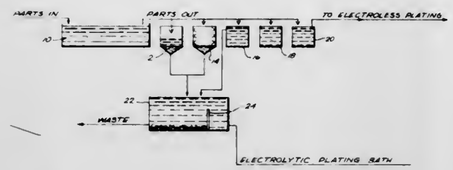
An insulating oil which has good resistance to oxidation and which is also non-gassing and of low viscosity comprises from 1–50 percent (by weight) of a residually unsaturated alkene polymer, and correspondingly from 99–50 percent of a low viscosity hydrocarbon oil. The polymer is derived predominantly from an alkene or alkenes having from three to five carbon atoms and has an average molecular weight in the range 100–900, preferably in the range 250–500. A mixture of such alkene polymers may be used. The hydrocarbon oil is preferably a mineral oil, and has a viscosity of 30 centistokes or less at 20° C.

3,668,129
DRILLING FLUID COMPOSITION AND ADDITIVE THEREFOR
Robert P. Willett, 5948 North Market Street, Shreveport, La.
Filed June 3, 1970, Ser. No. 43,201
Int. Cl. C10m 3/26
U.S. Cl. 252—8.5 P 13 Claims

An aqueous drilling fluid contains a drilling fluid additive which comprises a mixture of a hydrocarbon oil containing an emulsifying agent in amounts sufficient to produce a stable emulsion of the oil in water and an ethylene oxide adduct of an ester of a polyalkanolamine and a high molecular weight polybasic fatty acid. The adduct contains sufficient ethylene oxide units to render the adduct water soluble. Optionally, the additive contains a water-soluble surfactant.

3,668,130
CHROMIC ACID CONDITIONER FOR TREATMENT OF POLYMERIC RESIN SURFACES FOR ELECTROLESS PLATING
Leon A. Kadison, Pasadena, and Eileen Maguire, San Gabriel, both of Calif., assignors to Crown City Plating Co., El Monte, Calif.
Filed Oct. 31, 1969, Ser. No. 872,880
Int. Cl. H05k 1/00; B44d 5/04
U.S. Cl. 252—79.2 11 Claims

Aqueous chromic acid solutions containing from 1.1 to 1.3 kilograms of chromium trioxide per liter of solution as provided by the presence of trivalent chromium are used to condition polymeric resin surfaces for electroless plating.



3,668,131
DISSOLUTION OF METAL WITH ACIDIFIED HYDROGEN PEROXIDE SOLUTIONS
Russell S. Banush, Trenton, Mich., and Donald P. Hagerty, Somerville, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Aug. 9, 1968, Ser. No. 751,388. The portion of the term of the patent subsequent to Oct. 25, 1985, has been disclaimed.
Int. Cl. C09k 3/00; C23f 1/04
U.S. Cl. 252—79.4 21 Claims

Invention relates to the treatment of metal with hydrogen peroxide, and particularly to urea and thiourea catalyzed acid-hydrogen peroxide solutions as etchants for copper in the manufacture of printed circuits.

3,668,132
COMPOSITION AND METHOD
Earl E. Finder, Cottage Grove, Minn., assignor to Ecodyne Corporation, Chicago, Ill.
Filed June 15, 1970, Ser. No. 46,551
Int. Cl. C02b 5/04
U.S. Cl. 252—80 8 Claims

An improved water treating composition comprising about 45 to 85 percent alkali metal hexametaphosphate, about 5 to 35 percent alkali metal pyrophosphate, and about 3 to 30 percent di-alkali metal orthophosphate. The preferred composition is a 70-20-10 composition, containing 70 percent sodium hexametaphosphate, about 20 percent sodium hydrogen pyrophosphate, and about 10 percent dipotassium orthophosphate. The invention also provides a method for treating water which comprises adding the foregoing compositions to water at levels of about 0.5 to 20 ppm.

3,668,133
DETERGENT OILY AGENT ADAPTED TO BE WELL ADSORBED IN FABRICS AND HAVING DETERGENCY
Yoshinobu Ijiri, Hiroshima; Yoshiaki Yano, Osaka, and Hiroshi Yoshida, Hiroshima, all of Japan, assignors to Hiroshima Kago Kabushiki Kaisha Minamikanon, Hiroshima-shi, Hiroshima-ken, Japan
Filed June 30, 1970, Ser. No. 51,377
Claims priority, application Japan, June 30, 1969, 44/51934
Int. Cl. C09k 3/22
U.S. Cl. 252—88 2 Claims

A detergent oily agent for the treatment of cotton and other fabrics for utilization typically as mops, said agent consisting essentially of a mineral oil. This mineral oil is added with a first nonionic surface-active agent, a cationic surface-active agent and a second nonionic surface-active agent. The second nonionic surface-active agent, such as polyoxyethylene alkyl phenol ether, is designed to serve as an emulsifier of the mineral oil and the other surface-active agents in a neutral solution, e.g., water. The mineral oil so emulsified can be effectively and surely absorbed in fabrics and has an effective detergency.

3,668,134
DETERGENT COMPOSITIONS CONTAINING THE ETHERS AND ESTERS OF TETRAHYDROFURAN AND TETRAHYDROPYRAN
Vincent Lamberti, Upper Saddle River, and Ronald R. Winegrad, Bloomfield, both of N.J., assignors to Lever Brothers Company, New York, N.Y.
Continuation-in-part of application Ser. No. 763,374, Sept. 27, 1968, now abandoned. This application Apr. 20, 1970, Ser. No. 30,245
Int. Cl. C11d 1/00
U.S. Cl. 252—89 11 Claims

Detergent compositions containing an organic detergent and, as a perfumery ingredient, an ester or ether of tetrahydrofuran or tetrahydropyran.

3,668,135
ANTIMICROBIC WASHING AGENTS, WASHING ADJUVANTS AND CLEANING AGENTS
Heinz Gunter Nosler, Monheim Rhine-Land; Richard Wessendorf, Hilden Rhine-Land, and Horst Bellinger, Dusseldorf, all of Germany, assignors to Henkel & Cie., GmbH, Dusseldorf, Germany
Continuation-in-part of application Ser. No. 747,453, July 25, 1968, now Patent No. 3,592,928. This application Nov. 7, 1968, Ser. No. 774,183
Claims priority, application Germany, June 4, 1968, P 17 67 684.5; July 25, 1967, P 16 68 195.1
Int. Cl. C11d 3/48
U.S. Cl. 252—107 20 Claims

Antimicrobic washing agents and adjuvants and cleaning compositions comprising (a) 0.2 to 30 percent by weight of a nitroalkyl-N-phenylcarbamate selected from the group consisting of 2-nitropropyl-N-phenylcarbamate, 1-methyl-2-nitropropyl-N-phenylcarbamate, 2-nitrobutyl-N-phenylcarbamate, 2-bromo-2-nitroethyl-N- (3-chlorophenyl)-carbamate, 2-bromo-4-nitrobutyl-N-(4-nitrophenyl)-carbamate, 2-bromo-2-nitrobutyl-N-(3, 4-dichlorophenyl)- carbamate, 2-bromo-2-nitropropyl-N-phenyl-carbamate and 2-bromo-2-nitrobutyl-N-(4-fluorophenyl)-carbamate (b) at least 5 percent by weight of an alkaline builder having calcium carbonate binding capacity in the Hampshire test of not more than 230 mg per gm of builder and (c) and optionally other common components of washing agents, washing adjuvants or cleaning compositions.

3,668,136
COMPATIBLE ANIONIC-CATONIC SURFACTANT COMPOSITIONS
Graham Barker, Fair Lawn, N.J., assignor to Witco Chemical Corporation, New York, N.Y.
Filed July 7, 1969, Ser. No. 839,698
Int. Cl. C11d 9/46, 1/65
U.S. Cl. 252—117 20 Claims

Novel surfactant compositions comprising an anionic surfactant and certain cationic surfactants compatible with same and in the form of quaternary ammonium compounds containing polyoxypropylene groups, said compositions exhibiting imprsved foam and solubilizing characteristics.

3,668,137
COMPOSITION AND METHOD FOR INHIBITING ACID ATTACK OF METALS
George Gardner, Elkins Park, Pa., assignor to Amchem Products, Inc., Ambler, Pa.
Filed Apr. 1, 1969, Ser. No. 812,368
Int. Cl. C11d 7/34
U.S. Cl. 252—149 30 Claims

A composition comprising a nitrogenous organic compound, a carboxylic acid and a sulfonium salt for use in an acidic aqueous composition for the purpose of inhibiting acid attack on metallic surfaces which are contacted with the acidic composition.

ERRATUM

For Class 252—180 see:
Patent No. 3,668,094

3,668,138
METHOD OF INHIBITING CORROSION WITH AMINO DIPHOSPHONATES

Merwin Frederick Hoover, Pittsburgh; Gloria Di Marco Sinkovitz, Bridgeville, and Andrew Martin Ruland, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 27, 1970, Ser. No. 93,419
Int. Cl. C02b *5/06*; C23f *11/16*, *14/07*
U.S. Cl. 252—181 8 Claims

Amino diphosphonic acid compounds and water-soluble salts thereof alone and in combination with zinc are disclosed as inhibiting the corrosion of metals in contact with water.

3,668,139
CATALYST AND METHOD OF POLYESTER POLYMERIZATION

David A. Daniels, Kendall Park, N.J.; Rowland L. Orem, Jr., Baltimore, and Edwin E. Lard, Bowie, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Original application Dec. 10, 1968, Ser. No. 782,734, now Patent No. 3,575,918. Divided and this application May 28, 1970, Ser. No. 50,011
Int. Cl. C08g *51/74*; C07c *73/00*
U.S. Cl. 252—186 2 Claims

A catalyst, containing a ketone peroxide, e.g., methyl ethyl ketone peroxide, and an organic non-ketonic diperoxide, e.g., 2,5-dimethyl-2,5-bis(2-ethyl hexanoyl peroxy)hexane, is used to cure polyester resins containing over 900 p.p.m. of an inhibitor. A small amount of sodium methoxide can be used as part of the catalyst. More specifically, polyester resins containing 900 to 40,000 p.p.m. of inhibitors can be cured within 10 minutes to 24 hours with the novel catalyst.

3,668,140
PROCESS FOR RECLAIMING YTTRIUM ORTHOVANADATE PHOSPHORS

Costas C. Lagos; Richard A. Fowler, both of Danvers, and Martha J. B. Thomas, Winchester, all of Mass., assignors to Sylvania Electric Products Inc.

Filed June 30, 1970, Ser. No. 51,372
Int. Cl. C09k *1/44*
U.S. Cl. 252—301.4 R 1 Claim

Europium activated yttrium orthovanadate phosphors are reclaimed and treated to eliminate unwanted ionic species. The phosphor is heated in a reducing atmosphere to reduce the vanadate and then dissolved in a mineral acid to form a clear solution. After the solvent is volatilized, the phosphor is heated in an oxidizing atmosphere.

3,668,141
PROCESS FOR PRECIPITATING LUMINESCENT ALKALINE EARTH HALOAPATITES

Roger D. Piper, Des Peres, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed Apr. 28, 1969, Ser. No. 822,099
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P 16 Claims

In the precipitation of luminescent alkaline earth haloapatites, control of particle size distribution and crystal form is improved by concurrently adding a first solution containing the alkaline earth ions and a second solution containing a major portion of the phosphate ions to a stirred aqueous precipitation medium, which initially contains a minor portion of the required phosphate ions. Also, the solutions are added to the precipitation medium in such a manner that the alkaline earth ions are dispersed into the main body of the precipitation medium relatively more slowly than the phosphate ions. Under preferred conditions, the haloapatites are thereby precipitated in the form of novel compact botryoidal agglomerates whose particle size and low tricalcium phosphate content makes them useful and advantageous for preparing the phosphor coatings used in fluorescent lamps and other fluorescent devices.

3,668,142
PREPARATION OF PHOSPHORS

George William Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original application July 31, 1967, Ser. No. 657,062, which is a continuation-in-part of application Ser. No. 390,741, Aug. 19, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 346,395, Feb. 21, 1964, now abandoned. Divided and this application Nov. 16, 1970, Ser. No. 90,031
Int. Cl. C09k *1/04*
U.S. Cl. 252—301.5 77 Claims

Inorganic phosphors are prepared by separately introducing the anions and cations to form the phosphor into a reaction solution; maintaining in the reaction solution, throughout the reaction, an excess of up to 1 molar of the anion or cation; preventing local excesses of anions and cations; and, growing crystals of the phosphor to at least 0.5 micron.

3,668,143
PREPARATION OF PHOSPHORS BY PRECIPITATION FROM SOLUTION

George W. Luckey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 390,741, Aug. 19, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 346,395, Feb. 21, 1964, now abandoned. This application July 31, 1967, Ser. No. 657,062
Int. Cl. C09k *1/04*
U.S. Cl. 252—301.4 R 77 Claims

Inorganic phosphors are prepared by separately introducing the anions and cations to form the phosphor into a reaction solution; maintaining in the reaction solution, throughout the reaction, an excess of up to 1 molar of the anion or cation; preventing local excesses of anions and cations; and, growing crystals of the phosphor to at least 0.5 micron.

3,668,144
DUST-FREE LEAD STABILIZER FOR SYNTHETIC RESINS

Derek Gordon Pearson, Denham, England, assignor to Associated Lead Manufacturing Limited, London, England

Filed Mar. 6, 1970, Ser. No. 17,294
Claims priority, application Great Britain, Mar. 10, 1969, 12,496/69
Int. Cl. B01j *1/16*; C08f *45/58*; C08g *51/58*
U.S. Cl. 252—400 10 Claims

A dust-free lead stabilizer mix which consists of a basic lead salt of an inorganic acid enveloped in an organic liquid which has been gelled by the addition to it of a lubricating stabilizer.

3,668,145
PRODUCTION ACTIVATED CARBON IN DUAL PULSE JET ENGINE SYSTEM

John W. Belter, Grand Forks, N. Dak.; Leroy Dockter, Laramie, Wyo., and Robert C. Ellman, East Grand Forks, Minn., assignors to The United States of America as represented by the Secretary of the Interior

Filed Nov. 9, 1970, Ser. No. 87,759
Int. Cl. C01b *31/08*
U.S. Cl. 252—421 8 Claims

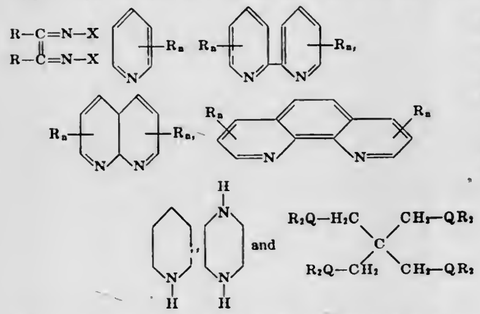
A particulate carbonaceous feedstock such as lignite is entrained and activated in the oscillating combustion gas in the two opposed tail pipes of the dual pulse-jet engine system. Gas continually withdrawn from the juncture of the two pipes contains entrained activated carbon which is subsequently separated from the gas.

3,668,146
CATALYSTS FOR THE DISPROPORTIONATION OF OLEFINS

Helmut W. Ruhle, Edison, N.J., assignor to Esso Research and Engineering Company

Filed Dec. 19, 1969, Ser. No. 886,766
Int. Cl. C07c *3/62*
U.S. Cl. 252—428 11 Claims

The instant invention relates to a novel process for preparing catalysts which are useful in the disproportionation of olefins. In more detail the instant process comprises contacting within a solvent, a metallic complex having the formula $L_aM_b(CO)$ wherein L is selected from the group consisting of CO, R_2Q, R_2QO, $(RO)_2Q$, RNH_2, R_2NH, RCN, R_2SO, $R_2N{-}CN$, $R_2P{=}N{-}CN$, $R_2P{=}NH$, $R_2P{=}CH{-}CH_2$, $R_2Q{-}QR_2$, $R_2Q{-}R^2{-}QR_2$, $R_2Q{-}R^2{-}QR{-}R^2{-}QR_2$, $R{-}Z{-}R^2{-}Z{-}R$, $R{-}Z{-}R^2{-}Z{-}R^2{-}Z{-}R$



wherein Q is selected from the group consisting of N, P, As and Sb; Z is selected from the group consisting of O and S; X is selected from the group consisting of NR_2, OH, OR and R; R is selected from the group consisting of C_1 to C_{20} hydrocarbyl and hydrogen radicals; and R^2 is selected from the group consisting of divalent C_1 to C_{20} hydrocarbyl radicals; n is an integer of from 0 to 2; M is a Group VI-B metal selected from the group consisting of Cr, Mo and W; a may vary from 1 to 4; b may vary from 1 to 2; and c may vary from 2 to 10, with an ionic compound, said ionic compound being selected from the group consisting of compounds having the general formula $R'_4Q'X'$, R'_3ZX', $(R'_4Q')(A1R'_dX'_{4-d})$, $(R'_3Z)(A1R'_dX'_{4-d})$, mixtures of $R'_4Q'X'$ or R'_3ZX' with $A1R'_dX'_{3-d}$ or mixtures thereof wherein R' is selected from the group consisting of C_1 to C_{20} hydrocarbyl radicals and halogenated derivatives thereof, Q' is selected from the group consisting of nitrogen, phosphorous or arsenic, Z is selected from the group consisting of oxygen or sulfur, X' is halogen and d may vary from 0 to 3, and said ionic compound being at least partially soluble in said solvent and an activator, said activator comprising an organometallic derivative selected from the group consisting of compounds having the general formulas $R''_eA1X'_{(3-e)}$, a mixture of the above compound with a compound having the general formula $A1X'_3$, a compound of the general formula $R''_fM'X'_g$, a mixture of one of several compounds having a formula $R''_fM'X'_g$ with one of the various compounds having the formula $R''_eA1X'_{(3-e)}$ and $A1X'_3$ wherein R'' is selected from the group consisting of C_1—C_{20} hydrocarbyl radicals and the alkoxy and halo derivatives thereof, M' is a metal selected from Groups I through III of the Periodic Table of Elements, X' is halogen, e is equal to 1 or 2, f is an integer between 1 and 3, and g is 0, 1 or 2, the atomic ratios of the metal in said activator to the metal in said metallic complex being from about 20:1 to 1:1, the molar ratio of Cr, Mo, or W of said metallic complex to ionic compound being from about 10:1 to 0.1:1, and the molar ratio of said Group I–III metal of said activator to ionic compound being from about 40:1 to 1.5:1.

3,668,147
MULTIPLE PROMOTED IRON OXIDE-ANTIMONY OXIDE CATALYSTS FOR OXIDATION OF OLEFINS

Takachika Yoshino, Yokohama; Shigeru Saito, Fuchu-shi; Jun Ishikura; Yutaka Sasaki, both of Yokohama, and Masukuni Sobukawa, Tokyo, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1968, Ser. No. 777,104
Claims priority, application Japan, Nov. 28, 1967, 42/75890; Sept. 20, 1968, 43/67578; 43/67580; 43/67579
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 3 Claims

This invention provides a multiple promoted iron oxide-antimony oxide catalyst composition having the empirical formula:

$$Fe_{10}Sb_{5-60}Me_{0.01-1}Te_{0.05-3}X_{0-1}O_{22-151}$$

wherein Me is V, Mo or W, and X is P or B.

The catalyst composition of this invention exhibits an improved catalytic activity in an oxidation reaction selected from the group consisting of ammoxidation of olefins to nitriles, oxidation of olefins to aldehydes, and oxidative dehydrogenation of olefins (C_4—C_8) to diolefins, particularly, in the case where high conversion is achieved and the amount of residual oxygen is very small.

For example, the catalysts of this invention [Ex. 1 and Ex. 12] and the catalysts of the prior art [R-1 and R-6] are prepared in the same manner, the compositions of these catalysts being as follows:

Ex. 1 : $Fe_{10}Sb_{25}W_{0.25}Te_{0.5-1}O_{67-68} \cdot (SiO_2)_{30}$
Ex. 12 : $Fe_{10}Sb_{25}E_{0.1}Te_{0.2-1}O_{66-68} \cdot (SiO_2)_{30}$
R—1 : $Fe_{10}Sb_{25}O_{65} \cdot (SiO_2)_{30}$
R—6 : $Fe_{10}Sb_{25}W_{1.5}O_{70} \cdot (SiO_2)_{30}$

Note: By "$(SiO_2)_{30}$" is meant silica carrier.

The activities of these catalysts are tested by the same method. The following maximum conversions (%) of olefins to acrylonitrile (AN), methacrylonitrile (MAN), acrolein (AL), methacrolein (MAL) and butadiene (BDE) are obtained:

	AN	MAN	AL	MAL	BDE
Ex. 1	78	70	70	58	82
Ex. 12	77	69	69	55	82
R—1	65	53	33	26	73
R—6	—	49	43	33	70

3,668,148
CATALYST PREPARED BY HOMOGENEOUS PRECIPITATION UNDER HIGH TEMPERATURE AND PRESSURE

Wilhelmus Petrus Van Beek, and Theo Jan Osinga, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 26,051
Claims priority, application Luxembourg, Apr. 9, 1969, 58391
Int. Cl. B01j *11/82*, *11/06*
U.S. Cl. 252—440 5 Claims

A process for preparing a catalyst comprising a metallic catalytic agent on a particulate carrier is discloeed which provides improved uniformity of distribution and fineness of division with narrowness of particle size distribution of the metallic catalytic agent on the carrier. The particles of carrier are suspended by agitation in an aqueous solution of a salt

of the metallic catalytic agent and of a source, on heating in aqueous solution, of hydroxyl ions. The suspension is heated in a sealed vessel above 100° C to precipitate the metal or the particles with uniformity of distribution and fineness of division with narrowness of particle size distribution. The metal is converted by conventional procedures to the appropriate active, oxidized or reduced, state. The process is particularly significant with carriers, such as alumina and silica, that in alkaline media are liable to undergo structural charges.

3,668,149

METHOD AND EQUIPMENT FOR THE PREPARATION OF CATALYTICALLY ACTIVE BODIES

John W. Geus, Geleen, and Jan C. Lemmens, Beek, Limbug, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Oct. 13, 1969, Ser. No. 865,821
Claims priority, application Netherlands, Oct. 11, 1968, 68/4538; Nov. 18, 1968, 68/6394
Int. Cl. B01j *11/44*
U.S. Cl. 252—448 3 Claims

Porous catalyst bodies are produced from a thermally stable inorganic carrier material by introducing a suspension of the said carrier material into a liquid immiscible with the suspension medium and heated above the boiling point of the said medium. After evaporation of the suspension medium to an essential extent, the porous catalyst bodies formed are separated from the liquid and subsequently heated to an elevated temperature to improve the strength caracteristics thereof.

3,668,150

CONCRETE FLOOR WITH GROUND METAL AGGREGATE AT THE WEAR SURFACE

Howard J. Horvitz, 21800 Shaker Blvd., Shaker Heights, Ohio

Filed Nov. 16, 1970, Ser. No. 90,040
Int. Cl. C04b *7/02*; H01b *1/02*
U.S. Cl. 106—90 10 Claims

A dry mix for making concrete comprising approximately 28 to 38 percent cement, approximately 62 to 72 percent powdered ferrous metal and approximately 0.01 to 0.80 percent sodium nitrite.

A method of making a substrate which includes forming a base of a conventional concrete mix and screeding and floating the base to form a substantially flat surface. The base is allowed to set until the bleed water disappears and then a dry mixture of approximately 28 to 38 percent cement, approximately 62 to 72 ground ferrous metal and approximately 0.01 to 0.80 percent sodium nitrite is deposited in a uniform manner on the flat surface by shaking. After the dry mixture absorbs adequate water from the base, it is floated and trowelled to the desired finish.

3,668,151

HIGH STRENGTH CATALYST PELLETS

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 28, 1969, Ser. No. 828,772
Int. Cl. B01j *11/22*
U.S. Cl. 252—466 4 Claims

A method of preparing a high strength catalyst pellet is disclosed which comprises calcining particulate ZnO admixed with particulate Al_2O_3. Additionally, a catalytic process using a prepared high strength catalyst is disclosed.

3,668,152

PORCELAIN ENAMELS FOR SELF-CLEANING COOKING OVEN

William S. Lee, Bay Village, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Original application Mar. 22, 1968, Ser. No. 715,186, now Patent No. 3,598,650. Divided and this application May 13, 1969, Ser. No. 847,753
Int. Cl. B01j *11/00*
U.S. Cl. 252—477 4 Claims

A porcelain enamel frit containing a high level of an oxidation inducing metal oxide, preferably cobalt, adaptable to be incorporated into a vitreous porcelain enamel for application to an oven liner, said enamel characterized by the ability to completely oxidize oven soils when heated to a point above 350° F., but below 600° F., and method of utilizing same as a self-cleaning oven liner coating.

3,668,153

FOAMED DETERGENT COMPOSITION

Homer E. Crotty, Cincinnati, Ohio, assignor to Chemed Corporation, Cincinnati, Ohio

Filed Mar. 20, 1967, Ser. No. 624,178
Int. Cl. C11d *3/066*
U.S. Cl. 252—528 8 Claims

Highly alkaline detergents for foam cleaning contain, as the foaming additive, sodium salts of fatty acid sulfonates, amine oxides, amido alkyl amine oxides, substitution derivative of imidazoline alkanoic quaternary ammonium hydroxide, and mixtures thereof.

3,668,154

PHOSPHORUS-CONTAINING POLYOLS AND POLYURETHANES EMBODYING SAME

Michel A. Buisson, Lavera, France, assignor to Naphtachimie, Paris, France

Filed June 3, 1970, Ser. No. 43,218
Claims priority, application France, June 4, 1969, 6918298
Int. Cl. C08g *22/14*, *22/46*
U.S. Cl. 260—2.5 AR 16 Claims

This invention is addressed to phosphorus-containing polyols prepared by reacting a chloro-chloro-alkyl phosphate having an average of 0.5 to 2.5 chlorine atoms joined directly to a phosphorus atom with a primary or secondary amine having at least one function which is capable of reacting with an organic isocyanate in the presence of water and a hydrogen chloride acceptor whose reaction product with HCl is soluble in water, and to flame or fire resistant polyurethanes prepared by reaction of a phosphorus-containing polyol and an organic polyisocyanate.

3,668,155

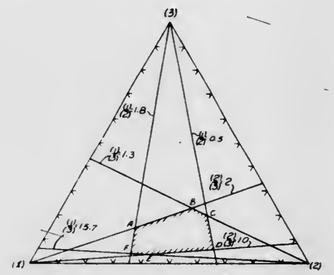
SELF-EXTINGUISHING ETHYLENE COPOLYMER FOAMS COMPRISING A TERNARY MIXTURE OF AN ANTIMONY COMPOUND, A HALOGEN-CONTAINING COMPOUND AND A BROMINE COMPOUND

Charles Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 606,579, Jan. 3, 1967, now abandoned. This application June 27, 1968, Ser. No. 740,675
Int. Cl. C08f *15/02*; C09k *3/28*
U.S. Cl. 260—2.5 FP 11 Claims

Compositions of the class of flame-retardant or self-extinguishing ethylene and vinyl alkanoate copolymer foams, useful as insulation, are described. Said foams are relatively lightly loaded with either a binary flame retardant mixture of (1) an antimony compound and (2) a halogen-containing

aliphatic or cycloaliphatic compound of particular specificity or a ternary flame-retardant mixture including (1) and (2),



and, (3) a bromine-containing aromatic or acyclic compound of particular specificity.

3,668,156

COVULCANIZABLE MIXES COMPRISING DIENE POLYMERS OR COPOLYMERS AND LOW UNSATURATION TERPOLYMERS

Giorgio Corradini; Giuseppe Ghetti; Sebastiano Cesca, and Arnaldo Roggero, all of San Donato Milanese, Italy, assignors to Snam Progettic S.p.A., Milan, Italy

Filed Apr. 23, 1970, Ser. No. 31,411
Claims priority, application Italy, Apr. 23, 1969, 15874 A/69
Int. Cl. C08f *17/00*
U.S. Cl. 260—5 4 Claims

A terpolymer-diene composition that is readily curable with conventional vulcanizing agents is provided by preparing a mixture of diene polymer or copolymer with an olefinic terpolymer which includes at least one



group directly bound to two carbon atoms, each of which is characterized by ethylenic unsaturation, wherein R_1 is a hydrocarbon radical.

3,668,157

BLEND CONTAINING AT LEAST A CELLULOSE ESTER AND A BLOCK COPOLYMER ELASTOMER

Robert L. Combs, and Richard T. Bogan, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,775
Int. Cl. C08b *21/08*; C08g *39/10*, *41/04*
U.S. Cl. 260—13 13 Claims

Cellulose ester compositions useful for producing optically clear extruded sheets, or molded or vacuum-formed products having high impact strength and toughness, said compositions being composed of (I) a cellulose ester, (II) a block copolymer elastomer which contains polyester or polyurethane segments. Such compositions may optionally contain a polyalkylacrylate or polyalkylacrylate-methacrylic acid polymer and/or a plasticizer for the cellulose ester component.

3,668,158

COMPOSITION FOR ADHERING PLASTIC FILM TO A VAPOR PENETRABLE NON-METALLIC SUBSTRATE

Robert James Keithley, Belleton Lake, N.Y., assignor to Borden Inc., New York, N.Y.

Filed June 3, 1970, Ser. No. 43,243The portion of the term of the patent subsequent to Aug. 18, 1987, has been disclaimed.
Int. Cl. C08b *21/32*, *21/34*
U.S. Cl. 260—17 R 11 Claims

This invention relates to an adhesive composition for applying a plastic film of a vapor penetrable backing or core material comprising an aqueous emulsion of an aliphatic 1-olefin and a vinyl ester of a lower monocarboxylic acid, the proportions of olefin in the copolymer being from 5–25 parts by weight the proportion of vinyl ester being the necessary remainder to make 100 parts total weight of copolymer and a water dispersible non-separating combination of (1) a wate soluble ester of a mono- C_1–C_4 alkyl ether of a C_2–C_4 glycol with a C_3–C_4 saturated monocarboxylic aliphatic acid and (2 a plasticizing ester of glycerin with saturated C_{2-C_4} monocarboxylic aliphatic acid, the ester of the said ether and the plasticizing ester being dispersed in substantially non-separating condition in the aqueous phase of the emulsion.

3,668,159

IN SITU PROCESS FOR TRANS-ISOMERIZATION AND CONJUGATION OF RESINS CONTAINING FATTY ACID ESTERS

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

Filed Dec. 23, 1970, Ser. No. 101,057
Int. Cl. C08g *17/16*
U.S. Cl. 260—18 EP 15 Claims

A method is provided for producing resins or esters from starting esterifiable components and polyunsaturated, non-conjugated fatty acids whereby the mass is heated in intimate admixture with sulfur dioxide gas to effect conjugation in situ and also rearrangement to provide increased isolated trans double bonds. The esterifiable components are suitably epoxy resins or alkyd-forming mixtures.

3,668,160

RESIN-COATED SAND MIXES FOR SHELL MOLDING

Robert A. Horton, Chesterland, and Timothy L. Coghill, Mentor, both of Ohio, assignors to Precision Metalsmiths, Inc.

Filed Apr. 21, 1969, Ser. No. 818,118
Int. Cl. B22c *1/22*; C08g *5/20*, *51/72*
U.S. Cl. 260—19 R 8 Claims

For use in resin-shell molding, a resin-coated sand mix containing a small percentage of a non-volatile, oily, organic liquid suitable to alleviate the condition of peel-back.

3,668,161

DEVOLATILIZATION OF LIQUID POLYMER COMPOSITIONS

Edward B. Nauman; Ted T. Szabo, both of Martinsville, N.J.; Felix P. Klosek, South Charleston, W. Va., and Stephen Kaufman, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 9, 1969, Ser. No. 831,353
Int. Cl. C08f *47/10* ; B01d *11/0 4*
U.S. Cl. 260—2.5 E 5 Claims

A method is provided for separating volatiles from a liquid composition containing polymer and volatile constituents when composition is passed thru a flash first devolatilization zone maintained at reduced pressure to vaporize and remove volatile constituents and produce a partially devolatilized composition, said partially devolatilized composition is heated and dispersed with foaming agent, and is passed thru a second flash devolatilization zone maintained at reduced pressure to vaporize and remove remaining volatile constituents and produce a finally devolatilized composition.

3,668,162
TREATING POLYBUTADIENE
Mason S. Wilt, Borger, Tex., assignor to Phillips Petroleum Company
Filed Nov. 25, 1968, Ser. No. 778,855
Int. Cl. C08d 9/12
U.S. Cl. 260—27 14 Claims

Polybutadienes are treated with titanium tetrachloride and molecular oxygen to form modified polybutadiene products having substantially higher Mooney viscosities, characterized by a reduced tendency to cold flow.

3,668,163
EMULSIONS OF WATER IN HALOGENATED SOLVENTS WHICH CONTAIN FLUORINATED OIL AND WATER REPELLENTS
Theodore Clyde Rapp, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 5, 1969, Ser. No. 847,737
Int. Cl. C08f 45/52, 45/30; D06m 11/00
U.S. Cl. 260—28.5 D 10 Claims

A water-in-oil emulsion comprising a chlorinated alkane solvent having contained therein in emulsified form an aqueous dispersion of a fluorinated oil- and water-repellent polymeric composition, wax, a melamine derivative, and a mixture of selected sulfonates.

3,668,164
AQUEOUS RESOLE RESIN COMPOSITION CONTAINING A POLYAMINOALKYL-SUBSTITUTED ORGANOSILOXANE COPOLYMER
John R. Le Blanc, Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 647,622, June 21, 1967, now abandoned. This application Mar. 4, 1970, Ser. No. 16,619
Int. Cl. C08g 47/0 4
U.S. Cl. 260—29.3 1 Claim

This application describes a stable, aqueous catalyst system adapted to be admixed with an aqueous resole resin and thereafter to accelerate resin cure when the product mixed resin system is dried and thermoset. The catalyst is especially useful when using phenolic resins for treating paper employed in the manufacture of water-repellent resin treated paper.

3,668,165
DISPERSION POLYMERIZED TERPOLYMER OF VINYL ACETATE, VINYL ESTER OF A FATTY ACID, AND VINYL CHLORIDE
Eduard Bergmeister; Joseph Heckmaier; Paul-Gerhard Kirst, and Hubert West, all of Burghausen/Upper Bavaria, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany
Continuation of application Ser. No. 727,692, May 8, 1968. This application Sept. 11, 1970, Ser. No. 71,362
Claims priority, application Germany, May 10, 1967, W43960
Int. Cl. C08f 15/40
U.S. Cl. 260—29.6 T 5 Claims

This invention relates to a process for the preparation of an aqueous polymerizate dispersion which comprises the steps of subjecting 100 parts by weight of a monomer mixture consisting of: (a) 40 to 70 parts by weight of vinyl acetate, (b) 15 to 30 parts by weight of a vinyl ester of fatty acids having eight to 18 carbon atoms and (c) 15 to 30 parts by weight of vinylchloride to an aqueous dispersion polymerization in the presence of (1) free-radical forming catalysts, (2) at least one protective colloid and (3) an emulsifier selected from the group consisting of anionic emulsifiers, non-ionic emulsifiers and mixtures thereof, and recovering said aqueous polymerizate dispersion, as well as the aqueous polymerizate dispersions so produced.

3,668,166
POLYVINYL ALCOHOL ADHESIVES
Thomas G. Kane, and William D. Robinson, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 25, 1970, Ser. No. 14,099
Int. Cl. C08f 29/26
U.S. Cl. 260—29.6 BM 14 Claims

The invention relates to polyvinyl alcohol compositions and aqueous adhesives formed therefrom which are characterized by improved rheological properties. The employment of polyvinyl alcohol having a 4 percent aqueous solution viscosity in the range of about 1 to 16 centipoises in aqueous tackified adhesive systems provides significant and unexpected improvement in flow properties.

3,668,167
PROCESS FOR CONCENTRATING AQUEOUS EMULSIONS OF FLUORINATED POLYMERS
Mario Ragazzini, Milan; Alberto Caimi, Legnano; Donato Carcano, and Giovanni Groppelli, both of Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Continuation-in-part of application Ser. No. 635,400, May 2, 1967, now abandoned. This application Dec. 1, 1969, Ser. No. 881,339
Claims priority, application Italy, May 4, 1966, 17486/66
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 F 1 Claim

A process for the concentration of aqueous polytetrafluoroethylene emulsions comprising forming atop the emulsion to be concentrated a layer of water absorbing agent, maintaining the resultant two layers in contact with each other until absorption of water from the emulsion by the said water absorbing agent has proceeded to a desired degree, separating the said layers, and thence recovering the aqueous polytetrafluoroethylene emulsion thus concentrated. The water absorbing agent can be any one of a number of water soluble organic liquid or solid water absorbing agents having a density less than that of the emulsions to be concentrated.

3,668,168
MOLDABLE METAL POWDER COMPOSITIONS CONTAINING AN ELASTOMER AND SILICA AQUASOLS
James M. Self, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 18,345, Mar. 10, 1970, which is a continuation-in-part of application Ser. No. 739,627, June 25, 1968, now abandoned. This application Aug. 7, 1970, Ser. No. 62,144
Int. Cl. C08d 7/06, 7/14
U.S. Cl. 260—29.7 R 7 Claims

Compositions of metal powder aggregate or metal powder aggregate/refractory mixtures, a siliceous binder, and an elastomeric material useful in the manufacture of metallic shapes or as a metallic filler compound.

3,668,169
PROCESS FOR PIGMENTING LINEAR SATURATED POLYESTERS
George H. Brinkman, Jr., Gulf Breeze, Fla., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 709,681, Mar. 4, 1968, now abandoned. This application July 24, 1970, Ser. No. 58,193
Int. Cl. C08g 51/40, 51/02
U.S. Cl. 260—31.8 XA 8 Claims

A pigment can be uniformly distributed throughout a linear saturated polyester without substantial degradation of the polyester by combining about 100 parts by weight of the polyester with about 0.1–4 parts by weight of a slurry containing about 2–50 percent by weight of the pigment and about 50–98 percent by weight of a chlorinated biphenyl or

diester of phthalic acid and them mixing the combined polyester and slurry above the melting point of the polyester.

3,668,170
ADHESIVE COMPOSITION
Iwao Maruta, Funabashi-shi; Haruhiko Arai, Narashino-shi, and Shozi Horin, Ichikawa-shi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
Filed Oct. 20, 1969, Ser. No. 867,884
Claims priority, application Japan, Oct. 29, 1968, 43/78754
Int. Cl. C08d 9/12
U.S. Cl. 260—27 4 Claims

A novel adhesive composed of a water-insoluble high molecular weight polyvinyl compound and a water-solubilizing amount of an alkali metal anionic surface active agent, improved by adding a water-soluble polyvalent metal inorganic salt to replace a portion of the alkali metal ions with a polyvalent metal ion. The adhesive is used to attach materials adapted to be subsequently separated by moistening.

3,668,171
NYLON COMPOSITIONS CONTAINING DIISOCYANATE MOLD RELEASE AGENTS
Willard M. Sims, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Jan. 11, 1971, Ser. No. 105,635
Int. Cl. C08g 51/44
U.S. Cl. 260—32.4 R 7 Claims

The mold release properties of nylon compositions are significantly improved by incorporating about 0.01 to 5.0 parts per 100 parts of nylon of a hydrocarbon diisocyanate having about 25 to 50 carbon atoms in the hydrocarbon chain.

3,668,172
PIGMENTED POLYESTER COMPOSITIONS
George F. Jones, and John R. Mendel, both of Glens Falls, N.Y., assignors to Hercules Incorporated, Wilmington, Del.
Filed Nov. 25, 1969, Ser. No. 879,924
Int. Cl. C08g 51/44, 51/50, 51/02
U.S. Cl. 260—32.6 R 6 Claims

Uniformly pigmented polyester compositions which can be melt spun into fine denier multifilament fibers are described. The preferred compositions are homogeneous blends of unpigmented polyester and a polyethylene pigment concentrate composed of pigment highly dispersed in a mixture of low molecular weight polyethylene, high molecular weight, medium density polyethylene and a surfactant. The most preferred blends also contain a small amount of a phosphoric acid ester.

3,668,173
NOVEL POLYURETHANE-UREA COMPOSITION
George Sidney Wooster, Hamburg, and Voldemar Kirss, Buffalo, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Dec. 10, 1969, Ser. No. 884,003
Int. Cl. C08k 1/44; C08g 51/44, 51/34
U.S. Cl. 260—32.6 N 17 Claims

Production of a novel polyurethane-urea composition by (1) reaction of a hydroxy-terminated polymer with an excess of saturated organic diisocyanate to produce an isocyanate-terminated prepolymer and (2) reaction of said prepolymer and a non-aromatic amine comprising a polyoxyalkylene primary diamine. This novel polymer when dissolved in a volatile lacquer solvent is characterized by a low, substantially constant viscosity. The polymer solution provides on evaporation of solvent a thermoplastic coating of excellent weathering and non-blocking characteristics.

3,668,174
HEAT RESISTANT COATING FOR SOLDER CONNECTIONS
Dale E. Smestad, Cottage Grove, Minn., and Nelson E. Quackenbush, Costa Mesa, Calif., assignors to The United States of America as represented by the Secretary of the Army
Filed Jan. 27, 1971, Ser. No. 110,251
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 1 Claim

A high temperature resistant coating composition for solder connection including a mixture of room temperature vulcanizing rubber having a viscosity rating of 250 poise and selective insulators including magnesium hydroxide, magnesium carbonate, asbestos, mica, barium sulfate and calcium carbonate for shielding the connection from a heat source of a predetermined intensity for a predetermined time.

3,668,175
CRESYLIC ACID BLENDS OF POLYMERIC AMIDE-IMIDE-ESTER WIRE ENAMELS
Frank A. Sattler, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application May 21, 1968, Ser. No. 730,833, now Patent No. 3,555,113, dated Jan. 12, 1971. Divided and this application Aug. 5, 1970, Ser. No. 61,115
Int. Cl. C08g 51/34
U.S. Cl. 260—33.4 R 20 Claims

Polymeric amide-imide-ester wire enameling compositions are prepared from (1) a monoanhydride of an aromatic tricarboxylic acid, e.g. trimellitic anhydride, (2) an aromatic primary diamine compound and (3) either polyfunctional acids and polyhydroxy compounds or the polyesters thereof. AT least a portion of the polyol or polyhydroxy compound is a tris (hydroxyalkyl) isocyanurate, e.g. tris (hydroxyethyl) isocyanurate. The polyfunctional acids (3) comprise an acid component selected from the group consisting of trimellitic anhydride, isophthalic acid and esters of isophthalic and terephthalic acid. The polymeric amide-imide-ester may be blended with terephthalate or isophthalate polyesters, polyisocyanates and other materials. One particularly suitable polyisocyanate is prepared from dimethylterephthalate, tris (2-hydroxyethyl) isocyanurate and tolylene diisocyanate. Small amounts of aliphatic amino compounds, aliphatic polyols and other flexibilizing materials may be incorporated into either the polymeric amide-imide-ester or the polyester blended therewith. A variety of block and modified block polymers may be made. Imidization occurs during the preparation of the polymeric amide-imide-ester so that the condensed water is removed before the fluid compositions are applied and cured.

3,668,176
METHOD OF MOLDING UTILIZING THERMOSETTING RESINS AND MAGNETIZED FILLER MATERIAL
Clyde O. Childress, 3641 South Court St., Palo Alto, Calif.
Filed Jan. 15, 1970, Ser. No. 3,115
Int. Cl. C08g 51/04
U.S. Cl. 260—37 EP 5 Claims

Liquid resins and plastisols can be made to assume and hold desired shapes, or to bridge gaps, not attainable with the present commercially available filled liquid resins or plastic puttys by employing a "filler" material, which has magnetic property.

3,668,177

MOLDING MASSES FOR PRODUCING FIBER REINFORCED PLASTIC ARTICLES, METHODS OF PREPARING SUCH MOLDING MASSES, AND ARTICLES PRODUCED THEREFROM

Cornelis Hendrikus Josephus Van Herpt, Helmond, Netherlands, assignor to N. V. Koninklijke, Helmond, Netherlands

Continuation of application Ser. No. 723,225, Apr. 22, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 512,141, Dec. 7, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 304,462, Aug. 26, 1963, now abandoned. This application May 18, 1970, Ser. No. 37,456

Claims priority, application Netherlands, Sept. 7, 1962, 283020; Aug. 8, 1963, 282776; Mar. 9, 1965, 6502959

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 2 Claims

A molding mass is obtained by adding to a thermosetting resin, for example, a polyester or epoxy resin, in liquid state, a particulate filler material, such as an asbestos or quartz powder, and bundled together reinforcing fibers of inorganic material, such as, glass fibers, which fibers have a diameter in the range from 0.01 to 0.02 mm and a length to diameter ratio between approximately 100 and 500, with the particle size of the filler material varying between 5 and 50μ in direct proportion to the variation of the length to diameter ratio, and subjecting the molding mass to a continuous mixing and kneading action at a localized region and removing one-fourth to one-seventh of the mass transported to the outlet of this region by means of a conveying ribbon and recycling the removed mass to the localized region, the rest of the transported mass being passed out of the mixing zone, thereby to avoid a substantial temperature rise in the mass while the mixing and kneading is continued until the mass has a density of 1.5 and at least approximately 80 percent of the bundled together fibers are pulled apart into individual fibers dispersed uniformly throughout the mass.

3,668,178

UNSATURATED POLYESTER RESINS ADMIXED WITH CYCLIC ESTER POLYMERS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 812,383, Apr. 1, 1969, now Patent No. 3,549,586, dated Dec. 22, 1970. This application Aug. 28, 1970, Ser. No. 68,051. The portion of the term of the patent subsequent to Dec. 22, 1987, has been disclaimed.

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R 25 Claims

The disclosure of this application is directed to unsaturated polyester compositions, containing a polymer of a cyclic ester having an average of at least one carboxyl group per molecule, which have particular utility in sheet molding applications to form thermoset articles characterized by excellent impact strength and by excellent surface properties such as excellent smoothness, excellent receptiveness to paints and excellent reproduction of the surface contours of the mold in which they are formed into shaped, thermoset articles.

3,668,179

COLOR STABILIZED POLYOLEFIN RESINS

Daniel J. Di Biasi, S. Plainfield, and Albin J. Zilis, Jackson, both of N.J., assignors to Mobil Oil Corporation

Filed Oct. 9, 1969, Ser. No. 865,174

Int. Cl. C08f *45/10*, *45/58*, *45/60*

U.S. Cl. 260—41 A 9 Claims

The incorporation of certain surface active additives, as exemplified by bis(2-ethylhexyl) sodium sulfosuccinate, inhibits undesired coloration in polybutene-1 and other polyolefin resin compositions containing a color-forming phenolic stabilizing agent (e.g., 2,6-di-tert-butyl-o-cresol) which inhibits oxidative degradation of the resin.

3,668,180

PREPARATION OF ALKOXYORGANOPOLYSILOXANE RESINS

James Leo Brennan, Adrian, and Gerald Paul Ford, Tecumseh, both of Mich., assignors to Stauffer-Wacker Silicone Corporation

Continuation of application Ser. No. 714,900, Mar. 21, 1968, now abandoned. This application Oct. 24, 1969, Ser. No. 869,396

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R 9 Claims

A water repellent composition comprising alkoxylated and partially hydrolyzed organopolysiloxane resins and a process for preparing the same.

The process for preparing the alkoxyorganopolysiloxane resin comprises mixing an organohalosilane with a hydrocarbon solvent, water and a lower aliphatic alcohol; introducing the reactants into a packed side-arm reactor; maintaining the solution in said reactor at a temperature of from about −10° to 10° C. to alkoxylate and partially hydrolyze said organohalosilane, continuously transferring the alkoxylated and partially hydrolyzed solution from said side-arm reactor into a second reactor containing additional solvent maintained at reflux temperature until said organohalosilane is hydrolyzed to a level of from 40 to 80 percent; neutralizing the solution and recovering the alkoxyorganopolysiloxane resin solution.

3,668,181

PURIFICATION OF POLYCARBONATE RESINS

Bryce C. Oxenrider, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 719,760, Apr. 8, 1968, now abandoned. This application Mar. 6, 1970, Ser. No. 17,348

Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA 9 Claims

Crude precipitated polycarbonate resin obtained by the reaction of bisphenol A and phosgene, preferably in an aqueous alkaline emulsion containing a water-insoluble partial solvent for the resin, is purified by extraction with aqueous methanol or dimethoxy ethane or a mixture thereof.

3,668,182

BETA HYDROXYETHOXY PHENYL ISOPROPYLIDENE BENZOIC ACID AND ESTER DERIVATIVES METHOD OF PREPARATION AND POLYMERS OF SAID COMPOUNDS

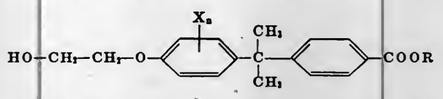
Robert Fuhrmann, Morris Plains; John Pisanchyn, Morristown, and Fred William Koff, Clifton, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 20, 1970, Ser. No. 4,401

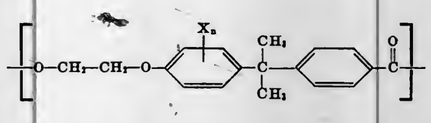
Int. Cl. G08c *17/02*

U.S. Cl. 260—47 C 6 Claims

Polycondensation of monomer of the structure:



wherein R is H or a C_1–C_6 alkyl group, wherein X is an alkyl radical of up to four carbons, chlorine or bromine, and n is O—4, affords polymers having recutting units of the structure:



These polymers have good thermal stability and transparency and a high, but not unduly high, glass transition temperature.

3,668,183

PRODUCTION OF POLYENAMINES

Kenneth Look Hoy, St. Albans, W. Va., and Charles Leonard Milligan, Centerville, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,611

Int. Cl. C08g *15/00*

U.S. Cl. 260—65 6 Claims

Polyenamine resins useful as adhesives and in coating applications are produced from the reaction of polyacetoacetates or polyacetoacetamides with blocked polyamines. The blocked polyamines are ketimines or enamines obtained by the reaction of an amine or amide with either a ketone or an aldimine obtained by the reaction of an amine or amide with an aldehyde.

3,668,184

CHLORAL COPOLYMERS

Otto F. Vogl, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 731,622, May 23, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 580,217, Sept. 19, 1966, now abandoned, and 558,631, June 29, 1966, now abandoned. This application Dec. 19, 1969, Ser. No. 886,739

Int. Cl. C08g *1/12*, *9/18*

U.S. Cl. 260—67 TN 25 Claims

Chloral is copolymerized with one or more isocyanate, isothiocyanate, diisocyanate, diisothiocyanate or ketene compounds to produce copolymers which are nonflammable and which can be made into a variety of useful, shaped objects. The process of making the copolymers involves preparing a homogeneous mixture of monomers and polymerization initiator at a temperature above the threshold polymerization temperature of the mixture, cooling the homogeneous mixture below the threshold polymerization temperature and maintaining the homogeneous mixture quiescent during the polymerization.

3,668,185

PROCESS FOR PREPARING THERMOPLASTIC POLYURETHANE ELASTOMERS

Stephen P. Boutsicaris, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 823,178, May 8, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 683,803, Nov. 17, 1967, now abandoned. This application Jan. 8, 1971, Ser. No. 105,084

Int. Cl. C08g *22/16*

U.S. Cl. 260—75 NH 8 Claims

This disclosure relates to a process for the preparation of thermoplastic urethane polymers or elastomers also having urethane and urea linkages derived by the reaction of the adduct of 6-caprolactam and an alkylene diamine, this adduct having the formula $NH_2(CH_2)_5CONH(CH_2)_xNH_2$ in which x has a value of 2–8, with a urethane prepolymer. The resulting urethane-urea elastomer has improved properties in comparison with such elastomers prepared from urethane prepolymers and 4,4'-methylene-bis-2-chloroaniline, generally referred to as "MOCA", or lauroguanamine which are the commonly used diamines for such purpose. In addition to the improved properties compared to the elastomers prepared from MOCA and aliphatic diamines, the product of this process has a considerably longer pot life and the reaction can be carried out at relatively elevated temperatures without gel formation. These elastomers are suitable for preparing melt-spun spandex fibers of high tenacity and melting temperature.

3,668,186

COMPOSITION FOR LOWERING THE RELEASE TEMPERATURE OF PHENOL- AND LOWER ALKYL SUBSTITUTED PHENOL-BLOCKED ISOCYANATES

Joe S. Duncan, Mogadore, and Otto C. Elmer, Akron, both of Ohio, assignors to The General Tire & Rubber Company

Filed Apr. 17, 1970, Ser. No. 29,648

Int. Cl. C08g *22/34*; C09k *3/00*

U.S. Cl. 260—75 NC 16 Claims

In the preparation of urethane polymers from phenol- and lower alkyl substituted phenol-blocked isocyanates, it is known to use a variety of reagents such as organotin compounds or amine compounds to lower the temperature at which the isocyanate becomes unblocked or reactive. These compounds, however, cause various side effects such as a decrease in the heat stability of the resultant polyurethane. This invention concerns a novel combination of certain tetravalent organotin compounds and certain quaternary ammonium compounds for addition to a phenol- or lower-alkyl substituted phenol-blocked isocyanate system to produce a synergistic lowering of the unblocking temperature in addition to, in the case of a coating compound, providing an unexpected increase in the heat stability of the resultant polyurethane coating.

3,668,187

THERMALLY STABLE POLYESTER FIBERS HAVING IMPROVED DYEABILITY

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 789,528, Jan. 7, 1969, now abandoned. This application May 13, 1969, Ser. No. 824,092

Int. Cl. C08g *17/08*

U.S. Cl. 260—77 8 Claims

Thermally stable fiber-forming polyester having improved dyeability with disperse dyes are produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H where R is an alkyl group containing an average of from about eight to 20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, butylene and isomers thereof, and mixtures of the above; and x has an average value of from 8–20, and is about equal to or greater than R. Polyfunctional chain-branching agents in amounts up to about 0.73 mole percent, based on the weight of the dicarboxylic acid or ester-forming derivative thereof, may be added, whereby the polymer, with the chain terminators described above, can be polymerized to higher molecular weights by ordinary polymerization techniques.

3,668,188

THERMALLY STABLE POLYESTER FIBERS HAVING IMPROVED DYEABILITY AND DYE LIGHTFASTNESS

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 824,092, May 13, 1969, and a continuation-in-part of 789,528, Jan. 7, 1969, now abandoned. This application Nov. 3, 1969, Ser. No. 873,333

Int. Cl. C08g *17/08*

U.S. Cl. 260—77 3 Claims

Modified polyester filaments having over conventional filaments, improved inherent thermal stability in the presence of oxygen and inherent disperse dye uptake, without the significant loss in dye lightfastness typical of such modified filaments, are produced from terephthalic acid; glycols; small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H, where R is an alkyl group containing an average of from about eight to 20 carbon atoms; G

is a hydrocarbon radical selected from the group consisting of ethylene, propylene, and isomers thereof, butylene and isomers thereof, and mixtures of the above; and x has an average value of from 8—20, and is about equal to 8–greater than R; and small amounts of manganous ion. Polyfunctional chain-branching agents in amounts up to about 0.7 mole percent, based on the weight of the dicarboxylic acid or ester-forming derivative thereof, may be added, whereby the polymer, with the chain terminators described above, can be polymerized to higher molecular weights by ordinary polymerization techniques.

3,668,189

FLUORESCENT POLYCARBONAMIDES

Frederick J. Goetz, Cedar Knolls, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,603
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **4 Claims**

Nylons are conventionally prepared by the condensation polymerization of diamines with dibasic acids. If there is incorporated into the polymerization charge from about 0.1 to 100 moles per 10,000 moles of conventional dibasic acid; a diacid, diester, diamide diacid chloride or diamidediamine of a fusedrring, polynuclear aromatic hydrocarbon having at least three fused rings, the thereby resulting nylon is fluorescent.

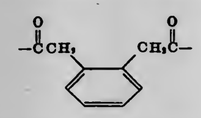
3,668,190

POLYAMIDES CONTAINING THE O-PHENYLENEDIACETIC ACID MOICTY

James S. Ridgway, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 751,729, Aug. 12, 1968, now abandoned. This application Dec. 23, 1970, Ser. No. 101,133
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **4 Claims**

Polyamides modified to contain as an integral part of their polymer chain units represented by the structure



possess a red color and can be fabricated into shaped articles, such as fibers, to provide red articles without the aid of pigments or dyes.

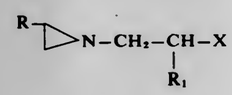
3,668,191

ADDUCTS OF N-SUBSTITUTED AZIRIDINES AND ORGANIC ACID ANHYDRIDES

Harry A. Smith, Midland, and Bobbie E. Rooker, Hope, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1970, Ser. No. 96,604
Int. Cl. C08f *25/00*; C08g *33/08*
U.S. Cl. 260—78.4 R **10 Claims**

Novel resins are prepared by reacting (a) maleic or succinic anhydride with (b) an aziridine of the formula



wherein R and R_1 are hydrogen or lower alkyl; and X is hydroxy, amino or cyano. The resins are useful contact adhesives.

3,668,192

CROSS-LINKED ISOTACTIC POLYBUTENE-1

Friederich Seifert, Marl; Josef Bittscheidt, Datteln, and Johannes Pleskowski, Marl, all of Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

Original application May 26, 1966, Ser. No. 553,014, now Patent No. 3,546,326, dated Dec. 8, 1970. Divided and this application Mar. 12, 1970, Ser. No. 26,464
Int. Cl. C08f *27/00*
U.S. Cl. 260—79.5 P **9 Claims**

Isotactic polybutene-1 is cross-linked with sulfur and an organic peroxide which decomposes at 140–220°C, e.g., dicumyl-peroxide.

3,668,193

VINYLIDENE FLUORIDE COATING COMPOSITIONS CONTAINING POLYIMIDES

James Ping King, Lansdale, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 27, 1971, Ser. No. 110,258
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 PA **15 Claims**

This disclosure concerns vinylidene fluoride polymer compositions containing a minor proportion of polyamide-acid resin which, after heat-curing of the composition, is converted to a polyimide resin. The coatings and films made from the cured composition have self-lubricating characteristics, improved wear resistance and impact resistance and better adhesion to substrates.

3,668,194

SUSPENSION POLYMERIZATION OF PVC POLYMERS AND COPOLYMERS AT REDUCED TEMPERATURES

Pink Kang Shen, Leominster, Mass., assignor to Borden, Inc., New York, N.Y.

Filed Dec. 14, 1966, Ser. No. 601,557
Int. Cl. C08f *3/30, 15/24, 15/06*
U.S. Cl. 260—86.3 **5 Claims**

This invention relates to vinyl chloride polymerization products and to the process of making such products comprising the steps of polymerizing in suspension and at temperatures below about 100° F. monomers consisting of at least 60 percent by weight of vinyl chloride in the presence of an organic peroxy compound, a reducing agent, and a metallic accelerator.

3,668,195

PROCESS FOR PRODUCING FIBRIDS FROM LATEX FOAM

Willem Jan Van Der Geer, Oosterbeek, Netherlands, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 16, 1968, Ser. No. 768,168
Claims priority, application Netherlands, Oct. 20, 1967, 6714246
Int. Cl. C08d *5/00*; C08c *1/14*
U.S. Cl. 260—94.7 R **4 Claims**

Paper-like and non-woven sheet-form articles of superior properties are produced by a process in which an aqueous latex of a polymeric binder material of natural or synthetic origin is first foamed, as by beating with air, the resulting foamed latex mixed with a coagulant under vigorous agitation to form directly an aqueous suspension of mainly flocculent particles of uniform particle size distribution, the resulting suspension of binder particles admixed with an aqueous suspension of fibers and the resulting mixed suspension dewatered to form a sheet which is then dried. The binder particles obtained by coagulation of a foamed latex produce products of higher wet and dry strengths and are more efficient in that more of the binder is retained by the fibers and less is lost in the dewatering operation.

3,668,196

3-AZETIDINOLS

William W. Hargrove, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Original application Oct. 22, 1965, Ser. No. 502,331, now Patent No. 3,481,920, dated Dec. 2, 1969. Divided and this application Jan. 13, 1969, Ser. No. 790,856
Int. Cl. C07d *25/00*
U.S. Cl. 260—239 A **3 Claims**

2,2-Disubstituted-azetidines, optionally substituted in addition at the 1,3, and 4 positions, useful as CNS stimulants and as blood pressure-lowering agents.

3,668,197

ESTERS AND AMIDES OF (DIAZOMETHYL) PHOSPHONIC ACID

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed July 22, 1969, Ser. No. 843,763
Int. Cl. C07c *113/02*; C07f *9/32*; C07d *1/12*
U.S. Cl. 260239 AA **3 Claims**

A method for the preparation of (cis-1,2-epoxypropyl)-phosphoric acid diesters and diamides which comprises treating the corresponding diester or diamide of (diazomethyl)-phosphonic acid with acetaldehyde or, alternatively, treating a mixture of an appropriate diester or diamide of formylphosphonic acid with diazoethane. The (cis-1,2-epoxypropyl) acid diesters and diamides thus obtained have utility as intermediates inasmuch as they may be converted to the pharmacologically active (cis-1,2-epoxypropyl)phosphonic acid and to the salts thereof which inhibit the growth of gram-positive and gram-negative pathogenic bacteria.

3,668,198

α-UREIDO-2,4,6-CYCLOHEPTATRIENYLMETHYLPENICILLINS

Jack Bernstein, New Brunswick; Patrick Andrew Diassi, Westfield, and Frank Lee Weisenborn, Somerset, all of N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed June 1, 1970, Ser. No. 42,600
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—239.1 **12 Claims**

This invention relates to α-ureido-2,4,6-cycloheptatrienylmethylpenicillins as well as their salts, which are useful as antibacterial agents.

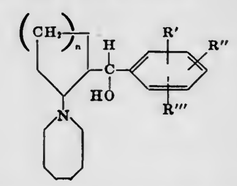
3,668,199

1,3-AMINOALCOHOLS

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Original application June 13, 1966, Ser. No. 556,892, now Patent No. 3,558,599, which is a division of application Ser. No. 786,385, Dec. 23, 1968, now Patent No. 3,595,867. Divided and this application Oct. 30, 1970, Ser. No. 85,718
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 B **10 Claims**

Novel 1,3-aminoalcohol of the formula



(IV)

wherein n has the value of 1 to 4, inclusive, wherein R', R'', and R''' are hydrogen, halogen, alkyl of 1 to 6 carbon atoms, inclusive, and alkoxy of 1 to 6 carbon atoms, inclusive, or CF_3, are prepared. The new compounds of formula IV per se as well as in the form of acid addition salts have diuretic activity and some of them have antihyperglycemic activity. Compounds of formula IV are thus useful to provide diuretics in mammals and are also useful as oral antidiabetic agents.

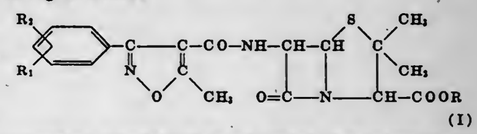
3,668,200

PROCESS FOR THE PRODUCTION OF ISOXAZOLYL PENICILLINS

Jinnosuke Abe, Yoshida; Tetsuo Watanabe, Yokohama-shi; Teruo Take, Tagata-gun; Kentaro Fujimoto, Tagata-gun; Tadashiro Fujii, Tagata-gun; Kazunari Takemura, Tagata-gun; Kazuyoshi Nishiie, Numazu-shi; Sakae Satoh, Sakai-shi; Tadashi Koide, and Yasue Hotta, both of Tagata-gun, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Tagata-gun, Japan

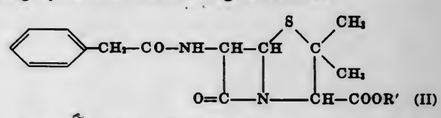
Filed Sept. 24, 1969, Ser. No. 860,812
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **6 Claims**

A chemical process for the production of isoxazolyl penicillins and nontoxic salts and lower alkyl esters thereof having the formula



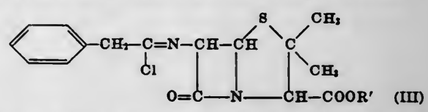
(I)

requires no microbiological deacylation or fermentation to produce 6-aminopenicillanic acid, but instead comprises reacting a penicillin G ester having the formula



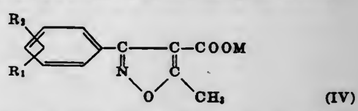
(II)

wherein R' is a protective group for carboxyl group and is selected from the group consisting of lower alkyl and a group which, when subjected to an elimination reaction, can be easily eliminated without having any detrimental effect on the structure of penicillin, which a chlorinating agent in the presence of a tertiary organic base to obtain an imide chloride group-incorporated compound having the formula



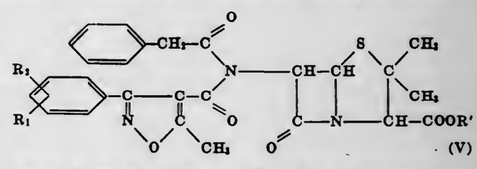
(III)

wherein R' is as defined above; reacting the compound of Formula III with an isoxazol carboxylate having the formula



(IV)

wherein M is a metal atom, and R_1 and R_2 are as defined above, to obtain a diacyl penicillin ester having the formula



(V)

wherein R_1, R_2 and R' are as defined above; then subjecting the compound of Formula V to dephenylacetylation; and eliminating R' when R' is a said easily eliminated group.

3,668,201
CEPHAM COMPOUNDS

Gerald E. Gutowski, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 24, 1970, Ser. No. 13,814
Int. Cl. C07d 99/24, 99/16
U.S. Cl. 260—243 C 6 Claims

3-Hydroxy-3-methyl-7-(protectedamino)cepham-4-carboxylic acids and salts, and esters which are useful as intermediates in the production of desacetoxycephalosporin antibiotic compounds.

3,668,202
PROCESS FOR PREPARING CEPHAM COMPOUNDS

Bennie J. Foster, Greenwood; Gerald E. Gutowski, and Lowell D. Hatfield, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 24, 1970, Ser. No. 13,815
Int. Cl. C07d 99/24, 99/14
U.S. Cl. 260—243 C 10 Claims

Preparing a 3-hydroxy-3-methyl-cepham-4-carboxylic acid, salt or ester in improved yields by heating a penicillin sulfoxide acid, salt, or ester in the presence of sulfuric or sulfamic acid, or a salt or ester thereof in a solvent system containing a tertiary carboxamide.

3,668,203
CEPHALOSPORIUS HAVING A THIOLTHERIFIED METHYL GROUP IN THE 3-POSITION

John Colin Clark, Gerrards Cross, England; James Kennedy, Montrose, Angus, Scotland, and Alan Gibson Long, Greenford, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

Continuation-in-part of application Ser. No. 752,190, Aug. 13, 1968, now abandoned. This application June 13, 1969, Ser. No. 833,150
Claims priority, application Great Britain, June 14, 1968, 28,527/68
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 11 Claims

7β-acylamidoceph-3-em-4-carboxylic acids having a thioetherified methyl group at the 3-position and physiologically acceptable derivatives thereof. The compounds have utility as antibiotics and show significant absorption after oral administration.

3,668,204
CHLORINATION OF CYANURIC ACID

Raymond N. Meslah, Somerset, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 66,105
Int. Cl. C07d 55/42
U.S. Cl. 260—248 C 7 Claims

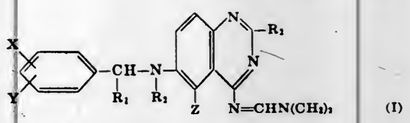
This invention provides a process for producing chloroisocyanuric acids by reacting cyanuric acid, sodium hypochlorite and chlorine at a temperature above zero° C. and preferably below 25° C., until the pH is between 1.7 and 3.5.

3,668,205
BENZYLAMINO QUINAZOLINYL FORMAMIDINE COMPOUNDS

Edward F. Elslager, and Donald F. Worth, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Apr. 20, 1970, Ser. No. 30,242
Int. Cl. C07d 51/48
U.S. Cl. 260—256.4 Q 6 Claims

Benzylamino quinazolinyl formamidine compounds (I) and their acid salts



(I)

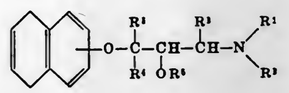
are provided by amidination of the corresponding 2,4-diamino or 2-amino-4-dimethylamidino compounds where R_1 is hydrogen or methyl; R_4 is hydrogen, nitroso, formyl, acetyl, propionyl or lower alkyl; R_5 represents amino or dimethylformamidino; and X, Y and Z are hydrogen, chloro or methyl. The compounds are pharmacological agents having useful antiparasitic properties, especially antimalarial properties.

3,668,206
HETEROCYCLIC AMINE DERIVATIVES OF 5,8-DIHYDRONAPHTHYLOXY PROPANOLS

Venkatachala Lakshmi Narayanan, 703a North Village, North Brunswick; Linda Louise Setescak, R.D. No. 1, Box 121, Cranbury, and Frank Lee Weisenborn, 21 Denherder Dr., Somerset, all of N.J.

Original application Oct. 16, 1968, Ser. No. 768,176, now Patent No. 3,354,085, dated Oct. 13, 1970. Divided and this application Jan. 26, 1970, Ser. No. 5,993
Int. Cl. C07d 51/70, 29/10
U.S. Cl. 260—268 BC 9 Claims

This invention relates to new 5,8-dihydronaphthyloxy-aminopropanols and related compounds of the formula



wherein



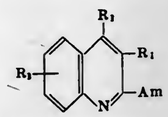
are piperidino and other heterocyclic derivatives and to salts of such compounds, products which are useful in coronary diseases, water softening and corosion inhibition.

3,668,207
2-AMINO-4-ARYL-QUINOLINES

Richard William James Carney, New Providence, N.J., assignor to Ciba-Geigy Corporation, Summit, N.J.

Continuation-in-part of application Ser. No. 638,594, May 15, 1967, now Patent No. 3,542,785. This application Jan. 22, 1970, Ser. No. 5,146
Int. Cl. C07d 33/52
U.S. Cl. 260—286 R 6 Claims

2-Amino-4-aryl-quinolines, e.g. those of the formula



Am=an amino or hydrazino group
R_1=H, aliphatic, araliphatic or aromatic radical
R_2=aromatic radical
R_3=H, alkyl, alkoxy, alkylmercapto, halogeno, CF_3, NO_2 or amino

acyl derivatives, quaternaries and salts thereof, exhibit antiinflammatory effects.

3,668,208
HEXAHYDRO IMIDAZOQUINOLINES

Charles A. R. Baxter, Sandwich, England, assignor to Pfirer Inc., New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,308
Claims priority, application Great Britain, Feb. 19, 1969, 8,882/69
Int. Cl. C07d 49/36
U.S. Cl. 260—283 S 10 Claims

A series of novel substituted hexahydro imidazoquinoline compounds have been prepared from the corresponding 2-aminomethyl-1,2,3,4-tetrahydroisoquinolines. These compounds are useful in the field of chemotherapy as antischistosomal agents. Preferred members include 2-(lower alkyl)-7-methyl-8-nitro-1,2,3,3a,4,5-hexahydroimidazo-[1,5-a]-quinolines, 2-(lower alkyl)-7-hydroxymethyl-8-nitro-1,2,3,3a,4,5-hexahydroimidazo-[1,5-a]-quinolines and 2-(lower alkyl)-7-methyl-8-chloro-1,2,3,3a,4,5-hexahydroimidazo-[1,5-a]-quinolines, as well as various 1- and 9-substituted derivatives thereof.

3,668,209
SEPARATION OF CHLORINATED PYRIDINES AND DERIVATIVES THEREOF

Demetrios Kyriacou, Oakley, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 784,226, Dec. 16, 1968, now abandoned. This application Apr. 8, 1971, Ser. No. 132,550
Int. Cl. C07d 31/16
U.S. Cl. 260—290 A 10 Claims

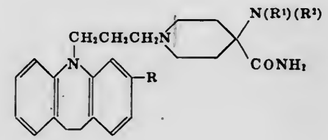
The present disclosure is directed to a method for separating halogen substituted pyridines having an unhindered hydrogen atom in a position alpha or beta to the ring nitrogen from closely related halogen substituted pyridines which lack such a hydrogen atom. The separation is carried out by contacting a mixture of the above pyridines with sulfuric acid or an alkane sulfonic acid in the presence of a solvent for those species not possessing an unhindered hydrogen atom followed by a hydrolysis step. This method can also be employed to separate isometric polychloropyridines from each other.

3,668,210
3-CHLORO DIHYDRODIBENZAZEPINE DERIVATIVES

Michio Nakanishi, Oita, and Chiaki Tashiro, Fukuoka, both of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

Filed Feb. 3, 1969, Ser. No. 796,163
Claims priority, application Japan, Feb. 7, 1968, 43/7571
Int. Cl. C07d 41/10 R
U.S. Cl. 260—293.59 5 Claims

New dibenzazepine derivatives of the formula



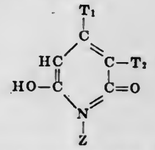
wherein R is Cl, OCH_3, CH_3, or $COCH_3$, and $-N(R^1)(R^2)$ is dimethylamino or piperidino, as well as pharmaceutically acceptable acid addition salts thereof, are useful as psychotropic agents.

3,668,211
CERTAIN 6-HYDROXY 2-(1H) PYRIDONES

Allen Crabtree, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 860,030, Sept. 22, 1969, now abandoned. This application Oct. 30, 1969, Ser. No. 872,745
Claims priority, application Great Britain, Dec. 9, 1968, 58,281/68; Dec. 11, 1968, 58,834/68
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 2 Claims

Compounds of the formula



wherein T_1 represents a hydrogen atom or a group of the formula —$COOR^1$ or $CONR^1R^2$, or an aliphatic, araliphatic, homocyclic or heterocyclic radical,

T_2 represents a group of the formula—CN, —$COOR^1$ or $CONR^1R^2$,

R^1 and R^2 each independently represents a hydrogen atom or an aliphatic, araliphatic, homocyclic or heterocyclic radical or $-NR^1R^2$ represents a heterocyclic radical, and Z represents an aliphatic radical having a primary or secondary amono group substituted therein, are valuable dyestuff intermediates being useful as coupling components for the manufacture of a wide variety of azo compounds.

3,668,212
METHYLSULFINYLMETHYLTHIAZOLE

Tsung-Ying Shen, Westfield; Alexander R. Matzuk, Colinia, and Conrad P. Dorn, Jr., Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original application Dec. 12, 1968, Ser. No. 783,430, now Patent No. 3,551,444, which is a division of application Ser. No. 592,977, Nov. 9, 1966, now Patent No. 3,438,992. Divided and this application June 10, 1970, Ser. No. 45,245
Int. Cl. C07d 91/32
U.S. Cl. 260—302 R 3 Claims

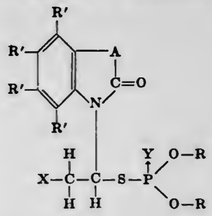
Anti-inflammatory thiazole methylalkyl sulfoxides.

3,668,213
CERTAIN 2-BENZOXAZOLINONE AND 2-BENZOTHIAZOLINONE DERIVATIVES OF 0,0-DIALKYL S-(2-HALOETHYL) PHOSPHOROTHIOATES AND DITHIOATES

Joel D. Jamison, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 801,767, Feb. 24, 1969, Pat. No. 3,529,059, which is a continuation-in-part of application Ser. No. 601,553, Dec. 14, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 535,735, Mar. 21, 1966, now Patent No. 3,355,353, which is a continuation in-part of application Ser. No. 417,516, Dec. 10, 1964, now abandoned. This application May 20, 1970, Ser. No. 51,032
Int. Cl. C07d 91/24
U.S. Cl. 260—304 23 Claims

Disclosed are compounds of the formula:



wherein each R is a lower alkyl radical, Y is selected from the group consisting of the oxo and thioxo radicals, X is a halo radical, A is selected from the group consisting of the oxy and thio radicals, and each R′ is selected from the group consisting of the hydrogen and halo radicals. These compounds are highly toxic to southern army worm larvae.

3,668,214

OXAZOLIDINE-3-OXYL DERIVATIVES

Harden M. McConnell, Stanford, and Edwin F. Ullman, Atherton, Calif., assignors to Synvar Associates, Palo Alto, Calif.

Filed Apr. 17, 1970, Ser. No. 29,661
Int. Cl. C07d 8 5/26
U.S. Cl. 260—307 F 5 Claims

Novel oxazolidine-3-oxyl compounds, wherein the two carbon of the oxazolidine ring is a carbon in the chain of palmitoleic acid, e.g. cis-2-(11-carboxy-3-undecenyl)-2-propyl-4,4-diethyloxazolidine-3-oxyl, which are useful as spin labels for biological membranes, are prepared by reaction of a 2-amino-2-lower alkyl-alkanol with an oxopalmitoleic acid, the resulting product oxidized to the corresponding oxazolidine-3-oxyl.

3,668,215

ARYL-SULPHONYL-SEMICARBAZIDES CONTAINING HETEROCYCLIC ACYLAMINO GROUPS

Hans Piumpe, and Walter Puls, both of Wuppertal-Elberfeld, Germany, assignors to Farvenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 12, 1968, Ser. No. 775,138
Claims priority, application Germany, Nov. 25, 1969, P 16 70 952.7
Int. Cl. C07d 8 5/24
U.S. Cl. 260—307 H 12 Claims

Oral antidiabetic aryl-sulphonyl-semicarbazides having heterocyclic acylamino groups and pharmaceutical compositions are provided. Typical embodiments are represented by the compounds 4-{{4-{β-[3-methyl-isoxazolyl-(5)-carboxamido]-ethyl}-benzene-sulphonyl}}-1,1-hexa-methylene-semicarbazide, 4-[4-{β-[4,5-tetramethylene-isoxazolyl-(3)-carboxamido]-ethyl}-benzene-sulphonyl]-1,1-hexamethylene-semicarbazide and 4-[3-{β-[5-methyl-isoxazolyl-(3)-carboxamido]-ethyl}-benzene-sulphonyl]-1,1-hexamethylene-semicarbazide which are administered in dosages of 1—10 mg/kg to a diabetic host formulated with excipients and tableted or filled into gelatin capusles.

3,668,216

PRODUCTION OF 1,2,4-OXADIAZOLIDINE-3,5-DIONES

Albrecht Zschocke, Bad Duerkheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 27, 1968, Ser. No. 787,624
Claims priority, application Germany, Dec. 30, 1967, P 16 70 299.1
Int. Cl. C07d R 5/34
U.S. Cl. 260—307 B 5 Claims

Production of 1,2,4-oxadiazolidine-3,5-diones by reaction of substituted hydroxylamines with N-chloroformyl-carbamic esters. The products are valuable starting materials for dyes.

3,668,217

3-(3′,5′-DIHALOGENOPHENYL)IMIDAZOLIDINE-2,4-DIONE DERIVATIVES

Akira Fujinami, Ashiya-shi; Toshiaki Ozaki, Toyonaka-shi; Fukashi Horiuchi, Saitama-ken; Sigeo Yamamoto, Toyonaka-shi; Kelichiro Akiba, Ikeda-shi; Katsutoshi Tanaka, Takarazuka-shi; Shigehiro Ooba, Takarazuka-shi; Tadashi Ooishi, Minoo-shi; Katsuji Nodera, Nishinomiya-shi, and Nobuyuki Kameda, Takarazuka-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Nov. 14, 1969, Ser. No. 876,987
Claims priority, application Japan, Nov. 25, 1968, 43/86483; May 13, 1969, 44/37160
Int. Cl. C07d 47/32
U.S. Cl. 260—309.5 9 Claims

3-(3′,5′-Dihalogenophenyl)imidazolidine-2,4-dione derivatives, which may be substituted with alkyl or phenyl in the 1 and/or 5 positions, are new compounds, and have high microbicidal activity on various fungi and bacteria and are non-toxic to plants and mammals. Those compounds are prepared by the intramolecular cyclization of a corresponding urea derivatives.

3,668,218

COPPER PHTHALOCYANINESULPHONIC ACIDS

Hans Von Tobel, Riehen/Basel-land, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed Mar. 6, 1970, Ser. No. 17,297
Claims priority, application Switzerland, Mar. 25, 1969, 4469/69
Int. Cl. C07d 27/74
U.S. Cl. 260—314.5 6 Claims

Copper phthalocyaninesulphonic acids which contain on the average 2 to 3 sulphonic acid groups, of which 1 to 1.8 are in 4-positions and the remainder in 3-positions, are suitable for exhaustion dyeing, pad dyeing and printing of natural and synthetic polyamide fibers, polyurethane fibers, natural and regenerated cellulosic fibers and leather.

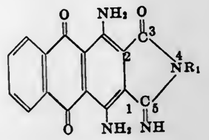
3,668,219

PREPARING WATER INSOLUBLE ANTHRAQUINONE DYESTUFFS

Tokio Otsuka, Ashiya; Shozo Sasabe, Ibaragi, and Hiroyuki Nakagawa, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Apr. 1, 1970, Ser. No. 24,828
Claims priority, application Japan, Apr. 9, 1969, 44/27500
Int. Cl. C07d 27/50
U.S. Cl. 260—325 7 Claims

Improvement for preparing water insoluble anthraquinone dyestuffs represented by the formula,



wherein R_1 is a saturated or unsaturated alkyl, cycloalkyl, aryloxyalkyl, aralkyl, aralkoxyalkyl or hydroxyalkyl having two to 12 carbon atoms, which comprises reacting 1-hydroxy-3-imino-4,7-diamino-5,6-phthalylisoindolenine or its tautomer with an alkylating agent in water or in an aqueous medium containing a small amount of an organic solvent.

3,668,220

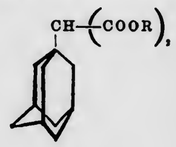
ADAMANTANE COMPOUNDS

Stephen S. Szinai, Wokingham, and William H. W. Lunn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

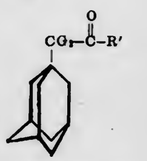
Original application Oct. 13, 1967, Ser. No. 675,037, now Patent No. 3,591,642. Divided and this application Apr. 27, 1970, Ser. No. 32,406
Int. Cl. C07d 27/28
U.S. Cl. 260—326.11 2 Claims

The present invention is directed to adamantane compounds of the formula:

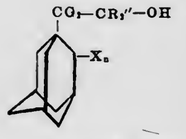
(I)



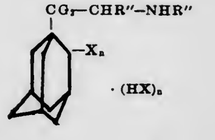
(II)



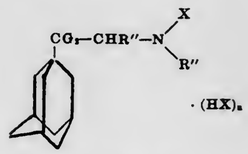
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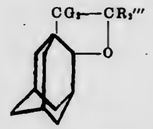
(IV)



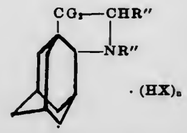
(V)



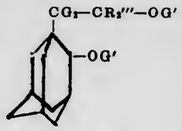
(VI)



(VII)



(VIII)



wherein each G independently represents hydrogen or straight-chain alkyl of from one to six, both inclusive, carbon atoms; G′ represents hydrogen or acetyl; R represents hydrogen or alkyl of from one to six, both inclusive, carbon atoms; R′ represents halo, alkoxy containing from one to six both inclusive, carbon atoms in the alkyl group, hydrogen or alkyl of from one to six, both inclusive, carbon atoms; each R″ independently represents hydrogen or alkyl of from one to six, both inclusive, carbon atoms; each R‴ independently represents hydrogen or alkyl of from one to six, both inclusive, carbon atoms or both R‴ groups taken together represent oxo(—0); X represents halo; and each *n* independently represents an integer of from zero to one, both inclusive. The terms "halo" and "halide" are employed herein to designate occurrences of bromine, chlorine and iodine.

The adamantane compounds of formula VII AND VIII are useful as agents to achieve a depressant action on the central nervous system of warm blooded animals. The adamantane compounds of formulas I, II, III, IV, V and VI are useful as intermediates in the synthesis of the compounds of formulas VII and VIII.

3,668,221

PROCESS FOR PRODUCING α-AMINO ACIDS

Takesaburo Shima; Akio Yamagishi; Masao Sada; Zenichi Yamamoto, and Hasunaga Shiozaki, all of Nihama-shi, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed July 21, 1967, Ser. No. 655,137
Claims priority, application Japan, July 28, 1966, 41/49736
Int. Cl. C07d 27/60; C07c 99/08
U.S. Cl. 260—326.14T 11 Claims

A process for producing α-amino acid by hydrolyzing a hydantoin compound in which the hydrolysis is effected while withdrawing out of the system ammonia and carbon dioxide generated during the hydrolysis and while during the reaction period, adjusting the amount of reaction medium to at least 1.5 *l.* per mole of the hydantoin compound initially employed. Particularly, a process in which the hydrolysis is effected in such a manner that an aqueous alkaline solution of hydantoin compound is fed to the upper part of a plate column-type reactor or packed column-type reactor and, simultaneously, steam is fed from the lower part of said reactor, while withdrawing ammonia and carbon dioxide out of the system. By thus effecting the hydrolysis without concentrating the reaction liquid, and while withdrawing the generated gases out of the system, α-amino acid can be produced in high yields.

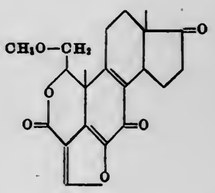
3,668,222

11-DESACETOXY-WORTMANNIN

Daniel Hauser, Reinach, Switzerland; assignor to Sandoz Ltd., Basel, Switzerland

Filed May 6, 1970, Ser. No. 35,300
Claims priority, application Switzerland, May 14, 1969, 7389/69; Sept. 10, 1969, 13485/69
Int. Cl. C07d 7/18
U.S. Cl. 260—343.2 R 1 Claim

The invention concerns the novel antibiotic 11-desacetoxy-wortmannin of the formula:



The antibiotic is a fungistatic and anti-inflammatory/edema-inhibiting agent.

3,668,223
2-OXO-3-BENZOXEPINS
Howard Jones, Holmdel, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
Filed Aug. 19, 1970, Ser. No. 65,354
Int. Cl. C07d 9/00
U.S. Cl. 260—343.2 R 2 Claims

2-Oxo-3-benzoxepin-6a-carboxylic acid derivatives useful as anti-inflammatory agents.

3,668,224
PROCESS OF PRODUCING 6A, 10A-TRANS-6A,7,8,10A-TETRAHYDRODIBENZO (B,D)-PYRANS
Theodor Petrzilka, 6 Rigistrasse, Erlenbach ZH 8703, Switzerland
Original application Sept. 16, 1968, Ser. No. 760,055, now abandoned. Divided and this application July 2, 1970, Ser. No. 52,105
Int. Cl. C07d 7/20
U.S. Cl. 260—345.3 11 Claims

This invention is directed to a process of producing (−)—1-hydroxy-3-n-amyl-6,6,9-trimethyl-6a,10a-trans-6a,7,8,10a-tetrahydrodibenzo(b,d)-pyran and related pyrans from resorcinols, including intermediates therein. The pyrans produced by this invention possess psychotomimetic and analgesic activity.

3,668,225
PROCESS FOR THE PREPARATION OF N,N'-DI-1-ANTHRAQUINONYLPHTHALAMIDE
John F. Santimauro, Wyckoff, N.J., and Herman Gerson, New York, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 6, 1969, Ser. No. 822,227
Int. Cl. C09b 1/42
U.S. Cl. 260—368 9 Claims

Reaction of a phthalic anhydride with an aminoanthraquinone in the presence of phosphorus oxychloride and/or phosphorus trichloride with perchloroethylene as solvent affords N,N'-di-anthraquinonylphthalamide pigment in high yield and in easily isolatable form. In the preparation of N,N'-di-1-anthraquinonylphthalamide, presence of an "active oxygen"-containing compound in the reaction medium affords a reddish-yellow alpha polymorph; absence of an "active oxygen"-containing compound affords a novel greenish-yellow beta polymorph.

3,668,226
STRAIGHT CHAIN ALIPHATIC CARBOXYLIC ACID MONOESTERS OF 1,3-DIHYDROXY-2-PROPANONE
Ronald P. Quintana; Lorrin R. Garson; Andrew Lasslo, all of Memphis, Tenn., assignors to The United States of America as represented by the Secretary of the Army
Filed Feb. 26, 1970, Ser. No. 14,417
Int. Cl. C07c 69/28; A01n 9/24
U.S. Cl. 260—410.6 1 Claim

This invention relates to perdurable insect repellent compositions comprising a precursor molecule which includes a moiety with dermal anchoring properties linked to a moiety with insect repellent properties. There are also described six new compounds, illustrative of the perdurable insect repellent structure. The six compounds are monoesters of 1,3-dihydroxy-2-propanone and the straight-chain aliphatic carboxylic acids—propanoic acid, pentanoic acid, hexanoic acid, heptanoic acid, octanoic acid, and undecanoic acid.

3,668,227
MOLYBDENUM CATALYSTS FOR THE OXIDATION OF UNSATURATED COMPOUNDS IN LIQUID PHASE
Anna Maria Mattucci, Torino, and Emilio Perrotti, San Donato Milanese, both of Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed Sept. 5, 1969, Ser. No. 855,739
Claims priority, application Italy, Sept. 5, 1968, 20871 A/68
Int. Cl. C07f 11/00; C07d 1/08
U.S. Cl. 260—429 J 7 Claims

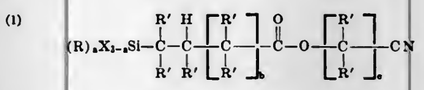
A molybdenum alkylene-dioxy-derivative, adapted to catalyze the oxidation of certain compounds containing ethylenic unsaturations, is prepared by reacting an organic molybdenum compound in which oxygen atoms are directly attached to the molybdenum atom with an organic derivative having vicinal hydroxyl groups.

3,668,228
SOLUTIONS OF CURING CATALYSTS FOR POLYSILOXANES
Hans Rudolf Zbinden, Allschwil, and Armin Hiestand, Binningen, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland
Filed June 4, 1969, Ser. No. 830,495
Claims priority, application Switzerland, June 13, 1968, 8828/68
Int. Cl. B01j 11/82
U.S. Cl. 252—431 C 8 Claims

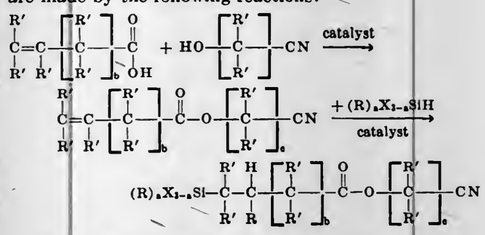
Solutions of curing catalysts for polysiloxanes containing a zinc, cadmium, titanium or zirconium salt, an alkylbenzenesulfonic acid salt, a polyethylene glycol compound and an organic solvent are used together with aqueous emulsions of organopolysiloxanes for finishing fiber materials such as paper or textiles.

3,668,229
CYANOALKYLESTERALKYLSILANES, AMINOALKYLESTERALKYLSILANES, POLYSILOXANES, AND POLISHES FORMED THEREFROM
Abe Berger, Schenectady, and Jalal S. Jaleel, Albany, both of N.Y., assignors to General Electric Company
Original application July 17, 1968, Ser. No. 745,377. Divided and this application Apr. 15, 1970, Ser. No. 33,139
Int. Cl. C07f 7/18
U.S. Cl. 260—448.8 R 8 Claims

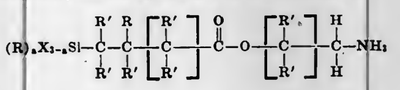
Cyanoalkylesteralkylsilanes within the scope of the formula:

(1) 

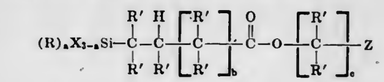
are made by the following reactions:



Aminoalkylesteralkylsilanes of the formula:



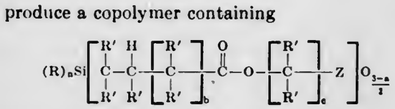
are made by hydrogenating the corresponding nitrile. A compound within the scope of the formula,



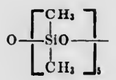
is reacted with a silanol stopped fluid of the formula,



to produce a copolymer containing

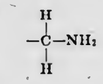


units and



blocks.

In the above formulas, R is an organic radical, R' is an organic radical or hydrogen, X is a hydrolyzable group, Z is a



or a -CN radical, *a* has a value of 0 to 2, *b* has a value of 0 to 4, and *c* has a value of one to five. The copolymer containing cyanoalkylesteralkylsilane units is useful as a solvent resistant protective coating material. The copolymer containing aminoalkylesteralkylsilane units is the primary ingredient of a detergent resistant car polish.

3,668,230
ALKYL-SULFOXIDE AND ALKYL-SULFONE TERMINATED OLIGOMERS
Leland E. Dannals, Waterbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.
Continuation-in-part of application Ser. No. 547,743, May 5, 1966, now abandoned , and 562,097, July 1, 1966, now Patent No. 3,498,943, and 562,098, July 1, 1966, now Patent No. 3,498,942. This application Nov. 19, 1968, Ser. No. 777,175
Int. Cl. C07c 121/28, 121/38, 121/40
U.S. Cl. 260—465.4 12 Claims

Alkyl-sulfoxide and alkyl-sulfone terminated oligomers. Prepared by addition polymerization of monomer in presence of a mercaptan, followed by oxidation. Oligomers used as emulsifiers in the emulsion polymerization of one of more monomers to produce rubber or plastic latexes from which solid polymers can be obtained.

3,668,231
PRODUCTION OF CYANOACETIC ACID
Jacob Rosin, Maplewood, and Frank S. Ang, Kearney, both of N.J., assignors to Chris-Craft Industries, Inc.
Continuation-in-part of application Ser. No. 749,940, Aug. 5, 1968, now abandoned. This application Sept. 9, 1970, Ser. No. 70,915
Int. Cl. C07c 121/40
U.S. Cl. 260—465.4 3 Claims

Cyanoacetic acid is produced in a sequence of reactions in which an aqueous solution of chloroacetic acid neutralized with sodium carbonate or sodium hydroxide to form sodium chloroacetate which, in turn, is reacted in a nucleophilic substitution with an alkali metal cyanide and the resultant cyanoacetate is then acidified to form an aqueous reaction mixture comprising cyanoacetic acid and the respective salts formed in such reaction sequence. This process is improved

a. by conducting the nucleophilic substitution reaction in the presence of an alkanol and at a temperature in excess of about 80° C. to accelerate the reaction while substantially precluding undesirable side reactions, thereby increasing the yield of the cyanoacetate and decreasing the tendency of the reaction to form color bodies; and

b. by extracting the acidified, aqueous reaction mixture with an alkanol which contains from not less than three to about 12 carbon atoms and which is substantially insoluble in saturated brine, using the aqueous reaction mixture in such a manner that the amount of salts in such reaction mixture substantially saturate the amount of water present, thereby permitting substantially all of the cyanoacetic acid to be extracted by the alkanol.

By using these improvements in a process to produce cyanoacetic acid, it is possible to obtain extremely high yields of cyanoacetic acid using much less process equipment than presently employed to produce this product. The improved process furthermore facilitates the subsequent production of alkyl cyanoacetates and of cyanoacetamide.

3,668,232
N-SUBSTITUTED 2-AMINOMETHYL-2'-BIPHENYLCARBOXYLIC ACID AND DERIVATIVES
John O. Hawthorne, and Edward L. Mihelic, both of Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation
Original application May 16, 1969, Ser. No. 825,440, which is a continuation-in-part of application Ser. No. 529,258, Feb. 23, 1966, now abandoned. Divided and this application May 21, 1970, Ser. No. 39,554
Int. Cl. C07c 101/00, 101/42
U.S. Cl. 260—471 A 7 Claims

N-substituted 2-aminomethyl-2'-biphenylcarboxylic acid and derivatives thereof are prepared by reacting 2-formyl-2'-biphenylcarboxylic acid or an ester thereof with ammonia or a primary amine with hydrogenation of the product.

3,668,233
ESTERS OF PERFLUORO-TERTIARYALKYL ALCOHOLS AND HYDROCARBYL OR HOLOHYDROCARBYL CARBOXYLIC ACIDS
Frank J. Pavlik, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of application Ser. No. 538,556, Mar. 30, 1966, now abandoned , which is a continuation-in-part of application Ser. No. 246,022, Dec. 20, 1962, now abandoned , which is a continuation of application Ser. No. 234,222, Oct. 30, 1962, now Patent No. 3,385,904. This application Apr. 17, 1970, Ser. No. 28,242
Int. Cl. C07c 69/14, 69/54, 101/68
U.S. Cl. 260—471 C 6 Claims

An ester condensation product of (1) a perfluoro-tertiary-alkyl alcohol in which the perfluoro-alkyl group has not more than 20 carbon atoms, is directly bonded to the alcoholic hydroxyl radical, and has at least one perfluoro-methyl group bonded to the tertiary carbon atom, and (2) an organic acid of not more than 18 carbon atoms with at most double bond unsaturation and selected from the group consisting of a hydrocarbon carboxylic acid, a hydrocarbon sulphonic acid, a hydrocarbon phosphonic acid, a hydrocarbon silicic acid or cyanuric acid, or a halogen substituted counterpart thereof. Illustrative uses of these esters include inert heat exchange fluids, as polymerizable monomers, textile treatment, surface active agents, and the like.

3,668,234
BIS-HALOPHENOXYACETIC ACID ESTERS OF POLYALKANOLS
Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Original application Oct. 22, 1968, Ser. No. 769,725, now Patent No. 3,542,795, which is a continuation-in-part of application Ser. No. 748,234, July 29, 1968, now abandoned. Divided and this application July 13, 1970, Ser. No. 61,033
Int. Cl. C07c 69/76
U.S. Cl. 260—473 G 4 Claims

The compounds are esters of derivatives of acetic acid and contain a plurality of bis-(p-halophenoxy)acetoxy functions, e.g., the bis-p-chlorophenoxyacetic acid ester of ethylene glycol, and are useful as hypocholestermic agents.

3,668,235
PROCESS FOR DRYING BIS-(β-HYDROXYETHYL) TEREPHTHALATE
Yataro Ichikawa; Gentaro Yamashita; Michiyuki Tokashiki, and Nobuo Suzuki, all of Iwakuni-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Dec. 24, 1969, Ser. No. 888,082
Int. Cl. C07c 69/82
U.S. Cl. 260—475 PR 5 Claims

Process for removing a volatile liquid medium from solid bis-(β-hydroxyethyl) terephthalate wetted with said volatile liquid, by heating said wet bis-(β-hydroxyethyl) terephthalate into a molten mass and evaporating said liquid medium. Dried bis-(β-hydroxyethyl) terephthalate containing an extremely small amount of volatile liquid can be obtained in a short time without causing degradation in the quality of the product.

3,668,236
REACTION PRODUCT OF ALKANOLAMINE AND TWO PARTICULAR ACIDS
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 720,339, Apr. 10, 1968, Continuation-in-part of application Ser. No. 329,979, Dec. 12, 1963, now abandoned. This application Mar. 23, 1970, Ser. No. 22,010
Int. Cl. C07c 93/16
U.S. Cl. 260—485 H 20 Claims

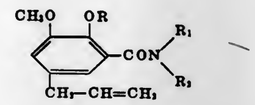
Reaction product formed by the condensation of alkanolamine, polyhalopolyhydropolycyclicdicarboxylic acid or derivative and aliphatic substituted dicarboxylic acid. The reaction product has utility as a stabilizer against deterioration of organic substances, such as lubricants, hydrocarbon oils and plastics, as well as utility as a detergent, dispersant, extreme pressure additive, flame retardant and also possessing insecticidal properties.

3,668,237
AMINE SALTS OF PHOSPHINIC ACID ESTERS
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 493,918, Oct. 7, 1965, now abandoned. This application June 24, 1969, Ser. No. 836,133
Int. Cl. C07c 101/02
U.S. Cl. 260—485 G 9 Claims

Tertiary amine salts of polycarboxylic acid esters of bis-(hydroxyalkyl)-phosphinic acid. These compounds are useful as additives for lubricating oil, grease and organic substances normally subject to oxidative deterioration and, also serving to prevent wear or corrosion of metallic components.

3,668,238
2-HYDROXY-3-METHOXY-5-ALLYL BENZAMIDES
Francois Clemence, Rosny-sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel Uclaf, Paris, France
Continuation-in-part of application Ser. No. 743,576, June 6, 1968, now abandoned. This application Sept. 25, 1968, Ser. No. 762,606
Int. Cl. C07c 69/02
U.S. Cl. 260—488 14 Claims

An amide of 2-hydroxy-3-methoxy-5-allyl-benzoic acid of the formula



(I)

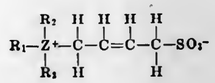
wherein R is selected from the group consisting of hydrogen, alkyl of one to seven carbon atoms and acyl of an organic carboxylic acid of one to 18 carbon atoms, R_1 and R_2 are selected from the group consisting of hydrogen, substituted and unsubstituted alkyl of one to seven carbon atoms, aryl and cycloalkyl and when taken together with the nitrogen atom form a heterocyclic which may contain another heteroatom, which products possess outstanding choleretic properties far superior to dehydrocholic acid. The invention also relates to a novel process and novel intermediate for the preparation of the said benzamides of Formula I.

3,668,239
PROCESS FOR PREPARING GLYCOL ESTERS FROM OLEFINICALLY UNSATURATED COMPOUNDS
John Kollar, Wyckoff, N.J., assignor to Halcon International, Inc.
Continuation-in-part of application Ser. No. 763,001, Sept. 26, 1968, and 762,978, Sept. 26, 1968, and 819,507, Mar. 24, 1969. This application Apr. 23, 1970, Ser. No. 31,262
Int. Cl. C07c 67/04
U.S. Cl. 260—497 R 11 Claims

Glycol esters derived from olefinically unsaturated compounds are prepared by contacting the olefinically unsaturated compound and molecular oxygen in a carboxylic acid medium in the presence of a catalyst. The particular catalyst employed is a combination of tellurium and an appropriate form of bromine which will insure that the pH of the reaction medium when determined at 25° C. is maintained at less than 2.0, after a 10:1 weight dilution with water. Improved selectivities to the vicinal glycol diester are obtained when operating within the specified reaction conditions.

3,668,240
UNSATURATED ZWITTERIONIC SURFACE ACTIVE COMPOUNDS
Melvin A. Barbera, Mount Healthy, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 31, 1970, Ser. No. 24,330
Int. Cl. C07c 143/16
U.S. Cl. 260—501.12 4 Claims

Zwitterionic surface active compounds are provided having the following formula:



wherein R_1 represents an unsaturated or saturated aliphatic group having six to 24 carbon atoms, R_2 and R_3 each represent an alkyl group having one to six carbon atoms, and Z represents nitrogen or phosphorus.

These compounds have valuable surface active properties that make them especially useful as detergent compounds.

3,668,241
SUBSTITUTED 1-OXOINDEN-5-YLOXY ALKANOIC ACIDS
Edward J. Cragoe, Jr., Lansdale, Pa., and Otto W. Woltersdorf, Jr., Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Nov. 25, 1968, Ser. No. 778,819
Int. Cl. C07c 65/02
U.S. Cl. 260—520 8 Claims

(1-Oxoinden-5-yloxy)- and (1-Oxoinden-5-ylthio)-alkanoic acid products and salts, esters and amide derivatives thereof wherein the 1-oxoindenyl ring may be substituted by various radicals are disclosed. The said products are diuretic and saluretic agents. The products may be prepared by three routes: (1) via the dehydrohalogenation of a [1-oxo-2-halo-5-indanyloxy(or thio)]-alkanoic acid; (2) via the etherification of a 5-hydroxy-(or mercapto)inden-1-one; or (3) via the hydrolysis of a [1-oxoinden-5-yloxy-(or thio)]alkanoic acid ester.

3,668,242
HALOGENATED PHENOXY COMPOUNDS
Edward D. Weil, Yonkers, and Jerome Linder, Westfield, both of N.J., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Original application Dec. 2, 1966, Ser. No. 635,929, now Patent No. 3,443,016, dated May 6, 1969, which is a division of application Ser. No. 233,873, Oct. 29, 1962, now Patent No. 3,347,929, dated Oct. 17, 1967. Divided and this application May 1, 1969, Ser. No. 821,106
Int. Cl. C07c 65/02
U.S. Cl. 260—521 A 6 Claims

Unsaturated halogenated phenoxy compounds are described. They are prepared by opening the corresponding halogenated phenoxy cycopentenones and are employed as herbicides.

3,668,243
DIFUNCTIONALLY TERMINATED POLYMERS AND METHODS OF THEIR PREPARATION
Edwin J. Quinn, Lancaster, Pa., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 9, 1968, Ser. No. 751,350
Int. Cl. C07c 59/18
U.S. Cl. 260—535 R 6 Claims

Preparation of carboxy-hydroxy conjugated diolefin polymers useful in rocket fuel and for the production of alpha-omega dicarboxy conjugated diolefins.

3,668,244
OXIDATION OF 2-(2,4-DICHLOROPHENOXY) ETHANOL AND 2-(2,4,5-TRICHLOROPHENOXY) ETHANOL WITH NITRIC ACID TO THE CORRESPONDING PHENOXYACETIC ACID
Edwin J. Strojny, and Ludo K. Frevel, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Sept. 30, 1969, Ser. No. 862,511
Int. Cl. C07c 65/02
U.S. Cl. 260—521 A 10 Claims

Nitric acid is used to oxidize 2-(2,4-dichlorophenoxy)ethanol or 2-(2,4,5-trichlorophenoxy)ethanol to the corresponding phenoxyacetic acid by reaction with nitric acid at a temperature of 0° to 90° C. in a solvent having at least 0.5/1 parts by weight of benzenesulfonic acid to water plus sufficient sulfuric acid to maintain the total acid concentration of the reaction mixture between about 6 N and about 13 N throughout the reaction. The reaction is preferably conducted in an atmosphere of nitric oxide.

3,668,245
PROCESS FOR PREPARING ACRYLIC ACID
Howard S. Young; George C. Anderson, and Edgar L. McDaniel, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 31, 1969, Ser. No. 813,354
Int. Cl. C07c 51/32
U.S. Cl. 260—533 N 17 Claims

Process for the oxidative conversion of propylene to acrylic acid which comprises contacting a mixture of vaporized propylene and oxygen at a temperature from about 300° C. to about 500° C. with a novel catalyst comprising oxidized molybdenum and at least one of oxidized niobium and oxidized tantalum. The novel catalyst may further include oxidized arsenic. Acrylic acid may be subsequently converted to lower alkyl esters for use in the plastics industry.

3,668,246
PROCESS FOR THE CONTINUOUS PRODUCTION OF ALKALI METAL SALTS OF NITRILOTRIACETIC ACID
Christoph Berding, Limburgerhof, Upper Palatinate; Paul Guenthert, Iggelheim, Upper Palatinate; Waldemar Koehler, and Gerhard Schulz, both of Ludwigshafen, Rhineland, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhineland, Germany
Filed Aug. 12, 1968, Ser. No. 752,033
Claims priority, application Germany, Aug. 16, 1967, P 16 43 238.5
Int. Cl. C07c 101/20
U.S. Cl. 260—534 E 6 Claims

Continuous production of alkali metal salts of nitrilotriacetic acid from an alkali metal cyanide, formaldehyde and ammonia by reaction of the components in at least two stages, the alkali metal cyanide being reacted with formaldehyde in stoichiometric or substantially stoichiometric ratio at temperatures of 50° to 200° and pressures of from atmospheric pressure to 50 atmospheres gauge in the presence of an excess of ammonia in the first stage and (while simultaneously removing ammonia) further amounts of alkali metal cyanide and formaldehyde being allowed to act at temperatures of 60° to 110°C in one or more subsequent stages, 5 to 35 mole percent of the total amount of alkali metal cyanide required being replaced by free hydrocyanic acid and/or hydroxyacetonitrile.

3,668,247
AROMATIC ACID CHLORIDE PROCESS
Christian S. Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 10, 1969, Ser. No. 875,543
Int. Cl. C07c 51/58
U.S. Cl. 260—544 M 9 Claims

Process for preparing benzene carbonyl chlorides useful as intermediates for making polyester, polyamide and the like condensation polymers by (1) mixing a trichloromethyl benzene bearing at least one additional halogen, trichloromethyl or carbonyl chloride group, all carbon-containing groups being nonadajacent to each other, with at least about two molecules of sulfur trioxide per trichloromethyl group; and (2) maintaining the mixture at a temperature at which it is molten but below which ring sulfonation occurs for a time sufficient to convert at least one trichloromethyl group to a carbonyl chloride group.

3,668,248
5-CHLORO-2,4-BIS(SULFAMOYL)FLUOROBENZENE AND 5-CHLORO-2,4-BIS(CHLOROSULFONYL)FLUOROBENZENE

Calvert W. Whitehead, and John J. Traverso, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original application Sept. 30, 1964, Ser. No. 400,470, now Patent No. 3,419,552, dated Dec. 31, 1968, Continuation-in-part of application Ser. No. 102,385, Apr. 12, 1961, now abandoned. Divided and this application Oct. 24, 1968, Ser. No. 810,409

Int. Cl. C07c *143/70*, *143/78*

U.S. Cl. 260—543 R — 2 Claims

5-Chloro-2,4-bis(sulfamoyl)fluorobenzene, and 5-chloro-2,4-bis(chlorosulfonyl)fluorobenzene are intermediates in the preparation of dihydrobenzothiadiazine-1,1-dioxides, useful as diuretics.

3,668,249
CYCLIC HYDROCARBOXYLATION PROCESS FOR PRODUCTION OF STRAIGHT-CHAIN ACIDS, ANHYDRIDES OR ESTERS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed June 10, 1969, Ser. No. 831,982

Int. Cl. C07c *51/14*, *51/56*, *67/00*

U.S. Cl. 260—546 — 8 Claims

A process for preparation of straight-chain acids, anhydrides or esters, comprising contacting an ethylenically unsaturated hydrocarbon, carbon monoxide and water, a carboxylic acid or an alcohol at specified temperatures with a group VIII noble metal catalyst, separating the straight-chain product and recycling the branched-chain product to the reaction medium.

3,668,250
UREA SYNTHESIS PROCESS

Maxim Karafian, Cold Spring Harbor, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Aug. 19, 1969, Ser. No. 851,327

Int. Cl. C07c *127/04*

U.S. Cl. 260—555 A — 13 Claims

Aqueous urea solution formed by synthesis from ammonia and carbon dioxide is heated for water vapor evaporation and concentration by indirect heat exchange with a reacting mixture of off-gas and aqueous absorbent solution, which generates heat due to re-absorption of off-gas components in the aqueous absorbent solution.

3,668,251
DIALKYLAMINOALKYL AMIDES OF 6-CHLORO-1,2,3,4-TETRAHYDRO-1-NAPHTHALENEACETIC ACID AND Δ^1 ANALOGS

Robert W. Hamilton, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Sept. 22, 1969, Ser. No. 860,050

Int. Cl. C07c *103/20*

U.S. Cl. 260—558 R — 4 Claims

Preparation of the captioned compounds — for example, 6-chloro-N-(2-diethylaminoethyl)-1,2,3,4-tetrahydro-1-naphthaleneacetamide, 2-dimethylaminoethyl 6-chloro-1,2,3,4-tetrahydro-1-naphthaleneacetate hydrochloride, etc. — and their valuable biological properties — including antiulcerogenic, antibiotic, and antiinflammatory activities — are disclosed.

3,668,252
SOLVENT PROCESS FOR AURAMINE AND ETHYL AURAMINE

Rill Lewis Groskios, Williamstown, W. Va., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 22, 1968, Ser. No. 778,302

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R — 4 Claims

The process for the preparation of auramine and ethyl auramine by the reaction of 4,4'-tetramethyldiaminodiphenyl methane and 4,4'-tetraethyldiaminodiphenyl methane, respectively with sulfur, ammonium chloride and ammonia gas is improved by carrying out the reaction in the presence of a solvent selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol and glycerol at a temperature of from about 125° C. to about 175° C.

3,668,253
N-NITROSO-4,4'-BIS(2-PHENYLISOPROPYL)-DIPHENYLAMINE

Guy Bertrand, Choisy-le-Roi, and Jean Marc Maison, Paris, both of France, assignors to Rhone-Poulenc SA, Paris, France

Original application Sept. 5, 1968, Ser. No. 757,757, now Patent No. 3,573,252, dated Mar. 30, 1971. Divided and this application Sept. 9, 1970, Ser. No. 70,724

Int. Cl. C07c *87/28*

U.S. Cl. 260—570 R — 1 Claim

N-Nitroso-4,4'-bis(2-phenylisopropyl)diphenylamine, a new compound, is valuable as a vulcanization retarder for elastomers. It has an anti-ageing effect on the vulcanized product.

3,668,254
N-HALOALLYL-P-PHENYLENEDIAMINES

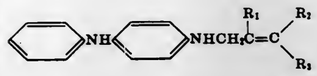
John J. D'Amico, Akron, and Sidney T. Webster, Worthington, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 20, 1970, Ser. No. 21,542

Int. Cl. C07c *87/48*

U.S. Cl. 260—576 — 3 Claims

A para-phenylenediamine of the formula



wherein R_1, R_2 and R_3 are hydrogen or halogen, at least one being halogen, useful for the preservation of rubber.

3,668,255
PROCESS FOR ALKYLATION OF ALIPHATIC KETONES AND PRODUCT

Walter C. Meuly, New Brunswick, and Peter S. Gradeff, Somerset, both of N.J., assignors to Rhodia Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 241,036, Nov. 29, 1962, now abandoned, and 502,585, Oct. 22, 1965, now abandoned. This application Oct. 31, 1967, Ser. No. 679,543

Int. Cl. C07c *49/06*, *49/28*, *49/30*

U.S. Cl. 260—586 R — 7 Claims

A process is provided for the alkylation of aliphatic ketones having an alpha hydrogen, substitution occurring on the carbon alpha to the carbonyl group, by use of solid alkali in the presence of an organic amine and/or ammonia as a catalyst.

Alkenyl highly branched ketones having a pleasant odor also are provided, useful in the formulation of perfumes and perfume bases.

3,668,256
PURIFICATION OF ACETONE

Jasper A. Brundege, Dover, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,851

Int. Cl. C07c *49/08*

U.S. Cl. 260—593 P — 6 Claims

Acetone free of aldehydic impurities is obtained by fractionally distilling crude acetone in a single, multiple-plate column and continuously introducing, at a point above the acetone feed, a counterflowing dilute alkaline solution, such as sodium hydroxide, the amount and concentration being sufficient to polymerize aldehydic impurities contained therein without forming a second liquid phase when the alkali mixes with the liquid in the column; and removing pure acetone from the top of the column and water and nonvolatiles as bottom products.

3,668,257
OXIDATION OF OLEFINS

William D. Schaeffer, Pomona, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 240,131, Nov. 26, 1962, now abandoned. This application Aug. 8, 1966, Ser. No. 570,745. The portion of the term of the patent subsequent to May 24, 1983, has been disclaimed.

Int. Cl. C07c *47/06*

U.S. Cl. 260—604 AC — 11 Claims

Hydrocarbon olefins are oxidized to carbonyl compounds by contacting the olefin and oxygen with a liquid phase reaction medium containing water, a carboxylic acid and as the only catalyst components a Group VIII noble metal and an alkali metal ammonium or hydrogen chloride or bromide. The reaction proceeds at a high conversion rate despite the absence of any recognized redox agent for the Group VIII noble metal to produce acetaldehyde from ethylene, acetone from propylene and methylethyl ketone from butene.

3,668,258
SULFUR-CONTAINING POLYARYL POLYPHENOLIC COMPOUNDS AND PROCESS

Howard A. Hageman, Southbury, Conn., assignor to Uniroyal Inc., New York, N.Y.

Filed Mar. 17, 1969, Ser. No. 807,956

Int. Cl. C07c *149/36*

U.S. Cl. 260—609 F — 17 Claims

The compounds are of the class of thiobis(beta-aryl-alkylene)diphenols and chain-extended polythiopoly-phenols derived therefrom. They are useful as anti-oxidants in compositions containing unsaturated rubbers — that is, so-called diene rubbers. A typical compound of the class is 4,4'-thiobis(beta-phenyl-ehtylene)diphenol, made by condensing bis(beta-chloro-phenethyl)sulfide (1 mole) with phenol (2 moles). Chain extension is apt to occur by reaction of the first-formed mono-thio diphenol with additional amounts of the dichloro coupling agent and the starting phenol, forming polythio polyphenolic compounds having repeated alternating units of the coupler and the the phenol moieties.

3,668,259
1,3,3-TRIMETHYL-BIS (α-t-BUTYLPEROXYISOPROPYL)-1-PHENYLINDANE

Frederick G. Schappell, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of application Ser No. 741,850, July 2, 1968. This application Dec. 31, 1969, Ser. No. 889,685

Int. Cl. C07c *73/06*

U.S. Cl. 260—610 B — 7 Claims

1,3,3-Trimethyl-bis(α-t-butylperoxyisopropyl)-1-phenylindanes in which the α-t-butylperoxyisopropyl groups are attached in the 6- and 4'-, 6- and 3'-, 5- and 4'-, and 5- and 3'-, 7- and 4'-, or 7- and 3'-positions are heated in contact with curable polymers whereby crosslinking of the polymer is effected.

3,668,260
SUBSTITUTED TETRACHLOROBENZENES

Friedrich Becke, Heidelberg; Adolf Flahcer, Mutterstadt; Helmut Hagen, and Guenter Scheuerer, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

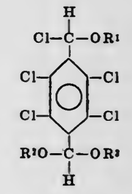
Filed May 8, 1970, Ser. No. 35,877

Claims priority, application Germany, May 14, 1969, P 19 24 530.8

Int. Cl. C07c *43/28*

U.S. Cl. 260—611 A — 2 Claims

New and valuable substituted thetrachloro-benzenes having the formula



where R^1, R^2 and R^3 are identical or different and each denotes an alkyl radical, herbicides containing these compounds, and a process for controlling the growth of unwanted plants with these compounds.

3,668,261
NITRATION PROCESS FOR PHENOLIC COMPOUNDS

Ernest Albert Harvey, Beaver Falls, N.Y., and James Frederick Russ, North Brunswick, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Original application Nov. 24, 1965, Ser. No. 509,629, now Patent No. 3,519,693, dated July 7, 1970. Divided and this application Dec. 17, 1969, Ser. No. 886,040

Int. Cl. C07c *79/24*

U.S. Cl. 260—622 R — 2 Claims

A phenolic compound, selected from phenol and m-cresol is nitrated to produce a high yield of paranitrated phenolic compound by a process comprising (1) providing a mixed acid solution having defined concentrations of HNO_3, HNO_2 and H_2SO_4, (2) adding the phenolic compound to said solution in a manner to avoid formation of an oil-phase therein while maintaining the temperature of the solution at from −20° to +25° C., the amount of phenolic compound added not exceeding 5 moles per liter of the acid solution and the concentration of HNO_2 in said solution always being 1 mole per liter in excess of the phenolic compound added, and (3) recovering the paranitrated phenolic compound product from the reaction mixture.

3,668,262
HIGH DENSITY FLUOROBROMOALKANES FOR GYROSCOPE FLOTATION

Albert L. Dittman, Hackensack, N.J., assignor to Halocarbon Products Corporation

Filed Sept. 8, 1969, Ser. No. 855,999

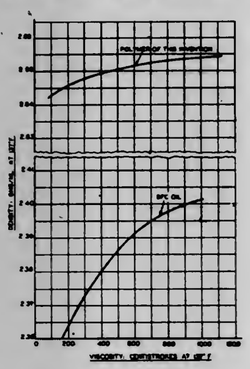
Int. Cl. C07c *19/08*; C08f *3/20*

U.S. Cl. 260—653.1 T — 5 Claims

Totally substituted fluoro-bromo hydrocarbons useful as gyroscopic damping and flotation oils are obtained by react-

ing tetrabromomethane with bromotrifluoroethylene or tribromofluoromethane with bromotrifluoroethylene in the presence of ultraviolet radiation.

Normal tetrabromotetrafluoropropane and normal pentabromoheptafluoropentane are specifically claimed.



A polymer separated from the reaction products and having the formula:

$$CFBr_2(CF_2CFBr)_nCF_2CFBr_2$$

where $n = 3$ to 10 is particularly useful as a gyroscopic flotation oil because it has a rather high density which changes very little with the molecular weight of the polymer.

3,668,263

ORGANOLITHIUM POLYMERIZATION INITIATORS AND USE THEREOF IN POLYMERIZATION PROCESSES

Robert C. Morrison, and Conrad W. Kamienski, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Filed Jan. 19, 1970, Ser. No. 4,126
Int. Cl. C07f 1/02; C08d 3/04
U.S. Cl. 260—665 R **24 Claims**

Polymerization initiator compositions comprising reaction products of C_3–C_{12} alkyllithiums with monomers from the group of polymerizable conjugated dienes and polymerizable vinyl-substituted aromatic compounds in a medium of aliphatic, cycloaliphatic or aromatic hydrocarbons and/or aliphatic tertiary monoamines or aryl ethers, the conjugated diene and vinyl-substituted aromatic compound portion of said initiator compositions being relatively nonpolymeric. Such initiator compositions are highly effective for the productions of polymers of conjugated dienes and/or vinyl-substituted aromatic compounds.

3,668,264

PRODUCTION OF ALKYLBENZENES

Starling K. Alley, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed July 15, 1969, Ser. No. 842,007
Int. Cl. C07c 3/52
U.S. Cl. 260—671 **15 Claims**

Alkyl benzenes are produced from a cycloalkane, benzene or an alkylbenzene having a lower degree of alkylation by contacting the feedstock with a zeolitic composition of alumina and silica in the absence of any hydrogenating component and at a temperature from about 400° to 700° F. The contacting is performed at a space velocity from about 1 to about 10 liquid volumes per volume per hour and a pressure from about 1 to 100 atmospheres in the absence or presence of hydrogen. It is believed that the contacting under the aforedescribed conditions dehydrogenates the cycloalkanes and fragments some of the aromatic rings. The resulting fragments are active in alkylating remaining aromatic rings to thereby increase the degree of alkylation of the feedstock.

3,668,265

DISPROPORTIONATION OF ALKYLBENZENES

Donald C. Tabler, and Marvin M. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 14, 1970, Ser. No. 2,971
Int. Cl. C07c 3/62
U.S. Cl. 260—672 T **11 Claims**

Disproportionation of alkylbenzenes is promoted by the use of catalysts prepared from antimony salts, optionally with cobalt or nickel salts, on alumina.

3,668,266

SODIUM MORDENITE SEPARATION OF PARA-XYLENE

Nai Yuen Chen, Cherry Hill, and Stanley J. Lucki, Runnemede, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 340,789, Jan. 28, 1964, now abandoned, which is a division of application Ser. No. 838,023, June 19, 1969, now Patent No. 3,524,895, dated Aug. 18, 1970. This application Nov. 26, 1969, Ser. No. 877,577
Int. Cl. C07c 7/00
U.S. Cl. 260—674 **1 Claim**

An improved separation of para-xylene from a mixture of para-meta-xylene is achieved by passing the mixture through an adsorption zone of aluminosilicate with a crystalline structure of sodium mordenite for a relatively short adsorption period. The para-xylene is preferentially sorbed.

3,668,267

SEPARATION OF 2,7-DIMETHYLNAPHTHALENE FROM 2,6-DIMETHYLNAPHTHALENE WITH MOLECULAR SIEVES

John A. Hedge, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Jan. 30, 1970, Ser. No. 7,273
Int. Cl. C07c 7/12
U.S. Cl. 260—674 SA **16 Claims**

Two structurally similar polycyclic compounds can be separated by contacting a fluid feed mixture containing said compounds with a partially dehydrated molecular sieve zeolite, the ratio Al/Si of the zeolite being in the range of 0.65–0.2. The polycyclic compounds can be heterocyclic or carbocyclic. For example, selective adsorption of 2,7-dimethylnaphthalene from a dimethylnaphthalene concentrate is obtained with sodium Type Y molecular sieves. 2,6-Dimethylnaphthalene can then be crystallized from the unadsorbed raffinate fraction. Separation factors of 6 to 8 are obtained, indicating the unexpected high selectivity of these particular molecular sieves for this adsorption (especially compared to Type X zeolite).

A continuous method is disclosed for adsorption and desorption of 2,7-dimethylnaphthalene utilizing Type Y zeolite. Type L zeolite can be used for adsorption and desorption of 2,6-DMN.

3,668,268

PARAFFIN CONVERSION

Bernard F. Mulaskey, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 17, 1970, Ser. No. 29,701
Int. Cl. C07c 9/00
U.S. Cl. 260—676 **8 Claims**

A process for disproportionating feed light alkane to obtain higher molecular weight hydrocarbons which comprises contacting the feed light alkane, at elevated temperature and pressure, with a catalyst comprising a molecular sieve composited with a Group VIII noble metal. Preferably the contacting is carried out in the presence of H_2O.

3,668,269

PROCESS FOR DISPROPORTIONATING PARAFFINIC HYDROCARBONS TO YIELD PRODUCTS CONTAINING ISO-PARAFFINIC HYDROCARBONS

Frank J. Chloupek, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,330
Int. Cl. C07c 9/00
U.S. Cl. 260—676 R **13 Claims**

A process for disproportionating paraffinic hydrocarbons containing three to seven, four to five, carbon atoms in a hydrogen atmosphere to yield products containing iso-paraffinic hydrocarbons containing one more and hydrocarbons containing one less carbon fragment per molecule is disclosed. In the process, the paraffinic hydrocarbon is contacted in a hydrogen atmosphere at about 700° to 900° F. with a solid, acidic catalyst comprising a minor, catalytically effective amount of a platinum-group metal and containing a hydrogen or metal exchanged crystalline aluminosilicate having pores in the 8 to 15 A range and a mole ratio of silica-to-alumina of greater than about 2 to 1 and a solid oxide support. The catalyst can contain from about 1 up to about 85 weight percent of the crystalline aluminosilicate. A preferred oxide support is silica-alumina which can further contain a minor amount of alumina such as an activated alumina of the gamma family.

3,668,270

OLEFIN PURIFICATION PROCESS

David Eric Martin, Camberley, and Brian Michael Palmer, Shepperton, both of England, assignors to BP Chemicals Limited, London, England

Filed June 18, 1970, Ser. No. 47,350
Claims priority, application Great Britain, July 17, 1969, 35,982/69
Int. Cl. C07c 11/12
U.S. Cl. 260—683 D **9 Claims**

A process for the purification of an olefinic feedstock, particularly a feedstock for a disproportionation process over a rhenium heptoxide supported on alumina catalyst, by contacting the feedstock with a catalyst consisting essentially of a supported alkali metal at a temperature in the range −50° to +80° C and a pressure in the range 0 to 2,000 psig. and a Liquid Hourly Space Velocity in the range 0.01 to 100.

3,668,271

HYDROGENATION OF UNSATURATED HYDROCARBONS USING ION EXCHANGE RESIN CONTAINING ZERO-VALENT METAL AS CATALYST

Werner O. Haag, Trenton, and Darrel Duayne Whitehurst, Raritan, both of N.J., assignors to Mobil Oil Corporation

Original application Oct. 2, 1967, Ser. No. 672,007, now Patent No. 3,578,609, dated May 11, 1971. Divided and this application Mar. 13, 1970, Ser. No. 48,580
Int. Cl. C07c 5/08
U.S. Cl. 260—683.9 **1 Claim**

This specification discloses hydrogenation of unsaturated hydrocarbons. As catalyst for these reactions, an ion exchange resin containing zero-valent metal is employed. In the preparation of the catalyst, an ion exchange resin is contacted with a reducing agent to fix the reducing agent in the resin. Thereafter, the resin is contacted with a soluble metal compound, the metal being from Groups VIII, IB, IIB, IIIB, IVB, VB, VIB, and VIIB of the Periodic Table. The metal of the compound is thereby reduced to the zero-valent state in situ in the resin.

3,668,272

UNSATURATED ETHERS OF POLYALKOXY SILANES AND THERMOSETTING SYSTEMS CONTAINING COPOLYMERS THEREOF

Kazys Sekmakas, Chicago, Ill., assignor to De Soto, Inc., Chicago, Ill.

Continuation of application Ser. No. 519,524, Jan. 10, 1966, now abandoned. This application June 22, 1970, Ser. No. 48,958. The portion of the term of the patent subsequent to Sept. 23, 1986, has been disclaimed.
Int. Cl. C08f 11/04, 35/06; C08g 47/10
U.S. Cl. 260—826 **14 Claims**

Solvent-soluble, heat-hardening, non-gelled resins are provided by etherifying a polymethoxy siloxane with an unsaturated hydroxy-functional compound, with some of the methoxy groups of the siloxane being preserved for subsequent cure. This ether is then copolymerized with other ethylenically unsaturated materials to form a copolymer which includes methoxy groups carried by the siloxane in order to improve the elevated temperature cure of the resin. The preparation of an unsaturated ether by a reaction in which alcohol instead of water is removed coupled with subsequent polymerization enables larger proportions of the resinous siloxane material to be incorporated into the resin.

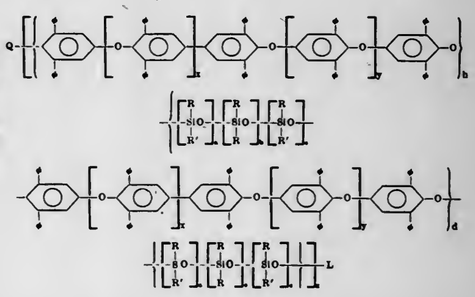
3,668,273

ORGANOPOLYSILOXANE-POLYPHENYLENE OXIDE BLOCK COPOLYMERS & METHOD OF PREPARATION

Karl W. Krantz, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 5, 1971, Ser. No. 121,518
Int. Cl. C08g 47/10, 43/02, 23/16
U.S. Cl. 260—824 R **15 Claims**

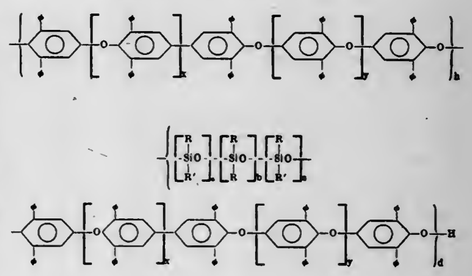
Novel block copolymers are provided having both polydiorganosiloxane segments and polyphenylene oxide segments. The block copolymers are selected from those having the formula:



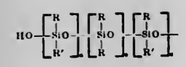
where Q and L are chosen from the group consisting of:

Option 1 – when Q is a single bond, L is a single bond forming a cyclic or infinite polymer;

Option 2 – when Q is HO, then L is:

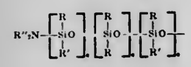


Option 3—when Q is



then L is H

Option 4—when Q is



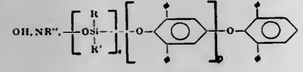
then L is



and those having the formula:



where C is chosen from:



where R is one of a variety of organic substituents, R' is a nonphenyl substituent; each R'' is independently selected from the class consisting of hydrogen, lower alkyl radicals having from one to six carbon atoms, and aryl radicals; ϕ is the phenyl substituent; *a*, *b*, *c*, and *e* are representative of the chain length of the polydiorganosiloxane components; *n*, *p*, *x*, and *y* are representative of the length *of* of polyphenylene oxide components; and *d*, *f*, *g* and *h* are indicative of the number of recurring units in the block copolymer, and each *a*, *b*, *c*, *e*, *n*, *p*, *x*, *y*, *d*, *f*, *g* and *h* are independent of each other, for example, the value of *a* in a polysiloxane block of a particular polymer can be different from the value of a second *a* in the same polymer.

The block copolymers are formed by reacting polyphenylene oxide segments with polydiorganosiloxane segments which are chain terminated with amine groups. Additional length can be obtained through further reaction of the remaining amine groups.

The materials produced according to this invention are useful in the formation of oriented films and fibers and as plasticizers for polyphenylene oxide. The films can be wrapped or extruded onto wires to provide electrical insulation. The films are also heat shrinkable and can be used to package turkeys using a heat shrinkable bag made from the film.

3,668,274

ACRYLIC MODIFIERS FOR POLYCARBONAMIDES

Frederick H. Owens, Willingboro, N.J., and James S. Clovis, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 10, 1970, Ser. No. 71,228

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 G **12 Claims**

An impact resistant nitrogenous polymer comprises a multiphase amine-reactive moiety-containing polymer grafted to a polycarbonamide containing recurring amide linkages as an integral part of the polymer chain; the grafting, by reaction of an amine-reactive moiety of the polymer with an amine end group of the polycarbonamide. Preferably the amine-reactive moiety-containing polymer is a multiphase carboxylic acid-containing polymer comprising (A) a first elastomer phase that is preferably polymerized from monomers comprising; 50 to 99.9 parts by weight alkyl acrylate wherein the alkyl group contains one to 15 carbon atoms, butadiene or substituted butadiene; 0 to 40 parts by weight of other ethylenically unsaturated monomers; 0 to 5 parts by weight of a polyethylenically unsaturated crosslinking monomer; and 0 to 5 parts by weight of a graft-linking monomer; and (B) a final rigid thermoplastic stage containing amine-reactive carboxylic acid groups and polymerized from monomers containing; 1 to 50 parts by weight of a copolymerizable carboxylic acid; 50 to 99 parts by weight of a member selected from the group consisting of alkyl methacrylates, styrenes, acrylonitrile methacrylonitrile and olefins that, when homopolymerized, form polymers having a heat distortion temperature greater than about 20° C.; 0 to 49 parts by weight of another acrylic monomer; and 0 to 40 parts of another copolymerizable ethylenically unsaturated monomer. The impact resistance nitrogenous polymer is characterized by superior hot strength that renders the polymer extrudable, blow moldable and injection moldable.

3,668,275

COATING COMPOSITIONS COMPRISING A POLYESTER FROM 1,4-BIS(HYDROXYMETHYL) CYCLOHEXANE

Franz Riemhofer; Walter Dittmann; Karl-Heinz Hornung, and Ernst-Christian Schutze, all of Marl, Germany, assignors to Chemische Werke Huels A.G., Marl, Germany

Continuation of application Ser. No. 749,348, Aug. 1, 1968, now abandoned. This application Aug. 12, 1970, Ser. No. 63,300

Claims priority, application Germany, Aug. 10, 1967, C 43 079; Feb. 6, 1968, C 44 550

Int. Cl. C08g *37/34*; C07c *69/34*

U.S. Cl. 260—850 **13 Claims**

Coatings having high elasticity and hardness as well as excellent resistance to chemicals from cured compositions of:

(a) aminoplast and

(b) linear polyesters

of a molecular weight of 600 – 3,000 made from 1,4-bis-(hydroxymethyl)-cyclohexane optionally with minor amounts of other diols, and a mixture of (1) 91–33 mol percent aliphatic dicarboxylic acid, and (2) 9–67 mol percent aromatic and/or cycloaliphatic diacarboxylic acid, functional esterifiable acid derivatives of such acids also being usable.

3,668,276

COATING COMPOSITIONS COMPRISING AMINOPLASTS AND POLYESTER BLENDS

Franz Riemhofer; Walter Dittmann; Uwe Biethan; Karl-Heinz Hornung, and Ernst-Christian Schutze, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 23, 1969, Ser. No. 868,901

Claims priority, application Germany, Oct. 25, 1968, P 18 05 189.3; P 18 05 196.2

Int. Cl. C08q *37/34*

U.S. Cl. 260—850 **18 Claims**

Coating compositions resistant to yellowing, solvents, acids and alkalies and having the combination of high elasticity and good hardness are produced by using a mixture of

a. an aminoplast and

b. a polyester having an average molecular weight of 800–5,000 of (I) an alcohol mixture which contains an aliphatic polyol having three to four hydroxyl groups and three to six carbon atoms and a diol which includes 1,4-bis(hydroxymethyl)-cyclohexane, and (II) an acid mixture of one or more cyclic dicarboxylic acids and one or more acyclic dicarboxylic acids or functional acid derivatives thereof.

3,668,277

COATING COMPOSITIONS COMPRISING A MIXTURE OF A POLYESTER AND AMINOPLAST

Franz Riemhofer; Walter Dittmann; Uwe Bethlan; Karl-Heinz Hornung, and Ernst-Christian Schutze, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 23, 1969, Ser. No. 868,926

Claims priority, application Germany, Oct. 25, 1968, P 18 05 190.6

Int. Cl. C08g *37/34*

U.S. Cl. 260—850 **16 Claims**

Coating compositions resistant to yellowing, solvents, acids and alkalies having the combination of a high elasticity and good hardness are produced by using a mixture of

a. an aminoplast and

b. a polyester having an average molecular weight of between 600 and 3,000 of

I. an alcohol mixture which contains 1,4-bis(hydroxymethyl)cyclohexane and another aliphatic or cycloaliphatic diol, and

II. an acid mixture of one or more cyclic dicarboxylic acids and one or more acyclic dicarboxylic acids or functional acid derivatives thereof.

3,668,278

BLENDS OF POLYOLEFINS AND POLYAMIDES

Alberto Bonvicini, Terni, and Giuseppe Cantatore, Collescipoli, both of Italy, assignors to Montecatini Edison S.P.A., Milan, Italy

Filed Sept. 29, 1970, Ser. No. 76,646

Claims priority, application Italy, Oct. 1, 1969, 22766 A/69

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 L **4 Claims**

A new class of basic polyamides having a molecular weight between about 2,000 and 200,000. The polyamides are prepared by first reacting an acrylic or methacrylic ester with a monoamine and then further reacting the product obtainable with a polyamine. The polyamides are suitable for use as tinctorial modifiers for polymeric materials and particularly for crystalline polyolefins consisting essentially of isotactic macromolecules.

3,668,279

PROCESS FOR COUPLING LIVING LITHIOPOLYMERS

Frederick C. Loveless, Oakland, and Roy E. Hartz, Jefferson, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 885,301, Dec. 15, 1969, now abandoned. This application July 6, 1970, Ser. No. 52,743

Int. Cl. C08f *15/00*, *7/02*; C08d *5/00*

U.S. Cl. 260—879 **12 Claims**

Living monolithio polymers are coupled by the action of certain novel coupling agents (e.g., nitrobenzene, sulfur, dimethyl terephthalate, acrylonitrile, maleic anhydride). For example, styrene is first polymerized in benzene with n-butyl lithium catalyst to form a styrene polymer block (S) followed by addition of butadiene to form a butadiene polymer block (B) copolymerized with the styrene block in the form of a living monolithio block copolymer $SB^{\ominus}Li^{\oplus}$. Then a coupling agent, such as nitrobenzene, is added, forming coupled block copolymer SBCSB where C is a residue of the coupling agent. Coupling of three molecules of living polymer is possible with maleic anhydride, or of four molecules with dimethyl terephthalate.

3,668,280

DYE-RECEPTIVE POLYOLEFIN TEXTILE FIBERS COMPRISING SYNTHETIC HIGH POLYMERS, AND PROCESS FOR THEIR PREPARATION

Alberto Bonvicini, and Giuseppe Cantatore, both of Terni, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Feb. 24, 1970, Ser. No. 13,811

Claims priority, application Italy, Feb. 26, 1969, 13.333 A/69

Int. Cl. C08f *21/12*

U.S. Cl. 260—897 B **20 Claims**

There are disclosed dyeable fibers comprising mixtures of olefinic polymers with terpolymers of (a) vinyl or isopropenyl derivatives of aromatic hydrocarbons, such as styrene, vinyl-toluene, alpha-methylstyrene and the like; (b) alpha, beta-unsaturated nitriles, such as acrylonitrile, methacrylonitrile, and the like; and (c) aromatic and cycloaliphatic hydrocarbons, containing a double vinylenic bond, such as indene, acenanaphthylene, cyclohexene, and the like. The olefin polymer may be, and preferably is, a high molecular weight polypropylene consisting essentially of isotactic polypropylene made up of isotactic macromolecules, i.e., of macromolecules having substantially isotactic structure and being non-extractable with boiling n-heptane. A process for preparing the dye-receptive fibers is also disclosed.

3,668,281

POLYPROPYLENE COMPOSITIONS

William O. Drake, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 25, 1970, Ser. No. 14,194

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 C **8 Claims**

High impact strength polypropylene compositions are prepared by blending polypropylene, a halogenated polyolefin, and a rubbery ethylene-propylene copolymer. These compositions can be made fire-resistant by blending therein a halogenated bis(cycloalkenyl) compound, optionally further with antimony oxide, without loss of desired physical properties.

3,668,282

STABILIZED MIXTURE EMPLOYING N-(BETA-0,0-DIALKYLDITHIOPHOSPHORYL) ARYL SULFONAMIDES

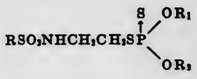
John F. Below, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of application Ser. No. 644,815, June 9, 1967. This application May 8, 1970, Ser. No. 37,388

Int. Cl. A01n *9/36*; C07f *9/16*

U.S. Cl. 260—944 **9 Claims**

A mixture comprising (1) a N-(beta-0,0-dialkyldithiophosphoryl)-aryl sulfonamides having the formula:



wherein R is selected from the group consisting of phenyl, p-tolyl, p-chlorophenyl, 3,4-dichlorophenyl, 2,5-dimethylphenyl m-nitrophenyl, and 2,5-dichlorophenyl and (2) a Lewis base and a process for preparing the mixture by dispersing the Lewis base into the sulfonamide.

3,668,283

PROCESS FOR THE FABRICATION OF NUCLEAR FUEL ELEMENTS

Claude Moreau, Seyssinet, France, assignor to Commissariat A L'Energy Atomique, Paris, France

Filed Sept. 11, 1969, Ser. No. 857,187

Claims priority, application France, Sept. 23, 1968, 167099

Int. Cl. G21c *21/00*

U.S. Cl. 264—0.5 **9 Claims**

A method of fabrication of nuclear fuel elements having high impermeability to fission gases and made up of refractory fuel particles dispersed in a carbonaceous matrix, said fuel particles being coated with a mixture of graphite and an organic diluent by means of a pelletizing process. An outer jacket for containing the coated particles is fabricated by shaping a paste formed of graphite powder and a binder, then baking and impregnating the jacket with pyrocarbon in a single operation by heating to a temperature between 850° and 1,100° C. in a gaseous hydrocarbon atmosphere.

3,668,284
MANUFACTURE OF NUCLEAR FUEL ELEMENTS
John Richard Cox Gough, Weymouth, Dorset; Geoffrey William Meaden, Wareham, Dorset, and Michael Stuart Thomas Price, Weymouth, Dorset, all of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Dec. 2, 1968, Ser. No. 780,602
Claims priority, application Great Britain, Apr. 22, 1968, 18,985/68
Int. Cl. G21c *21/02*
U.S. Cl. 264—0.5 2 Claims

A method of agglomerating particles of nuclear fuel resides in tumbling the particles in a drum or other container while spraying alternately in succession powdered graphite/synthetic resin mixture and a spray of solvent for the resin wherein the proportions of graphite powder may be between 60 and 40 percent of the total powder mix.

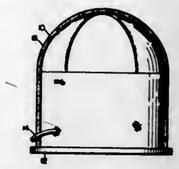
3,668,285
WARM-PRESSING METHOD OF MAKING STACKED FUEL PLATES
C. Trench De Freitas, Sao Paulo, Brazil, and Joseph W. Handwerk, Sepulveda, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 27, 1970, Ser. No. 84,516
Int. Cl. G21c *21/02, 3/18*
U.S. Cl. 264—0.5 4 Claims

A process for rapidly fabricating large numbers of thin, flat fuel plates of uranium dioxide or uranium dioxide-plutonium dioxide for use in a nuclear reactor. Using U_3O_8 or an uranium oxide having an oxygen to metal ratio greater than 2 to 1 as starting material, a plurality of such plates are pressed simultaneously in a metallic die at 800° to 1,000° C. in a reducing atmosphere using spacers between the plates.

3,668,286
FIBERBOARD PRODUCED FROM WOOD PARTICLES HAVING A 5 TO 25 PERCENT MOISTURE CONTENT PRIOR TO STEAMING AND MECHANICAL REDUCTION IN THE FORMATION PROCESS
Stanley H. W. Brooks, and Harry A. Raddin, both of Richmond, Va., assignors to Miller Hofft, Inc., Richmond, Va.
Filed Apr. 14, 1970, Ser. No. 28,503
Int. Cl. B29j *5/02*; D21j *1/06*
U.S. Cl. 264—26 7 Claims

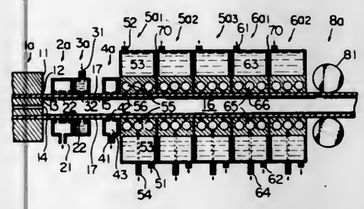
Fiberboard is produced by subjecting a mass of wood particles that have previously been dries to a moisture content in the range of about 5 to 25 percent to steaming and mechanical reduction to form a mass of lignocellulosic material in fibrous form; mixing the latter with a solution of the essentially unreacted ingredients of a thermosetting resin; compressing the resulting mass to desired thickness between separately heated platens; creating between said platens and throughout said mass a high frequency electric field; and maintaining said field for a time sufficient to initiate and at least partially complete the reaction of said ingredients; said solution of essentially unreacted ingredients of thermosetting resin having a viscosity under about 100 c.p.s. and a resin solids content of at least about 45 percent.

3,668,287
METHOD OF CONSTRUCTING FOAMED IN PLACE BUILDING CONTAINING HEATING WIRE
William L. Mackie, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Original application Sept. 25, 1968, Ser. No. 762,463, now Patent No. 3,503,167, dated Mar. 31, 1970. Divided and this application Dec. 29, 1969, Ser. No. 888,552
Int. Cl. B29d *27/04*
U.S. Cl. 264—46 3 Claims



The invention is directed to a method of constructing a shelter and includes securing an inflatable form to a base element, inflating the form, applying a releasing agent to the form, positioning heating wires over the form, spraying polyurethane foam over the form, removing the form after curing said foam and then positioning a door and windows in the structure. The sprayed polyurethane foam may include an inner layer of non-interconnected cells and an outer layer of interconnected cells which permits a cooling effect when moisture is deposited on the structure.

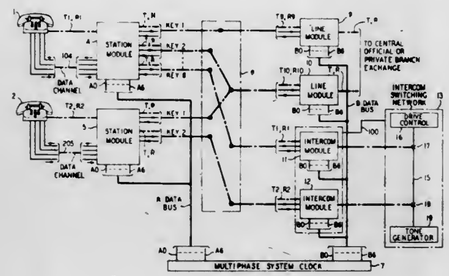
3,668,288
METHOD FOR MAKING THERMOPLASTIC SYNTHETIC RESIN HOLLOW STRUCTURE ARTICLES
Keiichi Takahashi, 340-656-3 Nakakakubu, Ichikawa-shi, Japan
Filed July 30, 1969, Ser. No. 846,089
Claims priority, application Japan, Apr. 2, 1969, 44/24738; Nov. 18, 1968, 43/83772; Dec. 18, 1968, 43/92328
Int. Cl. B29c *17/07, 25/00*; B29d *23/04, 27/00*
U.S. Cl. 264—47 24 Claims



A method for continuously making hollow structures of thermoplastic synthetic resin. The resin is heated and extruded to form a continuous hollow structure. Fluid coolant is forced onto the outer surface of the structure and subsequently removed so as to provide for cooling of the outer surface of the structure without retaining stress therein due to quick cooling of the structure. The structure is then continuously shaped in an externally disposed suction mechanism while slowly cooling the structure. The structure may then be reheated to remove any residual stress.

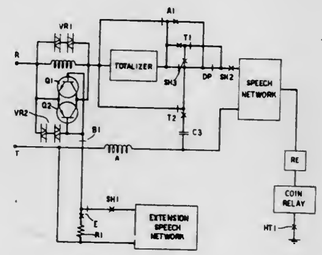
ELECTRICAL

3,668,289
KEY TELEPHONE SYSTEM LINK SWITCHING NETWORK
Francis Michael Fenton, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 3, 1970, Ser. No. 60,505
Int. Cl. H04m *3/56*
U.S. Cl. 179—1 CN 12 Claims



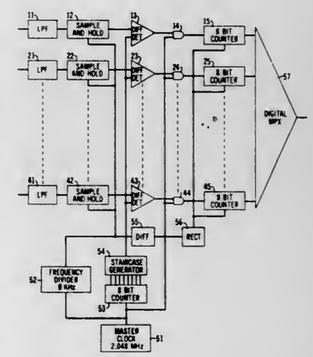
A conference link for a plurality of telephone station sets is disclosed which eliminates the need for battery feed coils by switching in a current supply transistor respective to each telephone set incident to connecting that set to the link. The current supply transistor is biased for constant current operation to provide an additional increment of constant current for each telephone set communicating over the link.

3,668,290
COMBINATION COIN TELEPHONE AND EXTENSION CIRCUIT
Ralston Hodges Robertson, Jr., Bayou La Batre, Ala., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 22, 1970, Ser. No. 57,154
Int. Cl. H04m *17/00*
U.S. Cl. 179—6.3 R 5 Claims



A circuit for connecting an extension telephone across the terminals of a coin telephone employs the combination of an in-line relay in parallel with a solid state switch to ensure access to the telephone line by the coin telephone irrespective of whether the extension is in use and to preclude monitoring of the coin telephone by the extension.

3,668,291
PULSE CODE MODULATION MULTIPLEX SYSTEM
Matthew Francis Siana, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 22, 1971, Ser. No. 108,791
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 AP 3 Claims

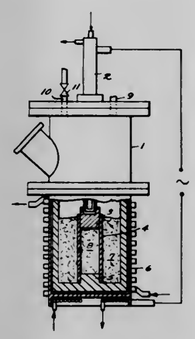


A multichannel pulse code modulation time division multiplex system samples the signals appearing in each of the channels substantially simultaneously at a predetermined rate and encodes the signal samples obtained from all of the channels substantially simultaneously with the aid of a clock pulse generator common to all channels, a repetitive staircase waveform generator common to all channels driven by the clock pulse generator, a separate pulse counter in each channel, a gate in each channel for supplying pulses from the clock pulse generator to the pulse counter, and comparison means in each channel to inhibit transmission through the gate whenever the staircase waveform exceeds the magnitude of the signal sample in the same channel.

3,668,292
APPARATUS FOR VAPOR FREE MELTING OF URANIUM CARBIDE OR PLUTONIUM CARBIDE
Axel Krauth, Wurzburg, and Hans-Jurgen Teiwes, Ruckingen, both of Germany, assignors to Nukem Nuklear-Chemie and-Metallurgie GmbH, Wolfgang bei Hanau (Main), Germany
Filed July 17, 1970, Ser. No. 55,876
Int. Cl. H05b *3/60*
U.S. Cl. 13—23 6 Claims

There is provided an apparatus for the vapor free melting of fuel carbides consisting of uranium carbide, plutonium carbide or mixtures of these carbides. The apparatus comprises a cylindrical melting tube and two posts serving as

electrodes which form a closed reaction space. At least one electrode is moveable and the volume of the reaction space is



changed during the melting process by readjustment of the upper post to the volume of the inserted material.

3,668,293

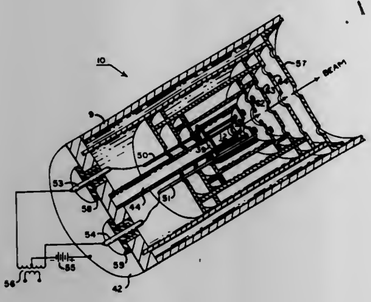
MOLECULAR FREQUENCY STANDARD

Helmut W. Hellwig, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Original application Apr. 16, 1968, Ser. No. 721,776, now Patent No. 3,578,968, dated May 18, 1971. Divided and this application Mar. 17, 1970, Ser. No. 24,965

Int. Cl. H05b *7/00*

U.S. Cl. 13—31 **5 Claims**



A molecular beam source for a molecular beam tube frequency standard using a barium oxide molecule of the form $Ba^{138}O^{16}$ having spinless atoms and using electrostatic state selection, which source includes a thin-walled refractory electrically conductive oven tube containing $Ba^{138}O^{16}$. The oven tube, which is chemically inert to barium oxide, is surrounded by a thermionic electron emitter which is made negative with respect to the oven tube. Electrons emitted from the electron emitter bombard the oven tube and heat the barium oxide to a temperature at which $Ba^{138}O^{16}$ molecules are evaporated.

3,668,294

ELECTRONIC SYNTHESIS OF SOUNDS EMPLOYING FUNDAMENTAL AND FORMANT SIGNAL GENERATING MEANS

Akio Kameoka, Kawasaki; Shinichi Nakamura, Yokohama; Shinichi Makino, Fujisawa; Kenjiro Endoh, Tokyo, and Mamoru Kuriyagawa, Kamakura, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 15, 1970, Ser. No. 54,889

Claims priority, application Japan, July 16, 1969, 44/55781; Oct. 7, 1969, 44/79686; Sept. 30, 1969, 44/77535

Int. Cl. G10h *5/06*

U.S. Cl. 84—1.01 **13 Claims**



A sound generating system comprising means for producing signals of fundamental frequency, and means for generating formant frequency signals of frequency higher than the fundamental frequency which starts oscillation synchronizingly with said signal of fundamental frequency and continues said oscillation only for a desired length of time during the period of said signals of fundamental frequency, wherein said signals of formant frequency are generated at the same starting point for each frequency interval as said signals of fundamental frequency. Sounds thus produced consist of a fundamental frequency component and harmonic components, and the frequency spectrum of said sounds presents a peak in a formant frequency, so that the system eliminates the necessity of using an electrical filter having complicated frequency characteristics in electrically producing sounds having a complicated frequency spectrum.

3,668,295

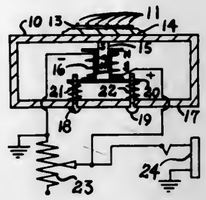
ELECTROMAGNETIC AUDIO PICKUP FOR STRINGED MUSICAL INSTRUMENTS, WITH VOLUME CONTROL MEANS, AND SUITABLE FOR USE WITH ANY TYPE STRINGS

Paul Daniel Broussard, 1009 North Hebert, Kaplan, La.

Filed Mar. 31, 1971, Ser. No. 129,878

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.15 **10 Claims**



Basically, in a stringed musical instrument comprising a resonator, top, or belly with strings tensioned between tuning means, string supporting means, and string anchoring means; the improvement comprising an electromagnetic audio pickup suitable for use with any type strings. Said pickup comprises a magnet secured to the said resonator, top, or belly, and a hollow core coil which is magnetically linked to the said magnet so that the magnetic fields aid, and the said coil is mounted to the instrument back or equivalent thereof in a fixed or adjustable relationship to the magnet secured to the resonator, top, or belly.

3,668,296

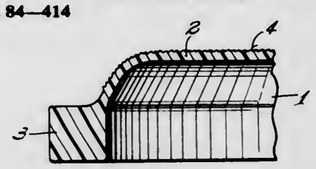
HEAD FOR MUSICAL INSTRUMENT

Andrew C. Criscuolo, 8 Belleview Drive, Derby, Conn.

Filed June 8, 1970, Ser. No. 44,097

Int. Cl. G10d *13/02*

U.S. Cl. 84—414 **6 Claims**



Heads for musical instruments, such as drums, having a vibratile diaphragm section and a peripheral ring section for securing the head to a musical instrument, characterized by molding the head from a moldable synthetic resinous composition as a unitary structure.

3,668,297

LOW-TEMPERATURE ELECTRICAL CABLE ARRANGEMENT

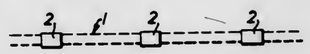
Theodor Adam Buchhold, Wiesbaden, and Eduard Bochenek, Frankfurt am Main, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 14, 1971, Ser. No. 133,826

Claims priority, application Germany, Apr. 17, 1970, P 20 18 404.7

Int. Cl. H01b *7/34, 9/04*

U.S. Cl. 174—15 C **9 Claims**



An low-temperature cable which can be electrically joined to, and structurally connected to, a similar cable within an means. The cable has an electrical conductor formed of a plurality of helically wound individual conductor sections internally supported by spaced support means. Insulation is helically wound in layers about the electrical conductor. The frictional resistance to movement of the electrical conductor within the insulation and over the support means due to temperature changes is reduced because the radial contraction of the insulation is equal to or smaller than the radial contraction of the electrical conductor and the radial contraction of the support means is equal to or greater than that of the conductor.

3,668,298

MULTICONDUCTOR COMMUNICATIONS CABLE

Walter L. Hawkins, Montclair, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 10, 1969, Ser. No. 883,973

Int. Cl. H02g *15/20*

U.S. Cl. 174—23 C **1 Claim**



A multiconductor communications cable includes a hydrophobic material filling the space between primary insulated conductors. Compatible filler-insulation materials designed for long-life stabilization are described. Insulation materials include various ingredients which stabilize the insulation and resist extraction by the filler.

3,668,299

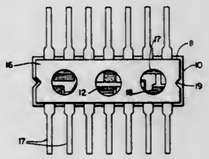
ELECTRICAL CIRCUIT MODULE AND METHOD OF ASSEMBLY

Jack D. McNeal, Long Beach, Calif., assignor to Beckman Instruments, Inc.

Filed Apr. 29, 1971, Ser. No. 138,587

Int. Cl. H05k *5/00*

U.S. Cl. 174—52 PE **14 Claims**



An encapsulated electronic module including a nonconductive substrate having attached thereto a plurality of electrical components and an electrical network of connectors attached to the substrate and forming termination pads adjacent the edges of the substrate to which leads are attached. A flat cover is disposed over the substrate but spaced therefrom; the cover having a hole formed therethrough through which an encapsulation material is inserted between the substrate and cover completely filling the space therebetween. The encapsulation material extends at least partially into the opening in the cover member thereby securely attaching the cover member to the base member and sealing the space between these members.

3,668,300

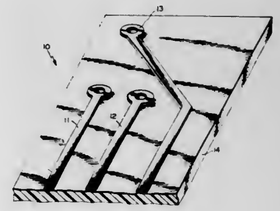
PRINTED CIRCUIT WITH SUBSTRATE OF AN OXYBENZOYL POLYESTER

Bernard E. Nowak, Lancaster; Steve G. Cottis, and James Economy, both of Buffalo, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed May 28, 1969, Ser. No. 828,692

Int. Cl. B32b *27/36;* **H01b** *3/42;* **H05k** *1/00*

U.S. Cl. 174—68.5 **6 Claims**

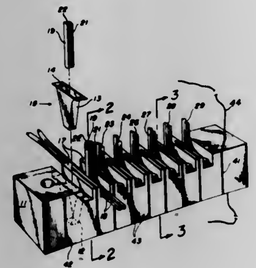


A printed circuit comprising at least one conductor on a substrate of an oxybenzoyl polyester.

3,668,301
MEANS AND METHODS OF JOINING CONDUCTORS

Harry A. Faulconer, 8328 Center Drive, Le Mesa, Calif.

Continuation-in-part of application Ser. No. 316, Jan. 2, 1970, now abandoned , which is a continuation-in-part of application Ser. No. 676,002, Sept. 28, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 594,785, Nov. 16, 1966, now abandoned. This application Sept. 23, 1970, Ser. No. 74,907
Int. Cl. H02g 15/08
U.S. Cl. 174—88 R 17 Claims

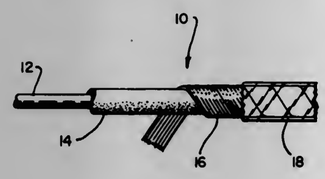


Method and apparatus for organizing and joining conductors of multi-conductor cables such as communication cables. An elongated multiple connector structure having a series of open-channels, the entrance ends of which are intersected by guide channels, each having a releasable holder at one end so that a bundle of wires may be separated, organized and held in the channels in bridging relation to connection sockets. Plugs are forced into the sockets and press bridging portions of the wires therein to strip the insulation and establish permanent electrical connections. Each socket is provided with a sharp edge to shear the excess portions of the wires as the plugs are forced into the sockets.

3,668,302
FLAME RETARDANT TEXTILE COVERED WIRE

Daniel Edmund Boland, Buffalo, N.Y.; Leonard S. Dewees, Baltimore, Md., and LeRoy M. Towsley, Berkeley Heights, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 25, 1968, Ser. No. 747,757
Int. Cl. H01b 7/00; C09d 5/18
U.S. Cl. 174—121 A 4 Claims

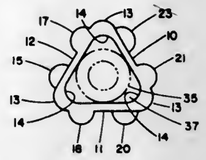


A textile served wire coated with a flame retardant lacquer comprised essentially of a mixture, by weight, of 100 parts cellulose acetate base, 35 parts tricresyl phosphate plasticizer, 42.5 parts tris (2, 3 - dibromopropyl) phosphate flame retardant, and 128.5 parts acetone solvent.

3,668,303
SUPPORTING INSULATOR FOR ELECTRICAL HEATING ELEMENTS

Donald E. Alexander, Knoxville, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.

Filed June 23, 1971, Ser. No. 155,953
Int. Cl. H01b 17/58; H01c 1/02; H05b 3/06
U.S. Cl. 174—138 J 6 Claims

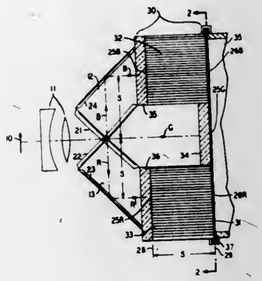


The insulator consists of a body of triangular shape pressed from refractory material and having a non-circular aperture for receiving the heater element. The outer surface of each side of the body is formed with a pair of projections spaced apart axially of the body. Preferably the projections of each pair are located adjacent the apexes of the triangular body and whereby the projections of each pair are also spaced apart in a direction lengthwise of each side.

3,668,304
SINGLE PICKUP TUBE COLOR TELEVISION CAMERA

Robert Lewis Ellenberger, Colts Neck Township, Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1970, Ser. No. 50,571. The portion of the term of the patent subsequent to Oct. 13, 1968, has been disclaimed.
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 8 Claims

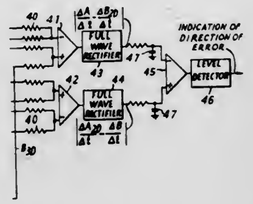


In a multiple-image/single-tube color camera an arrangement of air spaced dichroic layers splits image-forming white light into three distinct-color parallel beams. Fiber optic material is used to translate all of the color beams to a common target plane of the pickup tube upon which the photoconductive surface is deposited. In one embodiment the faceplate of the tube is a composite of fiber optic material and homogeneous glass. In another, the faceplate is formed exclusively of fiber optic material.

3,668,305
TELEVISION CAMERA REGISTRATION

Derek Thomas Wright, Crawley, England, assignor to The Marconi Company Limited, and Standard Telephones & Cables Limited, London, England

Filed Nov. 19, 1970, Ser. No. 90,991
Claims priority, application Great Britain, Nov. 24, 1969, 57,451/69
Int. Cl. H04n 9/08
U.S. Cl. 178—5.4 M 10 Claims

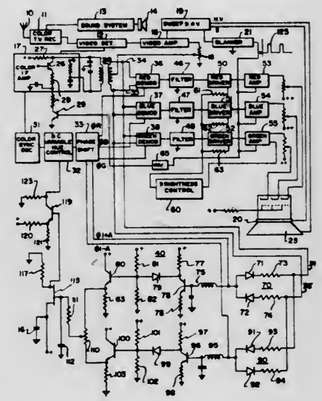


To detect misregistration in the outputs of two or more television camera tubes, the outputs of the tubes are subtracted and differentiated, the resultant being integrated and rectified, and a minimum then being detected in the amplitude of the integrated and rectified signal. The differentiation is achieved by delaying the signals and subtracting the delayed from the undelayed signals, the delay being an incremental delay to detect misregistration in the line scan direction or equal to one or more line periods for the field scan direction.

3,668,306
AUTOMATIC HUE CONTROL FOR A TELEVISION RECEIVER

Robert B. Hansen, Arlington Heights; Thomas W. Ivas, Evergreen Park, and William H. Slavik, Oak Lawn, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 19, 1969, Ser. No. 825,775
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 16 Claims

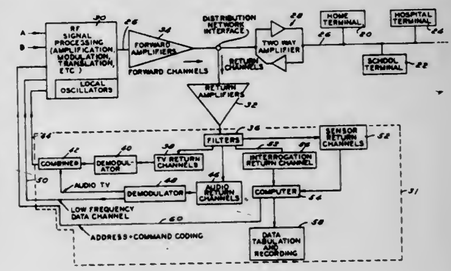


A color television receiver providing for the direct demodulation of the red, blue and green color representative signals includes an additional pair of hue control demodulators for demodulating color difference signals on opposite sides of the I-axis by equal amounts. The outputs of the hue control demodulators are inverted with respect to one another and are supplied to an adder, which provides a DC control voltage indicative of the relative difference in the amplitudes of the signals obtained from the hue control demodulators. This control voltage then is supplied to a DC controlled variable hue control circuit which shifts the relative phase between the color sync oscillator output and the subcarrier to the demodulators by an amount sufficient to maintain the average outputs of the two hue control demodulators equal in amplitude.

3,668,307
TWO-WAY COMMUNITY ANTENNA TELEVISION SYSTEM

William W. Face, Saline; Harold W. Katz, and Murray H. Miller, both of Ann Arbor, all of Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.

Filed Mar. 30, 1970, Ser. No. 24,009
Int. Cl. H04n 7/18
U.S. Cl. 178—5.6 13 Claims



A two-way community antenna or closed circuit television system or community cable television system which permits two-way communication (including voice communication) through a transmission center from and between various terminals, such as schools, homes, hospitals, doctor's offices, community centers, industrial sites and the like. A control center including a properly programmed digital computer continuously interrogates the system over a forward control channel and receives responses from the terminals over a return control channel. The computer also controls transmissions between the transmission center and the terminals and between the terminals via the transmission center. Each terminal is provided with a control unit for communication with the control center. The system utilizes an appropriate bridging amplifier or other suitable means to convert to a two-way link a portion of the transmission cable interconnecting the transmission center and the terminals. The system also contemplates the use of channel allocations between 0 and 300 MHz, it being practical to allocate in this range certain portions for return transmission channels for programs originating at the terminals and certain portions for extra forward transmission channels for special programs originating at the transmission center.

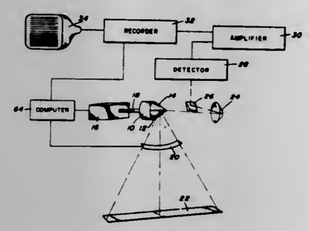
3,668,308
A TELEVISION SYSTEM FOR TERRAIN SURVEILLANCE

Warren T. Burt, and Herman J. Hoffman, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 20, 1970, Ser. No. 56,563
Int. Cl. H04n 3/32, 5/78, 7/02
U.S. Cl. 178—6.6 A 13 Claims

A system for terrain surveillance from an aircraft utilizing a scanning optical system, a TV monitor, and a modified video recorder. A rotating mirror scans a section of the ter-

rain below the aircraft extending transversely to the aircraft flight path and directs the reflected light onto a photocell. The photocell signal forms the input to the video recorder and TV monitor. The TV display is unconventional in that

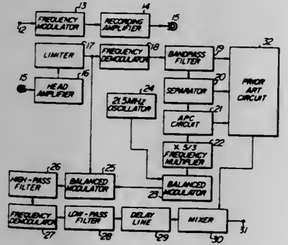


each frame presented has one new scan added and the lowermost old scan is removed and thus the pilot sees on his monitor a terrain picture which advances as the aircraft moves along its flight path.

3,668,309
METHOD AND APPARATUS OF RECORDING AND REPRODUCING ELECTRICAL SIGNALS

Ichiro Arimura, Kyoto, Japan, assignor to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed May 18, 1970, Ser. No. 38,358
Claims priority, application Japan, May 21, 1969, 44/40793; 44/40794
Int. Cl. H04n *5/14, 5/78, 9/02*
U.S. Cl. 178—5.4 CD **7 Claims**



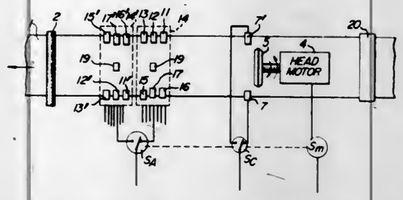
A recording and reproducing system having means for correcting a timing variation error (horizontal jitter) introduced into a reproduced signal as in magnetic recording and reproducing systems by frequency-multiplying a reference signal simultaneously reproduced during the reproducing process up to nearer the carrier frequency of the reproduced signal and using the frequency-multiplied reference signal and signals having frequencies higher than the frequencies of those signals to compensate the timing variation component in the reproduced signal.

3,668,310
MAGNETIC VIDEO RECORDING AND REPRODUCING APPARATUS

Osahiko Yano, Kadoma, and Mitsuaki Ono, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 2, 1970, Ser. No. 42,709
Claims priority, application Japan, June 5, 1969, 44/44779; 44/44778; June 10, 1969, 44/46661; 44/46662
Int. Cl. G11b *5/86, 21/00;* **H04n** *5/78*
U.S. Cl. 178—6.6 A **7 Claims**

A magnetic video recording and reproducing apparatus by which television signals can be recorded and reproduced in the form of an ordinary recording pattern and simultaneously television signals, if necessary, can be recorded in the form of a recording pattern having a mirror-image relationship with

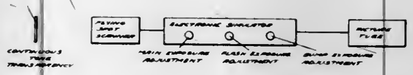


the said ordinary recording pattern so that a master tape adapted for use with a contact transfer method is produced.

3,668,311
METHOD AND SYSTEM FOR SIMULATING HALFTONES

Robert Paul Bigliano, and Karl Lehman Thaxton, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1969, Ser. No. 878,161
Int. Cl. H04n *5/84*
U.S. Cl. 178—6.7 R **24 Claims**

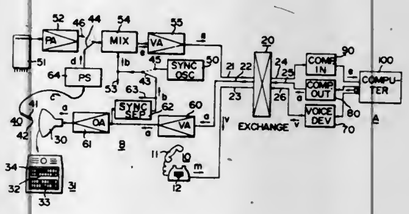


A halftone screen process is electronically simulated to obtain exposure conditions for main and flash and/or bump exposures with different halftone screens and photographic films.

3,668,312
TELEVISION TELEPHONE SYSTEM

Kazuyuki Yamamoto, Tokorozawa, and Ryoichi Matsuda, Tokyo, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Apr. 2, 1970, Ser. No. 25,136
Claims priority, application Japan, Apr. 10, 1969, 44/27239
Int. Cl. H04n *7/00*
U.S. Cl. 178—6.8 **10 Claims**

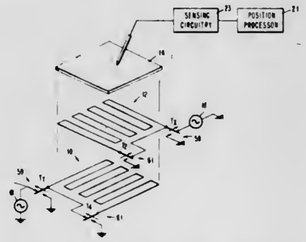


A television-telephone system for information transmission in a subscriber-subscriber communication mode or subscriber-computer communication mode, wherein the information transmission is effected between an information receiving party and a transmitting party, which may be a computer. A position indicating signal can be sent back from the receiving party to the transmitting party by using a light-pen and a signal switching network. The position indicating signal is sent to the transmitting party to indicate a command of the receiving party by displaying the position indicating signal superposed on the transmitted picture, or this indication information may be further processed and utilized by the transmitting party to form a definite digital indication of the position information.

3,668,313
RESISTIVE GRID GRAPHIC DATA TABLET

Herbert Dym, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,462
Int. Cl. G08c *21/00*
U.S. Cl. 178—19 **5 Claims**

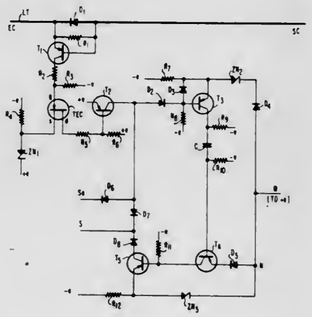


A two-dimensional graphic data entry tablet for transforming a positional information into a digital input to a computer system. The tablet structure consists of two continuous resistance lines superimposed on each other. Each of these lines being in the form of a grid and representing position in one of said two dimensions. A voltage differential is applied to each of the grids in order to create a voltage gradient along the path of the grid wires. An analog positional information is created by sensing grid voltage with a capacitively coupled stylus. By having the stylus viewing area cover a plurality of wires, the sensed potential averages out and represents a position directly related to the center location of the stylus on the faceplate of the tablet. The resistive grid lines provide the dual function of resistive bleeding and presenting a potential gradient to a capacitively coupled stylus.

3,668,314
SUPERVISORY CIRCUIT FOR ELECTRONICALLY MONITORING A TELEGRAPHY LINE

Claude Rousseau, Joinville-le-Pont, France, assignor to C.I.T. Compagnie Industrielle des Telecommunications, Paris, France

Filed Dec. 31, 1969, Ser. No. 889,359
Claims priority, application France, Dec. 31, 1968, 183136
Int. Cl. H04l *25/02*
U.S. Cl. 178—69 G **18 Claims**

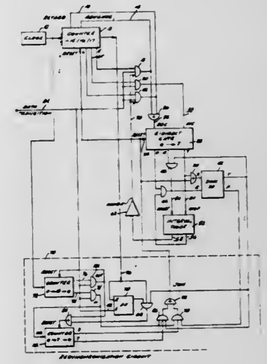


An electronic supervisory circuit indicates the condition of a telegraphy line being supervised without interfering with the transmission of the telegraphy signals. The supervisory circuit employs a holding circuit responsive to the detection of modulated line signals which maintains the output of the supervisory circuit during the periods when the modulated signals are transmitted over the telegraphy line. An auxiliary output is also employed to indicate the instantaneous condition of the line.

3,668,315
RECEIVER TIMING AND SYNCHRONIZATION SYSTEM

James O. Heltzman, Fullerton, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 15, 1970, Ser. No. 37,790
Int. Cl. H04n *1/36*
U.S. Cl. 178—69.5 R **14 Claims**



A receiver timing and synchronization system useful in a digital data communication system for providing timing signals synchronized with received digital data. The receiver system includes means for providing small incremental changes in the locally generated timing signals to maintain synchronization as well as means for enabling synchronization to be maintained during signal fades. In addition, means are provided for rapidly re-synchronizing the timing signals to data received from a new transmitter. Incremental timing signal adjustments are made by determining whether a data signal transition occurs during an early, on time, or late portion of a bit period. If a data transition occurs during early or late portions, the timing signal is either incrementally advanced or retarded. If data transitions occur during corresponding portions of n successive bit periods outside of the on time portion, then the timing signal is jammed into synchronization with the recurring data transitions.

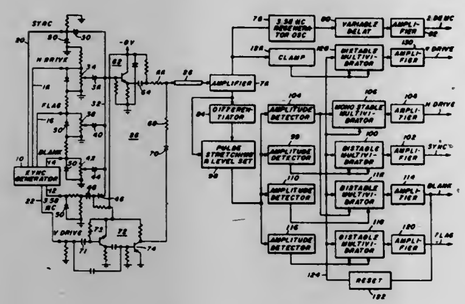
3,668,316
TRANSMISSION SYSTEM FOR OVERLAPPING PULSES

Irving Moskovitz, Roslyn Heights, N.Y., assignor to Riker Communications Inc.

Filed Jan. 31, 1968, Ser. No. 701,955
Int. Cl. H04n *5/06;* **H03k** *5/20, 5/08*
U.S. Cl. 178—69.5 TV **8 Claims**

A system for combining discrete, overlapping electrical signals and for transmitting the signals over a single conduc-

tor rather than a plurality of conductors, the composite transmitted signal being decoded at a receiving station into the discrete separate signals from which it was formed.



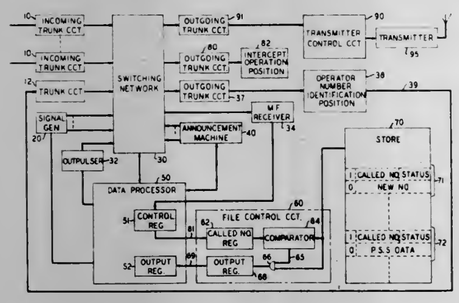
ERRATA

For Classes 179—1, 179—15 OAP, and 179—1 OCM see: Patent Nos. 3,668,289 thru 3,668,291

3,668,317
AUTOMATIC PERSONAL SIGNALING SYSTEM

Alfred Emanuel Vitalo, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 7, 1970, Ser. No. 35,402
Int. Cl. H04m *3/50*
U.S. Cl. 179—18 BF **5 Claims**



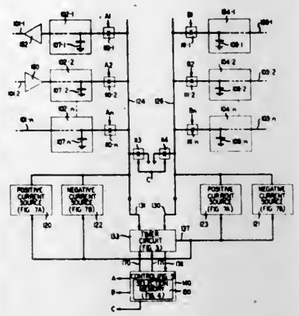
Telephone switching system automatic intercept facilities are utilized in combination with radio signal transmission circuitry to provide personal signaling or paging service.

3,668,318
TIME DIVISION HYBRID ARRANGEMENT

Floyd Kenneth Becker; James Owen Dimmick; Theras Gordon Lewis, and John Francis O'Neill, all of Boulder, Colo., assignors to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Dec. 14, 1970, Ser. No. 97,887
Int. Cl. H04j *3/02*
U.S. Cl. 179—15 AA **9 Claims**

In a time division hybrid arrangement first and second storage devices of one group of storage devices connectable to a common bus are connected to an outgoing line and an incoming line respectively. A third storage device of a group of storage devices connectable to a second common bus is coupled to a bidirectional line. During a first time slot, the first and third storage devices are connected to their common buses; the signal difference between the first and the third storage devices is detected; and distinct signals are applied to the first and third storage devices for a time interval corresponding to the detected difference. In the immediately

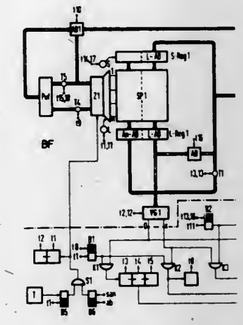


successive time slot, the second and third storage devices are connected to their common buses; the signal difference between the second and third storage devices is detected; and distinct signals are applied to the second and third storage devices for a time interval corresponding to the detected difference in the immediately successive time slot.

3,668,319
CENTRAL COMMAND GENERATOR FOR TIME DEPENDENT PROGRAM CONTROLLED FUNCTIONAL SEQUENCES IN TELECOMMUNICATION EXCHANGE INSTALLATIONS

Peter Gerke, Grafelfing; Hans Baur, Munich; Karl Rutkowski, Pullach; Hans-Eugen Binder, Gauting; Helmut Palsa, Oberbachern, and Hartmut Fablanke, Dusseldorf-N, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 21, 1969, Ser. No. 826,432
Claims priority, application Austria, May 24, 1968, A 5014/68
Int. Cl. H04m *15/00*
U.S. Cl. 179—18 ES **8 Claims**

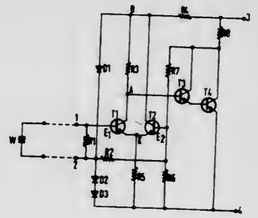


A central command generator for control commands of time-dependent program controlled functional sequences in exchange installations, the command generator having a pulse generator and at least one counting register with individual stages. At least one separate storage segment is assigned to each individual stage. Means are provided to register the identification addresses of the control commands after the expiration of a predetermined time interval or for the counting off of predetermined time intervals, in the corresponding storage segment assigned to that stage of the counting register which follows the stage identified by the counting register, by a number of stages equal to the quotient of the associated time interval and the basic period of the counting register.

3,668,320
CONNECTION ARRANGEMENT FOR A TELEPHONE MICROPHONE AMPLIFIER WITH POWER SUPPLY CONNECTED TO THE OUTPUT SIDE OF THE AMPLIFIER

Wolfgang Duck, deceased, late of Munich, Germany (by Hertha Duck, heir), assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 11, 1969, Ser. No. 856,933
Claims priority, application Germany, Sept. 24, 1968, P 17 62 924.2
Int. Cl. H03f *3/10*
U.S. Cl. 179—1 A **2 Claims**

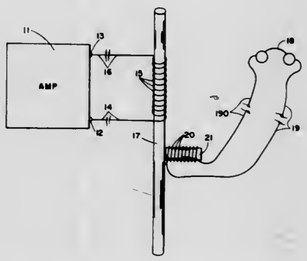


A speech amplifier for telephone microphones including an input direct coupled, differential amplifier, and an output Darlington-connected amplifier, with the operating points stabilized by forward-biased diodes.

3,668,321
MAGNETIC COUPLER

Henry C. Lang, 73 Winter Street, Waltham, Mass.

Filed Aug. 11, 1970, Ser. No. 62,858
Int. Cl. H01f *27/26*
U.S. Cl. 179—1 PC **6 Claims**

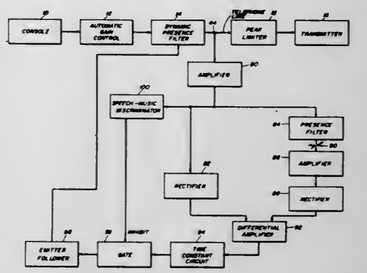


An easily attachable and detachable coupling for electrical systems, such as earphones to audio amplifiers, comprising a coil on a magnetically soft ferromagnetic body and a second coil mounted on a permanent magnet. The first coil can be connected to an audio signal and the second coil connected to a pair of earphones.

3,668,322
DYNAMIC PRESENCE EQUALIZER

Richard G. Allen, Pound Ridge, N.Y., and Emil Torick, Darien, Conn., assignors to Columbia Broadcasting System, Inc.

Filed June 18, 1970, Ser. No. 47,214
Int. Cl. H03g *3/24*
U.S. Cl. 179—1 VL **14 Claims**

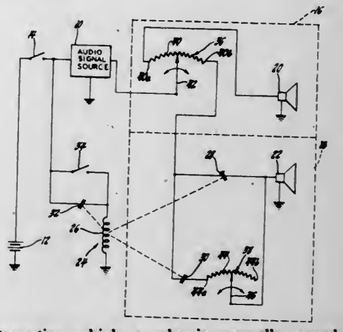


A speech processing device operative to correct deficiencies in speech programs caused by inadequate energy in the "presence band." The device determines the relative amount of total signal energy in the presence band, and, if it is inadequate, automatically boosts the amplitude of presence band components to a level to obtain a more optimum spectral distribution. The circuit is designed to operate with an automatic speech-music discriminator which inhibits control action during music programming.

3,668,323
AUTOMOTIVE VEHICLE SOUND DISTRIBUTION SYSTEM

Thomas H. Lee, 2400 South Wabash, and Donald E. Brinkerhoff, 3020 Dellwood Drive, both of Kokomo, Ind.

Filed Oct. 19, 1970, Ser. No. 81,714
Int. Cl. H04r *5/02*
U.S. Cl. 179—1 VE **2 Claims**



In an automotive vehicle, a relay is manually operable to shift control over the sound level of a rear seat speaker from a front seat fader exclusively to a rear seat fader and the front seat fader collectively.

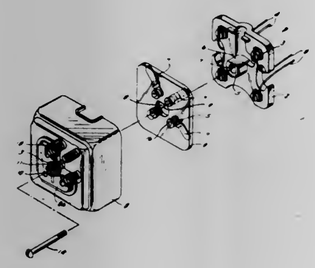
3,668,324
TELEPHONE ADAPTER

Jerome Firestone, Mount Vernon, N.Y., assignor to Saxton Products, Inc., Congers, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,306
Int. Cl. H04m *1/72*
U.S. Cl. 179—1 PC **10 Claims**

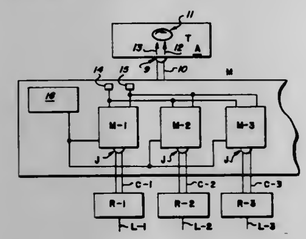
A telephone adapter for use with a telephone terminal unit having a plurality of contacts each of which is connected

with a telephone wire. The adapter has a housing provided opposite an open side thereof with a transverse wall formed with a plurality of apertures therethrough. The number of apertures corresponds to the number of contacts on the terminal unit with which the adapter is to be used. In the interior of the housing is located a plurality of axially compressible helical contact springs each aligned with one of the apertures and so dimensioned as to frictionally engage a contact pin which is pushed through a respective aperture from the outer side of the housing. A plate member of insulating material is



received through the open side in the housing and has at one major surface which faces the springs projecting pins which are each conductively received in an adjacent end of one of the springs, and on the opposite major surface the plate member has contact strips which are each conductively connected with one of the pins and which, when the housing is connected by means of connecting means provided for this purpose with the terminal unit, each engage one of the contacts on the terminal unit.

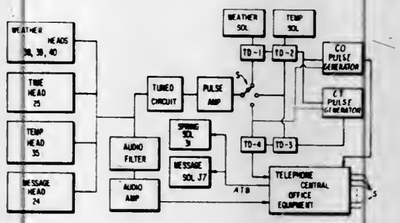
3,668,325
MULTIPLIER CIRCUIT FOR AUTOMATIC TELEPHONE ANSWERING SYSTEM
Peter F. Theis, 70 W. Burton Place, Chicago, Ill.
Filed Mar. 22, 1971, Ser. No. 126,519
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 C **2 Claims**



A multiplier circuit for an automatic telephone answering system allows a single automatic answering unit to service a number of telephone lines simultaneously.

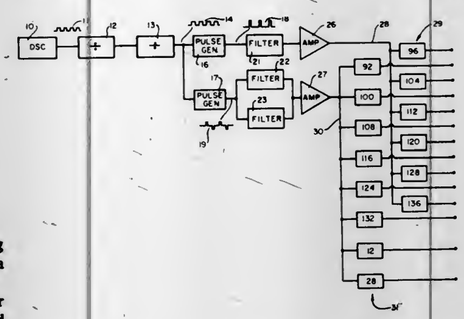
The system provides two message cycles to the first caller and then shuts off. Additional calls may be received and served at the same time, with each hearing the remaining portion of the message cycle then in progress plus one additional complete message cycle.

3,668,326
VARIABLE MULTIPLE PERIODIC AND APERIODIC ANNOUNCEMENT SYSTEM
Ellis H. Bryant, Jr., and Leary W. Smith, both of Atlanta, Ga., assignors to The Audichron Company, Atlanta, Ga.
Filed Feb. 11, 1970, Ser. No. 10,386
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 TA **8 Claims**



An announcing system for providing a family of recorded announcements through telephone central office equipment to one or more telephone subscriber lines. Each announcement selectively includes weather, temperature, or other periodic and aperiodic information segments. Each announcement is changeable in length from a long cycle which includes a full advertising segment to a short cycle in which a major portion or all of the advertising segment is deleted so that the time required for an announcement is shortened. The length of the announcement cycle is shortened in response to the number of subscriber lines waiting to be connected to the announcing system being in excess of the number of subscriber lines which can be connected to the announcing system by the telephone central office equipment. However, the announcing system also provides for deleting segments of an announcement which are in error without changing the length of the announcement cycle or it being apparent that the announcement segment has been deleted. The weather segment of the announcement is determined by different three digit weather codes and by changing the positions of a plurality of weather announcing heads along a weather announcing drum in response to a plurality of resistances corresponding to the three digit weather codes.

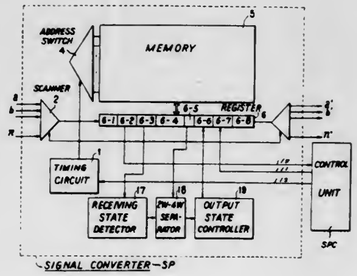
3,668,327
CARRIER SUPPLY FOR MULTIPLEX COMMUNICATION SYSTEM
William H. Euchner, and Eugene Y. Ho, both of San Carlos, Calif., assignors to Farinon Electric, San Carlos, Calif.
Filed Nov. 20, 1969, Ser. No. 878,426
Int. Cl. H04j *1/20*
U.S. Cl. 179—15 FD **4 Claims**



A carrier frequency supply including frequency dividers serves to receive a master frequency and form low frequency

pulses having a high harmonic content. Filter means receive said pulses and filter out unwanted frequencies including the fundamental. The output of the filter is applied to a single harmonic amplifier which amplifies the harmonic frequencies and supplies the same to individual filters, each of which selects a carrier frequency from the harmonic frequencies.

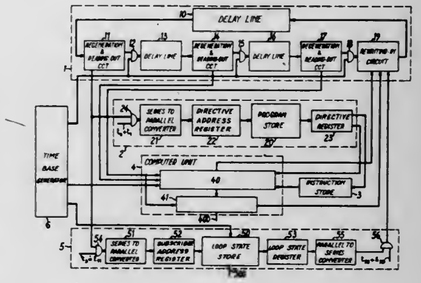
3,668,328
TIME-DIVISIONAL CONNECTION SYSTEM FOR A PLURALITY OF DIGITAL COMMUNICATION CIRCUITS
Yukio Nakagome; Hiroichi Teramura; Yasuo Fukata, all of Tokyo, and Sumitoshi Ando, Ohmiya, all of Japan, assignors to Kadusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 26, 1970, Ser. No. 22,805
Claims priority, application Japan, Mar. 26, 1969, 44/22395
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ **4 Claims**



A time-divisional connection system for a plurality of digital communication circuits for connecting time-divisionally, for each communication circuit in a characterwise manner, between one and the other of each pair of two-way digital communication circuits by means of four-wire terminal equipment. The system includes a detector for detecting time-divisionally, for each communication circuit, whether or not a time-serial character exists at one of the input and output terminals of the four-wire terminal equipment for each communication circuit, and means responsive to the output of the detector for interrupting one of two paths from the input terminals to the output terminals of each communication channel in the four-wire terminal equipment during the duration of the detected character or characters in order to prevent an undersired sending-out or receiving of the detected time-serial character signal.

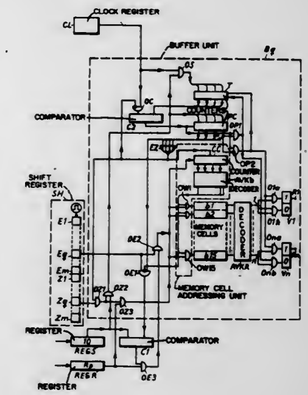
3,668,329
MULTIREGISTER FOR TIME-DIVISION SWITCHING NETWORK
Daniel G. Hardy, 47 residence du Raux, and Daniel E. Goby, 62 residence du Raux, both of Lannion, France
Filed Mar. 31, 1970, Ser. No. 24,299
Claims priority, application France, Mar. 31, 1969, 6909723
Int. Cl. H04q *11/00*
U.S. Cl. 179—18 J **2 Claims**

Multiregister for automatic telephone time-division switching networks having a circulating store for subscriber data in the form of series recorder words, constructions for modifying the breaking or making of subscribers+ circuits, booking access circuit and rebooking circuit for entering modified data, three read-out circuits in the store, and first, second and third series-parallel converters connected to the read-out circuits, whereby a directive address in the circulating store from the first series to parallel converter goes to a processing unit in the second and third series to parallel converter and is modified by the modifying data to permit the modified data to be collected and processed in parallel from the read-out circuits while this modifying data advances into



the circulating store, the data after modification being entered in series.

3,668,330
ARRANGEMENT FOR CONTROLLING DEVICES TRANSMITTING DIGITAL PULSES IN A COMPUTER CONTROLLED TELECOMMUNICATION SYSTEM
Goran Anders Henrik Hemdal, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Dec. 22, 1969, Ser. No. 887,098
Claims priority, application Sweden, Jan. 8, 1969, 185/69
Int. Cl. H04q *1/32*
U.S. Cl. 179—18 ES **4 Claims**

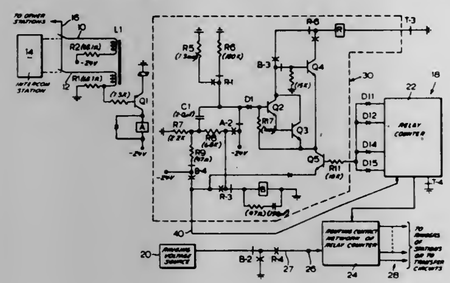


There is disclosed an arrangement in a stored program controlled telephone exchange for controlling devices emitting pulse series corresponding to dialed digits. The arrangement comprises a number of buffer units which are scanned, when a certain digit is to be emitted from a certain device, in order to determine either if there exists an idle unit from which the pulse series emitting device could be controlled or if there exists a unit in which there are a required number of control signals corresponding to the certain digit, in which latter case these signals are supplied to the device in question.

3,668,331
TIMING AND CONTROL CIRCUIT FOR INTERCOM TELEPHONE SYSTEM

Wesley John Warner, Mississauga, Ontario, Canada, assignor to Northern Electric Company Limited, Quebec, Canada

Filed Feb. 22, 1971, Ser. No. 117,549
Int. Cl. H04m 1/26
U.S. Cl. 179—84 R 12 Claims

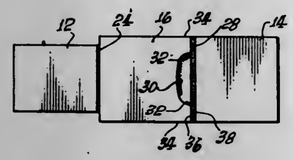


In an intercom telephone system, a timing capacitor located in a charging circuit has one terminal connected in the base circuit of a high gain transistor circuit. A pulsing relay follows dial pulses received and clamps the capacitor terminal voltage during each dial pulse. At the end of dialing, the pulsing relay remains operated, allowing the capacitor terminal voltage to rise sufficiently to trigger the transistor circuit, which operates a ringing relay. The ringing relay causes discharge of the capacitor and release of the transistor circuit, increases the time constant in the charging circuit, and initiates ringing for a timed period until the capacitor recharges sufficiently to retrigger the transistor circuit, which then releases the ringing relay.

3,668,332
MAGNETIC RECORDING HEAT WHICH ACCURATELY DEFINES THE WIDTH OF THE RECORDING TRACK

Harold M. Anderson, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1970, Ser. No. 66,930
Int. Cl. G11b 5/26
U.S. Cl. 179—100.2 C 22 Claims

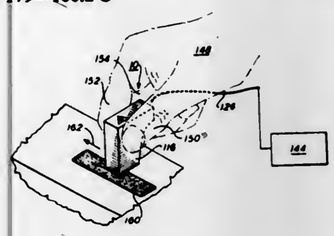


A magnetic recording head having a read-write gap and an erase gap adjacent a common core. The read-write gap is of a predetermined width equal to or less than the width of the common core. Within the common core, in the surface adjacent the erase gap, there is a notch of predetermined width less than the predetermined width of the read-write gap. The notch is of sufficient depth to minimize the erase function of that portion of the erase gap opposite thereto. In operation, the initial width of the magnetically recorded information, as determined by the width of the read-write gap, is cropped to the predetermined width of the notch during erasure. Accurately defined tracks of extremely narrow width may be attained with this recording head thereby permitting an increase in the number of tracks recorded per unit with of the magnetic storage medium.

3,668,333
HANDHELD TRANSDUCER OPERATING STATE INDICATOR

Melvin Kamenir, West Orange, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 862,608
Int. Cl. G11b 5/10, 19/16
U.S. Cl. 179—100.2 C 4 Claims



A handheld magnetic transducer comprises a gun-shaped housing having a directional arrow on one surface. The arrow is illuminated by a light within the housing indicating the operating state of the transducer as determined by a signal device. The housing has dimples in opposed side walls for ease of grasping. The armature is in two parts. Each part has a T-shaped portion the crossbars of which overlap. The armature is inserted within the bobbin and is resiliently held at the crossbars to lock into position with a shim. The bobbin front wall in combination with the armature and shim form the muzzle or reading end of the transducer and has a substantially frustro pyramidal shape. The armature-bobbin structure is held in place by fingers which form a part of the transducer housing. The wires from the coil are secured to clips. The clips or terminal are U-shaped members spring retained on arms of the bobbin. The clips each have a flange portion for engaging an aperture in the arm. The reading portion of the transducer is hemispherical in shape with the gap defining an arc thereon such that the transducer is capable of rotation or positioning about one of three axes while moving relative to a record.

3,668,334
HEARING AID WITH CHANGEABLE BATTERY COVER CONTAINING RF PICKUP COIL

William O. Schwake, Sulphur, Okla., assignor to Radioear Corporation, Canonsburg, Pa.

Filed May 7, 1970, Ser. No. 35,464
Int. Cl. H04r 25/00
U.S. Cl. 179—107 R 9 Claims

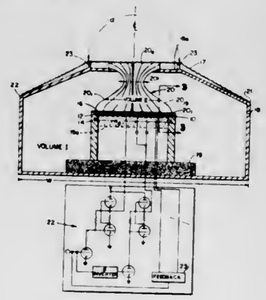


A hearing aid has a pair of spaced electric contacts projecting from its case in a position to hold a battery between them for operating the hearing aid. A removable housing with an open inner end normally fits over these contacts to conceal the battery. The housing contains a radio-frequency pickup detection circuit connected with a radio-frequency pickup coil and provided with a pair of terminals. The hearing aid case has means projecting from it into the housing and detachably engaging the pair of terminals therein to connect the radio-frequency detection circuit with the amplifier in the case. A pickup coil tuned to a different radio-frequency can be connected to the case by simply replacing the housing with a similar one containing such a coil.

3,668,335
ELECTROSTATIC LOUDSPEAKER

Harold N. Beveridge, 1616 Franceschi Road, Santa Barbara, Calif.

Filed June 17, 1969, Ser. No. 833,952
Int. Cl. H04r 19/02
U.S. Cl. 179—111 R 22 Claims



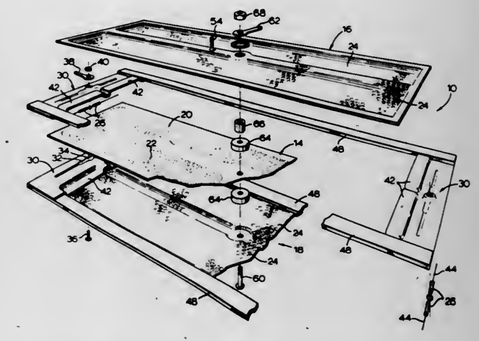
An electrostatic loud speaker system is shown which combines a balanced transducer, an amplifier and an enclosure each of unique construction which together permit the reproduction of frequencies over the full audio range. The electrostatic transducer is shown surrounded by an enclosure that has an outlet passage preferably significantly smaller than the transducer and an acoustic lens preferably guides the sound through the narrow outlet into a wave form of circular cross-section. By these provisions a low resonant frequency for the speaker and wide dispersal of the directional high frequencies are achieved in an enclosure of limited size. The fixed electrodes of the transducer are of substantial thickness and are formed of high dielectric constant material, achieved preferably by molding a lower K matrix with additives raising K and lowering volumetric resistivity. The amplifier is formed of series-connected active devices, one controlled by the other. A third active device amplifies the audio signal. Its output is connected to control the first of the series-connected devices and the output terminal of the amplifier is connected through a resistive feedback path to the output of the third device. A further feedback system employs a carrier wave applied to the diaphragm of the transducer. The resulting signal on the electrodes is differentiated and negatively fed back to damp speaker response at low frequency resonance.

3,668,336
AUDIO SYSTEM INCLUDING ELECTROSTATIC LOUDSPEAKER

William M. D. Wright, Thornhill, Ontario, Canada, assignor to Dayton Wright Associates Limited, Toronto, Ontario, Canada

Filed Dec. 8, 1969, Ser. No. 883,143
Int. Cl. H04r 19/02
U.S. Cl. 179—111 R 17 Claims

An audio system including the last stage of the audio amplifier as an audio frequency voltage output source, a DC source providing a substantially constant charge so as to define and maintain an electrostatic field, and an electrostatic loudspeaker wherein the electrostatic field is maintained between electrodes and the audio frequency voltage output is impressed on the electrostatic field. Negative feedback from the audio voltage output may be provided.

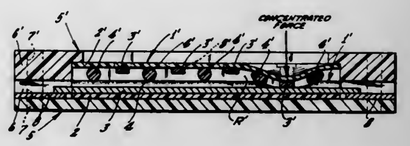


The electrostatic loudspeaker is assembled so as to include spacer blocks on either side of a movable diaphragm, and clamped between two rigid, outer electrodes. An electrical connection is passed through the spacer blocks so that both outer electrodes may have electrical connections made to each, respectively, on one common side of the loudspeaker assembly.

3,668,337
MATRIX SWITCH WITH IMPROVED FLEXIBLE INSULATIVE SPACER ARRANGEMENT

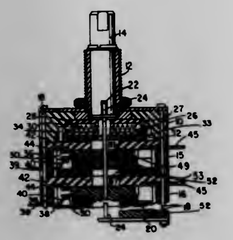
William Y. Sinclair, Frenchtown, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Jan. 18, 1971, Ser. No. 107,192
Int. Cl. H01h 9/26, 13/26
U.S. Cl. 200—5 A 12 Claims



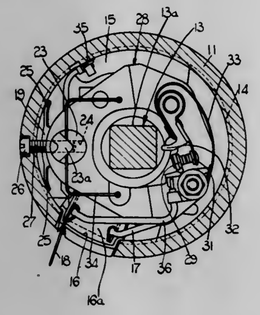
A matrix switch comprises an orthagonal arrangement of two sets of parallel conductors spaced from one another by a plurality of resilient elements. Preferably, the switch is made by securing together two one-sided flat conductor cables, each of which comprises a plurality of alternating, parallel conductors and elastomeric elements, with the heights of said elastomeric elements being greater than the heights of said conductors. Each cross-over point of the spaced conductors forms a switch point which is activated upon depression of the upper conductor into contact with the lower conductor. The orthogonally disposed flat conductor cables are held in a suitable housing including printed circuit board pads to which the conductors are connected, thereby facilitating simultaneous connection of the conductors to conventional multi-pin printed circuit board connectors for connection to the electronics used in conjunction with the matrix switch.

3,668,338
MINIATURE AXIAL BRIDGING ROTARY SWITCH WITH IMPROVED HOUSING
Thomas J. O'Malley, Brookfield, Ill., assignor to Grayhill, Inc., La Grange, Ill.
Filed Feb. 1, 1971, Ser. No. 111,545
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—11 A 11 Claims



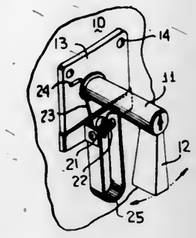
Multi-position electrical switch including switch sections or decks arranged so that any desired number of sections can be used. Each section includes a rotor for selectively bridging switch contacts which can be arranged in different manners as required in different applications. A large number of switch positions, for example, 24, can be provided in a very small switch structure. The individual contacts for the different positions are embedded in a plastic insulating member to provide a solid insulated support therefor.

3,668,339
IGNITION DISTRIBUTOR WITH A SUPPORT PLATE FOR THE CONTACT ASSEMBLY HELD IN POSITION BY ZONE RESILIENCE
William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Aug. 1, 1967, Ser. No. 657,630
Claims priority, application Great Britain, Aug. 23, 1966, 37,673/66
Int. Cl. H01h *19/62*
U.S. Cl. 200—19 7 Claims



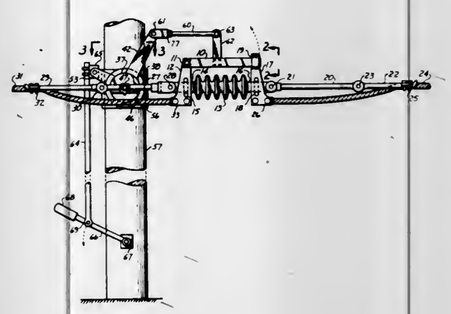
An ignition distributor including a casing, a rotatable shaft extending axially within the casing of the distributor, and carrying the rotor arm of the distributor, and a plate supported within the casing and carrying the contact breaker assembly of the distributor, said plate being engaged with the inner surface of the casing by virtue of its own resilience, the plate being flexed during insertion into the casing and the casing being shaped to locate the plate in its correct position.

3,668,340
LATCH FOR A SWITCH ACTUATOR
Eugene H. Brown, 2518 Hart Street, Dodge City, Kans.
Filed Oct. 9, 1970, Ser. No. 79,440
Int. Cl. H01h *27/00*
U.S. Cl. 200—42 T 2 Claims



A latching device for a manual switch actuator, including a U-shaped retainer which can be placed in either of two conditions, in one of which it leaves the actuator free to be manipulated and in the other of which it restrains the actuator against movement. An elongate spring secured to a base at one end can be hooked at its other end under an edge of the retainer, or released from the retainer. When released the retainer drops and permits the actuator to be operated at will subject to no inhibition. When hooked the spring locks the retainer against actuation, except on forcible displacement of the retainer against the force of the spring.

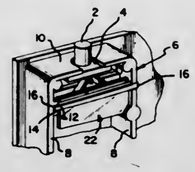
3,668,341
SWITCH FOR POWER LINES ACTUATED BY A ROTATABLE SUPPORTING INSULATOR
Paul A. Smedley, 3780 Canfield Road, Pasadena, Calif., and Anderson B. Smedley, 1191 Morada Place, Altadena, Calif.
Filed Oct. 21, 1970, Ser. No. 82,734
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R 15 Claims



A switch for power lines which is actuated by a supporting rotatable insulator. A first insulator has a bearing at each end, one to be attached to a support such as a pole, and the other to the conductor of the power line. The first insulator is freely rotatable without moving the conductor. A second insulator structurally interconnects two segments of the conductor, and a movable switch blade movable by rotation of the first insulator connects or interconnects the segments.

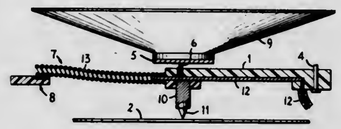
This invention makes possible the innovation of remotely-actuated group operation of a plurality of in-line switches, in addition to its capability of individual operation of a single switch.

3,668,342
CAN OPENER SWITCH
James Pritulsky, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 29, 1971, Ser. No. 167,304
Int. Cl. H01h *21/00, 3/16*
U.S. Cl. 200—52 R 11 Claims



A metal can opener switch housing has slotted, spaced apart side walls for slidably receiving a unitary switch frame of insulating material which, in turn, employs parallel, spaced apart walls. Offset switch terminal supports extend transversely between the walls and adjacent respective ends of the switch frame. First and second similarly configured switch terminals formed of flat strip stock have web portions on the supports and portions extending obliquely beyond one side of the frame and away from respective ends, defining contact ends which extend in opposite directions and are spaced apart due to the spacing of the supports. A leaf spring integral with the housing is engageable by the overlapping or outer terminal upon flexure towards the other side of the frame to provide a high force tending to open the switch.

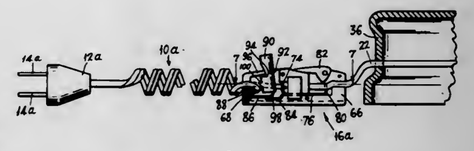
3,668,343
SOUND PLAYBACK DEVICE WITH IMPROVED COIL SPRING PICK-UP ARM
Corrado Raffaeli, Via dei Chiavari 6, and Guiliana Somigli, Via Leopoldo Ruspoli 40, both of Rome, Italy
Filed Jan. 30, 1970, Ser. No. 7,181
Claims priority, application Italy, May 3, 1969, 36888 A/69
Int. Cl. H01h *1/22*
U.S. Cl. 200—52 R 3 Claims



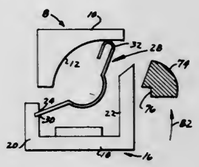
A phonograph has a pivoted pick-up arm and a switch comprising a first contact member protruding from said arm and arcuately movable over at least one second contact member. Operation of said switch actuates circuits for the function of auxiliary devices during playback.

3,668,344
QUICK REPLACEMENT, SLACK TAKE-UP ELECTRIC CORD WITH IMPROVED SWITCH, DETACHABLE ELECTRICAL CONNECTOR MEANS
Herbert G. Lehmann, 5 Kent Road, Easton, Conn.
Filed May 4, 1970, Ser. No. 34,324
Int. Cl. H01h *35/00*
U.S. Cl. 200—52 R 5 Claims

A quick replacement, slack take-up electric cord for lamps, clocks, radios, etc, comprising a length of two-conductor lamp cord coiled and permanently set in a helix, one end of the lamp cord having a conventional two-prong electric plug for insertion in a wall receptacle. The other end of the cord has a special elongate receptacle made with a recess at the end opposite to the entrance of the cord. The receptacle has a push-button switch and a flat base for support on a table surface. Within the receptacle are two metal connector pieces having sharp prongs located at the inner end of the recess. The recess is oblong in cross sectional configuration to receive a freshly cut end portion of the original electric cord from the appliance, where it has been cut close to the appliance. The receptacle also has a manually operable lever to force the said cut end of the appliance cord laterally against the prongs so as to make electrical connection thereto. Replacement of an old cord involves merely cutting the cord an inch or so from the appliance, inserting the cut cord end deeply in the receptacle recess and then operating the lever to impale the cord on the sharp prongs. The plug of the replacement cord is then inserted in the wall receptacle. The receptacle switch will now be conveniently accessible to switch the appliance on and off.



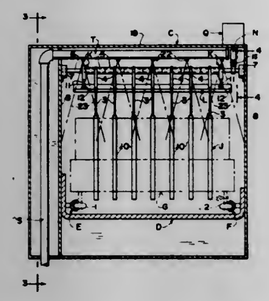
3,668,345
ELECTRIC SWITCH WITH IMPROVED CAM OPERATED PIVOTED CONTACT
Oka Tsumoru, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Oct. 8, 1970, Ser. No. 79,032
Claims priority, application Japan, Oct. 14, 1969, 44/98006
Int. Cl. H01h *1/06, 1/34*
U.S. Cl. 200—6 BB 21 Claims



A switch particularly adapted for use with a variable resistance mechanism comprises a first fixed contact having an arcuate contact edge, a second generally U-shaped fixed contact spaced from said first fixed contact, and a resilient movable contact, one end of which is secured to one leg of the second fixed contact, said movable contact being normally flexed with its other free end biased into engagement with the arcuate edge of said first fixed contact. A rotor is provided with an integrally formed projection having a recess adapted to engage the free end of said movable contact in confining relationship. Electrical connection between the first and second fixed contacts through the movable contact is broken as the rotor is rotated in one direction engaging the free end of the movable contact in the recess formed in said projection. The rotation of the rotor in the opposite direction allows the movable contact to resile into operative electrical engagement with said first fixed contact. This is accomplished by means of a stop member on the other leg of said second fixed contact adapted to engage the free end of said movable contact.

3,668,346
SWINGABLE COMB FOR CLOSING MAGNETIC SWITCH FOR CONTROLLING HOT RINSE WATER IN A DISHWASHER

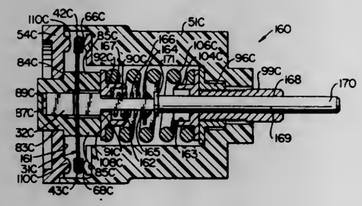
Tore H. Noren, 1350 Donner Avenue, San Francisco, Calif.
Filed Jan. 11, 1971, Ser. No. 105,471
Int. Cl. H01h 3/16
U.S. Cl. 200—61.41 4 Claims



A dishwashing machine having a hot water rinse compartment through which a train of dish-carrying dollies is moved and a switch actuating comb is mounted in the compartment and has depending tines that are swung in one direction by a dish basket carried by a dolly so as to close a magnetic switch that opens a solenoid valve for spraying rinse water onto the dishes. The comb tines are so mounted that they can freely swing in the opposite direction should it become necessary to reverse the movement of a dolly and its dish basket in the rinse compartment and the magnetic switch will not be closed and neither will the tines be damaged.

3,668,347
SNAP ACTING ELECTRICAL SWITCH CONSTRUCTION HAVING RESET MEANS

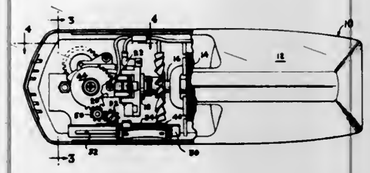
Theodore Y. Korsgren, Orange, Conn., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Jan. 19, 1970, Ser. No. 3,833
Int. Cl. H01h 15/18
U.S. Cl. 200—76 16 Claims



A snap blade carried by a housing means and having an opening means passing therethrough, an actuator member interconnected to said snap blade to cause the snap blade to snap to different positions thereof as the actuating member is moved relative to the housing means for an electrical switching function. The actuating member is disposed in the opening means of the blade and has opposed ends extending from opposite sides thereof. A cup-shaped plunger member receives one of the ends of the actuator member in the open end thereof and has abutment means extending from the open end and being received in the opening means of the blade to provide for manual reset of the switch construction. The housing means comprises a body member and a cover member, the body member having four like terminal mounting slots arranged in annular fashion therein and each being adapted to receive a contact carrying terminal.

3,668,348
KITCHEN MIXER

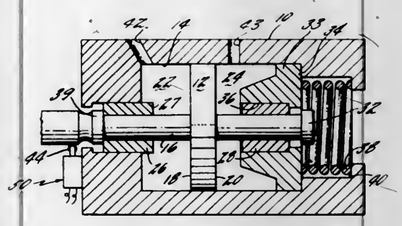
Charles L. Bauer, Cheshire, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed Mar. 23, 1971, Ser. No. 127,149
Int. Cl. H02k 7/54
U.S. Cl. 200—80 1 Claim



Kitchen mixer includes an external speed control slider and a pivotable centrifugally operated switch. A connecting arrangement is provided between said control slider and said centrifugally operated switch. A peripherally toothed face cam is arranged to swing said switch. This is effected by the cam-teeth which are connected through a spur gear train to the rack gear carried by said slider.

3,668,349
PROPORTIONAL PRESSURE DIFFERNCE ACTUATOR

Jerome G. Duchesneau, Andover, and Robert A. Schwartz, Vernon, both of, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 12, 1971, Ser. No. 123,507
Int. Cl. H01h 35/38; F01b 7/04
U.S. Cl. 200—82 R 7 Claims



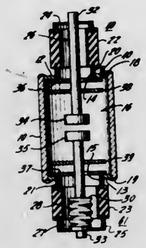
Actuation of a pressure actuator is manifested solely when the pressures from two separate systems exceed a predetermined differential or the absence of pressure is evidenced by including a piston having one face sensitive to one of the pressures and the opposing face sensitive to the other pressure, and a pair of smaller pistons slidably mounted on connecting shaft of the piston, each having a face adapted to subtract a force from the total force when the pressure acting on one face of the sensing piston is at a predetermined value. The piston is spring loaded in an actuating position when no pressure is acting on the piston.

ERRATUM

For Class 200—144 see:
Patent No. 3,667,871

3,668,350
VACUUM TYPE CIRCUIT INTERRUPTER

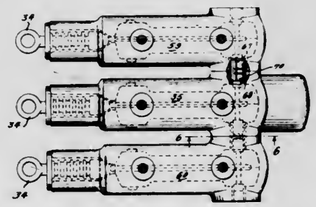
Koichi Takeuchi; Takeo Okada, and Shinichi Aoki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 18, 1969, Ser. No. 808,263
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 1 Claim



An arc extinguishing chamber confined by a cylindrical housing of stainless steel, and an insulating chamber within a hollow cylindrical insulator communicate with each other and are maintained in a vacuum with two contacts disposed in the arc extinguishing chamber. A pair of apertured separator plates respectively disposed at each end of the housing and another pair of separator plates respectively mounted on each contact rod are formed of stainless steel and prevent the insulating chamber from overheating during exhaustion at a high temperature and also from being contaminated in operation. Two heating devices are used to heat the housing to a higher temperature than the insulating chamber during the exhausting operation.

3,668,351
SECTIONALIZING AND PROTECTIVE APPARATUS FOR SINGLE HOUSE TRANSFORMER

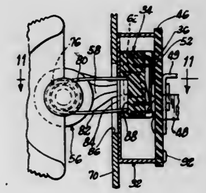
Carl J. Walbrun, and Kenneth Earl Hanke, both of St. Louis County, Mo., assignors to Kearney-National Inc., St. Louis, Mo.
Filed July 30, 1969, Ser. No. 846,187
Int. Cl. H01h 33/00
U.S. Cl. 200—144 5 Claims



Apparatus for controlling and protecting an electrical power distribution system from failure occurring in or between single dwelling transformers whose primary windings are energized from a sectionalizable loop. The apparatus includes three disconnect switches, one set of contacts in each being permanently connected in electrical series and the outermost ones of the series have their opposite contacts impermanently connected to different sections of the sectionalizable loop, while the intermediate one of the series has its opposite contacts removably connected to one end of a fuse, the opposite end of which connects with the primary of said transformer, whereby the transformer may be isolated without interrupting the continuity of the loop circuit, or a faulty section of the loop between different single dwelling transformers may be isolated and repaired or replaced without deenergizing any transformer energized from the loop.

3,668,352
BLAST ORIFICE UNIT FOR SELF-BLASTING COMPRESSED GAS ELECTRIC CIRCUIT-BREAKERS

Benito Jose Calvino Y. Teijeiro, Bergamo, Italy, assignor to Magrini Fabbriche Riunite Magrini Scarpa e Magnano M.S.M.S.p.A., Milan, Italy
Filed Nov. 25, 1970, Ser. No. 92,671
Claims priority, application Italy, Nov. 27, 1969, 24973 A/69
Int. Cl. H01h 33/70
U.S. Cl. 200—148 R 7 Claims



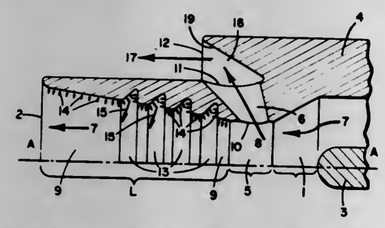
An axial blast interruption chamber for self-blasting compressed gas electric circuit-breakers, having a blast orifice unit internally shaped to provide, in the outlet direction, a conical convergent zone; a cylindrical zone having the smallest surface in comparison with the other internal zones, in which a plurality of decompression holes is located, the mouth sections of these holes being parallel to the axis of the interruption chamber; and a substantially conical divergent zone, the divergent zone having a plurality of ring-like grooves, each of which is of substantially triangular cross section with an open base disposed towards the outlet orifice of the interruption chamber; wherein the decompression holes have substantially the shape of oblique truncated cones with their axis slanting in the gas outflow direction; an external shell concentrically surrounding the interruption chamber; and a toroidal groove concentrically disposed in the shell, having a substantially triangular cross section with an open base disposed in the direction of the outlet orifice, the generatrix of the toroidal groove slanting in the gas outflow direction, the outlet sections of the decompression holes opening into the toroidal groove.

3,668,353
ELECTRICAL SWITCHES WITH EXTERNAL RETURN SPRINGS

Andrew F. Raab, Morton Grove, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.
Filed May 21, 1970, Ser. No. 39,289
Int. Cl. H01h 15/02
U.S. Cl. 200—153 K 4 Claims

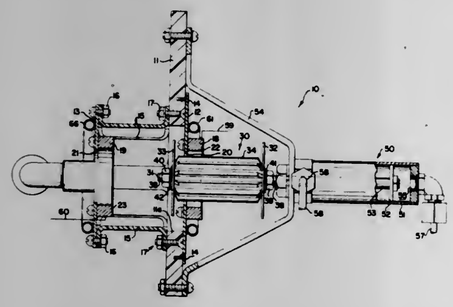
The present invention provides a new switch having a return spring which is mounted outside the casing in which the carriage and contactor are movable. An operating lever or other member extends into the casing to engage the carriage. Preferably, the spring is in the form of a torsion spring mounted on the pivot which supports the lever. In one embodiment, the spring has arms which extend into the casing through an opening therein, and then into a recess in the carriage. When the carriage is moved in opposite directions, it engages and moves the opposite arms of the spring. The op-

posite ends of the opening in the casing provide stops which are engageable with the arms to maintain initial stress in the



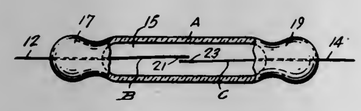
spring. In another embodiment, the arms are engageable by tabs or other elements on the operating lever.

3,668,354
RADIO FREQUENCY TRANSFER SWITCH
Ronald A. Meermans, Strongsville, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed Dec. 4, 1970, Ser. No. 95,212
Int. Cl. H01h *3/00*
U.S. Cl. 200—153 S **17 Claims**



A radio frequency transfer switch is provided which includes a pair of spaced apart annular fixed contact elements and a pair of movable contact discs carried by an axially reciprocable shaft which is fluid motor actuated to move the contact discs into and out of engagement with the fixed annular contacts. The fixed annular contacts are supported by plate means and fluid cooling tube means are disposed against the plate means and in surrounding relationship with respect to the fixed annular contacts.

3,668,355
REED MATERIAL FOR SEALED CONTACT APPLICATION
David Campbell, and Real Oscar Chamberland, Greenfield Park, both of Quebec, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Jan. 27, 1971, Ser. No. 110,153
Int. Cl. H01h *1/02, 1/66*
U.S. Cl. 200—166 C **6 Claims**



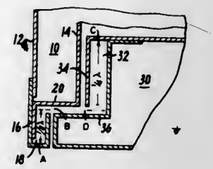
A reed for use in a reed-type switch comprising a body of magnetic material having a contacting surface essentially made up of a precious metal with some of the body material diffused therein, and an interface layer of an alloy of the precious metal and the body material between the body of magnetic material and the precious metal layer. The magnetic material is a glass-compatible nickel-iron alloy containing from about 0.125 to about 0.250 manganese by weight percent and having a resistivity not greater than about 225 ohms per circular mil foot.

3,668,356
MECHANICAL KEY ACTUATOR INCLUDING A CANTILEVER BEAM RESTORING FORCE MEANS
Dennis H. Kekas, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,557
Int. Cl. H01h *3/12*
U.S. Cl. 200—172 A **12 Claims**



An actuating device having a keytop, base, and an actuator assembly affixed to the base, the assembly including a rod and a cantilever beam arrangement for providing a snap action response to key force and for driving the rod to form an electrical make-break contact, the base and assembly constituting a unitary flexible-tough thermoplastic body.

3,668,357
MICROWAVE SEAL FOR ELECTRONIC RANGE
Kyozo Kobayashi, Shizuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 22, 1970, Ser. No. 83,162
Claims priority, application Japan, Oct. 23, 1969, 44/100841
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **4 Claims**

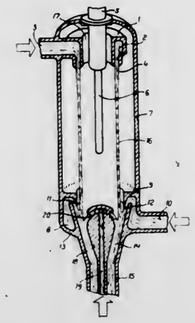


The disclosed microwave seal for electronic range comprises a choke coupling type microwave cavity communicating with a clearance between a range main body and a door in addition to a microwave seal of any desired type. The microwave cavity serves to choke the second harmonic frequency component of the microwave energy to prevent the same from leaking from the range, while the microwave seal serves to prevent the basic frequency component of the microwave energy from leaking.

3,668,358
APPARATUS FOR ELECTROMAGNETIC HEATING OF LIQUIDS
Lennart Arvid Stenstrom, Huddinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed May 21, 1970, Ser. No. 39,250
Claims priority, application Sweden, May 27, 1969, 7461/69
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.65 **7 Claims**

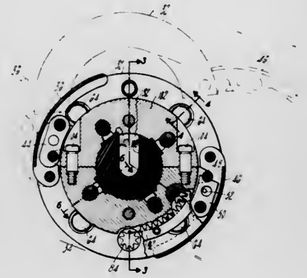
The liquid to be heated is formed by suitable means into a jet having an annular cross-section and which is free from

contact with any surface; and means are provided for transferring to the annular jet electromagnetic energy uniformly



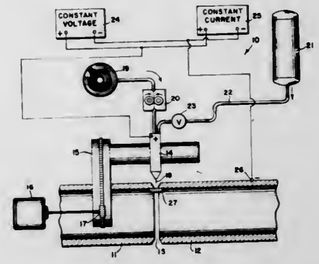
distributed around the periphery of the jet as viewed in said cross-section.

3,668,359
CLAMPING AND WELDING ASSEMBLY
John O. Emmerson, c/o The DSD Company, Bradley Park, West Granby, Conn.
Filed Jan. 29, 1971, Ser. No. 110,930
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **11 Claims**



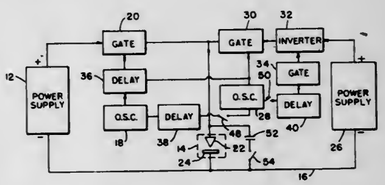
An orbital tube welder is provided comprising a pair of tube clamping assemblies having dual clamping areas and an electrode carrying housing adapted for rotation around the clamping assemblies while applying a closing force thereon. The clamping assemblies advantageously accommodate irregular contours along the length of tubing being welded while assuring precise positioning and secure aligned clamping thereof during the welding operation by utilizing clamping jaws adjacent the weld and a spaced resilient aligning and clamping collar having a radial slot extending along the length thereof. Multiple adjustments are incorporated in both the housing and the individual clamping assemblies for precisely controlling alignment of the tubes being welded.

3,668,360
AUTOMATIC PIPELINE WELDING METHOD
William L. Ballis, 661 Leap Road, Hilliard, Ohio
Continuation-in-part of application Ser. No. 18,370, Mar. 12, 1970, now abandoned, and a continuation of 704,437, Feb. 9, 1968, now abandoned. This application Feb. 24, 1971, Ser. No. 118,449
Int. Cl. B23k *31/06*
U.S. Cl. 219—61 **11 Claims**



The method for automatically welding pipelines by means of a gas shielded short circuiting electric arc is disclosed wherein the arc is supplied by a consumable metal electrode which is connected in parallel to both a constant voltage power source and a constant current power source. A solid non-consumable metal backup plate is positioned against the root opening of the weld joint, an arc is established between the electrode and the pipeline and the electrode is moved along the circumference of the pipeline in proximity to the weld joint. The electrode is supplied to the joint at a constant feed rate selected from the range of between 350 and 1,000 inches per minute during each of a stringer bead pass, one or more filler passes, and a cap pass of the electrode about the circumference of the pipeline. During each of the passes the current supplied to the electrode by the constant current source is selected in accordance with the feed rate in order to maintain the current supplied by the constant voltage source, and thus the arc force, below a predetermined level for each selected feed rate while maintaining a short circuiting type welding operation.

3,668,361
STRUCTURE FOR AND METHOD OF ELECTRO EROSION MACHINING
Thomas J. O'Connor, 100 Morgan Road, Ann Arbor, Mich.
Filed Apr. 30, 1970, Ser. No. 33,217
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 C **5 Claims**



A high voltage, low current electric signal is placed across the electrode and workpiece in an electro erosion machining circuit in accordance with the disclosure to provide improved machining. The high voltage, low current signal may be continuous or pulsed and if pulsed, it may be initiated by intermittent low voltage, high current electro erosion machining

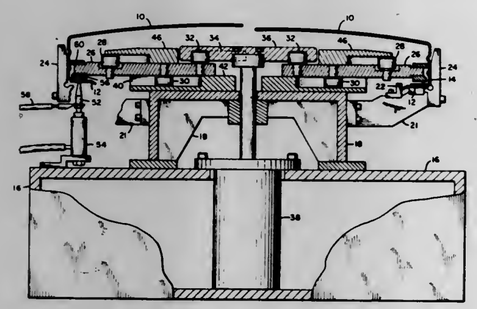
pulses or independent therefrom. The high voltage, low current signals, if pulsed, may also be initiated prior to, at the same time as or subsequent to the low voltage, high current electro machining pulses and may be of the same or opposite polarity. If the high voltage, low current signal is pulsed, the frequency and pulse width may be varied. A capacitor may be selectively placed across the electrode and workpiece during electro erosion machining in conjunction with the high voltage, low current signal to further improve the machining characteristics of the low voltage, high current electro erosion machining signal.

3,668,362

METHODS AND APPARATUS FOR WELDING REINFORCING MEMBERS TO SHADOW MASKS

Myron C. Kirchner, Itasca, Ill., and Thomas R. Rosenberger, Milwaukee, Wis., assignors to Tubal Industries, Inc., Elk Grove Village, Ill., by said Kirchner

Filed June 22, 1970, Ser. No. 48,132
Int. Cl. B23k *11/10*
U.S. Cl. 219—87 **12 Claims**



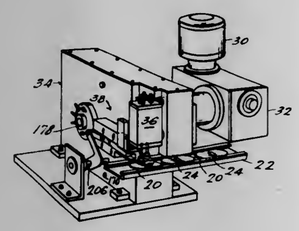
A method and apparatus for welding reinforcing members to color television shadow masks. Eight internal supporting blocks are positioned by a rotary cam to support the inside concave surface of the mask while welding electrodes press and weld a reinforcing ring to the shadow mask from the outside.

3,668,363

APPARATUS FOR WELDING PARTS TO WORKPIECES

Don E. Ehrlich, Avon, Ohio, assignor to TRW Inc., Cleveland, Ohio

Original application Jan. 26, 1970, Ser. No. 563,914, now Patent No. 3,557,338. Divided and this application Jan. 26, 1970, Ser. No. 10,705
Int. Cl. B23k *9/20, 9/22*
U.S. Cl. 219—98 **1 Claim**



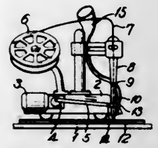
Apparatus is provided for welding parts to workpieces at a high rate in the order of 250–300 parts per minute. The apparatus includes an arrangement for supplying the parts to the chuck of the welding tool and a mechanical arrangement for co-ordinating the operation of the tool and the part supply. The entire operation of the tool is controlled mechanically including mechanical means for timing the pilot ad welding arcs of the welding cycle.

3,668,364

WELDING METHOD

Hirokazu Nomura, and Akira Sasaki, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of application Ser. No. 794,957, Jan. 29, 1969, now abandoned. This application May 4, 1970, Ser. No. 31,873
Claims priority, application Japan, Feb. 19, 1968, 43/10094
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **2 Claims**



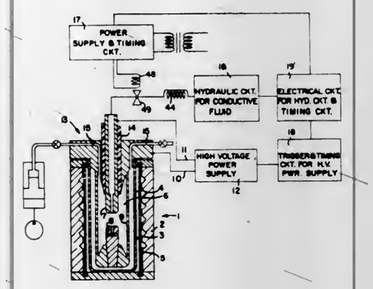
A welding method used in electric arc welding wherein a consumable wire core electrode is fed by a nozzle onto a workpiece at a welding station. The nozzle moves relative to the workpiece at a changeable speed including intermittent motion so as to provided an agitating action to the weld metal, the intermittent motion being in the form of oscillations at between 0.2 to 4 Hz and small amplitude along the direction of the weld seam.

3,668,365

PULSED LIQUID WIRE ELECTROHYDRAULIC SYSTEM

Robert W. Norin, Country Club Hills, and Donald J. Roth, Chicago Heights, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Original application Sept. 25, 1968, Ser. No. 762,457, now Patent No. 3,566,648. Divided and this application Aug. 17, 1970, Ser. No. 64,394
Int. Cl. B21j *1/06*
U.S. Cl. 219—149 **4 Claims**



An electrohydraulic container forming device wherein a thin stream of conductive fluid constitutes a bridge between one electrode and the other of the shock producing electrodes. The conductive liquid is pressurized to a higher value than the internal pressure of the container. In operation the conductive liquid is emitted under pressure from one electrode by a timing circuit driving a shear type solenoid valve.

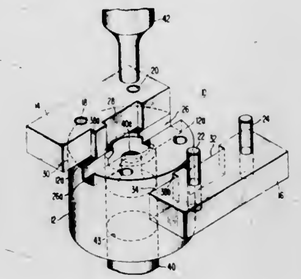
A second timing circuit synchronizes the electrical discharge with the establishment of a preferentially conductive bridge across the electrode gap. A sharp jet pulse is given off from the arc thus established and this develops pressure inside the rubber diaphragm to press it against the container which is then pressed into the interstices of the die to give a fully stylized container.

3,668,366

RESISTANCE WELDING APPARATUS

Johannes F. Gerber, King of Prussia, and Rudolph A. Cola, Malvern, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 17, 1971, Ser. No. 116,156
Int. Cl. B21J *13/08*
U.S. Cl. 219—158 **3 Claims**



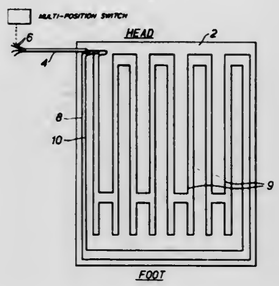
A welding apparatus which permits accurate spacing of workpieces, and eliminates arcing of the welding current and contamination of the workpieces.

3,668,367

ELECTRICALLY HEATED PADS OR BLANKETS

Frederick R. Williams, Woking, England, assignor to Dreamland Electrical Appliances Limited, Hythe, Southampton, Hampshire, England

Filed May 15, 1969, Ser. No. 824,962
Int. Cl. H05b *1/00*
U.S. Cl. 219—212 **3 Claims**



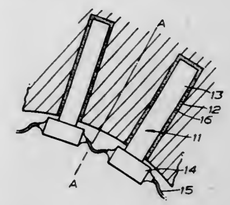
An electrically heated pad or blanket having two heating elements defining two separate electrical circuits, each circuit being connected to a multi-position switch so that they can be connected to a supply of electricity in series or parallel or selectively one at a time, one of the heating elements being longer than the other and having the greater length part disposed in a region not containing the runs of the shorter element so that when placed in parallel there is an even heat distribution over the pad or blanket, when placed in series there is an even heat distribution of less heat and when only one circuit is connected to the supply one area of the pad or blanket is heated at a different temperature to the remaining area of the pad or blanket.

3,668,368

A PROCESS AND APPARATUS FOR THE PREVENTION OF ICE FORMATION IN TUNNELS

Oddmund Moldskred, Brakebaugen, 5050 Nesttun, Norway

Filed Dec. 7, 1970, Ser. No. 95,452
Int. Cl. H05b *3/00*
U.S. Cl. 219—213 **27 Claims**



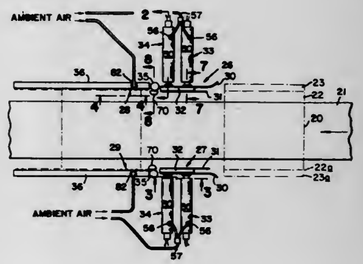
Processes and devices for the prevention of ice formation in tunnels, especially road and railway tunnels, mountain cuttings and the like, by the supply of heat from the outside to rock faces where the formation of ice normally occurs. More particularly, this involves installing electrical heating means distributed in a self-supporting manner in individual bores formed in a rock face substantially at right angles to a boundary surface with the air and heating a layer of rock between the air and rear-lying masses of rock to a temperature higher than the temperature at said boundary surface and lower than the temperature of said rear-lying rock masses.

3,668,369

HEAT SEALING APPARATUS FOR CLOSURE OF PAPERBOARD PACKAGE FLAPS

William J. Howe, Los Altos, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Original application Feb. 3, 1969, Ser. No. 795,786, now abandoned , which is a continuation-in-part of application Ser. No. 696,794, Jan. 10, 1968, now abandoned. Divided and this application June 2, 1970, Ser. No. 54,079
Int. Cl. H05b *1/00*
U.S. Cl. 219—243 **11 Claims**



Apparatus for heat-sealing paperboard package closure flaps having a heat sealable coating. While the package

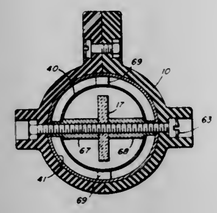
moves, two flaps are brought into proximity along two planes diverging at an acute angle, and upon the facing flap surfaces, are impinged one or more high-volume, low-velocity streams of very hot air, each along a controlled narrow area to heat one or more critical strips of each flap above the heat-sealing temperature.

3,668,370

PORTABLE ELECTRIC HEAT GUN

Richard Arthur Pattison, Burlington, Mass., assignor to Electronized Chemicals Corporation, Burlington, Mass.

Filed Nov. 6, 1969, Ser. No. 874,577
Int. Cl. F24h *3/04*; H05b *3/02*
U.S. Cl. 219—373 **5 Claims**



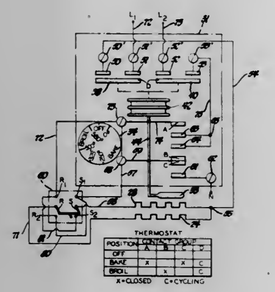
A portable heat gun especially applicable for shrinking of heat-shrinkable polyethylene tubings. A brushless self-lubricating electric motor is positioned within a hollow pistol grip shaped housing of high impact plastic, in line with an air intake orifice in the rear of the housing. The motor carries a fan to push intake air past a heating wire wound round a stiff, flat, refractory card maintained within the inner stainless steel tube of the two co-axial tubes set in the housing and giving the heat gun the appearance of a pistol, and then through an exhaust orifice. The tubes and card are held in place by a set of screws and by associated spacer elements. Air may be passed between the tubes to provide thermal insulation. A three-way switch permits fan operation with or without heating. Support means on the housing cooperate with the handle to provide a tripod support for holding the tubes vertical.

3,668,371

CIRCUIT ARRANGEMENT FOR ACCELERATED CONTINUOUS CLEANING OF SELF CLEANING OVEN COATINGS

Millard E. Fry, and Robert D. Bremer, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 16, 1971, Ser. No. 153,727
Int. Cl. F27d *11/00*
U.S. Cl. 219—413 **3 Claims**



A circuit arrangement for a continuously cleaning coated oven at an elevated temperature range above the normal operating range but not in excess of that allowed for non-locked oven operation so as to improve the thermal cleaning of the oven bottom wall coating. The arrangement includes a separate manually settable control switch having a Cook position for energizing the bake and broil elements in a conventional manner and a Clean position wherein the broil element is disconnected and the bake element is energized while maintaining the thermostatic condition for broil operation such that the oven will continuously self-clean by heating the oven bottom wall much hotter than the existing oven air temperature.

3,668,372

TEMPERATURE SENSING DEVICE AND APPARATUS UTILIZING THE SAME

William H. Russell, Malvern, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 6, 1971, Ser. No. 131,672
Int. Cl. H05b *3/68*
U.S. Cl. 219—450 **20 Claims**



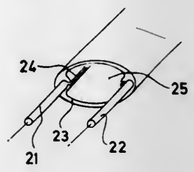
A temperature sensing device for sensing the temperature of a cooking vessel disposed on the heating means of a cooking apparatus comprising a bracket secured to the cooking apparatus and movably carrying a sensing element that contacts the bottom of the cooking vessel, the sensing element having a capillary tube interconnected thereto and having a single bend therein that provides the sole means for urging the sensing element into contact with the bottom of the cooking vessel.

3,668,373

EXCESS TEMPERATURE SWITCHING DEVICE

Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Filed Oct. 19, 1970, Ser. No. 81,797
Claims priority, application Austria, Nov. 4, 1969, A 10334/69
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 **2 Claims**



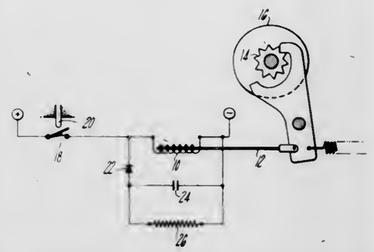
A temperature switching device for interrupting an electric circuit above or below a per-set temperature value having a temperature sensor formed as a hollow body containing two manually insolated conductors and a substance which undergoes a large change of resistivity at a well-defined temperature.

3,668,374

DRIVE CIRCUIT FOR PULSED INDUCTIVE WINDINGS

John G. Gamble, Simsbury, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed July 29, 1970, Ser. No. 59,190
Int. Cl. G06m *1/04*
U.S. Cl. 235—92 C **4 Claims**



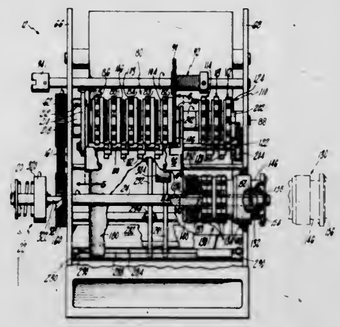
A pulse forming drive circuit for a high speed counter actuated by a solenoid wherein a pulsing switch controls the energization of the solenoid. The drive circuit is connected in parallel with the solenoid and includes a capacitor and a resistor each connected across the solenoid and a rectifier connected in series with the capacitor and resistor to prevent the flow of current therethrough when the pulsing switch is closed but allows the flow of current therethrough when the magnetic switch is open to delay the normal voltage spike and then use the delayed voltage spike to promote the rapid decay of the magnetic field energy of the solenoid.

3,668,375

PRINTER

Bruno S. Smilgys, Hartford, Conn., and Robert C. Ritchie, Feeding Hill, Mass., assignors to Veeder Industries Inc., Hartford, Conn.

Filed Oct. 13, 1970, Ser. No. 80,260
Int. Cl. B67d *5/22*
U.S. Cl. 235—94 R **8 Claims**



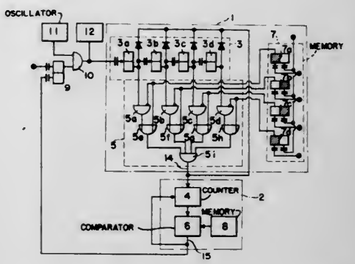
A gasoline pump printer having a cost printing counter, a serial printing counter, and a date printer and operable at the end of each gasoline delivery for printing a record of the delivery. A printer operating shaft is connected to rotate the supporting shafts of the cost and serial counters and date printer one full revolution to (a) rotate the print wheels to perform a printout, (b) reset the cost counter print wheels to "0," and (c) index the serial counter for printing the next serial count, and to operate a shearing mechanism for shearing the printed delivery record from a paper roll.

3,668,376

FEED CONTROL DEVICE FOR A PHOTOGRAPHIC TYPESETTER

Tomoji Murata, Sakai, and Toshiaki Ishihara, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha

Filed Sept. 16, 1970, Ser. No. 72,668
Claims priority, application Japan, Sept. 16, 1969, 44/73457
Int. Cl. G06f *15/46, 7/39*
U.S. Cl. 235—151.22 **2 Claims**



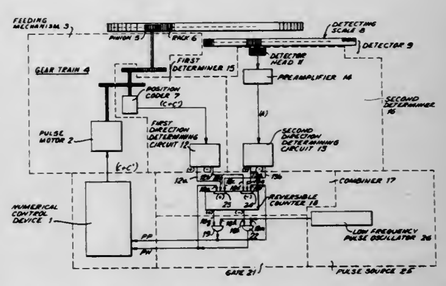
First and second comparing circuits each include respective first and second counter circuits wherein pulses generated by a pulse generator are initially compared by the first comparator with a stored number representing the width of a character to be photographed. In response to an output from the first comparator indicating coincidence with the stored number therein, the second comparator counts pulses from the pulse generator until coincidence with a stored digital factor representing the type size of the character to be photographed. An output signal from the second comparator is fed back to stop the pulse generating device.

3,668,377

NUMERICAL CONTROL SYSTEM FOR ELIMINATING PITCH ERROR AND BACKLASH OF THE FEEDING MECHANISM

Seluemon Inaba, Kawasaki-shi; Kanryo Shimizu, Tokyo, and Yoshihiro Hashimoto, Yokohama-shi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

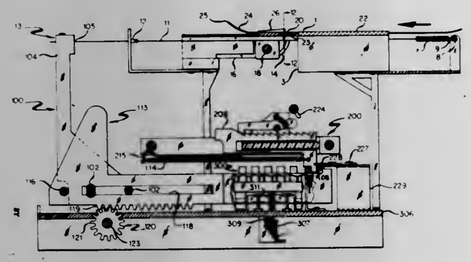
Filed May 2, 1969, Ser. No. 821,260
Claims priority, application Japan, May 8, 1968, 43/30740
Int. Cl. G06f *15/46*; G05b *19/18*
U.S. Cl. 235—151.11 **6 Claims**



A numerical control system eliminates error in a feeding mechanism for a movable machine by combining an indica-

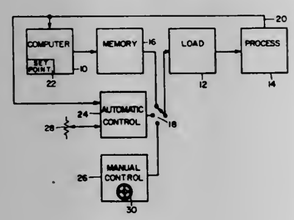
tion of the magnitude of an input fed by the feeding mechanism to the machine with an indication of the magnitude of movement of the machine and controlling the supply of a compensating pulse to the feeding mechanism in accordance with a difference between such indications.

3,668,378
REGISTERING APPARATUS
Eugene E. Reynolds, Orangeburg, S.C., assignor to SCM Corporation
Filed Mar. 24, 1969, Ser. No. 809,694
Int. Cl. G06f 5/02
U.S. Cl. 235—155 11 Claims



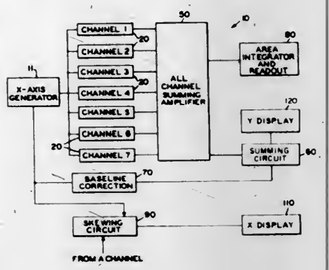
The invention relates to a mechanism for printing values entered in a keyboard or transmitted from a computer. Normally, values entered in a keyboard are entered in the decimal system of notation and values received from a computer or other external source are transmitted in a binary code. With this thought in mind, this invention provides a mechanism for receiving information from either an internal keyboard in decimal values or from an external source in binary coded values, entering said values serially into a storage and printing out said values in parallel.

3,668,379
INTERFACE APPARATUS FOR COMPUTER INCLUDING AN INTEGRATOR CIRCUIT WHICH OPERATES TO PERMIT TRANSFER BETWEEN AUTOMATIC AND MANUAL CONTROL
Steven L. Roberts, Amherst, N.H., and Edward J. Miller, Jr., Tempe, Ariz., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 21, 1969, Ser. No. 868,155
Int. Cl. G06g 7/18
U.S. Cl. 235—183 10 Claims



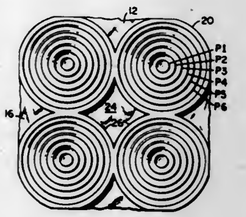
An apparatus is disclosed, including means to charge a capacitor and means to prevent leakage of the charge on the capacitor, to cause proper transfer of control, of the position of a tool or to change a step of a process, from a computer to a manual or automatic controller and in the reverse direction. The apparatus includes an integrator circuit which can be converted by proper manipulation of switches into a voltage following circuit.

3,668,380
COMPOSITE CURVE ANALYZER
William E. Claxton, Mogadore, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Oct. 14, 1969, Ser. No. 866,263
Int. Cl. G06g 7/28
U.S. Cl. 235—197 16 Claims



A special purpose analog computer is provided to resolve and display a plurality of peaks from a composite curve. The peaks may selectively be either Gaussian or Lorentzian in form. Peak position, width and amplitude are independently controlled. Baseline slope and skewing can also be provided, as necessary, to fit the composite curve. The output of the device can be displayed on an oscilloscope and can be sent to an area readout system so that percent areas of each component curve can be ascertained. Further, if desired, the integral curve of any component or combination of components can be easily displayed.

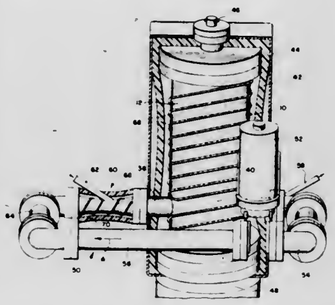
3,668,381
PRISMATIC LIGHT LOUVER
Robert A. D. Schwartz, 513 Independent Road, Oakland, Calif., and Rodney P. Osterberg, 7632 Surrey Lane, Oakland, Calif.
Filed Feb. 2, 1970, Ser. No. 7,950
Int. Cl. F21v 5/00
U.S. Cl. 240—106 12 Claims



A light transmitting louver for use as a ceiling panel in a luminous ceiling or as a lens in a lighting fixture. The louver has a planar member adapted to be positioned adjacent a light source and a plurality of walls extending from the member on the side opposite the light source to define a symmetrical closed cell system. Within the peripheral extent of each cell and on a surface of the planar member are prisms which extend generally symmetrical to the cell axis and with the cell wall. The individual prisms are asymmetrical in cross-

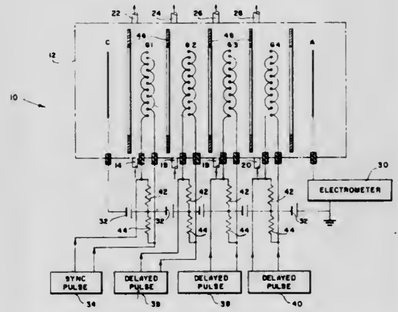
section, i.e., the angular slope of the respective surfaces of each prism is different.

3,668,382
SEPARATION AND DETECTION OF TRACE SUBSTANCES IN GASEOUS SAMPLES CONTAINING MOISTURE BY DILUTING WITH DRY AIR
Martin J. Cohen, West Palm Beach; Roger F. Wernlund, Lake Worth, and David I. Carroll, Lantana, all of Fla., assignors to Franklin Gno Corporation, West Palm Beach, Fla.
Filed Nov. 26, 1968, Ser. No. 779,096
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—41.9 TF 15 Claims



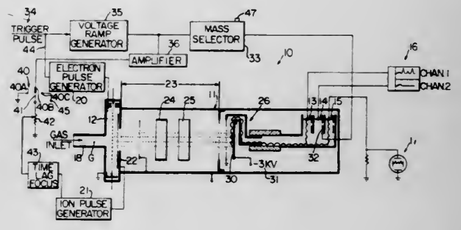
Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions and for reducing the deleterious effects of moisture upon the measurements. Positive or negative ions of the trace gas are formed by ion-molecule reactions between molecules of the trace gas and primary ions from another gas. Ions are classified in accordance with their velocity in an electric drift field. The effects of moisture in the sample are significantly reduced by diluting the sample with dry air, which is recirculated after treatment.

3,668,383
APPARATUS AND METHODS FOR SEPARATING, DETECTING, AND MEASURING TRACE GASES
David I. Carroll, Lantana, Fla., assignor to Franklin GNO Corporation, West Palm Beach, Fla.
Filed Jan. 9, 1969, Ser. No. 790,108
Int. Cl. H01J 39/36
U.S. Cl. 250—41.9 TF 28 Claims



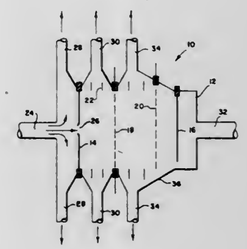
Apparatus and methods for sorting and detecting trace gases which undergo ion-molecule reactions. Reactant ions and product ions may be sorted in accordance with their velocity in an electric field at different regions of a drift cell, and multiple ion-molecule reaction regions may be provided. Different regions of the cell may be supplied with different gaseous media.

3,668,384
MASS SPECTROMETER
Charles J. Moorman, and Richard H. Lehman, both of Cincinnati, Ohio, assignors to The Bendix Corporation
Filed Apr. 1, 1969, Ser. No. 812,237
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 TF 1 Claim



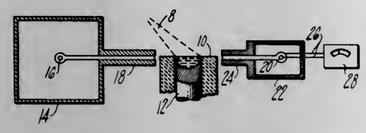
A mass spectrometer having means operatively connecting a circuit which provides a time lag between each ionizing electron pulse and each ion accelerating pulse to a delay circuit in an output scanner comprising the spectrometer so that each mass in the spectrum which is under observation will always be in best focus.

3,668,385
APPARATUS AND METHODS FOR IMPROVING MEASUREMENTS PERFORMED UPON GASEOUS SAMPLES BY REDUCING SAMPLE CONTAMINATION
Martin J. Cohen, West Palm Beach, Fla., assignor to Franklin Gno Corporation, West Palm Beach, Fla.
Filed Oct. 13, 1969, Ser. No. 865,738
Int. Cl. H01j 39/34; B01d 59/44
U.S. Cl. 250—41.9 TF 17 Claims



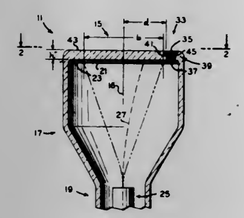
Variation of sample concentration, by gain from or loss to the wall of a measurement chamber or sample inlet pipe, is avoided by extracting the central gas core of a streamline sample flow. Measurements are performed upon trace sample components by drift cell techniques.

3,668,386
APPARATUS FOR MEASUIRNG HEIGHT OF A MOLTEN METAL POOL
Sol S. Blecherman, Newington; Nicholas E. Ulion, Vernon, and Louis L. Packer, Hazardville, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 13, 1969, Ser. No. 806,953
Int. Cl. G01t *1/17*; G01n *23/10*
U.S. Cl. 250—43.5 FL 3 Claims



An apparatus for detecting the liquid level in, or the liquid-solid interface at the bottom of, a pool of molten metal or alloy utilizing a radioactive isotope as a source of radiation and sensing the amount of radiation over or through the pool of metal and in which the melting is accomplished by an electron beam impinging on the pool surface.

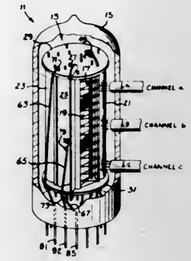
3,668,387
CATHODE RAY TUBE FACEPLATE HAVING DIVERSE OPTICAL MEANS THEREIN
Alfred D. Johnson, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.
Filed May 4, 1970, Ser. No. 34,023
Int. Cl. H01j *29/10*, *29/89*, *5/16*
U.S. Cl. 313—92 R 3 Claims



A cathode ray tube having a faceplate panel wherein at least one optical insert of low-attenuation optical material is disposed through the faceplate in substantially the peripheral region thereof to provide at least one defined light channel therethrough. The insert, being covered by the peripheral portion of the screen, provides means for channeling a discrete portion of excited screen luminescence through the faceplate.

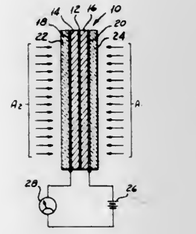
3,668,388
MULTI-CHANNEL PHOTOMULTIPLIER TUBE
Mahlon B. Fisher, Skaneateles; Charles K. Schiller, Seneca Falls, both of N.Y., and Ojars J. Ziemelis, Sunnyvale, Calif., assignors to GTE Sylvania Incorporated
Filed Feb. 24, 1971, Ser. No. 118,458
Int. Cl. H01j *31/50*
U.S. Cl. 313—95 12 Claims

The improved photomultiplier tube utilizes a multi-channel structure within a common envelope. A photocathode and a plurality of dynode members each have barrier means associated therewith to effect a plurality of related-area elements on each member providing a plurality of separate photomultiplier channel areas thereon. The anode structure has a separate anode element for each individual channel with a separate electrical connection extending therefrom.



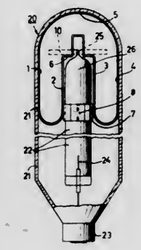
The photocathode and the separate dynode members each have individual electrical connections which are common to the related channel areas respectively formed thereon.

3,668,389
PHOTOSENSITIVE DEVICE COMPRISING PHOTOCONDUCTIVE AND PHOTOVOLTAIC LAYERS
Thomas D. Kegelman, Ridgefield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 19, 1969, Ser. No. 859,540
Int. Cl. H01j *39/00*, *39/06*
U.S. Cl. 313—96 1 Claim



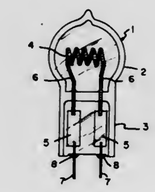
My invention relates to an image correlating device for determining the identity between two images and more particularly to a device which provides a measure of the correlation or lack of it between two images being compared.
In general my invention contemplates the provision of an image correlating device comprising a layer of opaque material providing a low resistance path through the layer and a relatively high resistance path in a direction transverse of the layer, sandwiched between two photoresponsive layers on which the images to be correlated are focused. My device provides an output current which is a measure of the correlation between the images.

3,668,390
GAS AND/OR VAPOR DISCHARGE LAMP HAVING A U-SHAPED DISCHARGE TUBE
Urbaan Paul Marguerite Goossens, Wanssmunster, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 18, 1971, Ser. No. 116,435
Claims priority, application Germany, Feb. 25, 1970, G 70 06 868.7
Int. Cl. H01j *61/34*
U.S. Cl. 313—220 4 Claims



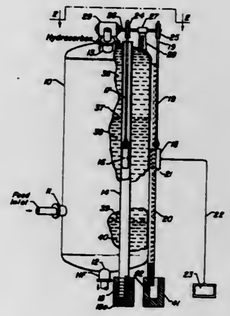
The invention relates to the concentration of a U-shaped discharge tube in an outer envelope namely at the bend of this tube.
The invention provides a centering member which includes a rectangular support of leaf spring, the inner wall of this support closely surrounding the two legs of the discharge tube.
When using the invention the risk of cracking of the discharge tube is only small. FIG. 2.

3,668,391
TUNGSTEN HALOGEN LAMP HAVING IMPROVED SEAL OF MOLYBDENUM ALUMINIDE
Stephen F. Kimball, Beverly, Mass., assignor to Sylvania Electric Products Inc.
Filed Aug. 19, 1970, Ser. No. 65,076
Int. Cl. H01j *5/48*
U.S. Cl. 313—318 10 Claims



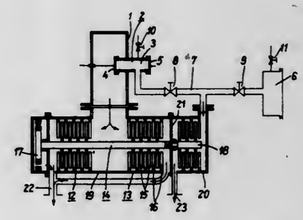
A tungsten halogen lamp has molybdenum ribbon connectors embedded within a press seal of the lamp. A molybdenum lead-in wire extends from each ribbon connector externally of the press seal. The lead-in wire has an oxidation resistant molybdenum aluminide coating thereon. A bead of soft glass seals the opening in the press seal caused by the lead-in wire.

3,668,392
RADIOACTIVE RADIATION-TYPE FLUID INTERFACE DETECTION SYSTEM
Walter A. Bajek, Lombard, and David M. Boyd, Jr., Clarendon Hills, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Continuation of application Ser. No. 454,519, May 10, 1965, now abandoned. This application May 20, 1969, Ser. No. 827,122
Int. Cl. G01n *23/10*
U.S. Cl. 250—43.5 D 13 Claims



Method and apparatus for locating one or more liquid-liquid interfaces within a closed vessel utilizing a radiation-type interface detector. A traveling radiation source within the vessel and a traveling radiation detector outside the vessel, the paths of travel of both being vertical and the speed of both being synchronized, are used to provide constant path length therebetween. The instrument output is in the nature of a density profile.

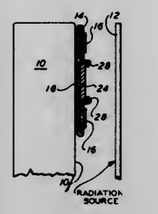
3,668,393
APPARATUS HAVING EVACUATION SPACES AND A PUMPING ASSEMBLY
Moriz Von Rauch, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 28, 1970, Ser. No. 75,883
Claims priority, application Germany, Sept. 30, 1969, P 19 50 328.7
Int. Cl. H01j *37/26*; F03b *5/00*; F01d *3/02*
U.S. Cl. 250—49.5 A 5 Claims



An apparatus has a high vacuum seal and at least one additional evacuative space as well as a pumping assembly for evacuating the vessel and space. The pumping assembly has a backing pump and a turbomolecular pump having a main section communicating with the vessel and with the backing pump. The turbomolecular pump has an auxiliary section communicating with the additional evacuative space and has

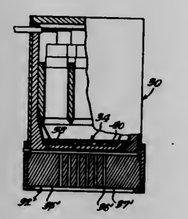
a housing enclosing the main and auxiliary sections. The turbomolecular pump has first and second pump members disposed in the main and auxiliary sections respectively. The housing includes a wall intermediate the main and auxiliary sections for separating the sections in vacuum tight relation to each other. The turbomolecular pump has a rotor shaft which passes through the wall and connects the first pump member with the second pump member.

3,668,394
X-RAY FILM IDENTIFICATION MEANS
Norman Panzer, 71 Blanchard Rd., South Orange, N.J.
Filed Aug. 3, 1970, Ser. No. 60,311
Int. Cl. G03b *17/26*
U.S. Cl. 250—67 **4 Claims**



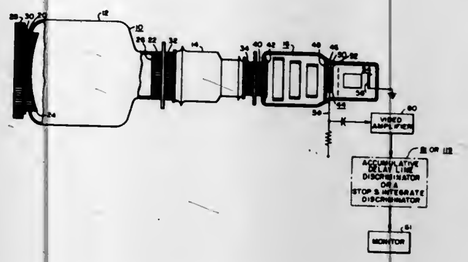
Means for contrastingly projecting X-rays for identification purposes upon an X-ray film carried by a cassette include, at the front face of the cassette (the side facing the radiation source), an indicia sheet of X-ray opaque material form which a plurality of identifying characters have been punched out, and imperforate X-ray absorbent sheet material interposed between said indicia sheet and the radiation source for attenuating the radiation beam passing to said indicia sheet. The indicia sheet and the imperforate sheet material, which are arranged to be subjected to X-rays simultaneously with the imposing of such radiation upon the person or thing to be identified, may be varied in their relative opacities and in their cumulative opacity, depending upon the radiation strength and the X-ray absorption characteristic of the subject being photographed. Said indicia sheet and imperforate sheet material are advantageously separably associated with a suitable indicia carrier.

3,668,395
SCINTILLATION CAMERA HAVING IMPROVED PERIPHERAL RESPONSE
William G. Walker, Schiller Park, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.
Continuation of application Ser. No. 717,750, Apr. 1, 1968, now abandoned. This application Dec. 17, 1969, Ser. No. 871,479
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **21 Claims**



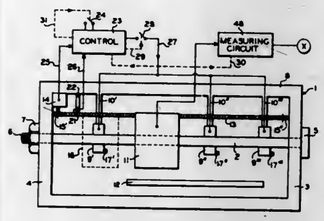
A substantial increase in the diameter of the useable light image generated by a scintillation camera equipped with a multiple collimator is achieved by using a collimator that does not include holes which allow radiation to strike the periphery of the scintillator.

3,668,396
TELEVISION TYPE NUCLEAR RADIATION CAMERA SYSTEM
Juris A. Asars, Monroeville, and Robert J. Schneeberger, Pittsburgh, both of Pa., assignors to CGR Medical Corporation, Cheverly, Md.
Filed Nov. 10, 1969, Ser. No. 875,348
Int. Cl. H04n *3/00*
U.S. Cl. 250—83.3 R **5 Claims**



A television type camera system in which TV type scanning is used for readout of a spatially distributed nuclear radiation image. The scanning system provides means of time integration of the video pulses derived from a single radiation event and provides discrimination of the integrated pulses generated by a single event in the spatially distributed image. In one embodiment of the invention, conventional TV scanning is utilized and circuitry is associated with the system to permit time integration of the multiple video pulses derived from a single event for subsequent discrimination. A second embodiment utilizes a non-conventional scanning system to permit the electron scanning beam to stop and integrate a single event and subsequent discrimination of the signal.

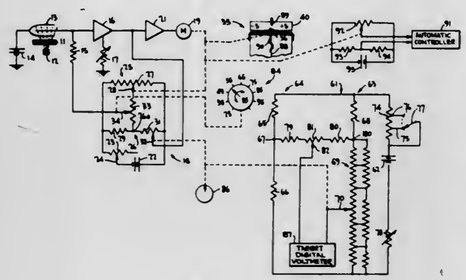
3,668,397
MEASURING SYSTEM SUPPORT
Duane L. Stucky; Richard G. Donaldson, and Allen D. Alexander, all of Columbus, Ohio, assignors to Industrial Nucleonics Corporation
Filed Feb. 16, 1971, Ser. No. 115,200
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D **5 Claims**



The present invention in one form provides an arrangement for support standardization a measuring system. The measuring system comprises a measuring device that is supported by one or more tubes held under tension in a frame.

The tubes are clamped to the frame while the device is measuring and unclamped to allow the tube to resume a free position. The clamps support the tubes in the free position, when the clamps are reclamped. Changes in the frame dimensions, due to thermal effects are compensated for, retaining the position of the measuring device relative to the material being measured substantially constant, for more accurate and reproducible measurements.

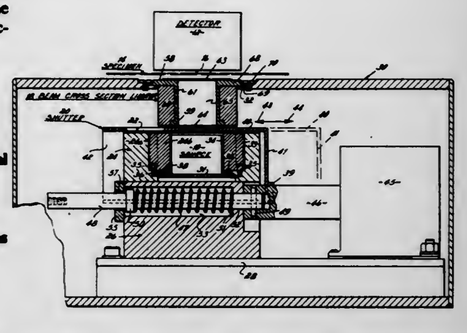
3,668,398
SYSTEM AND METHOD FOR FACILITATING THE OPERATING SET-UP OF A RADIATION GAUGE
George I. Doering, Columbus, Ohio, assignor to Industrial Nucleonics Corporation
Filed Dec. 26, 1968, Ser. No. 787,157
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 D **18 Claims**



Disclosed are a system and method for facilitating the setup of a nucleonic gauge and automatic controller for measuring and controlling the thickness of a material. The gauge includes conventional calibration circuits having variable voltage dividers set in accordance with the expected operating points for the material thickness center scale and gauge sensitivity. In one embodiment, the sensitivity and operating point voltage dividers as well as the automatic controller setpoint voltage divider are set with the aid of an auxiliary bridge including additional voltage dividers ganged with the voltage dividers of the gauge calibration circuits. In another embodiment, one of the auxiliary bridge voltage dividers has a logarithmic response, enabling calibration for different materials to be established by changing the input voltage to the auxiliary bridge.

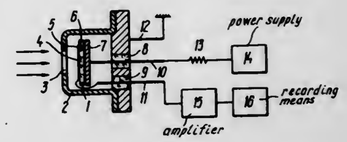
3,668,399
GAUGE USING ENVIRONMENT-INSENSITIVE RADIATION BEAM CROSS-SECTION LIMITER
Bonaventure B. Cahill, Ft. Mitchell, Ky., and Wilfred W. Lyon, Cincinnati, Ohio, assignors to The Ohmart Corporation, Cincinnati, Ohio
Filed June 30, 1969, Ser. No. 837,681
Int. Cl. G21f *5/02*; H01j *35/16*
U.S. Cl. 250—83.3 D **12 Claims**

Gauge for measuring the characteristics of a specimen including a shielded source of radiation, a detector spaced from said source, a radiation beam cross-section limiter through which radiation from the source passes as it travels along a path for impingement upon the specimen which is located in a gap between the limiter and the source for selectively blocking and unblocking radiation from the source. The radiation beam cross-section limiter includes a bore sealed at both ends through which the radiation from the source passes in its path to the specimen and detector. By virtue of the sealed beam-limiting bore the mass of material contained within the bore, which usually is air, remains constant independent of changes in the environment, such as changes in environmental temperature, barometric pressure,



humidity and the composition of the surrounding gas, thereby substantially reducing errors in the gauging process introduced by such environmental changes.

3,668,400
NUCLEAR RADIATION DETECTION DEVICE UTILIZING DIAMOND DETECTOR WITH INJECTING AND BLOCKING CONTACTS
Stanislav Fedorovich Kozlov, B. Akademicheskaya ulitsa, 49, korpus I, kv. 18, Moscow, U.S.S.R.
Filed Sept. 10, 1969, Ser. No. 856,606
Claims priority, application U.S.S.R., Sept. 11, 1968, 1269669
Int. Cl. G01t *1/24*
U.S. Cl. 250—83.3 R **1 Claim**

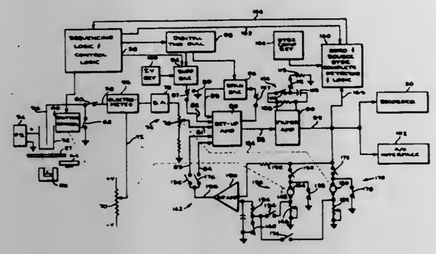


A device for detecting nuclear radiations, comprising a nuclear radiation detector on the basis of a diamond crystal plate, having a blocking and an injecting contacts, a detector power supply associated with the injecting contact, and an amplifier with recording means associated with the blocking contact.

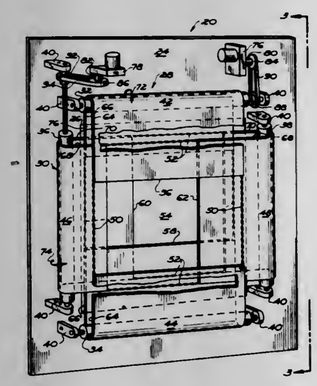
3,668,401
RADIATION MEASUREMENT SYSTEM WITH AUTOMATIC STANDARDIZATION USING A RATE FEEDBACK SIGNAL
Franklin Bong-See Shah, and Paul Henry Troutman, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation
Filed Mar. 11, 1970, Ser. No. 18,541
Int. Cl. G01t *1/18*; G01n *23/00*
U.S. Cl. 250—83.6 R **23 Claims**

A radiation measurement system for measuring an absorption-dependent property of a material is employed in a digital process control system. The radiation measurement system includes an automatic standardization system for performing

zero and source standardization and a detector for detecting the completion of each standardization mode. A rate feedback signal is derived in each standardization mode to damp the standardizing operation.

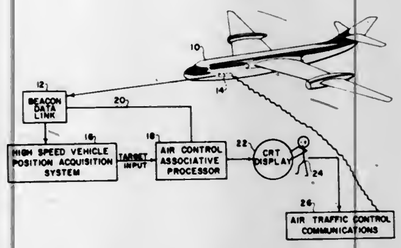


3,668,402
ADJUSTABLE COLLIMATOR
Anthony J. Palermo, South Euclid, and Charles B. Husick, Shaker Heights, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio
Filed Jan. 21, 1971, Ser. No. 108,465
Int. Cl. G03b *41/16*
U.S. Cl. 250—105 **9 Claims**



An adjustable X-ray collimator is disclosed which has two web assemblies. Each web assembly has a pair of spaced and connected webs which form a continuous loop reaved over a pair of rollers. The assemblies are positioned near and parallel with one another with the axes of the rollers on one assembly being perpendicular to the other so that one assembly defines the sides and the other assembly the ends of a rectangular X-ray beam opening. The size of the opening is adjusted by rotating the rollers so as to move the interconnected webs to adjust the amount of space between ends of the webs.

3,668,403
METHOD AND APPARATUS FOR VEHICLE TRAFFIC CONTROL
Willard C. Mellander, Kent, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed May 5, 1969, Ser. No. 821,618
Int. Cl. G06f *15/48*
U.S. Cl. 235—150.23 **17 Claims**

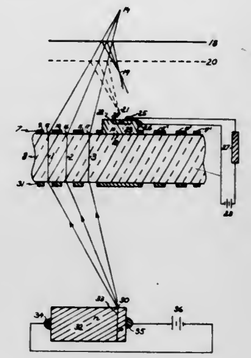


A method for vehicle traffic control is provided which is basically adapted to aircraft and includes a method for aircraft control to eliminate hazardous operating conditions, a method for determining a potential conflict between two or more aircraft in sufficient time to effect correction, a method for determining an effective maneuver to avoid collision, a method for predicting control sector overload, a method for predicting terminal overload, and as a result of conflict, determination of an alternate flight plan or necessary time delay in takeoff to minimize flight costs. The means to accomplish these methods is a sophisticated data processing system properly programmed to a previously prepared algorithm. Preferably, the invention contemplates use of an associative processor so that all calculations can be performed on each aircraft or vehicle simultaneously in parallel. The invention also contemplates a satellite position measuring system to determine conflict of aircraft or surface vehicles over large water expanses. In addition, the system contemplates determining if a given flight path may intersect hazardous weather, or that an aircraft has safe minimum terrain clearance as the system can provide command instructions or controls in accordance with the system information generation.

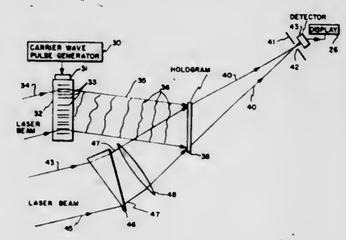
3,668,404
ELECTRO-OPTICAL MICROTRANSDUCER COMPRISING DIFFRACTIVE ELEMENT MONOLITHICALLY INTEGRATED WITH PHOTOELECTRIC DEVICE
Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.
Continuation-in-part of application Ser. No. 692,051, Dec. 20, 1967, now Patent No. 3,546,469. This application Sept. 29, 1970, Ser. No. 76,430
Int. Cl. G02b *5/18*; G02f *1/28*; H01l *15/02*
U.S. Cl. 250—211 J **10 Claims**

The position of a photocell is varied along the optical axis of the light distribution generated by a Fresnel optical system. The variation of the position of the photocell is caused by the displacement of a surface area element, thereby translating said displacement into an electrical signal.

Two or more of the three components of the above-mentioned arrangement, i.e., light source, Fresnel optics and photocell, can be combined into a compact integrated structure.

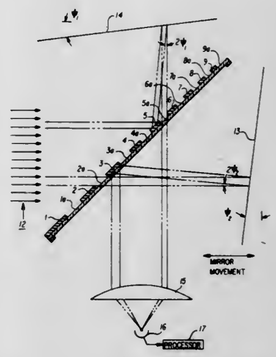


3,668,405
OPTICAL SYSTEM FOR IDENTIFYING PULSES
Robert E. Brooks, Redondo Beach, and Lee O. Heflinger, Torrance, both of Calif., assignors to TRW, Inc., Redondo Beach, Calif.
Filed June 16, 1969, Ser. No. 791,597
Int. Cl. G08c *9/06*
U.S. Cl. 250—216 **5 Claims**



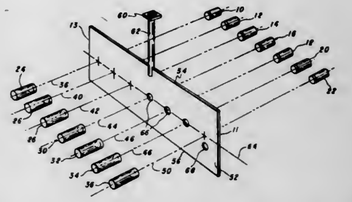
An optical system for identifying a pulse or wavetrain or for compressing the time duration of such a pulse. This is effected by passing monochromatic light through a cell containing a solid or liquid for sustaining an acoustic wave in the desired frequency spectrum. If the pulse to be identified is an electrical pulse, it may be coupled to the cell to set up the acoustic wave. Alternatively, the pulse may be already be an acoustic pulse. The resulting diffracted light wave is then optically filtered by an optical filter such as a hologram on which has previously been recorded a fringe or interference pattern of the pulse to e identified or to be compressed. Accordingly, if the acoustic wave corresponds to the desired electrical pulse, the light passing the hologram may be detected by a detector. If the time duration of the pulse is to be compressed, the hologram or optical filter is so arranged that it will focus the light from the laser substantially in a point or other predetermined area where its exact position may then be detected.

3,668,406
LIGHT PROCESSING DEVICE UTILIZING BEAMSPLITTER HAVING FIRST REGION REFLECTIVE FROM BOTH SIDES AND SECOND REGION WHICH IS TRANSPARENT
Lee R. Reid, Richardson, and Charles Sumner Williams, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 757,371, Sept. 4, 1968, now abandoned. This application Nov. 16, 1970, Ser. No. 90,143
Int. Cl. G01c *3/14*; G02b *27/14*; H01j *39/12*
U.S. Cl. 250—220 SD **6 Claims**



Disclosed is an interferometer using therein a beamsplitter having a thin-film, transparent substrate; a plurality of stripes, each stripe being reflective from both sides and affixed to the substrate; and two mirrors positioned such that as a wavefront of light is divided by the beamsplitter, the divided beams impinge upon the mirrors, whereby when one mirror is moved toward or away from the beamsplitter, the beams impinging upon the movable mirror are changed in phase from the beams impinging upon the other mirror, the phase being measured by a light detector.

3,668,407
OPTICAL SWITCHING FOR KEYBOARD ENCODER
Walter T. Matzen, and Hilton Wayne Spence, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 28, 1970, Ser. No. 41,406
Int. Cl. H01j *1/56*
U.S. Cl. 250—229 **8 Claims**



Disclosed is an optically coded encoder especially adapted for use in keyboards for calculators, adding machines and other applications requiring the generation of coded electrical signals in response to the activation of an input key. Encoding is accomplished by the imposition of an optically coded member in substantially columnar light beams thereby

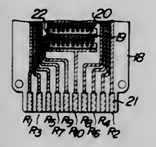
modulating the beams and detection of the modulated beams to generate a code which is uniquely representative of the activated input key.

3,668,408

LIGHT SENSOR MATRIX DEVICE CONSISTING OF PHOTO-CONDUCTIVE ELEMENTS

Oshio Yamashita, Hirakata; Manabu Yoshida, Osaka; Nobuo Hasegawa, Uji, and Saburo Kitamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 15, 1971, Ser. No. 124,409
Claims priority, application Japan, Mar. 16, 1970, 45/25705
Int. Cl. H01j *39/12*
U.S. Cl. 250—220 M **1 Claim**



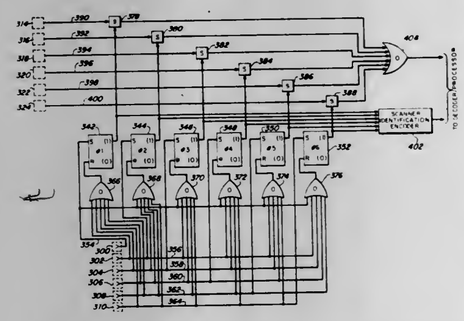
A light sensor matrix device for the static reading of punched cards and for the pattern recognition. It has groups of sandwich-type CdS photo-conductive elements arranged two-dimensionally on a printed circuit board at positions corresponding to those of holes of the punched card. The photo-conductive elements are connected in series with respective associated diodes, and the individual series circuits are connected in matrix form.

3,668,409

SCANNER/DECODER MULTIPLEX SYSTEM

Richard H. Tuhro, Bedford, and Christos B. Kapsambelis, Canton, both of Mass., assignors to Computer Indentics Corporation, Westwood, Mass.

Filed Feb. 26, 1971, Ser. No. 119,105
Int. Cl. H01j *39/12*; **G06k** *9/00*; **H04n** *3/28*
U.S. Cl. 250—236 **18 Claims**



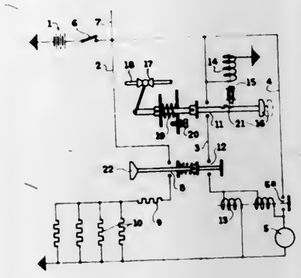
A time division multiplex optical scanning system is disclosed capable of sampling a number of optical scanners, each of which scans at a predetermined scan rate including a plurality of scanners each including a rotatable support means having a plurality of reflective members disposed about its periphery for scanning an object as the support means rotates; and means for rotating the rotatable support means in a predetermined phase relationship with the rotatable support means of each of the other ones of the scanners for enabling the scanners to scan one at a time in sequence; means responsive to radiation reflected from the members for producing an electrical signal that is a function of the reflected radiation; means for generating time frames at a rate equal to the scan rate, each frame having a predetermined number of time slots equal to the number of scanners capable of being sampled; and means responsive to the means for generating for sampling the electrical signal from each of the scanners during successive ones of the time slots during each frame.

3,668,410

DEVICE FOR STARTING AND STOPPING A DIESEL ENGINE

Pierre Ballandras, Montbeliard, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Nov. 3, 1970, Ser. No. 86,460
Claims priority, application France, Jan. 7, 1970, 7000361
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 R **6 Claims**



Device for starting and stopping a Diesel engine having a lock for locking a manual control element in a position thereof for opening the fuel supply conduit. The lock is electromagnetically controlled and the manual control element is maintained in the locked position, so long as the main contactor of the vehicle is in the "on" position, in opposition to the action of spring return means which tend to retain the manual control element in its position for closing the fuel-supply conduit.

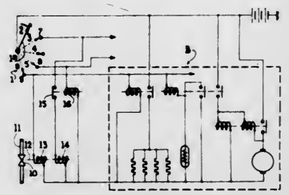
3,668,411

STARTING AND STOPPING DEVICE FOR A DIESEL ENGINE

Andre Leger, Sartrouville, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed June 3, 1971, Ser. No. 149,467
Claims priority, application France, June 11, 1970, 21460
Int. Cl. F02n *17/02*
U.S. Cl. 290—38 **2 Claims**

Device for starting and stopping a diesel engine including a valve in the fuel supply conduit for the engine and an electric supply circuit controlled by a main electric switch having "stop," "accessories," "garage," "operation," and "starting" positions. The valve is shifted between a stable open position and stable closed position by an opening coil and a closing coil respectively of an electromagnetic device. The opening coil is connected between ground and a pair of the electric supply circuit across which voltage is applied when the main switch is on the "starting" contact and the closing coil is connected between the "accessories" contact and ground in series with a normally-closed switch which is opened by a relay



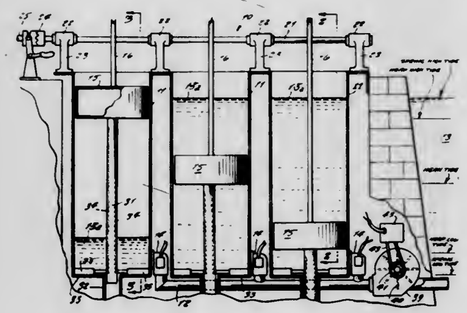
whose actuating coil is connected between the "operation" contact and ground.

3,668,412

APPARATUS FOR HARNESSING THE VERTICAL MOVEMENT OF OCEAN TIDES AND UTILIZE THE FORCE FOR GENERATING ELECTRICAL ENERGY

Charles K. Vrana, 60 Helen Lane, and Jacqulyn G. Lawton, 402 Crescent St., both of Fort Myers Beach, Fla.

Filed Oct. 27, 1970, Ser. No. 84,412
Int. Cl. F03b *13/12*
U.S. Cl. 290—53 **3 Claims**



An apparatus for harnessing the vertical movement of ocean tides and utilize the force for generating electrical energy, the apparatus being based upon the principal of a large float which exerts force upwardly at a time of a risen tide and a downward force due to gravity at a time of a fallen tide, said float is first securely captivated to the level of the prevailing low tide and which is then released at the height of the tide in order to contribute its full built up force of available energy, the vertical movements of the float being transmited from a vertical superstructure mounted upon the float to a rotatable gear mounted upon a rotatable horizontal shaft journalled in stationary stanchions, and the rotatable shaft thus driving an electrical generator or performing other useful work.

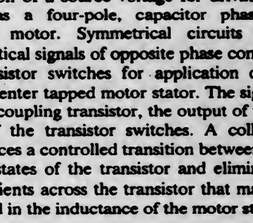
3,668,413

CONTROL SYSTEM FOR HIGH VOLTAGE D.C. LINK CONNECTED BETWEEN A.C. SYSTEMS

John Desmond Ainsworth, Stafford, England, assignor to The English Electric Company Limited, London, England

Filed May 11, 1970, Ser. No. 36,156
Claims priority, application Great Britain, May 9, 1969, 23,663/69
Int. Cl. H02m
U.S. Cl. 307—2 **5 Claims**

The invention in this application relates to a control system for controlling the power or current in an H.V.D.C. link connected between two a.c. systems and is employed particularly to damp power oscillations developed in such systems which frequently occur after any large disturbances, such as a temporary line short circuit. In particular, the system includes apparatus for defining an output signal proportional to a change function of absolute phase angle ϕ of the alternating



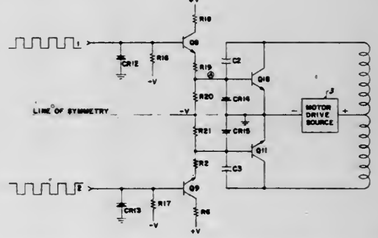
voltage in at least one of the a.c. systems, and a control circuit for controlling the converters in the d.c. link. The control circuit is responsive to a signal depending on both the output signal from the apparatus and a predetermined order signal whereby the d.c. link is controlled to have a component of variation proportional to the said change function.

3,668,414

TRANSITION INTEGRATION SWITCHING AMPLIFIER

Roger F. Norian, Rochester, and Virgil H. Koning, Henrietta, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,287
Int. Cl. G05f *1/08*
U.S. Cl. 307—104 **5 Claims**



A transition integration switching amplifier for controlling the application of a source voltage for driving an inductive load such as a four-pole, capacitor phased, hysteresis synchronous motor. Symmetrical circuits are provided wherein identical signals of opposite phase control the operation of transistor switches for application of the voltage source to a center tapped motor stator. The signals would be applied to a coupling transistor, the output of which controls the input of the transistor switches. A collector to base capacitor forces a controlled transition between the saturated and cut-off states of the transistor and eliminates any high voltage transients across the transistor that may arise due to energy stored in the inductance of the motor stator.

3,668,415

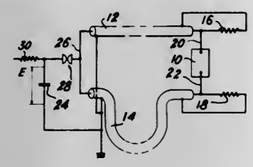
DEVICE FOR SUPPLY VOLTAGE PULSES

Jacques Marilleau, 7, rue Emile Zola-94, Nogent sur Marne, France

Filed Feb. 17, 1971, Ser. No. 116,006
Claims priority, application France, Feb. 23, 1970, 7006238
Int. Cl. H03k *3/00*
U.S. Cl. 307—106 **7 Claims**

A supply device for delivering rectangular voltage pulses of very small width between two outputs comprise a storage

capacitor, a transmission flat or coaxial line constituted by a plurality of two-conductor sections having the same characteristic impedance and placed in series. A rapid-closure



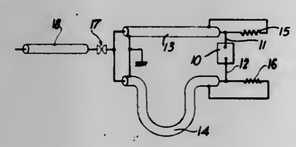
switching means connects the terminals of the capacitor to a circuit in which the two conductors of the line are incorporated. The two outputs are connected to the same conductor of the line at each end of one of said sections.

3,668,416

DEVICE FOR PRODUCING RECTANGULAR VOLTAGE PULSES OF VERY SMALL WIDTH BETWEEN TWO OUTPUTS

Jacques Marilleau, Nogent-sur-Marne, France, assignor to Commissariat a L'Energie Atomique, Paris, France

Filed Feb. 18, 1971, Ser. No. 116,548
Claims priority, application France, Feb. 23, 1970, 7006329
Int. Cl. H03k 3/00
U.S. Cl. 307—106 **12 Claims**



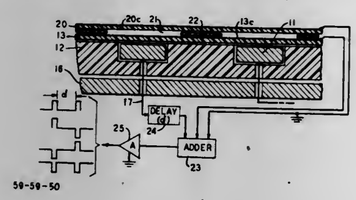
The device comprises a first transmission line which can be charged, a second transmission line which constitutes the load line and switching means for connecting one end of the charged line to the load line. The load line is made up of two sections having the same characteristic impedance and the charged line has a characteristic impedance which is very substantially lower than that of the load line.

3,668,417

TOUCH-SENSITIVE SWITCH EMPLOYING ELECTRET FOIL

Gerhard Martin Sessler, Summit; Robert Lee Wallace, Jr., Warren Township, Somerset County, and James Edward West, Union, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,536
Int. Cl. H01g 7/02; H01h 3/12
U.S. Cl. 307—113 **26 Claims**



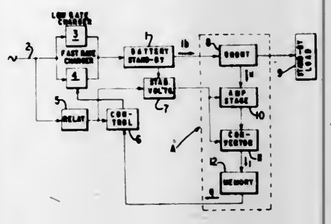
A keyboard switching arrangement that is mechanically simple, reliable, and which can be fabricated with an overall thickness of less than ¼ inch, includes a plurality of independent conductive elements aligned with holes in a protective front cover. A single sheet of a metallized foil electret is interposed between the cover and the conductive members. The metal layer of the foil forms a capacitive transducer with each backplate section. Each switch is operated by touching the foil electret through one of the cover holes. The resulting displacement generates an electric output signal which is utilized for actuating an associated switching element or the like.

3,668,418

SYSTEM FOR CONTROLLED CHARGING OF STAND-BY STORAGE BATTERIES THAT SUPPLY A LOAD ON FAILURE OF POWER SUPPLY TO THE LOAD FROM POWER MAINS

Pierre Godard, Livry-Gargan, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Dec. 22, 1969, Ser. No. 887,198
Claims priority, application France, Oct. 1, 1969, 6933547
Int. Cl. H02j 7/00
U.S. Cl. 307—66 **19 Claims**



A system for controlled charging of a stand-by storage battery that supplies a load in the event of failure of a.c. power supply mains including high and low rate charging means energized by power from the mains to supply charging current to the stand-by battery selectively at high or low rates. This system includes a memory storage cell or device of low capacity relative to the stand-by battery which is connected to be charged in response to flow of discharge current from the stand-by battery only during stand-by operation of said stand-by battery while power supply from the mains is interrupted. The extent of charge thus received by the memory storage cell is proportional to the current actually discharged by the stand-by battery only while and if it is operative and discharging into the load during mains power failure. Upon restoration of power in the mains, the proportionately charged memory storage cell is caused to discharge automatically at a constant rate until exhausted and the discharge current of the memory cell is used to control circuit means to effect automatically high-rate charging of the stand-by battery from the mains until substantial exhaustion of the proportionate charge of the memory storage cell occurs, whereupon low rate charging of the stand-by battery from the mains commences automatically.

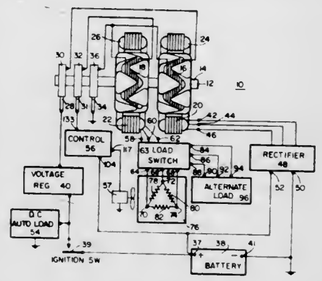
3,668,419

ELECTRICAL POWER SOURCE AND HEAT AUGMENTATION SYSTEM FOR USE IN AUTOMOTIVE VEHICLES

James R. Cherry, Barrington; Theodore A. Byles, Villa Park, and Ole K. Nilsen, Barrington Hills, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 30, 1970, Ser. No. 102,808
Int. Cl. H02j 7/00
U.S. Cl. 307—66 **7 Claims**

An auxiliary heat supply and electrical power source for a vehicle is comprised of first and second independently controlled alternators connected in tandem to a common shaft. The output of the first alternator is connected to a conventional electrical load and the output of the second alternator may be connected to a heat producing resistive load. The



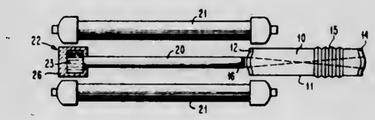
output of the second alternator can be controlled by circuitry including switches operating in cooperation with a conventional heating system and a fan speed control mechanism.

3,668,420

1.5 MICRON RAMAN LASER

James T. Vanderslice, Rockville, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,466
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 **13 Claims**



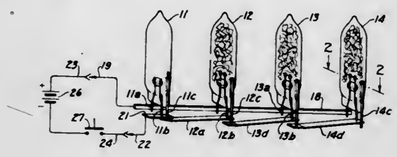
A laser system which emits Raman-stokes radiation in the 1.5 micron (eye-safe) region is achieved by directing a Q-switched 1.06 micron giant pulse beam through a Raman-active medium which has a Raman frequency shift of around 3000 cm^{-1}. The Q-switch is a saturable absorber dye from the class of bivalent transition metal dithiene complexes.

3,668,421

PHOTOFLASH LAMP ARRAY WITH AUTOMATIC SWITCHING

Harry J. Bowers, Jr., Mayfield Heights, Ohio, assignor to General Electric Company

Filed Dec. 4, 1970, Ser. No. 95,291
Int. Cl. H02j 1/00
U.S. Cl. 307—117 **17 Claims**



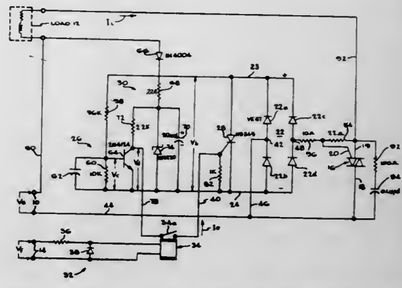
An array of photoflash lamps is provided with a plurality of switching means for connecting successive lamps to a source of firing pulses. Each flash lamp, except the last to flash, has a switch pin adhered thereto by means of a protective lacquer coating. Each switch pin coacts with a switching means so that when a lamp flashes the heat thereof softens the lacquer and the switch pin becomes movable and causes the associated switching means to connect an unflashed lamp into the firing circuit so as to be flashed by the next firing pulse. An indicator pin is adhered by lacquer on the last lamp to be flashed, for actuating a last-flash indicator mechanism. A particularly advantageous arrangement is disclosed for a dual array having three lamps on each side, and also an improved three-prong connector arrangement for a dual array.

3,668,422

SYNCHRONOUS SWITCHING CIRCUIT

Joseph E. Pascente, Norridge, Ill., assignor to Grigsby-Barton, Inc., Rolling Meadows, Ill.

Filed Sept. 28, 1970, Ser. No. 76,132
Int. Cl. H01h 9/56
U.S. Cl. 307—133 **17 Claims**



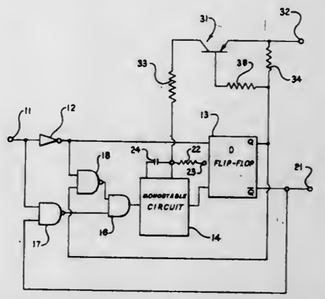
Switching circuits for controlling the application of an A.C. source to a load employ a zero voltage crossing detector for selectively triggering a control thyristor at a zero voltage crossing of the source and means for supplying a continuous latch current to the gate of the control thyristor during succeeding cycles of the A.C. source. The control thyristor is employed to latch a switching thyristor which, in turn, applies the power from the A.C. source to the load.

3,668,423

LOGIC CIRCUIT DELAY SYSTEM COMPRISING MONOSTABLE MEANS FOR PROVIDING DIFFERENT TIME DELAYS FOR POSITIVE AND NEGATIVE TRANSITIONS

Francis O. Couch, Belmont, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

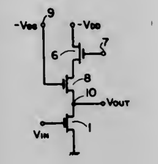
Filed Mar. 18, 1971, Ser. No. 125,670
Int. Cl. H03k 5/153
U.S. Cl. 307—208 **4 Claims**



A logic circuit having a single monostable circuit operating a flip-flop circuit and means controlled by the latter to switch

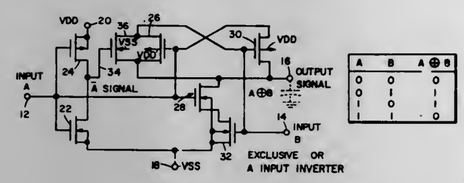
resistance values in an RC circuit of the monostable for establishing different time delays for positive and negative logic transitions.

3,668,424
INVERTER CIRCUIT
Hirohiko Yamamoto, and Masamichi Shiraishi, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Oct. 30, 1970, Ser. No. 85,673
Claims priority, application Japan, Nov. 1, 1969, 44/88260
Int. Cl. H03k *19/40*
U.S. Cl. 307—214 **4 Claims**



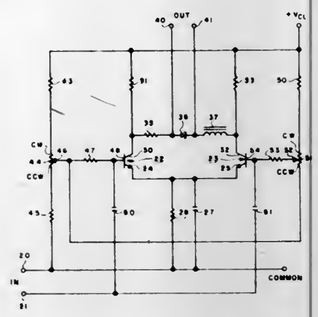
An inverter circuit comprising an input transistor, a load transistor, and a synchronizing transistor connected in series. A biasing voltage is applied to the load transistor, and a synchronizing signal is applied to the synchronizing transistor. The latter is effective to establish a relatively low resistance of the synchronizing transistor so that the load resistance and thus the switching speed of the circuit are substantially independent of the amplitude of the synchronizing pulse.

3,668,425
COMPLEMENTARY METAL OXIDE SEMICONDUCTOR EXCLUSIVE OR GATE
Bernard H. Schmidt, Jr., Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 28, 1970, Ser. No. 101,733
Int. Cl. H03k *19/08, 19/32*
U.S. Cl. 307—216 **18 Claims**



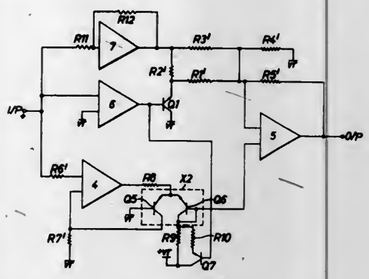
A complementary metal oxide semiconductor (CMOS) exclusive OR gate is shown having a minimum number of devices for performing the exclusive OR function. The exclusive OR function is performed by utilizing the normal two input signals as logic indicating signals and generating a control signal which is a complement of one of the two logic signals. A different configuration results with the selection of the logic signal from which the control signal is to be generated. The capacitance of the output node or output signal is charged by any one of a plurality of current paths associated with each logic configuration.

3,668,426
DIFFERENTIAL PULSE HEIGHT DISCRIMINATOR
Richard D. Culver, Harris County, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed July 23, 1969, Ser. No. 844,014
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **10 Claims**



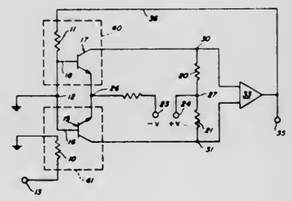
A pair of transistors are each normally biased to saturation, one more strongly than the other. A tunnel diode connected between the collectors, respectively, produces an output voltage only when one of the transistors is driven out of saturation, but not when both transistors are non-saturated. Neither transistor is taken out of saturation until the signal pulse input reaches a certain predetermined amplitude. When the input pulse reaches a second predeterminde amplitude, both transistors are taken out of saturation. Thus, only pulses of amplitudes within a given range produce output signals. In an alternative embodiment, a single transistor replaces the tunnel diode. In another embodiment, the tunnel diode is replaced by a second differential pair of transistors.

3,668,427
OPTICAL PYROMETER AMPLIFIERS
Kenneth R. Curwen, Southampton, England, assignor to Kollsman Instrument Limited, Southampton, England
Filed Apr. 8, 1970, Ser. No. 26,714
Claims priority, application Great Britain, Apr. 10, 1969, 18,526/69
Int. Cl. G06g *7/12*
U.S. Cl. 307—229 **7 Claims**

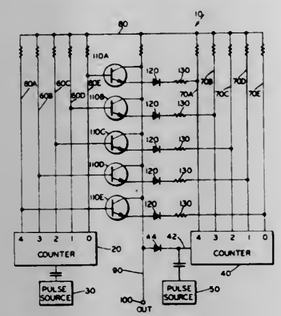


A linearizing circuit for producing output signals varying linearly with temperature from input signals derived from a pyrometer head and varying non-linearly with temperature comprising an input amplifier stage responsive to said non-linear input signals, a linearizing network responsive to output signals from the amplifier stage and including a circuit for generating signals representative of the logarithm of the input signal and summation means for adding a portion of the input signal and a fixed value signal to the logarithmic signal to produce an output signal which is substantially linear with temperature and an output amplifier stage responsive to output signals from the linearizing network to produce amplified signals arranged to be supplied to components associated with the pyrometer head and/or fed back to the head.

3,668,428
ROOT MEAN SQUARE MEASURING CIRCUIT
Henry Koerner, Tucson, Ariz., assignor to Burr-Brown Research Corporation
Filed Aug. 10, 1970, Ser. No. 62,416
Int. Cl. G06g *7/20*
U.S. Cl. 307—229 **7 Claims**

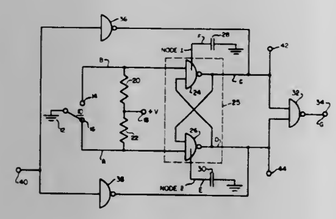


pulse to be provided when a predetermined relationship exists between the counters and permits an output pulse to be



transmitted when the predetermined relationship is disturbed.

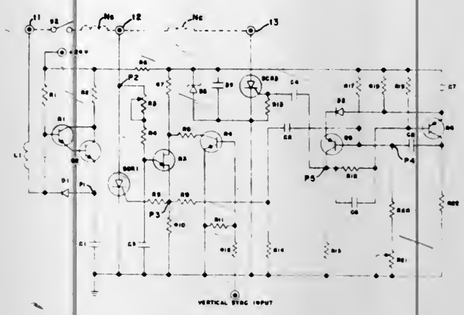
3,668,432
LOGIC SENSING CIRCUIT HAVING SWITCH CONTACT ANTI-BOUNCE FEATURE
Russell R. Rhodes, Marlboro, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Dec. 29, 1970, Ser. No. 102,470
Int. Cl. H03k *17/00*
U.S. Cl. 307—247 A **13 Claims**



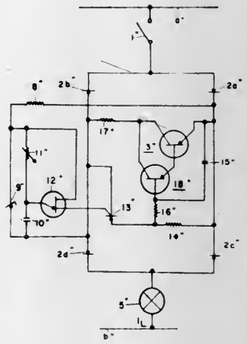
A strobe pulse is produced in response to the change in state of a switch without responding to switch contact bounce. Capacitors connected to node inputs of gates in a bistable multivibrator provide a delayed response of the multivibrator so that both outputs thereof are simultaneously at the same signal level sufficient to enable a gate producing strobe pulse.

3,668,433
DOUBLE PULSE SWITCH CONTROL SYSTEM AND CIRCUIT
Edward Camp Dowling, Harrisburg, and John Breniser Thomas, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Original application Aug. 30, 1966, Ser. No. 576,150, now Patent No. 3,535,691. Divided and this application June 1, 1970, Ser. No. 54,043
Int. Cl. H03k *17/20, 17/26, 3/284*
U.S. Cl. 307—247 A **5 Claims**

This invention relates to an overlap switching circuit for setting and clearing a plurality of memory elements. A drive circuit "sets" a selected element by a first pulse and then "clears" the remaining elements by a second pulse. The next setting pulse selects a given element and is followed by a clearing pulse which clears all elements except the last selected element.



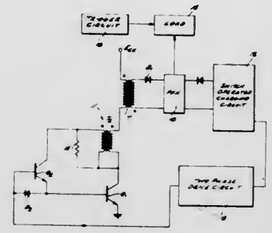
3,668,434
NOISE SUPPRESSING A C PHASE CONTROL SYSTEM
Heinrich-Josef Brungsberg, Ludenscheid, Germany, assignor to Brown, Boveri & Cie A.G., Mannheim, Germany
Filed Apr. 20, 1970, Ser. No. 30,135
Claims priority, application Germany, Apr. 25, 1969, P 19 21 122.4
Int. Cl. H03k *17/00*; G05f *1/44*
U.S. Cl. 307—257 **4 Claims**



An a-c phase control circuit includes a power transistor for phase control replacing the thyristor generally used for this purpose.

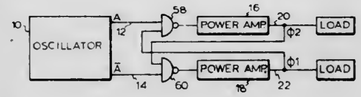
3,668,435
EFFICIENCY PULSE FORMING NETWORK CHARGING SYSTEMS
Robert P. Farnsworth, Los Angeles, and Rodney J. Dahlinger, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Aug. 12, 1970, Ser. No. 63,042
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **6 Claims**

A current feedback switch for the charging supply of a pulse forming network (PFN) is provided with regenerative feedback through a transformer T_2 and a control transistor Q_2 in order that base current be more efficiently provided to drive a main switching transistor Q_1 to saturation. Turning-off the main switching transistor Q_1 is facilitated by the transistor Q_2 in series with the feedback transformer T_2. In



that manner current is more efficiently turned on and off to charge the PFN.

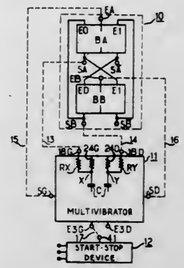
3,668,436
CIRCUIT APPARATUS FOR SUPPLYING FIRST AND SECOND TRAINS OF MUTUALLY EXCLUSIVE CLOCK PULSES
Stanley H. Bacon, Northridge, Calif., assignor to Computer Design Corporation, Santa Monica, Calif.
Filed Dec. 15, 1969, Ser. No. 885,210
Int. Cl. H03k *1/12*; H03b *25/00*
U.S. Cl. 307—262 **4 Claims**



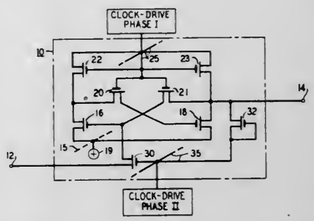
A two phase clock circuit particularly useful for driving logic circuitry whose operation requires the definition of two substantially non-overlapping clock phases. The clock circuit includes a square wave oscillator having true and complementary output terminals, each driving a different power amplifier. Each oscillator output terminal is connected to its associated power amplifier through a NOR gate. The second terminal of each NOR gate is connected to the output of the opposite power amplifier so that neither power amplifier can begin to form a clock pulse until the clock pulse formed by the other power amplifier has terminated, or in other words, until the output voltage of the other power amplifier has fallen to a defined threshold level.

3,668,437
PULSE GENERATOR APPARATUS
Atanasije M. Bankovic, Belfort, France, assignor to Societe Industrielle Honeywell Bull, Paris, France
Filed Apr. 6, 1970, Ser. No. 25,999
Claims priority, application France, Apr. 9, 1969, 6910934
Int. Cl. H03k *1/18, 17/60*
U.S. Cl. 307—265 **6 Claims**

A pulse generator for providing pulse sequences in which the individual pulses are of different durations, wherein a multistable device having a plurality of different states determines the order of the pulses of the sequences, wherein a multivibrator steps the multistable device through its sequence of states, and wherein the multistable device is coupled to the multivibrator to vary its controlling time constants during certain of such states.



3,668,438
SHIFT REGISTER STAGE USING INSULATED-GATE FIELD-EFFECT TRANSISTORS
Glen Trenton Cheney, and Ernam Fillmore King, both of Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 9, 1970, Ser. No. 53,459
Int. Cl. H03k *19/00, 3/286*
U.S. Cl. 307—279 **2 Claims**

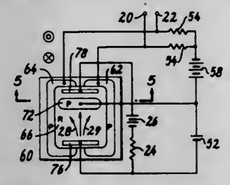


An insulated-gate field-effect transistor (IGFET) shift register stage occupies less semiconductor chip area because a separate ground lead to the gate and drain electrodes of a pair of IGFET load devices is eliminated. This lead is eliminated by substituting therefor a connection from those devices to a first clock phase which controls conduction through that pair of load devices and through a pair of cross-coupling transistors. A second clock phase, which is out of phase with the first clock phase, controls conduction through both an input transistor of the stage and a third IGFET load device connected to an output terminal of the stage.

3,668,439
MAGNETICALLY OPERATED SEMICONDUCTOR DEVICE
Kyoichiro Fujikawa, and Saburo Takamiya, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Marunochi, Chiyoda-ku, Tokyo, Japan
Filed Sept. 4, 1970, Ser. No. 69,867
Claims priority, application Japan, Sept. 11, 1969, 44/72195; Oct. 31, 1969, 44/87397; Dec. 16, 1969, 44/101189
Int. Cl. H01l *11/00, 15/80*
U.S. Cl. 307—309 **21 Claims**

In PNP transistors a transverse electric field is established in the base embraced by two opposite collectors whose direction is parallel to the emitter disposed on the base. A magnetic field is applied across the transistor perpendicularly to the emitter junction originally biased to zero. The Hall ef-

fect serves to deflect electrons flowing through the base toward either one of the end portions of the emitter junction to forwardly bias it. That collector adjacent the forwardly



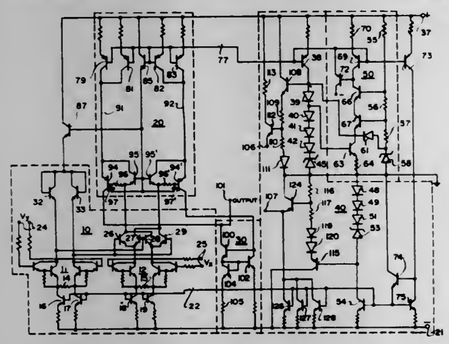
biased emitter end provides an output. In PNPN devices the emitter traverses the first base in which the majority carriers stream. A magnetic field is applied to the stream as in the above mentioned transistor to turn the device ON.

3,668,440

TEMPERATURE STABLE MONOLITHIC MULTIPLIER CIRCUIT

Walter Richard Davis, Tempe, and James E. Solomon, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 16, 1970, Ser. No. 81,399
Int. Cl. H03k 17/14
U.S. Cl. 307—310 **17 Claims**



A monolithic four-quadrant multiplier circuit, the output off which is subject to variations caused by changes in beta (β) due to changes in temperature, is temperature compensated by providing operating current thereto from a regulating circuit which causes the operating current for the multiplier to vary in accordance with a predetermined alpha (α) relationship to cancel out the effect of changes in β on the multiplier output. A level shifting circuit is connected to the output of the multiplier and causes the output of the multiplier to be referenced to ground. In addition, the level shifting circuit includes roll-off filter circuits to prevent high frequency signals from passing to the output terminals over paths which would subject the signals to large amounts of phase shift.

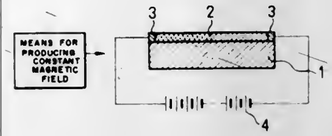
3,668,441

METHOD OF GENERATION OF SPONTANEOUS ELASTIC-SPIN-OSCILLATIONS IN FERROMAGNETOPIEZOSEMICONDUCTOR CIRCUITS

Sylwester Kaliski, ul. Einsteina, Warszawa 49, Poland

Filed Dec. 14, 1970, Ser. No. 97,499
Claims priority, application Poland, Dec. 13, 1969, 137535
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **5 Claims**

A method of generating spontaneous elastic-spin-oscillations in ferromagneto-piezosemiconductor circuits, including a slab of ferromagnetic crystal and a semiconductor layer on said slab, comprises applying a d.c. voltage through ohmic contacts to the semiconductor layer to produce surface and transverse oscillations the surface oscillations inducing in a semiconductor layer, a current of drifting electrons, modulating the current of drifting electrons by a piezoelectric field induced by elastic oscillations in the layer caused by the elastic spin oscillations in the ferromagnetic crystal, amplifying the elastic oscillations in the piezosemiconductor layer by the current when the drifting electrons are at a critical drift of velocity, amplifying the elastic oscillations in the ferromagnetic crystal when the elastic oscillations in the piezosemiconductor are amplified, the circuit being in a state of spin-acoustic resonance by placing the circuit in a constant magnetic field having a value determined by the circuit parameters, and producing a multiplication of spin oscillations through elastic-spin couplings, wherein the dimensions of the slab ensure a maximum reflection from the boundary borders of the slab when the surface oscillations meet Sommerfeld boundary conditions and when the transverse oscillations ensure a maximum reflection from the surface vertical to the direction of the propagation of elastic-spin waves.

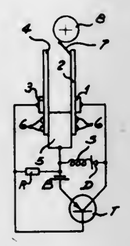


3,668,442

RESONATORS FOR DRIVING TIMEPIECE GEAR TRAINS

Gerhard Vosseler, Bale, Switzerland, assignor to Erwin Bernheim, Zurich, Switzerland

Filed Apr. 26, 1971, Ser. No. 137,359
Claims priority, application Switzerland, Apr. 27, 1970, 6261/70
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 **10 Claims**



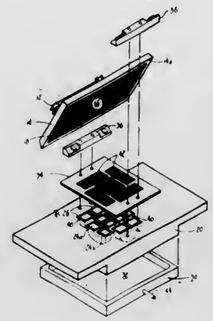
A timepiece resonator comprises mechanically connected first and second oscillating crystals connected respectively in the collector-emitter and collector-base circuits of a transistor. At least the first crystal is secured to a blade adjacent to a clamping point of the blade, and a free end of the blade, carrying driving means for cooperation with a pinion, oscillates at a sub-harmonic of the resonant frequency of the crystals.

3,668,443

MAGNETIC INCREMENTING DETENT

Samuel A. Schwartz, Los Altos, Calif., assignor to Data General Corporation, Southboro, Mass.

Filed May 17, 1971, Ser. No. 144,164
Int. Cl. H02k 41/02
U.S. Cl. 310—12 **20 Claims**



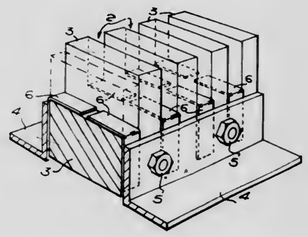
A multiphase magnetic incrementing drive for rapidly moving a magnetic head toward and away from the center of a magnetic information storage disc in very small yet precisely controllable and consistently reproducible increments. A movable member carrying the head is slideably mounted above a stationary member by an air bearing and both members are provided with juxtaposed magnetic coupling surfaces. At least three magnetic areas, each having pole pieces in relative phase differential to those in other areas are integrally formed on one of the magnetic surfaces in a geometrically balanced arrangement to equalize the magnetic driving forces with respect to bearing loads.

3,668,444

LINEAR MOTORS WITH COOLING MEANS

Anthony Walter Davey, Hathern, England, assignor to Herbert Morris Limited, Loughborough, County of Leicester, England

Filed Mar. 1, 1971, Ser. No. 119,660
Int. Cl. H02k 41/02
U.S. Cl. 310—13 **6 Claims**



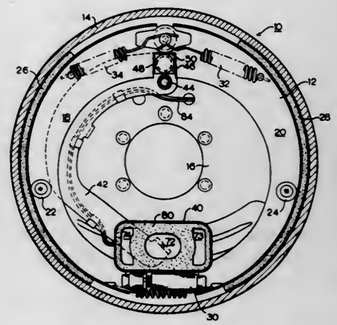
A linear induction motor in which the stationary member is formed with coil windings housed in slots between lamination packs mounted in a frame and having fingers or inserts introduced into the winding slots, the fingers or inserts extending over the edges of the lamination packs and being clamped to the motor frame.

3,668,445

ELECTROMAGNET FOR BRAKES AND CLUTCHES

Leroy K. Grove, South Bend, Ind.

Filed Dec. 21, 1970, Ser. No. 99,896
Int. Cl. H02k 7/102
U.S. Cl. 310—77 **19 Claims**



An electromagnet system having a friction material for engaging an armature, a pole and electrical coil for moving said friction material into engagement with said armature, the pole being constructed of a material which has magnetic characteristics and less wear resistance than the friction material so that the friction material normally forms the principal or only surface of contact between the electromagnet and the armature. The relationship of surfaces between the pole and the friction material may be obtained by the use of compacted, unfused powdered metal as the surface for the pole. The system is adaptable for use where the magnetic attraction of an electromagnet to an armature is employed as a linkage force for a braking function or direct frictional drive, and particularly for use in vehicle brakes and power transmission clutches and brakes.

3,668,446

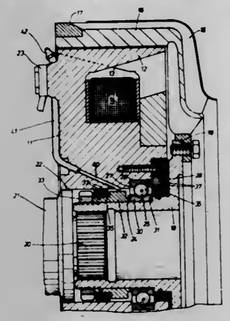
SEALING ARRANGEMENT FOR EDDY CURRENT APPARATUS

Alfred Hoyler, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 29, 1970, Ser. No. 85,145
Claims priority, application Germany, Nov. 3, 1969, G 69 42 657.9
Int. Cl. H02k 5/16
U.S. Cl. 310—90 **8 Claims**

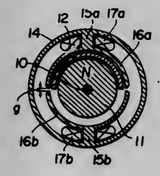
The hub portions of a field generating means and of an Eddy current developing means form an annular space in which a ball bearing is located. Two sealing rings are provided in the annular space on opposite sides of the ball bearing and form on one side of the same, a storage chamber filled with a lubricating grease for the ball bearing. Each sealing ring is attached to one hub portion and having parallel

annular grooves. Stacks of annular metal laminations are respectively located in the grooves, and attached to the other



hub portion. The laminations have lateral annular surfaces abutting each other.

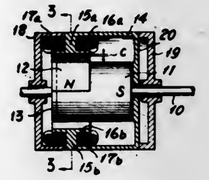
3,668,447
HOMOPOLE-TYPE AC GENERATOR
Enakichi Hayasaka, No. 322, Nakazato-cho, Kito-ku, Tokyo, Japan
Filed May 27, 1968, Ser. No. 740,390
Claims priority, application Japan, May 29, 1967, 42/33690
Int. Cl. H02k *17/00*
U.S. Cl. 310—166 **12 Claims**



A homopole-type AC generator having a rotary magnetic pole body mounted on a rotary drive shaft such that the magnetic axis coincides with the axis of said drive shaft, a pole piece provided on the homopole of the N and S poles of said pole body, magnetic paths along which and through said pole piece the magnetic flux flows from one pole of said rotary magnetic pole body to the other pole, coils disposed in said magnetic paths so as to interlink said magnetic flux, whereby the rotation of said pole body generates AC voltage depending on engagement and disengagement operations between said magnetic flux and the magnetic circuit produced by said coils.

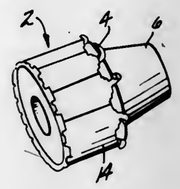
3,668,448
HOMOPOLE TYPE AC GENERATOR
Enakichi Hayasaka, No. 322, Nakazato-cho, Kita-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 740,390, May 27, 1968. This application May 13, 1971, Ser. No. 142,923
Claims priority, application Japan, May 29, 1967, 42/33690; May 15, 1970, 45/40890
Int. Cl. H02k *17/00*
U.S. Cl. 310—166 **6 Claims**

A homopole type AC generator consisting of a rotary magnetic pole body rotatable by a rotational force from outside, a yoke core through which magnetic fluxes flow from the N pole of the rotary magnetic pole body to the S pole and forms a part of magnetic path, and generating coils provided at positions interlinking with the magnetic path. The generating coils have induced AC voltage so as to effect AC generation as the magnetic fluxes make magnetic engagement and



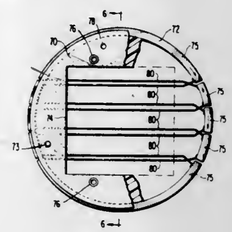
disengagement with or from the generating coils during the rotation of the rotary magnetic pole body.

3,668,449
ALUMINUM CLAD COPPER COMMUTATOR FOR USE WITH ALUMINUM ARMATURE WIRE
John B. King, Alton, Ill., assignor to Olin Corporation
Filed Oct. 13, 1970, Ser. No. 80,346
Int. Cl. H02k *13/04*
U.S. Cl. 310—236 **9 Claims**



A new and improved electrical commutator comprising a plurality of spaced apart plates wherein said plates have at least one outwardly projecting finger for holding an armature wire and wherein the plates are copper and the finger is copper integrally bonded to a side of aluminum.

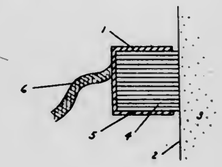
3,668,450
VARIABLE INDUCTION DEVICE
Donald S. Rozelle, Owego, N.Y.; Ralph B. Rozelle, Forty Fort, and Umid R. Nejib, Edwardsville, both of Pa., assignors to Magnetech Industries, Inc., Montrose, Pa.
Original application June 2, 1970, Ser. No. 42,703, now Patent No. 3,614,692, dated Oct. 19, 1971. Divided and this application June 24, 1971, Ser. No. 156,311
Int. Cl. H01r *39/06*
U.S. Cl. 310—237 **12 Claims**



The disclosure relates to a variable induction device or transformer of the type comprising a rectangular magnetic

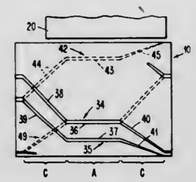
core having two primary transformer windings on opposite core legs and a transferable secondary winding carried by a pair of axially rotatable drums which are each mounted in telescoping relationship over an associated one of the primary transformer windings. Each drum carries a portion of the secondary winding, and the portions are connected in series opposition. The turns of the transferable secondary winding may be transferred from one drum to the other by rotating the drums in synchronism, thereby varying the effective number of transformer secondary turns. A fixed secondary winding or coil having a predetermined number of fixed turns is provided on one of the drums, and electrical connections are made to the windings on the drums by way of an induced current cancelling commutator. All of the elements comprising a variable induction device are removably mounted and one of the core end members is removable to provide interchangeability of the elements.

3,668,451
ELECTRICAL BRUSH STRUCTURE
Ian Roderick McNab, Foosway, Newcastle upon Tyne, 6, England
Filed Aug. 14, 1970, Ser. No. 64,550
Int. Cl. H01r *39/18*
U.S. Cl. 310—248 **6 Claims**



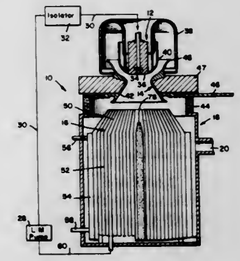
A current transfer brush for an electrical machine consists of refractory fibers, such as aluminum oxide fibers, with a deposited metallic film. The fibers provide mechanical strength with flexibility while the metallic films carry the current and high current densities can be achieved with low wear rates for the brushes and the contact surface which they traverse.

3,668,452
DYNAMOELECTRIC MACHINE WITH IMPROVED MAGNETIC FIELD CONSTRUCTION
Paul Y. Hu, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 5, 1971, Ser. No. 131,329
Int. Cl. H02k *1/22*
U.S. Cl. 310—266 **9 Claims**



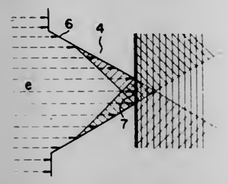
A direct current motor of the printed circuit armature type wherein the stator permanent magnets are physically dimensioned to immerse substantially the entire armature winding in the stationary magnetic flux field.

3,668,453
ELECTRICAL SWITCH DEVICE HAVING A FED LIQUID-METAL CATHODE AND A NON-INTERCEPTING ANODE
Kenneth T. Lian, Thousand Oaks, and Ronald C. Knechtli, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of application Ser. No. 720,692, Apr. 11, 1968, now abandoned. This application July 1, 1970, Ser. No. 51,706
Int. Cl. H01j *1/10, 7/16*
U.S. Cl. 313—7 **10 Claims**



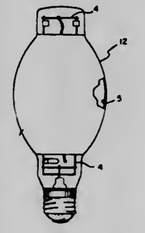
The electrical switch device has an envelope in which is mounted a liquid-metal cathode, an anode, and a condenser. The cathode is capable of very high electron-to-atom emission ratio. A desirable value for the electron-to-atom emission ratio is on the order of 100 or more and is attainable by means of a cathode such as disclosed in U.S. Pat. No. 3,475,636, when used in the switch device. The condenser has a very much larger area than the exposed liquid metal area on the cathode, and it is kept at a low enough temperature to efficiently condense the liquid-metal vapor emitted by the cathode. With mercury used as the liquid metal, the condenser temperature is kept substantially below 0° C., preferably at about −35° C. which is just above the melting point of mercury. When arcing occurs from the liquid metal, a plasma jet of electrons, ions, and neutral particles is emitted from the arc spot. The anode is mounted between the cathode and the condenser, and it is positioned at the edge of the plasma jet to capture the major portion of the electron flow for electrical conduction. Most of the ions and neutral particles as well as a sufficient number of electrons to preserve space-charge and current neutrality, pass the anode in the plasma jet and are captured on the condenser. The combination of the high electron-to-atom emission ratio of the cathode with the large, low-temperature condenser results in an equilibrium background pressure (i.e., pressure outside the plasma jet) of at least as low as 10^{-3} Torr during arcing, and lower than 10^{-4} Torr during non-arcing periods. These low pressures are obtained by maintaining the condenser in the range of low temperatures defined above. This low background pressure, in turn, permits the essentially unperturbed propagation of the plasma jet between the cathode and the surfaces upon which it impinges, i.e., condenser and anode. Such a discharge mode is commonly referred to as a "vacuum arc." The fact that the plasma jet is emitted only during arcing, and that the pressure within the space surrounding this jet is kept low, results in the ability to hold off electric fields up to 50 kV per centimeter between anode and cathode immediately after cessation of arcing.

3,668,454
FINE FOCUS X-RAY TUBE
Yoshihiro Shimura, Tokyo, Japan, assignor to Rigaku Denki Company Limited, Chiyoda-ku, Tokyo, Japan
Filed Mar. 9, 1970, Ser. No. 17,571
Claims priority, application Japan, Aug. 5, 1969, 44/61441; Nov. 17, 1969, 44/91454
Int. Cl. H01j 35/08, 35/14
U.S. Cl. 313—57 3 Claims



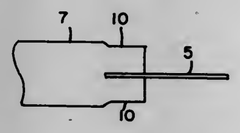
The present invention provides a fine focus X-ray tube with improved directivity wherein extremely intensive X-rays are generated from a fine focus and the position of the focus can be moved finely.

3,668,455
ELECTRICAL TRANSLATING DEVICE CONTAINING SPHEROIDAL PHOSPHORS
Ernest A. Dale, Hamilton, and Martha J. B. Thomas, Winchester, both of Mass., assignors to Sylvania Electric Products Inc.
Filed July 1, 1968, Ser. No. 741,717
Int. Cl. H01j 1/63, 63/04
U.S. Cl. 313—109 12 Claims



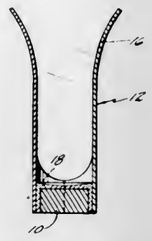
A fluorescent lamp with an inorganic phosphor coating on the lamp envelope. The phosphor particles have the shape of foraminous spheres with a diameter between about 3 and 20μ. In the preferred embodiment, these spheres are hollow so that there is a maximum of emitting surface for a minimum weight of powder.

3,668,456
LAMP HAVING IMPROVED PRESS SEAL
John W. Anderson, Danvers, Mass., assignor to Sylvania Electric Products Inc.
Filed Aug. 28, 1970, Ser. No. 67,699
Int. Cl. H01j 5/62, 5/48
U.S. Cl. 313—318 6 Claims



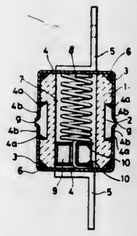
A thin refractory metal ribbon is completely embedded in the press seal of a high silica glass lamp envelope. One end of the ribbon is securely held within a longitudinal slot of a lamp lead-in wire, thereby establishing physical and electrical connection between the ribbon and the lead-in wire.

3,668,457
BRAZING ALLOY FOR BONDING THERMIONIC CATHODE TO SUPPORT
Fred M. Gardner, South Glastonbury; Joseph R. Gervais, Marlborough, and Frank S. Nettleton, Meriden, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Aug. 25, 1969, Ser. No. 852,578
Int. Cl. H01j 1/14, 19/06
U.S. Cl. 313—346 5 Claims



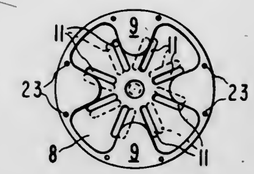
A thermionic cathode comprising a thermionic emissive material consisting essentially of a metal boride, a support consisting essentially of a refractory metal which is reactive with the metal boride and a brazing material bonding the metal boride to the support and acting as a barrier to prevent reaction therebetween.

3,668,458
EXPLOSIVELY ACTUATED GROUND INTERRUPTING DEVICE
Kouhei Irie; Misao Kobayashi, and Masaru Shimamura, all of Shizuoka, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed June 3, 1970, Ser. No. 43,030
Claims priority, application Japan, June 9, 1969, 44/44683; 44/44685; Apr. 24, 1970, 45/39916
Int. Cl. H01j 17/00
U.S. Cl. 313—325 8 Claims



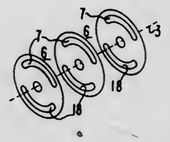
An explosively actuated ground interrupting device for a lightning arrester has an explosive charge which may be detonated by a resistor having a coil-shaped portion which presents a high impedance to transient currents, thereby inhibiting false detonation of the explosive charge.

3,668,459
COUPLED CAVITY SLOW WAVE CIRCUIT AND TUBE USING SAME
Robert S. Symons; Armand Staprans, both of Los Altos, and Robert J. Butwell, San Jose, all of Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed Sept. 8, 1970, Ser. No. 70,173
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 6 Claims



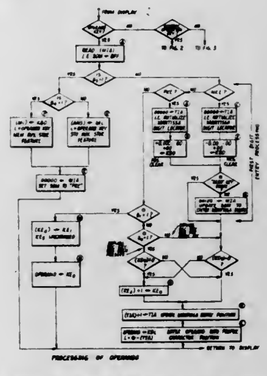
A coupled cavity slow wave circuit, such as a cloverleaf circuit, and a microwave tube using same are disclosed. The slow wave circuit includes an array of cavity resonators arranged successively along the beam path with adjacent ones of the cavities having a common end wall structure. A plurality of generally radially directed coupling slots are cut through the common wall between adjacent resonators to form a plurality of axially aligned arrays of coupling slots angularly displaced around the beam path. Each array of slots is angularly displaced about the beam path from the adjacent array by (360/N) degrees where N is the number of axially aligned arrays of slots. Each axially aligned array of coupling slots includes means for interrupting the flow of electrons through the slots such as a blocking member or the slots are staggered or offset in radial or angular position such as to block off a line-of-sight path parallel to the beam through at least a portion of each array of coupling slots to inhibit cumulative electromagnetic interaction between undesired beamlets in the arrays of slots and the fields of the slow wave circuit, whereby the efficiency and stability of the tube are increased.

3,668,460
COALESCED MODE COUPLED CAVITY SLOW WAVE TUBE
Bertram G. James, Redwood City, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Nov. 16, 1970, Ser. No. 89,670
Int. Cl. H01j 25/34
U.S. Cl. 315—3.5 5 Claims



A coupled cavity coalesced mode slow wave tube is disclosed. In the tube, the slow wave circuit is formed by a succession of cavity resonators coupled together via the intermediary of coupling slots. The coupling slots are dimensioned or tuned to have a resonant frequency substantially at the upper band edge frequency of the cavity mode to coalesce the slot mode and the cavity mode frequencies at the band edge, thereby increasing the passband of the circuit. At least two sets of such coupling slots are provided throughout the circuit. Each set of such slots is disposed with their centers in substantial alignment with a line substantially parallel to the axis of the beam. Provision of the plural sets of slots substantially reduces the slot impedance of the circuit, thereby substantially increasing the operating bandwidth of the circuit as compared to a similar circuit employing only one set of in-line coupling slots.

3,668,461
OUTPUT DISPLAY FOR USE WITH A CALCULATOR
Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett Packard Company, Palo Alto, Calif.
Original application June 23, 1966, Ser. No. 559,887, now Patent No. 3,566,160, dated Feb. 23, 1971. Divided and this application May 21, 1969, Ser. No. 826,613
Int. Cl. H01j 29/52
U.S. Cl. 315—22 23 Claims

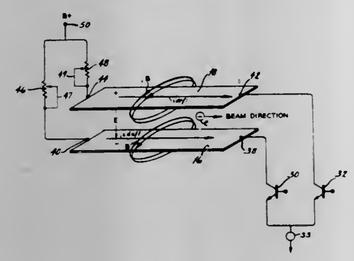


Right, left, and down deflection circuits are coupled to a cathode ray tube for deflecting a normally-off cathode ray beam of the tube along coordinate horizontal and skewed vertical axes in a recurring pattern of two rows of interconnected E's with contiguous segments of each E being traced in succession. Every segment on a horizontal axis is traced by holding the left and down deflection circuits in whatever state they are then in while the right deflection circuit deflects the cathode ray beam to the right along that horizontal axis, and every segment on a skewed vertical axis is traced by restoring the right deflection circuit and maintaining it in its restored state while the left and down deflection circuits simultaneously deflect the cathode ray beam down and to the left along that skewed vertical axis. The down deflection circuit is restored after each E in the second row has been traced, and the left deflection circuit is restored after the last E of the pattern has been traced. A control circuit is coupled to the cathode ray tube for selectively turning the cathode ray beam on while it is being deflected in the above-described pattern to form a display of two rows of numbers in decimal form. The control circuit reads each number in binary coded form from a memory during two different memory access cycles and decodes it into a control signal for turning the cathode ray beam on while selected segments of a pair of adjacent E's in the same row are being traced to form the number in decimal form.

3,668,462
CATHODE RAY TUBE DEFLECTION SYSTEM UTILIZING ELECTROMAGNETIC AND ELECTROSTATIC BEAM DEFLECTION
Robert R. Sinuzas, West Caldwell, N.J., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 22, 1970, Ser. No. 100,607
Int. Cl. H01j 29/72
U.S. Cl. 315—23 12 Claims

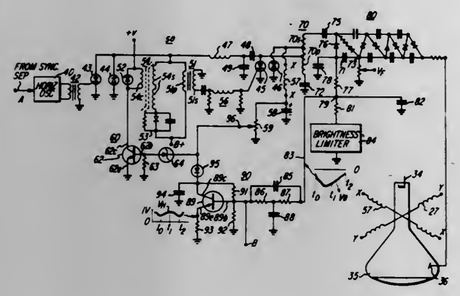
A deflection system for electrically charged particle beams and having at least first and second deflection plates therein

between which the charged particle beam passes. Selected locations on each of the first and second deflection plates are driven by a source of deflection signals, and a load circuit is connected between other selected locations on the first and second deflection plates. The deflection signals applied to the deflection plates establish both an electromagnetic and an electrostatic field between the deflection plates, and the combined force of these fields is utilized to deflect the charged particle beam and thus provide maximum deflection



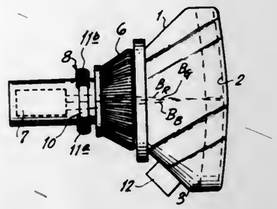
sensitivity for the system. Additionally, the deflection system disclosed herein may be operated either wholly be electromagnetic deflection or wholly by electrostatic deflection. Furthermore, since the deflection plates of the system exhibit a characteristic impedance, these plates may be terminated in their characteristic impedance for optimum system performance; and the latter feature enables deflection plate length to be adjusted without affecting the frequency response of the system.

3,668,463
RASTER CORRECTION CIRCUIT UTILIZING VERTICAL DEFLECTION SIGNALS AND HIGH VOLTAGE REPRESENTATIVE SIGNALS TO MODULATE THE VOLTAGE REGULATOR CIRCUIT
Lawrence Edward Smith, and Robert Joseph Gries, both of Indianapolis, Ind., assignors to RCA Corporation
Filed May 15, 1970, Ser. No. 37,781
Int. Cl. H01j 29/70
U.S. Cl. 315—27 GD 11 Claims



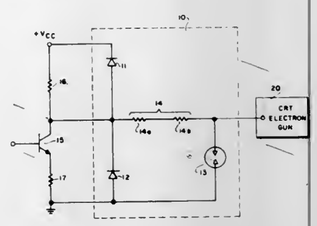
A raster correction circuit for a television receiver combines vertical deflection rate signals and high voltage representative signals and couples them to a control transistor which varies the bias on a regulator transistor to vary the energy supplied to the deflection circuit during each raster field in a manner to correct for side pincushion distortion.

3,668,464
DEFLECTION COMPENSATION FOR TEMPERATURE CHANGES IN A COLOR PICTURE TUBE
Tetsuo Tokita; Yuzo Fuse, and Yoshiharu Katagiri, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Feb. 11, 1970, Ser. No. 10,369
Claims priority, application Japan, Feb. 20, 1969, 44/12463
Int. Cl. H01j 29/70
U.S. Cl. 315—24 8 Claims



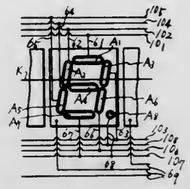
In a color picture tube having an apertured beam selecting grill or mask through one or more electron beams are made to land on predetermined color phosphors applied to the face plate of the tube, thermal expansion of the grill or mask is compensated for, so as to avoid mislanding of the beam or beams, by providing an auxiliary magnetic deflection means located in back of the main magnetic deflection or scanning means and operative in dependence on the operation of the main deflection means to produce magnetic flux in opposition thereto. The current flowing in the auxiliary magnetic deflection means is decreased with increasing temperature by means of a thermosensitive magnetic means so as to similarly decrease the magnetic flux opposing that of the main deflection means, whereby the effective center of deflection of the beam or beams is shifted rearwardly in response to increasing temperature.

3,668,465
SURGE VOLTAGE PROTECTION FOR CATHODE RAY TUBE DRIVERS
William E. Evans, Garland, and Robert C. Harding, Dallas, both of Tex., assignors to Seaco Computer-Display Incorporated, Garland, Tex.
Filed Feb. 16, 1971, Ser. No. 115,535
Int. Cl. H04b 41/36
U.S. Cl. 315—107 7 Claims



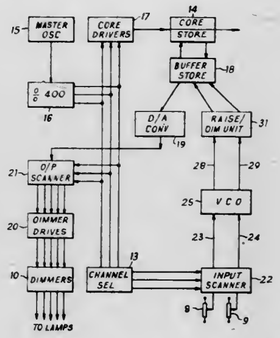
Disclosed in a transient voltage protective network for protecting the transistor of a video amplifier coupled to one of the input terminals of a CRT electron gun from the arcing voltages appearing at this input terminal, the protective network including a pair of diodes respectively connected to the output of the transistor and the collector supply voltage and ground terminals thereof, as well as surge voltage protective device coupled through resistive means across one of the diodes.

3,668,466
ELECTRON TYPE FLUORESCENT DISPLAY DEVICE WITH PLANAR ADJACENT CONTROL ELECTRODE
Satoshi Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 13, 1970, Ser. No. 27,713
Claims priority, application Japan, Apr. 17, 1969, 44/29863; Apr. 12, 1969, 44/29865
Int. Cl. H05b 37/02
U.S. Cl. 315—169 TV 6 Claims



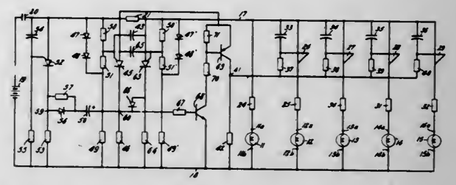
An electron tube having at least two electrodes and a cathode disposed within an evacuated envelope. One of the electrodes is spaced generally transversely with respect to the electro beam path from the cathode to the other electrode. The electrode which is spaced from the electron beam path is used to control the cathode current. Means are provided to couple various voltages to the respective electrodes to accomplish the desired control. The anode electrode may have a phosphor coating thereon so as to glow when bombarded by an electron beam from the cathode. Accordingly, an electron tube of this type is adaptable to display units for the display of letters, symbols, numerals and the like. In one form of the invention, the anode electrode and the control electrodes are arranged in a predetermined pattern to cause elemental areas of the anode electrode to glow and produce a display.

3,668,467
LIGHTING CONTROL APPARATUS WITH A SIGNAL SWITCHING MATRIX
Anthony Leonard Isaac, London, England, assignor to Thorn Electronics, Limited, London, England
Continuation of Ser. No. 677,215, Oct. 23, 1967.
Filed July 2, 1970, Ser. No. 56,111
Claims priority, application Great Britain, Oct. 21, 1966, 47,340/66
Int. Cl. H05b 37/02
U.S. Cl. 315—292 5 Claims



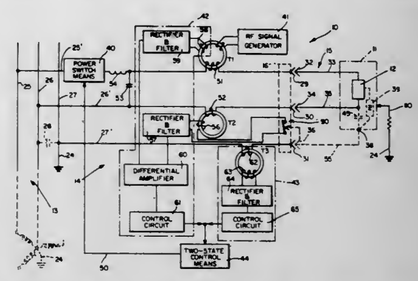
A light dimming system comprises: a plurality of lamps, a dimmer associated with each lamp, a controller for furnishing signals for controlling the brightness or the rate of change of brightness of each lamp and a signal switching matrix for selecting the proper signal for each dimmer.

3,668,468
SOLID STATE CIRCUITS FOR GUARANTEED SEQUENTIAL FLASHING OF PHOTOFLASH LAMP ARRAY
William P. Kornrumpf, Schenectady, N.Y., and Paul T. Cote, Cleveland Heights, Ohio, assignors to General Electric Company
Filed Dec. 16, 1968, Ser. No. 793,636
Int. Cl. G03b 15/04; H05b 37/04, 41/34
U.S. Cl. 315—323 14 Claims



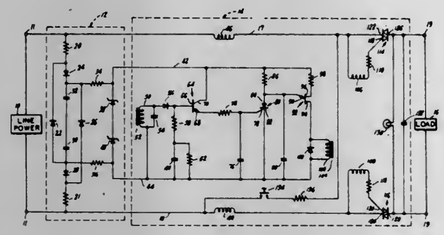
A solid state guaranteed flash circuit for sequentially flashing a linear array of n photoflash lamps employs solid state thyristors in series with the lamps that are turned on sequentially following actuation of the shutter release in a time interval a magnitude less than the shutter opening, the sequencing being interrupted when a lamp is fired. A series current sensing impedance in combination with a thyristor senses the application of current to a continuous filament, while a second current or light sensing thyristor senses the flashing of good lamps. Either sensor can interrupt and reset the series RC gating circuits for the lamp circuit thyristors, but the first is released after a predetermined interval sufficient to sense a good lamp. When a shorted-circuited lamp or air lamp is sensed, the timing cycle restarts and the next lamp in the array is flashed while the shutter is still open.

3,668,469
MONITOR FOR RECEPTACLE WITH TWO OR THREE CONTACTS
Joo C. Lee, Lindenhurst, Ill., assignor to The Safety Company, St. Charles, Ill.
Filed Dec. 21, 1970, Ser. No. 100,103
Int. Cl. H02h 1/02
U.S. Cl. 317—18 D 14 Claims



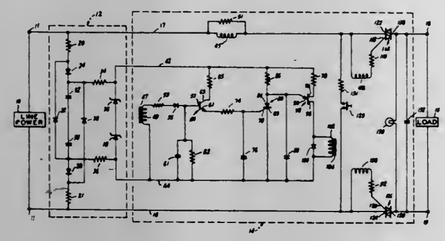
A monitoring module associated with a three-contact receptacle injects an RF supervisory signal into the line contact. When a power cable with a two-contact plug is inserted into the receptacle, a ground fault in the electrical equipment served by the cable provides an alternate path to ground for the injected RF supervisory signal thus reducing the RF current flow in the neutral contact. Such reduction is sensed in a differential amplifier and used to disconnect power. When a power cable with a three-contact plug is used, a discontinuity in the ground path reduces the RF current flow in the ground contact due to the injected RF signal. This reduction is sensed and used to disconnect power.

3,668,470
DEVICE FOR DETECTION AND CONTROL OF CURRENT LEAKAGE
Edward Curtis Ambler, Newington, and Andrew E. Scoville, Ellington, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 28, 1970, Ser. No. 101,534
Int. Cl. H02h 3/28
U.S. Cl. 317—18 D 7 Claims



A protective device for connection to the conductors between an associated electrical power supply and an associated electrical load detects electrical leakage from the load. Solid state devices in the protective device are rendered conductive or nonconductive in response to an error signal produced by a differential transformer when there is imbalance between conductors. The amplified error signal is applied to the gate of a silicon controlled rectifier which shorts the power furnished to a unijunction transistor oscillator. The shorting action terminates a pulse trigger supply to the solid state devices to render them nonconductive.

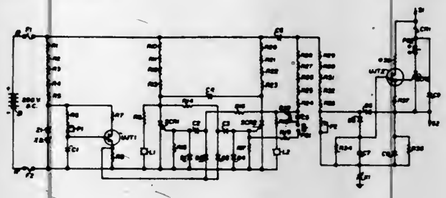
3,668,471
DEVICE FOR DETECTION AND CONTROL OF LEAKAGE AND EXCESSIVE CURRENT FLOW
Edward Curtis Ambler, Newington; Walter R. Bush, West Simsbury, and Andrew E. Scoville, Ellington, all of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Dec. 28, 1970, Ser. No. 101,748
Int. Cl. H02h 3/28
U.S. Cl. 317—18 D 14 Claims



A protective circuit device for connection between an associated electrical power supply and an associated electrical load which detects excessive current drawn by the load. Solid state devices in the protective device are rendered conductive or nonconductive in response to a signal produced by a current transformer. The amplified signal is applied to the gate of a silicon controlled rectifier which shorts power going to a unijunction transistor oscillator. The shorting action terminates a pulse trigger supply to the solid state devices to render them nonconductive.

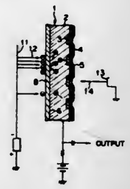
In one embodiment, the protection device also detects electrical leakage from the load by means of a differential transformer which produces an error signal when there is current imbalance between conductors from the line supply. The amplified differential transformer secondary voltage is applied to the gate of the silicon controlled rectifier to cause the solid state devices to become nonconductive.

3,668,472
GROUND DETECTION CIRCUIT FOR A D.C. DISTRIBUTION NETWORK
William B. Shields, Reading; Victor H. Willems, Shillington, and William F. Sailer, Sinking Spring, all of Pa., assignors to Gilbert Associates, Inc., Reading, Pa.
Filed May 17, 1971, Ser. No. 144,066
Int. Cl. H02h 3/28
U.S. Cl. 317—18 R 8 Claims



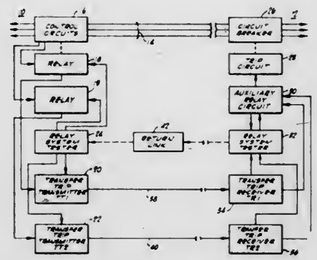
The invention relates to a ground detection circuit for an ungrounded D.C. distribution network. The sensitivity to ground is uniquely independent of polarity of the D.C. bus on which the ground occurs. The occurrence of multiple grounds will cause the ground detection circuit to operate as if all such ground resistances were in parallel with each other. The principle of detection is based on the fact that the algebraic sum of currents flowing through a resistance, having one end connected to ground and the other end being alternately connected to the plus and then to the minus bus of the center tap battery source, is inversely proportional to the "total resistance" to ground of the network, where "total resistance" is the equivalent of placing all resistances to ground in parallel.

3,668,473
PHOTOSENSITIVE SEMI-CONDUCTOR DEVICE
Shoichi Miyashiro, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 23, 1970, Ser. No. 49,006
Claims priority, application Japan, June 24, 1969, 44/49369; July 29, 1969, 44/58028
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 8 Claims



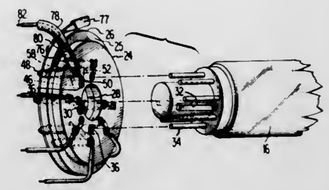
A photosensitive semi-conductor device for use as a target of camera tubes. It has a semi-insulating layer formed on that side of a semi-conductor substrate which is impinged by light photons or energetic electrons. The semi-insulating layer is charged in accordance with the incident light photons or energetic electrons, and the electric field set up across the semi-insulating coating layer by the bombardment of light photons and energetic electrons has an effect of controlling the motion of minority carriers to automatically control the input-output photoelectric conversion gain of the photosensitive semi-conductor device.

3,668,474
APPARATUS FOR AUTOMATIC RELAY SYSTEM TESTING
Marion D. Knox, Oklahoma City, Okla., assignor to Wayne Electronic Products Company, Oklahoma City, Okla.
Continuation-in-part of application Ser. No. 19,869, Mar. 16, 1970. This application Oct. 19, 1970, Ser. No. 81,694
Int. Cl. G01r 15/12; G08b 1/08
U.S. Cl. 317—28 R 11 Claims



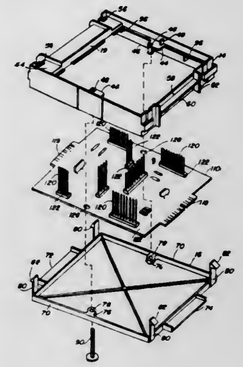
Apparatus for periodic testing of multiple-terminal, remote trip, dual transfer trip relaying systems. The apparatus consists of periodically actuatable test units which provide a plurality of program outputs to effect transmission tests of transfer trip channels as well as proper operation of the associated relay equipment. A master test unit located at a first position initiates operation and functions with one or more slaved remote test units to key transmissions and verify reception at the transfer trip receiver equipment, while test signification is made in accordance with programmed requirement via an associated return communications link.

3,668,475
KINESCOPE SOCKET
Raymond Clyde Owens, Carmel, and Lucius Ponder Thomas, Indianapolis, both of Ind., assignors to RCA Corporation
Filed Dec. 24, 1970, Ser. No. 101,357
Int. Cl. H02h 1/04
U.S. Cl. 317—61.5 15 Claims



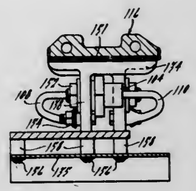
A kinescope socket includes two sections secured together by conductive connectors, with keyhole openings in each of the sections in alignment. A portion of each conductive connector is held captive within one of a plurality of kinescope pin receptacles in the first section. The other section has a conductive pattern on one of its surfaces. The pattern includes conductive pads electrically connected to pins of a kinescope when inserted into the kinescope pin receptacles by a second portion of the conductive connector. The second portion passes through the two sections and is connected by a conductive strap to the first portion. The conductive pattern also includes a conductive area adjacent to, but separated from, the conductive pads to provide an arc gap therebetween.

3,668,476
SELF-LOCKING ENCLOSURE FOR ELECTRONIC CIRCUITRY AND METHOD OF ASSEMBLING THE SAME
James Adam Wrabel, Chicago, and Casimer Joseph Dabrowski, Mount Prospect, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.
Filed Sept. 11, 1970, Ser. No. 71,583
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 13 Claims



Electronic printed circuit boards are positioned in multiple layers within a hollow plastic body having self-locking sections which are snapped into place entirely enclosing the circuit boards within the enclosure. Locking screws are passed through all of the sections and a seal is placed over the screws to prevent unauthorized opening of the enclosure and tampering with the circuitry contained therein. Openings are provided in the enclosure for electrical connections to extend through the wall of the enclosure to provide input signals to and extract output signals from the circuits contained therein.

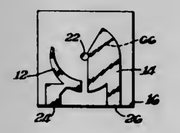
3,668,477
MOUNTING BRACKET FOR SEMICONDUCTOR RECTIFIERS TO HEAT SINKS
Lynn R. Zellmer, Rochester, Mich., assignor to The Udylite Corporation, Warren, Mich.
Filed Nov. 10, 1970, Ser. No. 88,322
Int. Cl. H01l 1/12
U.S. Cl. 317—100 6 Claims



This disclosure pertains to a rectifier system which includes a plurality of diodes in the secondary circuit of a main transformer to provide rectification for the energy flowing therefrom, and a plurality of semi-conductive rectifier devices for controlling current to the primary windings thereto. The diodes are stud mounted and adapted to be self locked between a pair of channel portions of an electrically conductive heat sink, whereas the semi-conductive rectifier

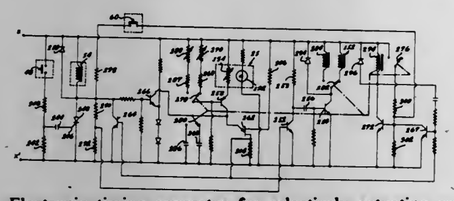
devices are stud mounted to extending flange portions of a novel heat sink bracket. The bracket is comprised of a base portion wherefrom is extended from one surface an extending flange. A bore is disposed in the flange portion, a preselected distance from the base, for self lockingly receiving the semi-conductive rectifier device. The bracket itself is fastened to a main heat sink by means of an epoxy which is heat conductive and electrically insulated.

3,668,478
VARIABLE CAPACITOR NETWORK
John H. Fabricius, Stamford, Vt., assignor to Sprague Electric Company, North Adams, Mass.
Continuation-in-part of application Ser. No. 880,529, Nov. 28, 1969, now Patent No. 3,588,640, dated June 28, 1971. This application May 14, 1970, Ser. No. 37,083
Int. Cl. H01l 19/00
U.S. Cl. 317—101 A **15 Claims**



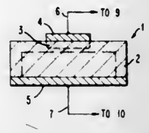
A continuous electrode and two discontinuous electrodes, made up of a plurality of isolated islands, are arranged over at least a pair of lower electrodes with an intervening film of dielectric material. Terminal connection is provided to the lower electrodes and to the upper continuous electrode. A slidable contact member provides bridging contact between the continuous upper electrode and selected island areas of either of the adjacent discontinuous electrodes to provide a network having two variable capacitors and a fixed capacitor. Additionally, deposited resistors are disposed alongside the electrodes in connection to at least one of the terminals to provide fixed and variable resistors of the network.

3,668,479
ELECTRONIC TIMING APPARATUS
Murray Weston; Dennis Anderson, both of Northridge, and Steve Cole, Van Nuys, all of Calif., assignors to Weston Murray, Northridge and Fred Fisher, Van Nuys, Calif., part interest to each
Filed June 22, 1970, Ser. No. 48,281
Int. Cl. G07t 11/08; H01h 47/18
U.S. Cl. 317—141 S **6 Claims**



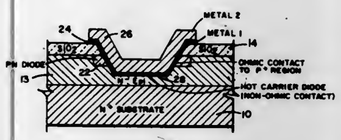
Electronic timing apparatus for selectively actuating an electro-mechanical device such as a solenoid for either of two distinct predetermined periods of time with a first period being the normal period of actuation and a second period capable of being selectively substituted for the first period for the next following actuation of the electro-mechanical device and then automatically replaced with the first period unless another selective substitution is made for the next following actuation. Each period of time is capable of being varied within a limited predetermined range in response to a change in an external physical condition such as pressure.

3,668,480
SEMICONDUCTOR DEVICE HAVING MANY FOLD IV CHARACTERISTICS
Leroy L. Chang, Tarrytown, and Leo Esaki, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 21, 1970, Ser. No. 57,383
Int. Cl. H01l 3/14
U.S. Cl. 317—234 **22 Claims**



A semiconductor diode having multiple Voltage characteristics and its method of fabrication is disclosed. When a voltage is applied in the forward direction to the diode, at some threshold, the current switches to a higher value of current. A decrease of the voltage causes a decrease in the current and, after a reverse voltage applied, reverse current values of increasing magnitude are obtained until a threshold is reached. When the threshold is reached, the diode switches from a high value of reverse current to a lower value of reverse current. A decrease in the reverse voltage to zero, reduces the current to zero and, increasing the voltage in the forward direction starts the above-described cycle over again. By adjusting the forward and reverse voltages, switching may occur at values higher than the thresholds and a family of voltage-current characteristics is obtained. A typical device consists of n-conductivity type gallium arsenide into which a region of deep centers has been diffused. A typical deep center of oxygen. A semiconductor junction which is alloyed, diffused or of the Schottky barrier type is formed with the deep center region. Where the junction formed is of the alloyed type, for example, an indium-zinc alloy may be used. Finally, an ohmic contact of gold-tin is applied to the semiconductor body. Forward voltages in the neighborhood of 1 volt provide switching in the forward direction while reverse voltages of as little as 3 volts cause switching in the reverse direction. A diode fabrication technique is also disclosed.

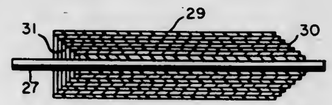
3,668,481
A HOT CARRIER PN-DIODE
Jack L. Saltich, Scottsdale, and James L. Rutledge, Tempe, both of Ariz., assignors to Motorola Inc., Franklin Park, Ill.
Original application Dec. 26, 1968, Ser. No. 787,024, now Patent No. 3,550,260. Divided and this application Aug. 10, 1970, Ser. No. 62,665
Int. Cl. H01l 5/02
U.S. Cl. 317—234 **5 Claims**



Disclosed is a Schottky barrier or hot carrier diode and process for making same wherein a diffused PN junction and a Schottky barrier junction are both formed in a body of semiconductor material. The diffused PN junction is formed by first diffusing an impurity through an opening in a diffusion mask and into one surface of the semiconductor body to form PN junction. Next, a large central portion of the region

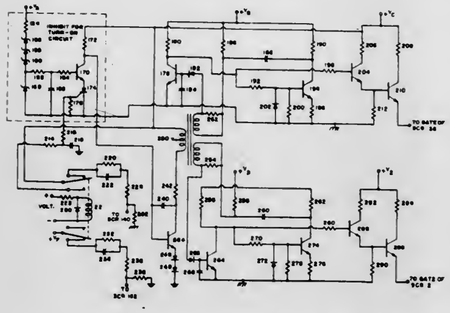
formed by the above diffusion is removed by etching or cutting, leaving unaffected by the etchant only that portion of the diffused region underlying and adjacent to the diffusion mask on the surface of the semiconductor body. The latter portion of the diffused region forms a relatively small area diffused PN junction. Finally, a Schottky barrier junction is formed in the etched out area of the semiconductor body, and the diode including the diffused and Schottky barrier junctions has a near-ideal current-voltage characteristic and still maintains its fast recovery time.

3,668,482
AN OFFSET, WOUND, SINGLE-WEB ROLL CAPACITOR AND PROCESS FOR MAKING SAME
David Johnstone Chalmers, Circleville, Ohio, assignor to E.I du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 9, 1971, Ser. No. 113,848
Int. Cl. H01g 1/14
U.S. Cl. 317—260 **7 Claims**



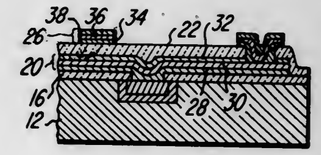
An electrical capacitor comprising a single web of a metallized dielectric convolutely wound and having a metal coating on the terminal ends with an electrical connector attached to the metal coating, wherein the terminal connection between the metallized portion of the capacitor serving as an electrode and the metal coatings on the terminal ends is improved by offsetting the exposed edge portions of the layers formed by the convolutely wound web at the terminal ends with respect to each other.

3,668,483
DIRECT CURRENT SOLID STATE CIRCUIT BREAKER
Carl W. Kellenbenz, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 19, 1971, Ser. No. 173,055
Int. Cl. H02h 3/08, 7/00
U.S. Cl. 317—33 SC **8 Claims**



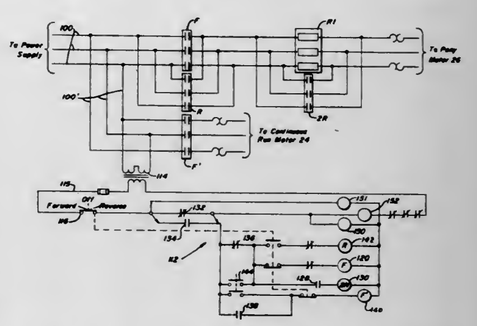
The present invention relates to a solid state circuit breaker for use in DC circuitry associated with deep submergence vehicles. The device includes a pair of high current silicon controlled rectifiers to break both sides of the direct current power lines. The device further includes current sensing means to sense over-current conditions, a capacitive discharge turn-off circuit for driving the SCR to the nonconductive state, and an inhibit circuit for preventing turn-on of the SCR's when the capacitor in the turn-off circuit is not fully charged. Further, the system includes a low voltage remote control circuit to allow turn-on and turn-off of the SCR's without the danger of having high voltage leads within the submerged vehicle.

3,668,484
SEMICONDUCTOR DEVICE WITH MULTI-LEVEL METALIZATION AND METHOD OF MAKING THE SAME
William John Greig, Somerville, and Ralph Robert Soden, Mendham, both of N.J., assignors to RCA Corporation
Filed Oct. 28, 1970, Ser. No. 84,581
Int. Cl. H01l 5/02
U.S. Cl. 317—234 R **4 Claims**



A semiconductor body has thereon a first level metalization pattern, a layer of an electrical insulating material on the body and covering the first level metalization pattern, and a second level metalization pattern on the insulating material layer and extending through at least one opening in the insulating material layer to contact the first level metalization pattern. Each of the metalization patterns includes a film of titanium, a film of platinum over the titanium film and a film of gold over the platinum film. The first level metalization pattern has an opening in the gold film in alignment with each of the openings in the dielectric layer so that the titanium film of the second level metalization pattern contacts the platinum film of the first level metalization pattern.

3,668,485
DRIVE FOR BELT CONVEYORS
Melvin N. Norris, 328 Crestview Dr., Franklin, Pa.
Filed July 2, 1969, Ser. No. 838,468
Int. Cl. H02p 1/58
U.S. Cl. 318—102 **16 Claims**

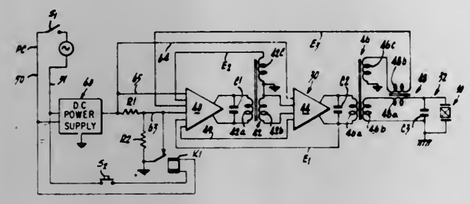


A method and apparatus of accelerating a belt conveyor wherein such acceleration is accomplished by means of sequential operation of two drive motors connected in tandem.

3,668,486
LOAD-SENSITIVE GENERATOR FOR DRIVING PIEZO-ELECTRIC TRANSDUCERS

Joseph Silver, Levittown, Pa., assignor to Crest Ultrasonics Corporation, Trenton, N.J.

Filed Jan. 8, 1971, Ser. No. 104,957
Int. Cl. H01v 7/00
U.S. Cl. 318—116 9 Claims

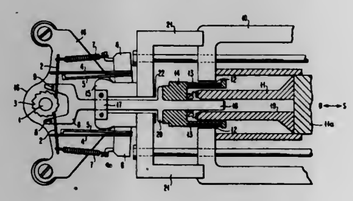


An oscillatory circuit, operating in the ultrasonic or high sonic frequencies, generates power for a piezo-electric transducer in proportion to mechanical resistances or loadings encountered by the transducer. High sensitivity and instantaneous power adjustment to a wide variety of loads is obtained, and instant "turn-on" and "turn-off" at the adjusted power settings are secured, by a circuit in which the input to the first stage of a two-stage oscillatory circuit comprises the sum of three feedback components plus a DC forward bias.

3,668,487
ELECTROMAGNETIC ACTUATED DETENT APPARATUS

David E. Cuzner, Ampfield; Leo J. Rigbey, Winchester, and George M. Smith, Chandler's Ford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,273
Claims priority, application Great Britain, June 30, 1970, 31,515/70
Int. Cl. H02k 33/10
U.S. Cl. 318—128 8 Claims

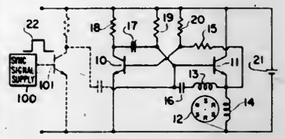


Locking and release for rotation of a threaded drive shaft or lead screw are selectively achieved by a detent apparatus, which includes an actuator element that is bidirectionally movable by a voice coil motor (VCM). A toothed detent wheel attached to the rotary drive shaft is engaged by detent pawls for locking. The detent wheel is released to allow rotation of the drive shaft by retraction of the actuator element, that is responsive to the VCM and that pulls the pawls out of engagement with the detent wheel. Stops limit the path of travel of the actuator element. A pulse generating circuit, in combination with a center-tapped coil of the VCM, provides an inhibit pulse to minimize bounce of the movable actuator element and associated mechanical members.

3,668,488
SYNCHRONOUS TRANSISTOR MOTOR WITH SOURCE VOLTAGE COMPENSATION

Akira Nikaido, Tokyo; Mitsuo Onda, Ohomiya; Fumio Nakajima, Tokyo; Takayasu Machida, Iruma, and Shunji Sudo, Fujimi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1970, Ser. No. 28,484
Claims priority, application Japan, Apr. 14, 1969, 44/33259
Int. Cl. H02k 29/00
U.S. Cl. 318—138 10 Claims

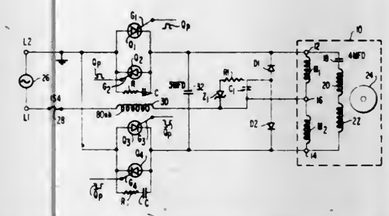


A small synchronous transistor motor designed for low power consumption to be used in devices such as time pieces. The motor includes two transistors, one a motor drive transistor the output of which is connected to a motor drive coil and the other a voltage compensating transistor to compensate for variations in the power supply. The motor also includes a sensing coil which is connected to the input of the drive transistor. The sensing coil senses the rotation of the rotor of the motor and a synchronizing signal which is applied to the motor, the sensing coil thereby maintaining the rotor in synchronism with the synchronizing signal.

3,668,489
FREQUENCY DOUBLER MOTOR DRIVE AND MOTOR

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company

Filed Apr. 16, 1971, Ser. No. 134,630
Int. Cl. H02p 7/42
U.S. Cl. 318—227 9 Claims



A frequency doubler induction motor drive circuit supplied from a line frequency power source for driving a two-pole induction motor at 7,200 rpm. The drive circuit supplies a 120 Hz waveform to the motor and eliminates the expense of rectifiers and smoothing filters. The crossover points of the 60 Hz waveform are detected, and a gating and timing circuit applies gating pulses to suitably connected silicon controlled rectifiers at the maximum points of the 60 Hz waveform to produce the 120 Hz waveform.

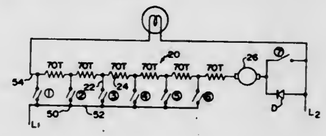
3,668,490
LIGHT POWERED BY INDUCTION OF VARIABLE IMPEDANCE MOTOR

William J. Conlon, New Britain, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Jan. 20, 1971, Ser. No. 107,906
Int. Cl. H02k 23/64; D05b 79/00
U.S. Cl. 318—245 10 Claims

A universal motor field tapped for speed control is serially connected at one end through the armature to one side of an

electrical potential. An operationally interlocked series of ON and OFF switches selectively interconnect the field taps to the other side of the electrical potential and a light bulb

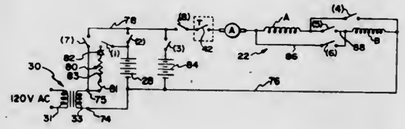


bridges said one side of the electrical potential and the other end of the field for substantially constant illumination of a working area at all speeds without need for a separate light switch.

3,668,491
BATTERY POWERED LIQUIDIZER

Raymond F. Kelley, Palm Beach, Fla., and Roy L. Swanke, Newington, Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,453
Int. Cl. H02p 7/00
U.S. Cl. 318—305 5 Claims

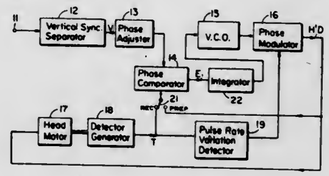


A portable multi-speed liquidizer operable from low voltage alternating or direct current is speed-controlled by a push button switch assembly, which also serves to select the power source for the liquidizer motor. The maximum current switched by any one contact of the assembly is reduced during speed changes by automatically switching the lowest impedance motor field coil into the circuit immediately preceding and during each speed change.

3,668,492
MOTOR DRIVING SERVO SYSTEM COMPRISING AN INTEGRATOR FOR THE QUANTITY RELATING TO THE ERROR SIGNAL

Tatsuo Konishi, and Masao Inaba, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 20, 1971, Ser. No. 145,335
Claims priority, application Japan, May 23, 1970, 45/44315
Int. Cl. G05b 11/42
U.S. Cl. 318—314 12 Claims

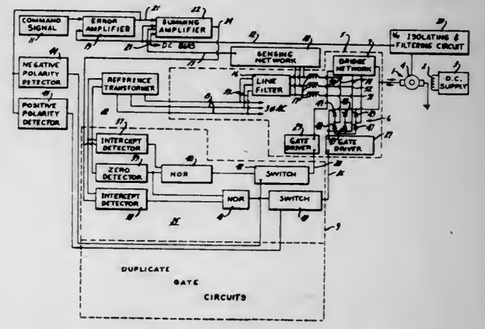


The servo system having a phase comparator for producing an error signal representative of the phase difference between an input reference periodic signal and an oscillatory signal for driving a motor. A voltage controlled oscillator controlled by the error signal to produce the oscillatory signal is provided with an integrator for integrating the error signal to produce an integration signal proportional to the result of the integration of the error signal and therefore to hold the instantaneous value of the integration signal when the error signal becomes zero. The integration signal is supplied to the oscillator in place of the error signal. the servo system is suitable for the drum and the capstan servos of rotary-head video tape recorders.

3,668,493
DYNAMOELECTRIC CONTROL CIRCUIT

John T. Maynard, New Berlin, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed May 20, 1970, Ser. No. 39,019
Int. Cl. H02p 5/16
U.S. Cl. 318—345 8 Claims

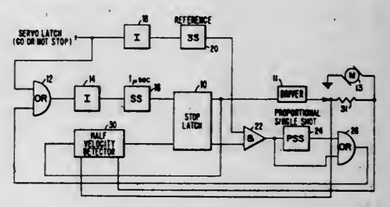


A D.C. shunt motor has the armature connected to a three-phase supply through a pair of parallel connected full-wave rectifier bridges, each having silicon controlled rectifiers in each leg. A separate NOR logic circuit controls gating of each rectifier in accordance with the proper half cycle of the applied voltage and at the desired phase angle to establish a predetermined energization level. The firing is determined by an intercept detector having a separate channel for each phase. Each channel is connected through a lag filter and a lead filter directly to the corresponding phase winding of a reference transformer to supply to the channel a voltage directly derived from the line-to-line voltage applied to the corresponding rectifier. The input to each channel is connected across a center tapped reference transformer winding and the junction of a resistor and capacitor connected across the winding. A D.C. control voltage is applied to the channels to establish a control signal pulse at the proper phase angle of the rectifier-applied voltage.

3,668,494
CONSTANT DISPLACEMENT STOPPING CONTROL

Gerald J. Agin, Redwood City, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 22, 1970, Ser. No. 48,249
Int. Cl. H02p 3/10
U.S. Cl. 318—373 3 Claims



Stopping of a d-c servo motor is effected in two phases,

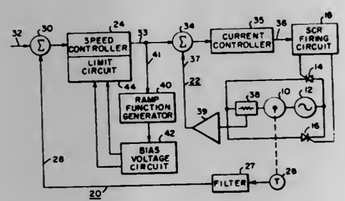
during the first of which the velocity is brought to half its initial value after initiation by a stop signal. A reference single shot and a proportional single shot determine the timing of the second phase, these circuits acting together to generate a stopping waveform which traverses a constant displacement, independent of motor deceleration rate.

3,668,495

APPARATUS FOR LIMITING THE RATE OF RISE OF CURRENT IN A MULTI-LOOP MOTOR CONTROL SYSTEM

Hermann Eisele, Pittsburgh, Pa., and Colin E. Huggett, Torrance, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1970, Ser. No. 86,809
Int. Cl. H02p *1/04*
U.S. Cl. 318—400 **15 Claims**



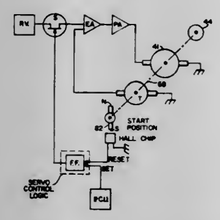
Described is a system for limiting the rate of rise of current in a multi-loop cascaded motor control configuration by means of a ramp function generator connected to the output of a motor controller, for example, a speed controller, whose output acts as a reference to a current loop.

3,668,496

SINGLE REVOLUTION CRANK SYSTEM

Ivan N. Markowitz, Framingham, and Robert G. Bower, Concord, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 4, 1970, Ser. No. 95,182
Int. Cl. G05g *5/00*
U.S. Cl. 318—466 **8 Claims**



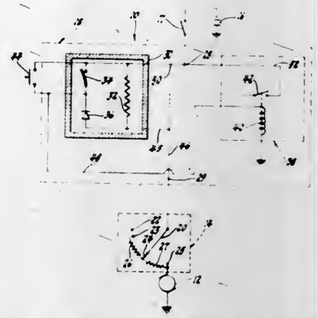
A single revolution crank system is provided for a DC motor, having a Hall effect sensing device employed as a position sensor. A bar magnet is attached to the DC motor shaft, with a magnetic Hall electrode device in the form of a Hall chip disposed adjacent the path of the bar magnet during its rotation on the shaft. A servo control loop is provided between the Hall effect device and the motor which is effective to substantially apply a constant voltage to the motor while the bar magnet has its one pole remotely disposed from the device, and with the one pole rotated to a position adjacent to the Hall effect device, an EMF is generated which is effective to reset a servo control flip-flop in the system to bring the motor velocity to zero. A mechanical detent is provided in the system to maintain the motor in the zero velocity position.

3,668,497

HEATER BLOWER MOTOR DELAY ENERGIZING MEANS

Ronald D. Freiberger, and James L. Woolley, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 6, 1970, Ser. No. 78,354
Int. Cl. G05d *23/30*
U.S. Cl. 318—471 **6 Claims**



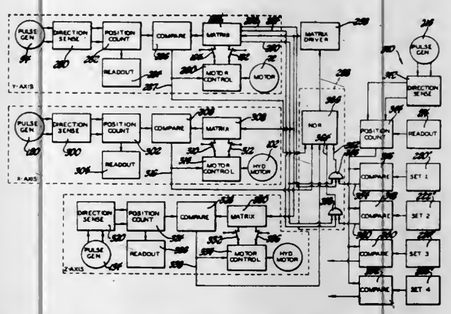
Apparatus for controlling the operation of a blower motor in a vehicle heating system. A time delay network which includes a heater and a temperature responsive switch in an insulated enclosure and a power relay provides for the immediate energization of the blower motor when a motor controlling switch is placed in a motor operative condition and the ambient temperature as sensed by the temperature responsive switch is above a certain level. Delayed operation of the blower motor is provided when the ambient temperature is below the certain level, the delay continuing until the interior temperature of the enclosure is raised above the certain temperature by the heater when the motor controlling switch is placed in the motor operative setting. An override switch is provided for effecting immediate operation of the blower motor when the ambient temperature is below the certain level if desired by the vehicle occupant so as to provide for immediate defrosting of the vehicle windows.

3,668,498

TRANSFER APPARATUS WITH DIGITAL PATH CONTROL

Albert A. Austin, Jr., Grand Blanc, Mich., assignor to Atlas Automation, Inc., Fenton, Mich.

Filed Apr. 20, 1971, Ser. No. 135,700
Int. Cl. G05b *19/42*
U.S. Cl. 318—568 **24 Claims**



Transfer apparatus is disclosed for use with a cyclically operated material processing machine such as a power press

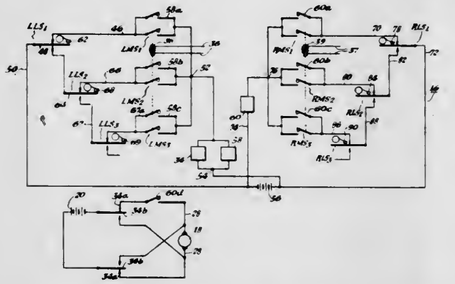
or the like. The apparatus comprises a transfer unit which includes a workpiece holder with separate drive means for displacement along horizontal and vertical axes and, if desired, for rotation about a third axis. A transfer unit may be mounted on the input or output side of the processing machine or a pair of units may be used for loading and unloading if desired. A transfer unit is provided with a control system adapted for two modes of operation, the set up or teaching mode and an automatic mode for production runs. The control system comprises data storage means suitably in the form of a pinboard matrix in which stored data defines coordinates of selected points on a predetermined transfer path and the direction and velocity of movement between successive points. During the teaching mode of operation a manual controller enables an operator to move the transfer unit stepwise through a cycle of operation on a trial basis to establish the transfer path and the accelerations and velocities of the workpiece holder. The data storage means includes manually settable elements which enable the operator to store the necessary data for a given segment of the transfer path when a trial movement is satisfactory. When all of the control data is established in the storage means for the entire transfer path the control means are switched to automatic operation and the apparatus is ready for production operation. Since the transfer apparatus has its own drive means it need not be integrally connected with the mechanism of the processing machine. Instead of timing signal generator connected with the control system provides for synchronization of the movements of the transfer apparatus with the cyclic operation of the machine.

3,668,499

STEERING CONTROL SYSTEM

Norbert P. Malloy, 5231 Gertrude St., Pittsburgh, Pa.

Filed Apr. 27, 1970, Ser. No. 32,224
Int. Cl. G05d *1/08*
U.S. Cl. 318—587 **16 Claims**



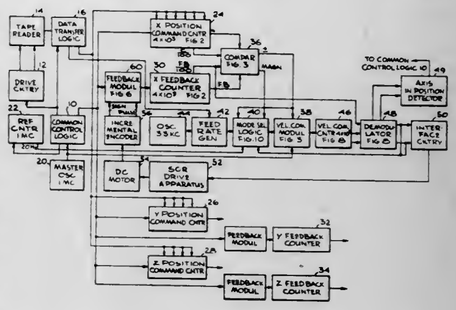
An automatic steering control system for use with a steerable vehicle or other craft having a steering mechanism, the combination comprising reversible steering actuating means for displacing said steering mechanism in relatively opposite directions to control the course of said vehicle or craft, steering control circuitry for energizing said actuating means in relatively opposite directions, said circuitry comprising a plurality of first circuit paths for energizing said steering actuating means in a given direction, and a plurality of second circuit paths for energizing said steering actuating means in the opposite direction, actuating and limiting switch means coupled in each of said circuit paths, each of said limit switch means having normally closed contact means coupled in its associated path in series with the associated actuating switch means and normally open contact means coupled to an adjacent one of said circuit paths so that said circuit paths can be energized successively for incremental operation of said steering actuating means in a given direction upon repeated and simultaneous actuation of all of the actuating switch means corresponding to such directional operation.

3,668,500

NUMERICAL SERVO MOTOR CONTROL SYSTEM

Marion Koeem, Willoughby, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Continuation of application Ser. No. 654,887, July 20, 1967, now abandoned. This application Apr. 1, 1970, Ser. No. 29,365
Int. Cl. G05b *19/28*
U.S. Cl. 318—601 **17 Claims**



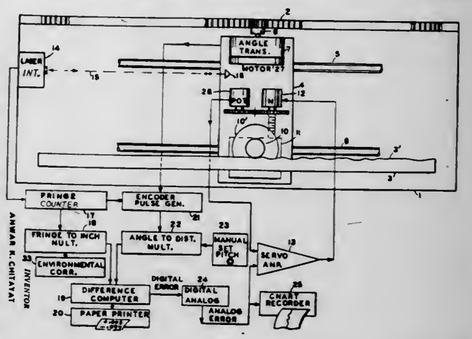
The motion of a machine tool table is controlled by comparing, for each axis, present location of the machine tool which is represented by the count in a feedback counter, with a desired location, which is represented by the count in a command counter. A transducer produces a pulse train wherein each pulse is representative of increments of machine tool table motion. A reference source of oscillation feeds pulses to drive the command counter. These pulses are modulated by the pulses from the feedback transducer and then are applied to drive the feedback counter. The difference in time at which both counters attain predetermined counts is sensed and is used to generate signals which control the application of drive signals to the motors which drive the machine tool tables.

3,668,501

MEANS FOR GENERATING COMPENSATING CONTROL MEANS

Anwar K. Chitayat, Plainview, N.Y., assignor to OPT Omechanisms, Inc., Plainview, N.Y.

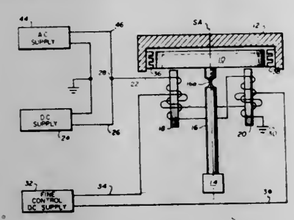
Original application June 2, 1969, Ser. No. 835,873, now Patent No. 3,605,552. Divided and this application Dec. 2, 1970, Ser. No. 94,512
Int. Cl. G05d *23/275*
U.S. Cl. 318—632 **10 Claims**



The invention comprises automatic means for generating compensating means for long lead screw and racks such as those used in precision machine tools. The workpiece lead

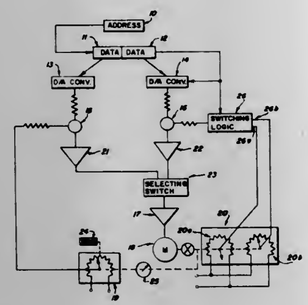
screw or rack is mounted parallel to the cam to be cut. A movable platform mounts a milling cutter. The platform is also connected to the lead screw by a nut or to the rack by a pinion. Angular motion of the lead screw or pinion is measured and transmitted to a computer. The linear motion of the platform is measured with an interferometer. The two measurements are compared in the computer and the output is fed to a servo mechanism which controls compensating means. A chart or printed or other type tape output is provided.

3,668,502
CONTINUOUS HYSTERESIS WIPER FOR ELECTROMAGNET IN INERTIAL GUIDANCE SYSTEM
Allan B. Pilger, W. Caldwell, N.J., assignor to The Singer Company, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,913
Int. Cl. G05b 1/06
U.S. Cl. 318—653 **2 Claims**



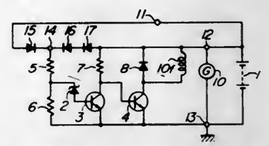
An inertial guidance system wherein one or more electromagnets are placed in a magnetic flux exchange relation with the flywheel of a gyroscope and are adapted to restore the gyroscope to a null position upon a signal from one or more pick-offs. An alternating current is applied to the energizing coils of the electromagnets and is of a magnitude large enough to nullify residual magnetic flux in the electromagnets due to hysteresis.

3,668,503
COARSE-FINE DIGITAL SERVO INDICATOR WITH CONTINUOUS ROTATION POTENTIOMETER FEEDBACK IN FINE MODE
Norman J. Lindner, New York, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.
Filed Nov. 26, 1969, Ser. No. 879,985
Int. Cl. G05b 1/06
U.S. Cl. 318—665 **9 Claims**



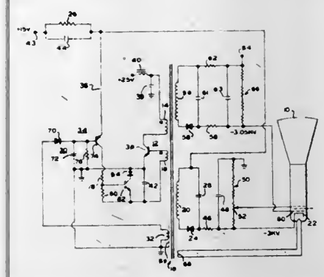
This disclosure deals with a mechanical servo system used to provide accurate digital readout from binary-coded decimal input. The input data is divided into a coarse portion and a fine portion. The coarse feedback portion measures in units of 1,000 feet, while the fine feedback control measures the low order units and consists of two cyclical elements. Each fine element has occasion to pass through a dead band region, but the elements are connected in a ganged relation 180° out of phase, so that when one is at its dead band, the other is at its continuous portion. The selection of a fine feedback element is controlled through a switching circuit and according to a logic equation stored in the input unit.

3,668,504
BATTERY CHARGING VOLTAGE REGULATOR INCLUDING SAFETY CIRCUIT
Yoshichi Kawashima, Gifu, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan
Continuation-in-part of application Ser. No. 61,814, Aug. 6, 1970, now abandoned, which is a continuation of application Ser. No. 783,201, Dec. 12, 1968, now abandoned, and a continuation-in-part of 797,010, Feb. 6, 1969, now abandoned. This application Oct. 26, 1970, Ser. No. 83,766
Claims priority, application Japan, Dec. 16, 1967, 42/80827; Feb. 10, 1968, 43/8466
Int. Cl. H02j 7/24
U.S. Cl. 320—64 **12 Claims**



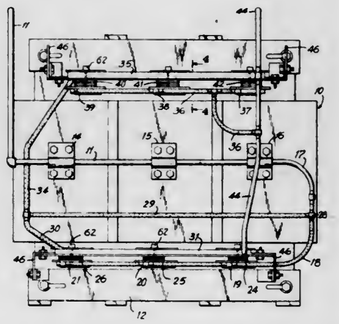
A charging voltage regulator for a storage battery, in which, an output voltage of a charging generator is controlled to maintain the terminal voltage of a storage battery at a predetermined value by interrupting the field current of the generator using a transistor circuit, and especially if such accidents as electrical disconnections between the transistor circuit and the storage battery occur, all disasters caused by an extraordinary high voltage between terminals of the charging generator resulting from the occurrence of such accidents may be eliminated, so that the charging generator operates in the same manner as in the case where the connecting condition of the circuit is normal.

3,668,505
HIGH VOLTAGE REGULATION CIRCUIT
Oliver Dalton, Portland, and Vaughn Weidel, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.
Continuation-in-part of application Ser. No. 670,691, Sept. 26, 1967, now abandoned. This application July 20, 1970, Ser. No. 64,014
Int. Cl. H02m 3/32; H01j 29/70; H03k 3/30
U.S. Cl. 321—2 **14 Claims**



A high voltage power supply for a cathode-ray tube includes an oscillator intercoupled with a transformer having a high voltage output winding. An additional low voltage winding on the transformer provides a signal substantially proportional to the high voltage output, and such signal is coupled by way of a peak detector to a control amplifier adapted to vary the d.c. bias value in the oscillator circuit. If the high voltage output tends to drop, the peak detector registers the lower voltage, causing the control amplifier to increase the amplitude of oscillations produced by the oscillator to thereby return the high voltage output toward a predetermined value. Since the low voltage winding does not provide a voltage value which is exactly proportional to the high voltage output, additional circuit means is included in series with the high voltage winding for coupling a current feedback to the control amplifier such that an increase in current drawn from the high voltage winding will also cause an increase in the amplitude of oscillations. By this means the actual high voltage output is closely regulated even though the regulation voltage is acquired at a low voltage level in the circuit.

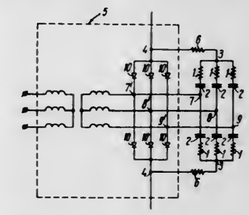
3,668,506
CURRENT AND FLUID CONDUCTING ARRANGEMENTS
Jack O. Beasley, Holmdel, and Paul J. Mohary, Toms River, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.
Filed Apr. 16, 1971, Ser. No. 134,727
Int. Cl. H02m 7/00
U.S. Cl. 321—8 C **8 Claims**



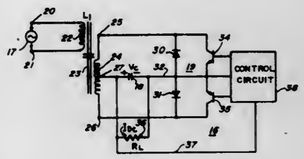
Apparatus is provided for the rectification of a power source for the use ultimately in such applications as electroplating, with the apparatus utilizing electrical conducting materials in the form of tubing for conveying simultaneously cooling fluids directly to areas adjacent parts requiring cooling during operation, and electrical current over substantial portions of the circuitry of the apparatus. In addition, new heat sink arrangements are provided for more even distribution of cooling fluids over parts to be cooled, and new clamping arrangements are provided for even distribution of pressure on parts being held and which clamping arrangements are readily manipulated by a single adjustment.

3,668,507
APPARATUS FOR DAMPING OSCILLATIONS IN THREE-PHASE BRIDGE CONVERTERS
Dmitry Evgenievich Kadomsky, prospekt Smirnova, 16, korpus 2, kv. 35, and Alexandr Sergeevich Nazarov, Offtsersky pereulok, 7, kv. 7, both of Leningrad, U.S.S.R.
Filed June 4, 1971, Ser. No. 150,119
Int. Cl. H02m 1/18
U.S. Cl. 321—11 **2 Claims**

An apparatus for damping oscillations in three-phase bridge converters, made in the form of two three-branch stars, whose branches are damping sections composed of a capacitor and a resistor in series and are connected each to the respective phase of the bridge circuit, while the neutral points of the stars are connected each to one of the poles of the bridge circuit, and there is a series resistor placed between at least one neutral point and the respective pole.



3,668,508
REGULATOR CIRCUIT
William A. Archer; Ronald H. Randall, both of Cuba, and Richard M. Lewis, Black Creek, all of N.Y., assignors to Acme Electric Corporation, Cuba, N.Y.
Filed Sept. 15, 1970, Ser. No. 72,401
Int. Cl. H02m 7/12
U.S. Cl. 321—18 **44 Claims**

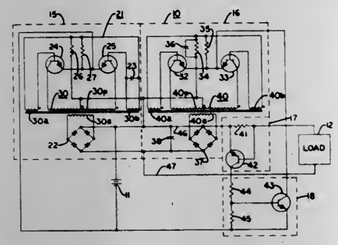


A regulator circuit is disclosed incorporating a DC capacitor as an energy storage device to be charged to a direct voltage level from an AC source through switch means. The switch means may be semi-conductor switches and because of the direct voltage on the energy storage device, a substantially square wave alternating voltage appears on the switch input. An inductive reactance absorbs the instantaneous voltage differences between the square wave and the alternating voltage input. The switches are operated at the same frequency as the alternating voltage input and operate at a variable phase angle of lag of the leading edge relative to the alternating voltage input in order to regulate the voltage output which may either DC across the storage device or AC across the switch input. The switch means is a double throw switch conducting for substantially 180° alternately to obtain the direct voltage across the storage device. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,668,509
POWER SUPPLY SYSTEM FOR AND METHOD OF ENERGIZING MULTIPLE LEVEL LOADS
Richard E. Riebs, Hales Corners, and Curtis J. Kohlman, Milwaukee, both of Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.
Filed Feb. 11, 1971, Ser. No. 114,543
Int. Cl. H02m 3/28
U.S. Cl. 321—18 **10 Claims**

A power supply for a direct current load that has two power level requirements senses the current requirements of the load and operates a high output inverter at high power

requirements and a low output inverter at low power requirements. The high and low output inverters are designed for maximum efficiency in their respective power ranges and are connected through full wave rectifying bridges to the load. The high power inverter is maintained in an "off" position



until the load current requirement is increased. Upon the increase in current, a sensing circuit and energy storage device activates a switch to energize the high power inverter to power the load as long as the current requirements remain above a selected level.

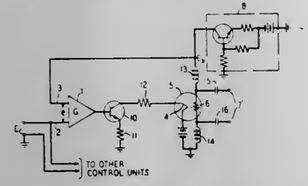
ERRATUM

For Class 322—28 see:
Patent No. 3,668,514

3,668,510
THERMISTOR CONTROL CIRCUIT

Kenneth D. Tentarelli, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 19, 1970, Ser. No. 3,989
Int. Cl. G05f 1/10
U.S. Cl. 323—8 **6 Claims**



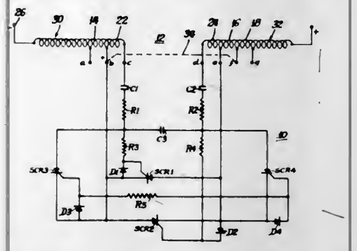
An indirectly heated thermistor control circuit wherein a constant current source is connected with the bead resistance of the thermistor to provide a reference voltage proportional to variations in bead resistance. The reference voltage is connected by a feedback path to the non-inverting input of a differential amplifier where it is combined with the input command voltage which is applied to the inverting input of the differential amplifier. The output signal from the differential amplifier provides the thermistor heater current and is proportional to the difference between the reference voltage and command voltage.

3,668,511
SELF ENERGIZING TAP SWITCH FOR ELECTRONIC TAP CHANGER

Charles E. Lewis, Zanesville, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.

Filed Feb. 16, 1971, Ser. No. 115,204
Int. Cl. G05f 1/14
U.S. Cl. 323—43.5 S **14 Claims**

A self energizing tap switch is disclosed as being connected in circuit with the primary winding of a transformer having a plurality of tap sections connected to an electronic tap changer. The tap switch connects two portions of the primary winding together when the transformer is initially energized or after the winding has been energized when there is no shunt connection between connections or when a malfunction causes the opening of a tap connection between tap sections. The tap switch includes a pair of silicon controlled rectifiers for carrying transformer load current during alternate half cycles of the energy source connected to the terminals of the primary winding. The gating circuit for each of the silicon rectifiers includes a capacitor for creating a gate current which leads the load current in the situation where the load current leads the load voltage. When a tap section is shunted out of the primary winding by a tap connection, it is

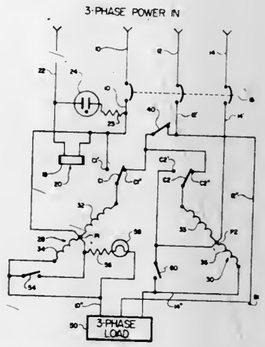


desired that the silicon controlled rectifiers do not conduct to short out the tap shunt connection and thereby effectively reinsert the tap section. To prevent such conduction, a second pair of silicon controlled rectifiers are each connected in parallel with the gate-cathode circuit of one of the first pair of silicon controlled rectifiers. The second pair of silicon rectifiers are gated when a tap shunt connection is made so that gate current to the first pair of silicon rectifiers is diverted and prevented from triggering the first pair of silicon controlled rectifiers.

3,668,512
AUTOMATIC VOLTAGE BOOSTER

James Carey, 306 Lee Avenue, Yonkers, N.Y., and Jay E. Citrin, 280 Ocean Parkway, Brooklyn, N.Y.

Filed May 12, 1971, Ser. No. 142,622
Int. Cl. G05f 5/00
U.S. Cl. 323—45 **5 Claims**

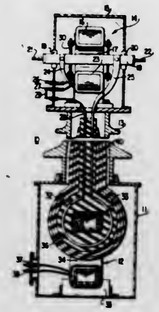


An instantly acting automatic voltage booster employing autotransformers each having a secondary winding connecting between power supply lines and a load in a three phase system for supplying power continuously to the load. Primary windings are maintained in short circuited condition by contacts of a relay actuated when voltage supplied via the supply lines remains above a predetermined minimum magnitude. The relay contacts open to energize the primary windings and induce voltage in the secondary windings when the supplied voltage falls to or below the predetermined magnitude for maintaining voltage supplied to the load above the predetermined magnitude. A switch is provided to short circuit the secondary windings and open circuit the primary windings in the event of equipment failure.

3,668,513
UPRIGHT TYPE BUSHING CURRENT TRANSFORMER

Denji Tsubouchi; Susumu Ito, both of Yokohama; Eisuke Toyota, Hiratsuka, and Kenji Wada, Yamato, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Mar. 19, 1971, Ser. No. 126,121
Claims priority, application Japan, Mar. 31, 1970, 45/26883
Int. Cl. H01f 40/06
U.S. Cl. 323—60 **6 Claims**

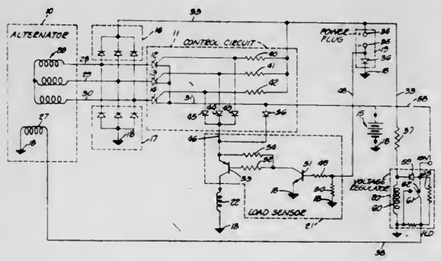


A bushing current transformer is provided and includes an auxiliary current transformer mounted on the top of a bushing. The primary and secondary coils of the auxiliary current transformer are connected parallel to each other and in series to an electrical power line having a high voltage and carrying a high current therethrough. A conductive lead is connected to the secondary coil of the auxiliary current transformer and is conducted to the bottom of the bushing to thereby form a primary coil of a main current transformer which is positioned on the bottom of the bushing and then conducted upwards again through the bushing. With such an arrangement the size of the line conductor being introduced into the bottom of the bushing can be made smaller, since the current transformation ratio between the primary and secondary coils of the auxiliary current transformer can be adjusted. Also, the current transformer can be standardized and thereby adapted for mass production due to the ability to fix the secondary current of the auxiliary current transformer at a constant amplitude.

3,668,514
DUAL VOLTAGE POWER SYSTEM FOR USE WITH VEHICLE ALTERNATORS AND THE LIKE

Donald W. Peck, Newbury Park, Calif., assignor to Oaks Power Corporation

Filed Sept. 15, 1970, Ser. No. 72,311
Int. Cl. H02p 11/00
U.S. Cl. 322—28 **12 Claims**

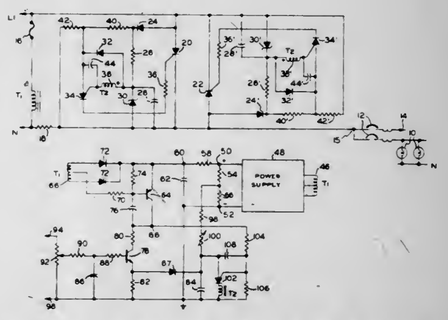


There is disclosed herein a dual voltage power unit for use in automobiles, campers, and the like for normally supplying the relatively low DC voltage from an alternator to a storage battery and other electrical devices of the vehicle and for supplying a higher voltage, such as 115 volts, for external usage such as for lighting, emergency power, and so forth. Several circuits are disclosed herein for providing a dual output DC voltage, or for providing a low DC voltage and a higher AC voltage at 60 hertz. The system includes a rectifier circuit coupled with the output of an alternator for normally providing the usual automotive DC voltage, such as 14.5 volts. A load sensor and control circuit are provided for sensing the demand for the higher voltage and for controlling rectifier circuits to supply the same.

3,668,515
LOAD CONTROL SYSTEM EMPLOYING SILICON CONTROLLED RECTIFIERS WITH OVERVOLTAGE PROTECTION AND COMPENSATION FOR LINE VOLTAGE FLUCTUATIONS

Arthur P. Horne, Portland, Oreg., assignor to Electronics Diversified, Inc., Portland, Oreg.

Filed Jan. 30, 1970, Ser. No. 7,093
Int. Cl. G05f 5/00
U.S. Cl. 323—22 SC **20 Claims**



A control system for a load includes a pair of oppositely poled silicon controlled rectifiers disposed in parallel between a line and the load, each being provided with a drive circuit energized from across the rectifiers for triggering each silicon controlled rectifier at a predetermined time by discharging a capacitor via a control transistor. The triggering time is controllable. The triggering circuitry is empowered from the line whereby triggering also varies in a manner for maintaining a relatively constant output despite changes in line voltage. Each control transistor is additionally triggerable when the voltage across the pair of rectifiers reaches an excessive value, whereby the rectifiers are turned on alternately with each rectifier protecting the other.

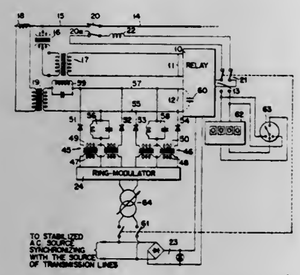
3,668,516
APPARATUS FOR INSPECTING A.C. ELECTRIC RELAY SYSTEMS DURING THE OPERATION THEREOF BY USE OF A HIGH FREQUENCY MODULATED SIGNAL

Masahide Muraoka, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 5, 1970, Ser. No. 9,009
Claims priority, application Japan, Feb. 10, 1969, 44/9485
Int. Cl. G01r 31/02
U.S. Cl. 324—28 R **7 Claims**

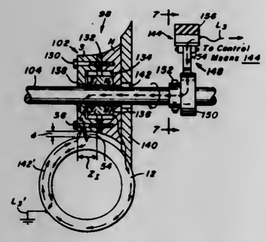
In an apparatus for inspecting an A.C. responsive relay system during operation thereof a pulse train is provided having distinctly higher repeating frequencies than those input signals to the relay indicative of a real fault and which pulse train is modulated by A.C. voltages having frequencies and wave forms similar to those input signals for the relay indicative of a real fault. The pulse train so provided is created by

mixing a pair of first and second pulse trains modulated by A.C. voltages in a pair of ring-modulators. The pulse A.C. voltages used for the modulation have distinctly higher frequencies than those of the real fault input signals for the relay. The A.C. voltages for the modulation feed the positive half waves thereof to a first multivibrator associated with one of the ring-modulators to thereby provide the first train. The A.C. voltages for the modulation, further, feed its negative half waves to a second multivibrator associated with the



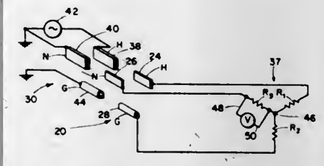
other ring-modulator to establish the second pulse train. Both of the multivibrators include means for regulating the respective time constants thereof whereby the pulses within the first and second pulse trains are distributed in the combined pulse train with extremely small time intervals between the resultant adjacent pulses, respectively. Thus, the combined pulse train so formed and used as the inspection signals may be easily distinguished from input signals indicative of a real fault which are applied to the relay system.

3,668,517
MAGNETIC PARTICLE INSPECTION APPARATUS WHEREIN THE ACCUMULATED PARTICLES CLOSE THE INDICATOR CIRCUIT
William L. Zemberry, Swissvale Borough, Pa., assignor to United States Steel Corporation
Filed July 30, 1970, Ser. No. 59,407
Int. Cl. G01r *33/12*
U.S. Cl. 324—38 **19 Claims**



An automatic magnetic particle inspection apparatus for detecting a defect in the workpiece and for signalling the presence of the defect in the workpiece is disclosed. The apparatus has conveying means for supporting the workpiece, drive means connected to one of the conveying means and the apparatus for causing relative movement between the conveying means and the apparatus to convey the workpiece along a path of movement; magnetizing means disposed adjacent a path of movement of the workpiece and for creating lines of flux in the workpiece and fringe lines of flux adjacent the defect in an attraction zone; magnetic particles spray means disposed further along the path of movement of the workpiece for spraying magnetic particles on the magnetized workpiece to deposit the particles on the workpiece in a spray zone adjacent the attraction zone and to create a pile of the magnetic particles adjacent the defect in the attraction zone within the spray zone; and detecting and signalling means disposed further along the path of movement of the workpiece. The detecting and signalling means has a bi-pole detecting head which is spaced from the attraction zone a predetermined distance and has magnet means and a contact member for contacting the workpiece. The magnet means is operable to create lines of flux through one pole of the detecting head, the contact member, the workpiece, the pile of magnetic particles, the other pole of the detecting head to the magnet means to form the pile of magnetic particles and into a bridge across the predetermined distance. Signal means are employed for indicating the presence of the defect and control means are connected to the detecting head and the signal means and are energized by the bridge to actuate the signal means to indicate the presence of the defect.

3,668,518
INSTRUMENT FOR TESTING THREE-WIRE ELECTRICAL OUTLETS
Alan R. Shapiro, Sharon, Mass., assignor to Bio-Design, Incorporated, Stoughton, Mass.
Filed Apr. 3, 1970, Ser. No. 25,409
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **8 Claims**

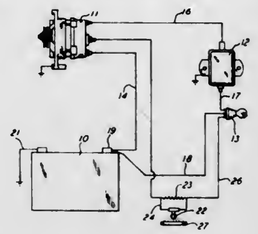


The disclosure depicts apparatus for testing wiring connection patterns in a three-wire AC electrical outlet, comprising a three-wire plug adapted for insertion into an outlet and comprising a line probe, a neutral probe, and a ground probe. In the embodiments illustrated a test circuit connected to the plug includes circuit branches between each of the probes and a common terminal, the branches containing resistance means having different resistance values. An AC electrical meter is connected in one of the circuit branches such that deflection of the needle is proportional to the absolute current flow in that branch and also in the test circuit as a whole. Different wiring connection patterns in a tested outlet produce different series-parallel connections of the circuit branch resistances and thus establish different current flows in the branch including the meter. The meter has a scale upon which a plurality of discrete zones are marked with indicia characterizing the various outlet wiring connection patterns which are possible. Upon insertion of the plug into an outlet, the meter needle is deflected to a particular zone on the scale, thus identifying the particular wiring connection pattern existing in the tested outlet. The location of the needle in the zone gives an indication of absolute line voltage in the outlet. Two disclosed embodiment include a resistor connected between the neutral and ground probes such that an open neutral connection in the outlet may be detected.

3,668,519
LUMINOUS AMMETER-VOLTMETER
George R. Mueller, South Milwaukee, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed Apr. 30, 1971, Ser. No. 138,929
Int. Cl. G01r *31/00*
U.S. Cl. 324—96 **8 Claims**

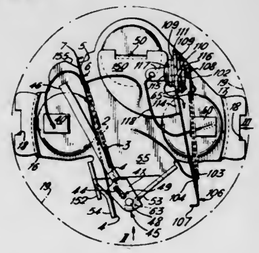
A luminous ammeter-voltmeter of a type which is particularly useful in a vehicle which commonly has a relatively low voltage electric system. The system includes a battery, and a

type of electric generating means, and an electric regulator and a gauge for indicating amperage and voltage in the system. The gauge is in the form of a light bulb connected in the system to emit light rays in proportion to the electric power in the system, and the light rays are directed to a refractor which receives the light rays in various areas of the refractor. The refractor areas are respectively spaced from



the light bulb to thereby indicate the intensity of the light emitted from the bulb, by having the refractor areas respectively located in the high-intensity light-ray position or the low-intensity position, that is, either close to or farther from the light bulb. The refractor is provided with indicia for visibly disclosing the quantity of electric power in the system by having the respective areas of the refractor illuminated in the different intensities mentioned.

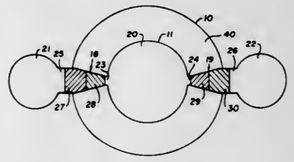
3,668,520
MOVEMENT FOR INSTRUMENTS
Norman Blackham, Lane Farm, Sewell, England, and Mervyn H. H. Read, 15 Ronald Avenue, Greenwich, Australia
Filed Mar. 16, 1970, Ser. No. 19,820
Claims priority, application Great Britain, Mar. 14, 1969, 13,551/69
Int. Cl. G01r *5/26*; G05f *5/00*
U.S. Cl. 324—106 **4 Claims**



Bimetal instrument movements of the V-pivot type and the pin-pivot type in which the integral upstanding portions of a one-piece frame member support the fulcrum for the movements' pointer means and U-shaped bimetallic structure. Calibration and/or adjustment is effected by forcibly bending the upstanding portions. The instrument movement of the pin-pivot type described is provided with removable pointer means.

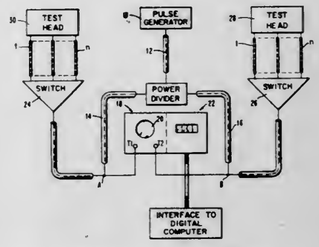
3,668,521
ZERO TEMPERATURE DRIFT ELECTROTHERMIC UNITS
Edward E. Aslan, Plainview, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.
Filed June 22, 1970, Ser. No. 48,288
Int. Cl. G01r *5/22, 21/00*
U.S. Cl. 324—106 **5 Claims**

An electrothermic unit comprising two thin film thermocouples mounted in a coaxial transmission line relative to location and the thermal resistive distributions thereof, such



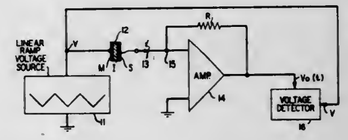
that the sum of the hot junction temperatures is substantially equal to the sum of the cold junction temperatures.

3,668,522
METHOD AND APPARATUS FOR CHARACTERIZING TEST ELEMENTS ON THE BASIS OF RISE-TIME DEGRADATION
Majid Ghafghaichi, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1968, Ser. No. 782,299
Int. Cl. G01r *31/22, 27/04*
U.S. Cl. 324—158 T **1 Claim**



Method and apparatus for characterizing the dynamic input impedance of a test element by measuring the rise-time degradation of an input waveform. A pulse having a very fast rise-time is supplied by a pulse generator and transmitted down two branches of a balanced transmission line. One leg of the balanced transmission line is connected to a sensing means while the other leg of the balanced transmission line is connected to a test element as well as the sensing means. Thus, the sensing means would receive two identical pulses but for the rise-time degradation of the pulse connected to the test element. The test element is characterized on the basis of this rise-time degradation.

3,668,523
ELECTRICAL TESTING OF DIELECTRIC LAYERS, EXHIBITING VOLTAGE DEPENDENT CAPACITANCE, WITH LINEAR RAMP VOLTAGES
Matthew Kuhn, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed May 7, 1969, Ser. No. 822,675
Int. Cl. G01r *31/22, 27/26*
U.S. Cl. 324—158 D **9 Claims**



In order to test a dielectric layered structure exhibiting a voltage dependent capacitance, a metal-insulator-semicon-

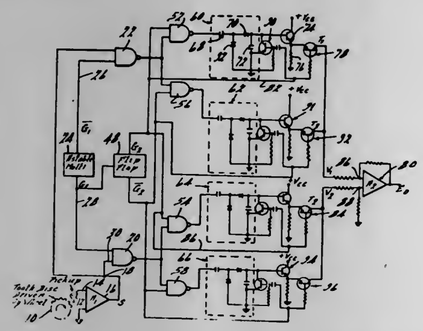
ductor (M-I-S) structure for example, a linear ramp (sawtooth) voltage is applied across the structure initially in thermal equilibrium, but at a temperature below which the insulator allows ionic impurities to become mobile. The profile of current vs. time, which thereby flows through the structure, constitutes a signal which can be rapidly electronically processed to yield information about the quality and properties of the structure.

3,668,524

ELECTRONIC CIRCUIT FOR DETECTING AND EVALUATING ANGULAR ACCELERATION AND DECELERATION OF A ROTARY MEMBER

James I. Berry, Livonia, and Zbigniew J. Jania, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 19, 1970, Ser. No. 3,667
Int. Cl. G01p 3/42
U.S. Cl. 324—162 **8 Claims**



An electronic circuit for developing a voltage signal that is proportional in magnitude to the acceleration or deceleration of a rotary member, including a speed pick-up signal generator connected to the rotary member and having an output signal in the form of voltage pulses, a plurality of voltage storage counters, each being connected to an output signal amplifier circuit, a separate electronic gate for controlling the entry of a triggering voltage signal to each of said storage counters and a multi-vibrator switching circuit connecting the input side of each gate with the output side of said speed pick-up whereby the signal generated by said speed pick-up is selectively distributed to the gates to allow each storage counter to develop an output signal voltage that is determined by the number of pulses generated by said pick-up within a predetermined interval, the differences in voltages stored by each counter thereby being a measure of the change in velocity of said rotary member during operation in one interval relative to the speed of the rotary member during operation in another interval.

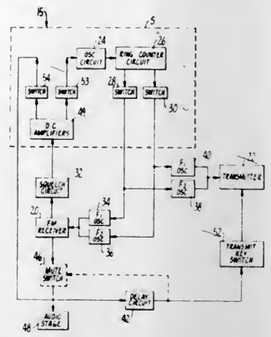
3,668,525

COMMUNICATION SYSTEM

Robert E. McGraw, 1517 Sierra Gardens Drive, Roseville, Calif.

Filed Mar. 12, 1970, Ser. No. 18,920
Int. Cl. H04b 7/16
U.S. Cl. 325—1 **5 Claims**

A communication system wherein a relay station comprising a single receiver and a single transmitter is adapted to selectively monitor a plurality of frequencies and transmit the monitored signal in one of a plurality of predetermined frequencies. To accomplish this end a sensing system is operated in conjunction with the receiver and transmitter to sense the incoming signal and lock the receiver and transmitter in an operating condition corresponding to the sensed incoming signal. Assuming that the receiver portion of the



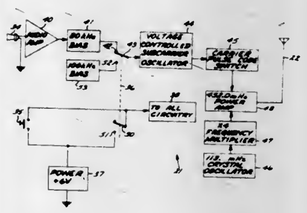
relay station is of an FM type, the squelch circuit thereof may be utilized in conjunction with the sensing device to lock the receiver on frequency.

3,668,526

COMMUNICATION SYSTEM HAVING MEANS FOR CAUSING A DISTRESS SIGNAL

Jerome S. Raskin, 20661 Suburbia Lane, Huntington Beach, Calif.

Filed Sept. 12, 1969, Ser. No. 857,496
Int. Cl. H04b 7/00
U.S. Cl. 325—64 **21 Claims**



A communication system including a short range hand held transmitter having the capability of transmitting an intelligence signal on one basic frequency and a steady signal on a second separate basic frequency to a vehicle located a short distance away, and a transceiver-input unit which is plugged into a standard transceiver in the vehicle, which unit is responsive to said one frequency signal to cause said transceiver to broadcast to a remote point the intelligence signal. Said unit is responsive to said second frequency signal to turn on the vehicle siren and lights, and also to change said constant signal into brief coded signals which are broadcasted by said transceiver at regular intervals with each brief coded

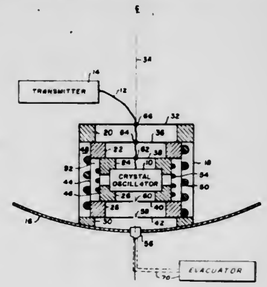
signal being no more than 33⅓ of the interval between two brief coded signals. Said units turns on the transceiver one-quarter second before the beginning of the brief coded signal and turns the transceiver off immediately upon conclusion of the brief coded signal. The transmitter broadcasts a carrier wave which is pulse coded around said one basic frequency by a subcarrier which is frequency modulated by the intelligence input into the transmitter.

3,668,527

CRYSTAL OSCILLATOR FOR SATELLITE

Roger L. Easton, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 785,883, Dec. 23, 1968, now Patent No. 3,560,880, and 806,640, Mar. 12, 1969, now Patent No. 3,600,951. This application Nov. 3, 1970, Ser. No. 86,496
Int. Cl. H04b 1/04
U.S. Cl. 325—115 **4 Claims**



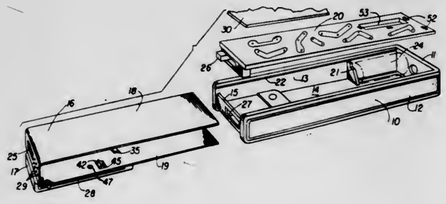
Structure and apparatus located on a satellite which control the environment of a crystal oscillator for the purpose of attaining extreme frequency stability and reducing the problems of pre-flight testing and adjusting. The oscillator is located in an evacuated chamber together with heat shields and ovens.

3,668,528

HOUSING ASSEMBLY FOR MINIATURE RADIO APPARATUS WITH SELF CONTAINED BATTERY

Thomas R. Hutchinson, Oak Park, and Edward J. Caper, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 20, 1970, Ser. No. 65,453
Int. Cl. H04b 1/08
U.S. Cl. 325—352 **16 Claims**



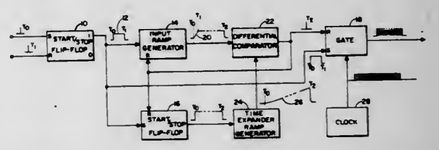
Housing assembly for miniature radio apparatus, such as a radio pager, having a molded frame member which supports the chassis and forms one end and two opposite sides of a housing. A U-shaped cover member slides in grooves in the frame member to form the other end and the other two sides of the housing, thereby providing a completely enclosed housing. Space for a battery is provided adjacent the end of the housing formed by the frame member, and the cover can slide with respect to the frame member to open the housing at that end to afford access to the battery. A detent is provided on the frame member which engages the cover member to hold the cover completely closed. A clip for holding the radio apparatus in a pocket includes a button to release the detent to permit the cover to slide for access to the battery. A second detent prevents further movement of the cover with respect to the housing preventing access to the radio chassis, with a key being required to release the second detent for removal of the cover from the frame member. Both single use and rechargeable batteries can be used, and contacts are provided in the housing for connecting the rechargeable battery to a charger.

3,668,529

MEASURING CLOSELY SPACED PULSES USING TIME EXPANSION

Jack R. Meyer, Columbia Heights, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 11, 1971, Ser. No. 105,582
Int. Cl. H03k 17/28
U.S. Cl. 328—129 **4 Claims**



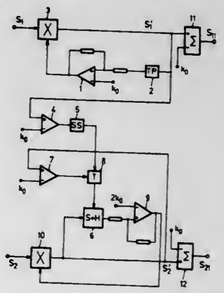
Apparatus for measuring the time between first and second pulses where the time is expanded by comparing the voltage held in a first fast ramp generator with that being developed by a second slow ramp generator. The expanded time is directly proportional to the actual time between pulses and is used to gate a clock, providing a digital signal proportional to the actual time.

3,668,530

APPARATUS FOR ELECTRONICALLY EVALUATING SIGNALS IN MUTUAL PHASE-QUADRATURE

Francois Mottier, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

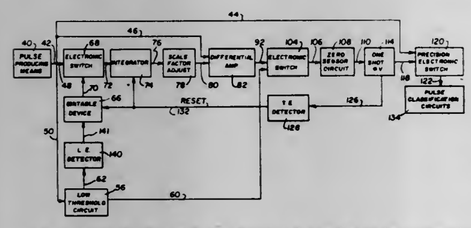
Filed May 13, 1971, Ser. No. 143,028
Claims priority, application Switzerland, May 26, 1970, 7782/70
Int. Cl. G06g 7/14; H03k 5/20
U.S. Cl. 328—147 **6 Claims**



Apparatus for electronically evaluating two output signals in mutual phase-quadrature from a measuring device in

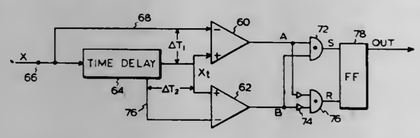
which the two phase-displaced signals are fed by way of parallel channels to the evaluating circuits and are represented respectively as the sine and cosine functions of which the argument is a measured variable proportional to the measured quantity. In order to establish an essentially error-free evaluation of the two signals so as to avoid errors which might be introduced as a result of variations of certain constants and differences in waveform of the signals, a regulator circuit provides for regulation of the d.c. component of one of the signals to a predeterminable voltage level, a comparator circuit continuously compares the instantaneous values of the regulated signal with that voltage level, a sensing and holding circuit is actuated at the moment when the instantaneous value of the first signal and the predeterminable voltage reach equality, the second signal is applied as an input to the sensing and holding circuit, the voltage value stored in the sensing and holding circuit is continuously compared with twice the value of the predeterminable voltage level, and an error signal proportional to any difference which may exist between these latter two compared values is utilized to regulate the second signal to this value.

3,668,531
PULSE ANALYZING APPARATUS
Walter R. Hogg, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Continuation of application Ser. No. 614,496, Feb. 7, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 529,452, Feb. 23, 1966, now abandoned. This application June 15, 1970, Ser. No. 48,888
Int. Cl. H03k *17/00*
U.S. Cl. 328—150 **22 Claims**



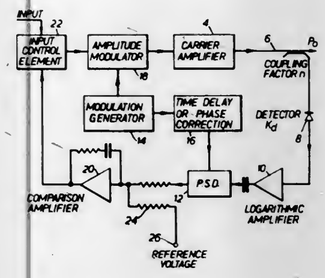
Apparatus finding the amplitude of a pulse at its center by comparing the pulse with its integral, adjusted to pass through the amplitude of the pulse at its time center, and passing to coincident gating means a signal having the pulse center amplitude at that time and a signal of fixed duration initiated at the finding of the pulse center. Also, a particle analyzing a system intercoupling the amplitude finding apparatus between a pulse generating transducer of liquid suspended particles and pulse classification structure.

3,668,532
PEAK DETECTION SYSTEM
Hanan Potash, Canoga Park, Calif., assignor to Sperry Rand Corporaton, New York, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,207
Int. Cl. H03k *5/20*
U.S. Cl. 328—151 **7 Claims**



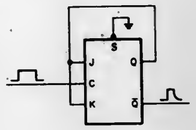
A system for detecting the peaks in an analog signal whose amplitude varies with respect to time. The system employs a delta differentiation technique to develop two separate binary differential signals; i.e., a first highly accurate short time constant differential signal and a second relatively noise immune long time constant differential signal. The two differential signals are then logically combined to yield a relatively noise immune output signal which accurately indicates the peaks in the analog signal.

3,668,533
FEEDBACK CONTROL SYSTEMS
Percy J. Fish, Bassett, and Malcolm B. Clark, Winchester, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Jan. 11, 1971, Ser. No. 105,573
Claims priority, application Great Britain, Jan. 10, 1970, 1,307/70
Int. Cl. H04b *3/10*
U.S. Cl. 328—168 **7 Claims**



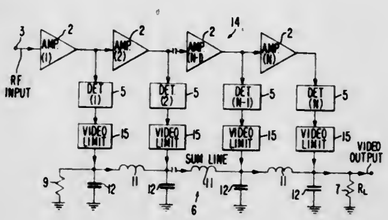
An amplifier arrangement includes an amplifier and a feed back system for maintaining the amplifier operating at a direct point on a non-linear part of its characteristic. The feed back system includes a generator for adding a pilot signal to the main input signal to the amplifier and a detector for detecting the amplified pilot signal. The amplitude of the amplified pilot signal will depend upon the operating point of the amplifier in its characteristic. By comparing the amplified pilot signal with a reference signal representative of a desired pilot signal with a reference signal representative of a desired point in the amplifier characteristic, the amplitude of the main input signal is varied to maintain the amplifier operating at the desired point.

3,668,534
J-K FLIP-FLOP MONOSTABLE MULTIVIBRATOR APPARATUS
James R. Perry, Jr., Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.
Filed Mar. 5, 1971, Ser. No. 121,426
Int. Cl. H03k *3/10*
U.S. Cl. 328—207 **8 Claims**



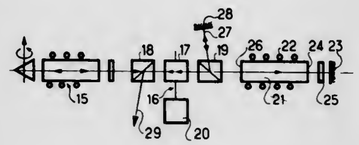
The circuit and method of connecting a J-K flip-flop so that it will operate as a one-shot multivibrator comprising establishing a "set" input at a logic 0 and an appropriate J or K input at a logic 1 for momentary operation in response to a clock input.

3,668,535
LOGARITHMIC RF AMPLIFIER EMPLOYING SUCCESSIVE DETECTION
Kenneth H. Lansdowne, Deer Park, N.Y., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 15, 1970, Ser. No. 3,164
Int. Cl. H03d *1/10*
U.S. Cl. 329—192 **4 Claims**



A logarithmic radio frequency amplifier is disclosed which employs a series of cascaded RF amplifier stages. Each amplifier stage includes a detector for demodulating the output of each amplifier to produce a video signal. A limiter is provided for each detector for limiting the video signal output of each of the detectors. The limited video output from each successive stage is applied to a summing delay line to produce the logarithmic video output at the end of the delay line.

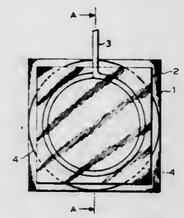
3,668,536
LIGHT AMPLIFIER STAGES
Maurice Michon, Dravell, France, assignor to Compagnie Generale D'Electricite, Paris, France
Filed Apr. 24, 1970, Ser. No. 31,634
Claims priority, application France, Apr. 24, 1969, 6913114
Int. Cl. H01s *3/05*
U.S. Cl. 330—4.3 **2 Claims**



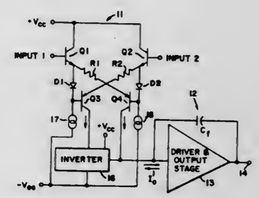
The present invention concerns light amplifier stages in which the provision of a fully reflecting surface at the end of a conventional amplifier stage causes it to produce an amplifying effect equivalent to plural conventional stages.

3,668,537
SYSTEM OF LIQUID ELECTRODES FOR POCKELS CELLS AND LIQUID COMPOSITIONS FOR SAID ELECTRODES
Adriano Berne; Mario Cesarotti, and Glauco Benedetti Michelagelli, all of Rome, Italy, assignors to Selenia Industrie Elettroniche Associate S.p.A., Rome, Italy
Filed Aug. 6, 1969, Ser. No. 848,046
Claims priority, application Italy, Aug. 31, 1968, 39447 A/68
Int. Cl. H01s *3/10*
U.S. Cl. 330—4.3 **6 Claims**

A Pockels cell with liquid electrodes, in which said electrodes comprise a water solution formed by the salt of the electro-optical crystal and by another simple salt having an ion common with that of the salt of the electro-optical crystal.

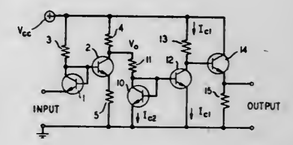


3,668,538
FAST SLEWING OPERATIONAL AMPLIFIER
William E. Hearn, Atherton, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.
Filed Feb. 19, 1970, Ser. No. 12,709
Int. Cl. H03f *1/02*
U.S. Cl. 330—9 **5 Claims**



A fast slewing operational amplifier having as an output stage an inverting integrator and as an input stage a differential amplifier. The output current of the differential amplifier varies in accordance with the differential input voltage to cause the integrator stage to slew in an exponential manner. The differential amplifier includes two pairs of complementary transistors with their emitters cross-coupled.

3,668,539
LOW LEVEL AMPLIFIER
Robert Joseph Healey, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 29, 1970, Ser. No. 59,251
Int. Cl. H03f *3/18*
U.S. Cl. 330—17 **6 Claims**



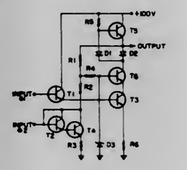
A low level d.c. error detector circuit wherein a semiconductor asymmetrically conducting device, such as a transistor connected as a diode, is serially connected with the low im-

pedance signal source to be detected and the base-emitter path of the detecting transistor. The transistor-diode and the detecting transistor have the same semiconductor ratings and are poled with their forward conductivity paths connected in opposition so that the substantially equal voltages across their junctions cancel. Amplification of low level signals is thereby provided free from the non-linear effects and sensitivity of transistor junctions and without the use of a differential amplifier having two opposite polarity biasing sources.

3,668,540
INTEGRATED VIDEO AMPLIFIER

Hans R. Camenzind, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Continuation of application Ser. No. 791,661, Jan. 6, 1969, now abandoned. This application July 13, 1970, Ser. No. 56,205
Int. Cl. H03f 3/42
U.S. Cl. 330—18 3 Claims

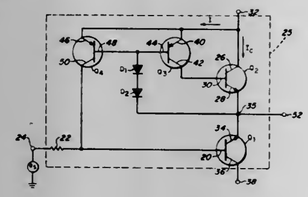


Integrated video amplifier having an output voltage which is accurately held to one-half of the supply voltage and which utilizes a class B output stage.

3,668,541
CURRENT COMPENSATOR CIRCUIT

Robert A. Pease, Wilmington, Mass., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Mar. 23, 1970, Ser. No. 21,736
Int. Cl. H03f 1/32
U.S. Cl. 330—23 9 Claims

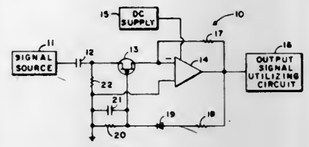


A current compensating circuit for compensating a transistor for thermal variations in its operating point. The circuit includes a compensating transistor of the same conductivity type as the transistor to be compensated, the two transistors being thermally matched to one another. The compensating transistor is connected so that it is supplied with a constant electric current and its emitter is direct coupled to the emitter of the transistor to be compensated. A compensating current is provided by a pair of transistors thermally matched to one another and of opposite conductivity type to the first transistors. One of the second pair has its collector connected to the base of the compensating transistor while the other of the second pair has its collector connected to the base of the transistor to be compensated. The current generating transistors have their bases connected to one another and their emitters connected to one another and to the collector of the compensating transistor. The principles are also applicable to a more complex circuit such as a differential amplifier wherein each of the input transistors of the differential amplifier are provided with transistors which provide a thermally variable correction current to the respective bases of the input transistors.

3,668,542
AUDIO COMPRESSION CIRCUIT

C. Daniel W. Stoffer, Don Mills, Ontario, Canada, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Feb. 3, 1970, Ser. No. 8,258
Int. Cl. H03f 1/32; H03g 3/30
U.S. Cl. 330—23 4 Claims

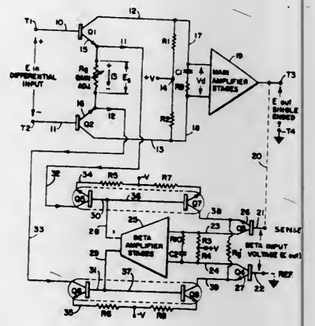


An audio compressor using a P-channel junction field effect transistor (JFET) as a voltage controlled resistor at the input of an integrated circuit operational amplifier. Good frequency response and fast attack are provided since the gain control element is not a part of the biasing circuit with limitations due to settling time thereby avoided.

3,668,543
TRANSDUCER AMPLIFIER SYSTEM

Dean C. Bailey, Los Altos, Calif., assignor to Intech Incorporated, Santa Clara, Calif.

Filed Jan. 31, 1968, Ser. No. 702,025
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 11 Claims



A solid state transducer amplifier system is provided in the form of a main operational amplifier having a differential input stage and an active series connected feedback loop as opposed to the conventional passive types of feedback. The active feedback loop incorporates a differential amplifier having an extremely accurate and linear differential transconductance characteristic such that the output voltage signal from the main operational amplifier fed to the differential feedback amplifier results in the generation of a differential feedback current proportional to this voltage. This differential feedback current generates a feedback voltage

which is balanced against the differential input signal in the input stage so that changes in the differential input signal are followed by changes in the feedback voltage. Since the value of the differential feedback current is at all times determined by the output voltage signal from the main amplifier fed into the feedback loop, the output voltage signal constitutes a very accurate and linear amplification of the differential input signal.

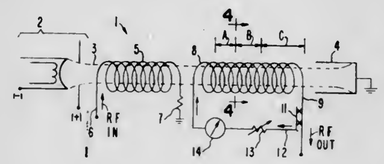
The differential feedback current is virtually unchanged by the common mode differential input voltage applied to the input stage thereby assuring a high common mode rejection.

The active feedback amplifier itself incorporates current feedback to linearize and establish a more accurate transconductance characteristic. Towards this end, pairs of monolithic dual transistors are preferably utilized to provide excellent inherent matching and tracking necessary between the generated output currents and feedback currents.

3,668,544
HIGH EFFICIENCY TRAVELING WAVE TUBE EMPLOYING HARMONIC BUNCHING

Erling L. Lien, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 3, 1970, Ser. No. 69,295
Int. Cl. H01j 25/34
U.S. Cl. 330—43 9 Claims



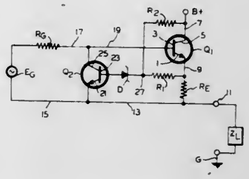
A slow wave tube is disclosed wherein the signal to be amplified and an harmonic thereof are applied concurrently over at least a portion of the slow wave circuit to increase the RF conversion efficiency of the tube. In a preferred embodiment, the harmonic wave energy is extracted from the output of the tube and fed back onto the slow wave circuit. The slow wave circuit portion, which provides the harmonic interaction with the beam, preferably has a dispersive characteristic such that the harmonic wave energy has a higher phase velocity than the fundamental wave energy for enhanced RF conversion efficiency.

3,668,545
APPARATUS FOR AMPLIFIER PROTECTION

Daniel R. Von Recklinghausen, Arlington, Mass., assignor to H. H. Scott, Inc., Maynard, Mass.

Continuation of application Ser. No. 649,661, June 28, 1967, now abandoned. This application Nov. 3, 1969, Ser. No. 871,603
Int. Cl. H03f 21/00
U.S. Cl. 330—207 P 17 Claims

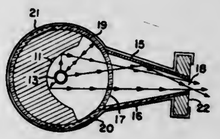
Protection for amplifiers and the like is provided by proportionally combining a measure of the voltage across the output terminals with a measure of the output current and actuating switching means across the input terminals when a proportional combination exceeds a predetermined value. Transistors may be employed as the amplifier and switching means, and push-pull amplifiers may be so protected. In one embodiment a current-responsive protection device protects both transistors of a push-pull circuit. Multiple proportioning ranges may be provided in a non-linear protection arrangement, and the protection device may be rendered insensitive to short duration overloads. Reverse current protection may also be provided by the addition of one or more diodes.



3,668,546
LASER STIMULATOR ASSEMBLY

Edward R. Schumacher, 4728 54th Street, San Diego, Calif.

Filed Jan. 11, 1971, Ser. No. 105,447
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 5 Claims



A laser stimulator assembly particularly suited for exciting a laser from an external position. An elongate source of laser excitation energy is positioned at the focal axis of an ellipsoidal reflector and together with cylindrical retro-reflectors and two extending plane reflectors directs the maximum amount of laser excitation energy to an elongate aperture with the minimum loss by reason of multiple reflections. The ellipsoidal reflector and the retroreflectors are positioned within a fluid-tight enclosure comprising a body member and two end members. Communication to the inside of the fluid-tight enclosure is provided through its end members for connection of the source of laser excitation energy to an external source of actuating energy. The same communication means in the form of an electrical conductor may, in the preferred embodiment, be hollow, providing a fluid path through the end members for circulating a cooling medium through the interior of the assembly and in contact with the elongate source of laser excitation energy to increase its efficiency. The cooling medium is preferably a selected fluid having desirable light transmissive and heat conduction properties, as well as being electrically non-conductive.

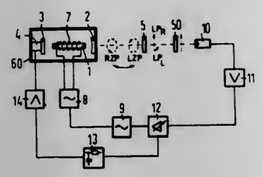
3,668,547
FREQUENCY-STABILIZED LASER ARRANGEMENT

Viktor Bodlaj, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 10, 1971, Ser. No. 122,796
Claims priority, application Germany, Apr. 1, 1970, P 20 15 612.1
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 7 Claims

A laser arrangement for the stabilization of the frequency of a one or two mode gas laser, particularly a short He–Ne laser, where the stimulated medium is arranged between a fixed mirror and a mirror which is displaceable by means of a piezo-ceramic in the axial direction of the laser, the laser beams discharging from the partially transparent fixed mirror

being used to generate a DC voltage control signal which is proportional to the frequency deviation of the laser beams with respect to the central frequency of the amplifying transfer, returning the resonator to the central frequency by way of the piezo-ceramic, in the control circuit which contains a photosensitive element and subsequent amplifiers and



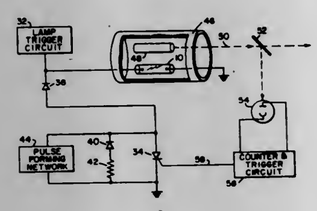
phase sensitive demodulators. The stimulated medium is arranged, at least partially, in a magnetic coil which is excited to generate an axis-parallel alternating magnetic field. A λ4 plate and a polarization device are arranged between the fixed partially transparent mirror and the photo-sensitive element.

3,668,548

SYSTEM FOR PROVIDING CONTINUOUSLY VARIABLE PUMP PULSES

Thaddeus A. Osial, Penn Hills, and Richard J. Ravas, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 26, 1968, Ser. No. 740,220
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 4 Claims



Described is an electric flash producing system wherein the period of the flash can be continuously and accurately varied. These flashes are used, for example, as a pumping light source for laser crystals. Also described is a system for producing single giant spikes or a controlled number of giant spikes by the use of laser rods formed from uranyl-sensitized neodymium glass.

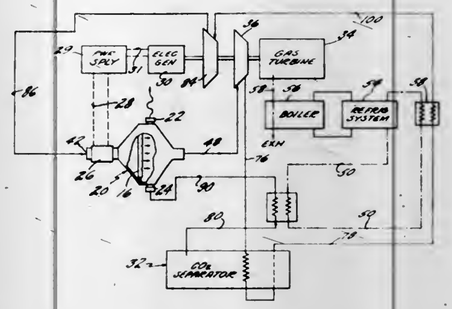
3,668,549

EXTENDED CLOSED CYCLE GAS LASER SYSTEM

Frank R. Biancardi, Vernon, Conn., and Gorken Melikian, Springfield, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 10, 1969, Ser. No. 857,646
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 21 Claims

A flowing gas laser system is connected to a closed cycle, so that the gas effluent is reused, the gases being refrigerated to a temperature between 100° F and minus 40° F, or lower utilizing either heat exchange with a refrigeration cycle or gas expansion means, with or without additional pre-cooling utilizing ambient heat exchangers. Embodiments include premixed laser systems, and mixing type systems wherein the



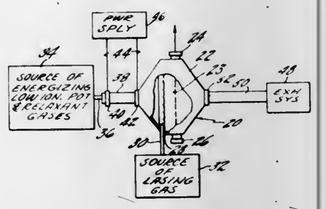
lasing gas is separated from other gases, in which case cooling to a point below ambient takes place after the separation.

3,668,550

GAS LASER LOW IONIZATION ELECTRIC DISCHARGE

Robert H. Bullis, Avon, and William Nighan, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 10, 1969, Ser. No. 857,648
Int. Cl. H01s 3/09, 3/22
U.S. Cl. 331—94.5 4 Claims



An electric discharge gas laser includes in its gas mixture a small amount of low ionization potential substance proportioned so as to provide a ratio of electric field intensity to neutral gas density within an electric discharge plasma which promotes substantially maximum upper laser level excitation in the lasing gas. Specific embodiments include CO_2—N_2-He—Cs and CO_2—Cs—He, in mixing and pre-mixed configurations.

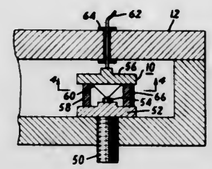
3,668,551

SOLID STATE MICROWAVE OSCILLATOR WITH CERAMIC CAPACITANCE TEMPERATURE COMPENSATING ELEMENT

Akihiro Kondo, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1970, Ser. No. 86,141
Claims priority, application Japan, Nov. 4, 1969, 44/88307; Sept. 10, 1970, 45/79486
Int. Cl. H03b 3/04, 7/14
U.S. Cl. 331—96 13 Claims

An enclosed Gunn effect diode is disposed within a microwave resonant cavity. A capacitive element of dielectric ceramic such as titanium oxide having a negative temperature coefficient of capacitance is attached to the insulating portion of the enclosure for the diode. Alternatively the enclosure for the diode may be partly or entirely formed of such a dielectric ceramic.

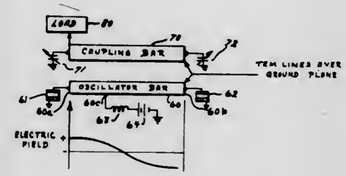


3,668,552

PUSH-PULL TRANSFERRED ELECTRON OSCILLATOR

Hiromu J. Kuno, Palos Verdes Peninsula, Calif.; Bertrand E. Berson, Trenton, and James F. Reynolds, Cranbury, both of N.J., assignors to The United States of America as represented by the Secretary of the Air Force

Original application Dec. 18, 1969, Ser. No. 886,238, now abandoned. Divided and this application Apr. 29, 1971, Ser. No. 138,423
Int. Cl. H03b 7/14
U.S. Cl. 331—100 2 Claims



A push-pull transferred-electron oscillator circuit in which a number of transferred-electron devices are connected in parallel to a DC bias circuit, but, in the RF (radio frequency) circuit, they operate in a push-pull manner so that the RF power is increased by four times for the same RF impedance.

3,668,553

DIGITALLY TUNED STRIPLINE OSCILLATOR

Vernon E. Dunn, Mountain View, and Arthur B. Vane, Menlo Park, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed June 26, 1970, Ser. No. 50,266
Int. Cl. H03b 7/06
U.S. Cl. 331—107 G 8 Claims

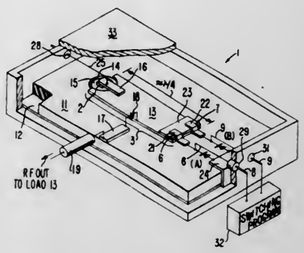
A digitally tuned microwave microstrip oscillator is disclosed. The oscillator includes a resonant section of stripline having a Gunn diode connected between the stripline and ground plane at a low impedance point and having one or more tuning capacitors connected via p-i-n diodes between a high voltage portion of the stripline resonator and the ground plane. Means are provided for selectively biasing one or more of the p-i-n diodes to a conductive state for switching one or more of the tuning capacitors across the resonant stripline for digitally tuning the resonator and oscillator in discrete frequency steps according to the switched condition of the diodes.

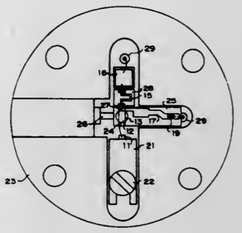
3,668,554

YIG-TUNED SOLID STATE MICROWAVE OSCILLATOR

John J. Dupre, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 29, 1971, Ser. No. 128,924
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 12 Claims





A tunable solid state microwave oscillator comprising a solid state device having negative resistance characteristics connected in series with the tuning circuit of a YIG resonator, the tuning circuit in turn being connected in series with the output of the oscillator. An impedance transforming network is connected in series between the YIG-tuning circuit and the output. A selective attenuator network may be coupled between the impedance transformer network and the output.

3,668,555

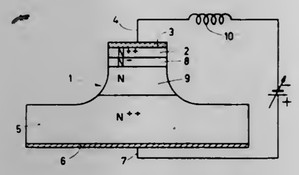
SEMICONDUCTOR DEVICE FOR PRODUCING OR AMPLIFYING ELECTRIC OSCILLATIONS AND CIRCUIT ARRANGEMENT COMPRISING SUCH A DEVICE

Wolfdietrich Georg Kasperkovitz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,782
Claims priority, application Netherlands, Jan. 17, 1969, 6900787
Int. Cl. H03b 7/14
U.S. Cl. 331—107 R 10 Claims

An electronically tunable semiconductor device for producing and amplifying electric oscillations, comprising between two ohmic contacts at least one thin layer of a low conductivity and a thicker layer of a higher conductivity,

with a difference in doping concentration which is smaller than $5 \cdot 10^{16}(\epsilon_o \epsilon_r/q)$ (E_{ac}/v), where E_{ac} is the field strength with beginning avalanche multiplication, v the saturation



velocity of the majority charge carriers, q the electron charge, and ϵ_r the dielectric constant of the semiconductor material.

3,668,556

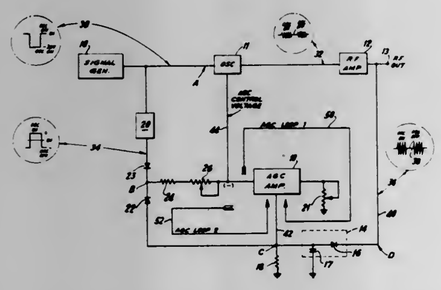
AUTOMATIC GAIN CONTROL CIRCUIT

William D. Harbeson, Montville, N.J., assignor to Ohmega Laboratories, Pine Brook, N.J.

Continuation of application Ser. No. 810,450, Mar. 26, 1969, now abandoned. This application May 11, 1971, Ser. No. 142,369

Int. Cl. H03b *3/02*

U.S. Cl. 331—109 **5 Claims**



An automatic gain control circuit for pulsed oscillators or other gate circuits which are intermittently operated. The control voltage for the amplitude of oscillator output is regulated to a substantially constant value even during the non-operating or blanking portion of the oscillator operation by a resistance-diode network responding to a blanking or switching signal in phase with the blanking or gating signals controlling the operation of the oscillator.

3,668,557

LOW FREQUENCY BLOCKING OSCILLATOR

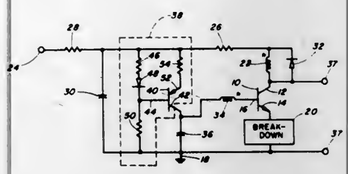
Charles H. Johnson, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 4, 1970, Ser. No. 69,682

Int. Cl. H03k *3/30*

U.S. Cl. 331—112 **4 Claims**

A low frequency astable blocking oscillator composed of a transistor with a first transformer winding in the collector circuit and a second transformer winding in the base circuit to provide regenerative feedback between the collector and the base. A capacitor is connected to the transistor and is charged by a constant current source to initiate operation of the blocking oscillator when a predetermined voltage is reached. A voltage breakdown device is coupled to the transistor to raise the voltage required by the capacitor before blocking oscillator action commences thereby providing low frequency operation.



3,668,558

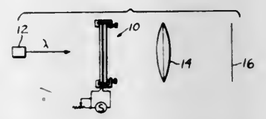
SURFACE WAVE INTERFERENCE MODULATOR

Billy Jo Hunsinger, Urbana, Ill., assignor to The Magnovox Company, Fort Wayne, Ind.

Filed Dec. 11, 1969, Ser. No. 884,097

Int. Cl. H01s *3/00*

U.S. Cl. 332—7.51 **7 Claims**



The specification discloses an apparatus for modulating light in which a interferometer of the multiple reflection or multiple transmission type is employed. The interferometer has a pair of spaced optically flat reflective surfaces on at least one of which Rayleigh waves are excited The excited surface may be formed on a piezoelectric member and the Rayleigh waves excited thereon by supplying voltage pulsations to a grid mounted on the surface to be excited.

3,668,559

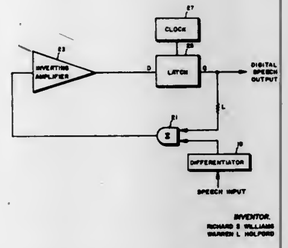
AUDIO TO DIGITAL CONVERTER

Richard E. Williams, Reston, and Warren L. Holford, Fairfax, both of Va., assignors to Scope Incorporated, Reston, Va.

Filed Nov. 16, 1970, Ser. No. 89,781

Int. Cl. H03k *13/22*

U.S. Cl. 332—9 R **2 Claims**



An audio-to-digital converter having a comparator means for comparing an audio input with a feedback signal. The feedback is coupled to the comparator through a feedback control device so that a constant comparison occurs.

3,668,560

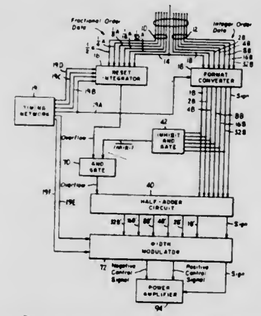
PULSE-WIDTH FREQUENCY MODULATION DEVICE

Joseph J. Padalino, West Orange, N.J., and Alfons A. Tuszynski, San Diego, Calif., assignors to Research Corporation, New York, N.Y.

Filed July 9, 1970, Ser. No. 53,435

Int. Cl. H03k *7/08*

U.S. Cl. 332—9 **6 Claims**



As described herein, a train of pulses used to control a servo-motor is modulated in accordance with the values of a varying digital input signal. To obtain accuracy of control, the digital input signal is divided into two components; a first group of bits representing integer order values; and a second group of bits representing fractional order data. A modulating circuit responds to the integer order bits to width modulate the pulse train in accordance with the magnitude represented by the integer order bits. The fractional order data bits are accumulated until the sum thereof at least equals the value of the least significant bit of the integer order component. At this time, the sum signal is added to the integer order data to add an increment of width modulation to the pulse then being modulated.

3,668,561

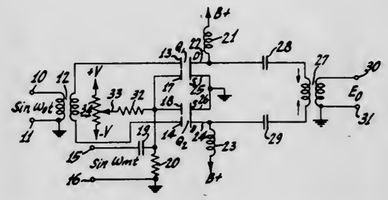
FIELD EFFECT TRANSISTOR MODULATOR CIRCUIT

John Eugene Krupa, and Mario Robert Paglee, both of Moorestown, N.J., assignors to RCA Corporation

Filed June 29, 1970, Ser. No. 50,625

Int. Cl. H03c *1/36*

U.S. Cl. 332—31 T **4 Claims**



A modulator circuit employing two dual gate field effect transistors. A carrier signal is applied to one gate of each transistor in a push-pull arrangement. A modulating signal is applied to the other gate of each transistor in parallel. The modulated output signal appears between the drains of the transistors.

3,668,562

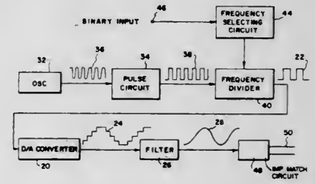
FREQUENCY MODULATION SYSTEM FOR TRANSMITTING BINARY INFORMATION

George A. Fritkin, Silver Spring, Md., assignor to Tel-Tech Corporation, Silver Spring, Md.

Filed Apr. 15, 1970, Ser. No. 28,740

Int. Cl. H04l *27/12*

U.S. Cl. 332—9 R **13 Claims**



A system for transmitting binary information in the form of a frequency modulated signal is provided. The system includes a digital to analog converter for converting a series of input pulses into an output signal consisting of a series of incremental voltage changes which is approximately in the form of a sine wave having a frequency determined by the frequency of the input pulses. The system also includes a frequency selecting circuit for controlling the frequency of the input pulses to the digital to analog converter. The frequency selecting circuit is operated by a binary input signal and controls the frequency of the output signal produced by the digital to analog converter. A filter is connected to the output of the digital to analog converter to eliminate discontinuities from the output signal of the converter.

3,668,563

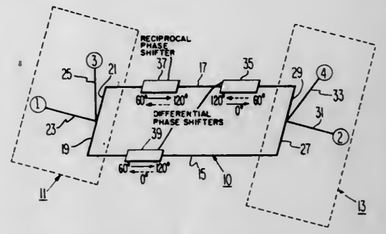
BROADBAND CIRCULATOR WHEREIN DIFFERENTIAL PHASE SHIFT VARIES WITH FREQUENCY IN PREDETERMINED MANNER

Wieslaw Wojciech Siekanowicz, Trenton, N.J., assignor to RCA Corporation

Filed Dec. 21, 1970, Ser. No. 99,912

Int. Cl. H01p *1/32, 5/12*

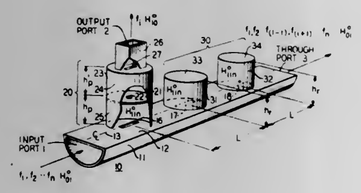
U.S. Cl. 333—1.1 **8 Claims**



A circulator includes a pair of magic tees and a pair of coupling paths therebetween. Each of the coupling paths includes a differential phase shifter. The differential phase shifter in a first path is arranged to provide a differential phase shift that increases with increase in frequency. The second differential phase shifter in the second path is arranged to provide a differential phase shift that decreases

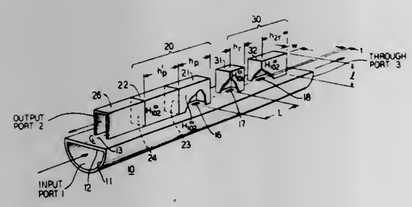
with increase in frequency. A reciprocal phase shifter is in the first path in series with the first differential phase shifter.

3,668,564
WAVEGUIDE CHANNEL DIPLEXER AND MODE TRANSDUCER
Chung-Li Ren, Andover, Mass., and Han-Chiu Wang, Salem, N.H., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 16, 1971, Ser. No. 134,805
Int. Cl. H01p 1/16, 5/12
U.S. Cl. 333—6 14 Claims



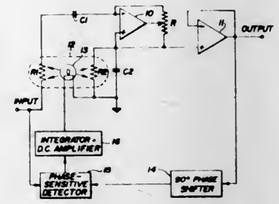
A waveguide channel diplexer in which plural resonant cavities are coupled to a segmented circular waveguide through thin slots on a plane longitudinal surface of the guide. The slots are located to preserve circular symmetry and consequently the purity of the circular electric mode; the cavities are designed to produce a complementary bandpass-bandstop filter pair. The diplexer structure may also be modified to operate as a mode transducer.

3,668,565
LOW PROFILE WAVEGUIDE CHANNEL DIPLEXER
Gerd Achim Tuchen, Boxford, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 16, 1971, Ser. No. 134,806
Int. Cl. H01p 5/12
U.S. Cl. 333—6 7 Claims



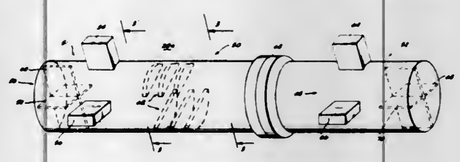
A waveguide channel diplexer in which plural resonant rectangular cavities are coupled to a segmented circular waveguide through thin slots on a plane longitudinal surface of the guide. The slots are located to preserve circular symmetry and consequently the purity of the circular electric mode; the cavities which produce a complementary band-pass-bindstop filter pair are designed to be electroformed from permanent mandrels.

3,668,566
PHASE-LOCKED TRACKING FILTER
Douglas F. Trigg, Orleans, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Dec. 10, 1970, Ser. No. 96,880
Claims priority, application Canada, Nov. 4, 1970, 097371
Int. Cl. H03h 7/10
U.S. Cl. 333—17 11 Claims



A phase-locked tracking filter in which the input and output voltages of a band-pass filter are compared as to phase and a control voltage produced to vary the characteristics of the filter to force the filter to "track" and provide maximum noise rejection of a desired input frequency. The phase comparison and feedback means includes, in the preferred version of the invention, inverting and non-inverting Schmitt triggers, a monostable multivibrator and a flip-flop phase-sensitive detector to provide a square wave voltage whose mean DC value is related to the phase difference. This voltage is used to control and vary the characteristics of the band-pass filter.

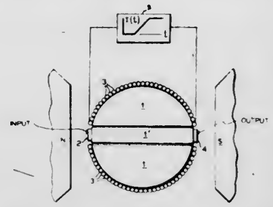
3,668,567
DUAL MODE ROTARY MICROWAVE COUPLER
Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed July 2, 1970, Ser. No. 51,869
Int. Cl. H01p 1/16, 5/12
U.S. Cl. 333—21 A 10 Claims



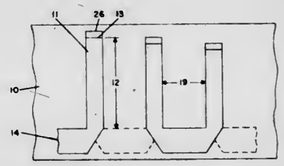
Microwave coupling devices having input and output rotatably mounted circular waveguide sections with a phase shifter and an orthogonal mode transducer coupled to the input circular waveguide section for converting a pair of linearly polarized input signals to counterrotating circularly polarized signals. A second orthogonal mode transducer, associated with the output circular waveguide section, provides output signals of the proper phase for dual mode transmission by a multiple feed horn antenna system.

3,668,568
SIGNAL PROCESSING APPARATUS
Frederic R. Morgenthaler, Winchester, Mass., assignor to Chu Associates, Inc., Harvard, Mass.
Filed Oct. 6, 1969, Ser. No. 870,478
Int. Cl. H03h 7/30
U.S. Cl. 333—30 19 Claims

This disclosure involves a novel and compact pulse compression filter and the like, employing elastic shear-wave, spin-wave, longitudinal-wave transduction by means of a time-varying magnetic bias field, providing increased power handling capability and greater compression ratios than present-day filters.

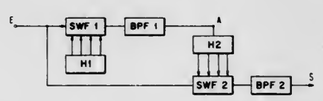


3,668,569
DISTRIBUTED-CONSTANT DISPERSIVE NETWORK
Frederick G. Herring, Wantagh, N.Y., assignor to Hazeltine Corporation
Filed May 27, 1970, Ser. No. 41,031
Int. Cl. H01p 1/18; H03h 7/28
U.S. Cl. 333—30 R 13 Claims



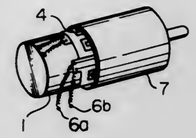
A microwave dispersive network for wideband signal processing systems is disclosed in which a plurality of all-pass, quarter-wave, coupled transmission lines constructed in dielectric stripline are connected in cascade to synthesize a desired dispersive characteristic.

3,668,570
ADAPTIVE SWITCHED FILTER ARRANGEMENT FOR USE IN RAPID FREQUENCY TRACKING
Alex Honore Lautier, Vence, and Jean Louis Monrolin, Tourettes sur Loup, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 4, 1970, Ser. No. 95,307
Int. Cl. H03h 7/10
U.S. Cl. 333—70 A 6 Claims



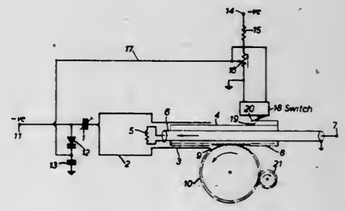
An adaptive switched filter arrangement formed from two switched filters to each of which is applied the same input signal. The first switched filter is switched at an independent predetermined frequency. The second switched filter, however, is tuned by the output frequency extracted by the first filter. This minimizes phase tracking time and cancels systematic phase error.

3,668,571
METHOD FOR ELIMINATING NOISE OF AN ELECTRIC APPLIANCE AND DEVICE THEREFOR
Masaaki Sato, and Shiniche Saitou, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Toyko, Japan
Filed Apr. 30, 1970, Ser. No. 33,363
Claims priority, application Japan, May 10, 1969, 44/42895
Int. Cl. H01h 7/14
U.S. Cl. 333—79 18 Claims



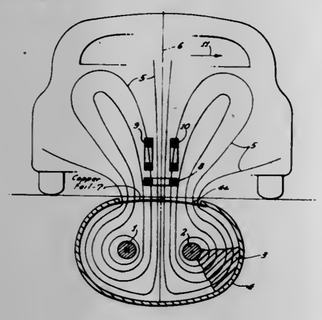
Method and device for eliminating noise of an electric appliance such as a tape recorder. The input lead wires of an electric motor incorporated in the electric appliance are made to have a predetermined length depending upon the factors such as the capacity of the motor so that the electromagnetic noise generated by the commutator and the brushes of the motor is compensated for by the length of the input lead wires thereby permitting the noise of the electric appliance is eliminated. The input lead wires are made of a printed circuit and located in any desired position in the electric appliance such as on the outer surface of the housing of the motor and on the inner surface of the casing of the electric appliance thereby permitting the same to be made extremely compact.

3,668,572
SIGNAL GENERATORS
John Alexander McHattie, Dunstable, England, assignor to Marconi Instruments Limited, London, England
Filed June 28, 1971, Ser. No. 157,309
Claims priority, application Great Britain, July 30, 1970, 36,872/70
Int. Cl. H01p 1/22, 7/06; H03j 3/06
U.S. Cl. 333—81 B 6 Claims



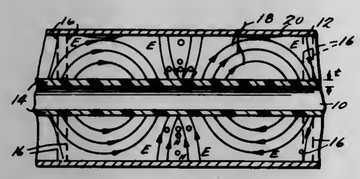
A signal generator includes a piston-in-waveguide attenuator coupled to a tuned circuit, a control voltage whose magnitude depends on the position of the piston in the waveguide of the attenuator being produced from a potentiometer and applied to a variable capacity diode in the tuned circuit. Changes in the reactance of the tuned circuit caused by the proximity of the piston are compensated by changes in the capacity of the variable capacity diode, maintaining a constant generated frequency.

3,668,573
HIGH-FREQUENCY CABLE
Helmut Martin, Hannover, Germany, assignor to Kabel-Und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Feb. 3, 1971, Ser. No. 112,306
Claims priority, application Germany, Feb. 24, 1970, P 20 08 398.1
Int. Cl. H01p 3/02
U.S. Cl. 333—84 R 7 Claims



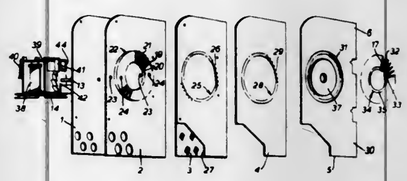
An h.f. cable with two conductors in a dielectric substance enveloped by a shield with an axial slot which is covered by a copper foil.

3,668,574
HYBRID MODE ELECTRIC TRANSMISSION LINE USING ACCENTUATED ASYMMETRICAL DUAL SURFACE WAVES
Harold Montague Barlow, Banstead, England, assignor to British Railways Board, London, England
Continuation-in-part of application Ser. No. 672,560, Oct. 3, 1967, now abandoned. This application Apr. 17, 1970, Ser. No. 29,626
Claims priority, application Great Britain, Oct. 7, 1966, 45,014/66; Feb. 1, 1967, 4,818/67
Int. Cl. H01p 1/16, 3/06, 11/00
U.S. Cl. 333—95 S 3 Claims



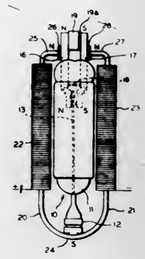
A method and means for reducing net transmission losses and frequency dispersion within an electrical transmission line having dual conducting surfaces and carrying a hybrid mode electromagnetic wave comprising both a TEM component and a dual surface wave component. One of the two conducting surfaces is caused to have more surface resistance than the other by a predetermined amount thereby making the surface wave part of the field asymmetric and enhancing the energy particularly associated with the surface wave to the detriment of the other existing components such as the TEM field. The predetermined amount of surface reactance is controlled to reduce the product of transverse attenuation and phase-change coefficients for the hybrid wave thereby causing a reduction in its overall axial attenuation coefficient in the direction of propogation. Thus the wave is slowed down by the dielectric loading, its phase-change coefficient is increased and made more nearly proportional directly to frequency.

3,668,575
ELECTRICAL SWITCH DEVICES
Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited
Filed Mar. 13, 1970, Ser. No. 19,378
Claims priority, application Great Britain, May 14, 1969, 13,463/69
Int. Cl. H01h 51/08
U.S. Cl. 335—140 22 Claims



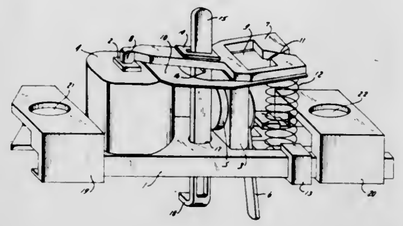
A plurality of reed switch elements are radially disposed in an arcuate formation in special channels including electrostatic and electromagnetic shielding so that a movable magnet may be rotated by such means as a stepping motor to actuate single switches in sequence.

3,668,576
FLAT PACK RELAY WITH PLURAL OPERATING COILS
Theodore M. Krizman, Osceola, and Clayton M. Emmons, Elkhart, both of Ind., assignors to The Adams & Westlake Company
Filed Nov. 5, 1970, Ser. No. 87,165. The portion of the term of the patent subsequent to Oct. 6, 1987, has been disclaimed.
Int. Cl. H01h 51/24, 51/28
U.S. Cl. 335—153 5 Claims



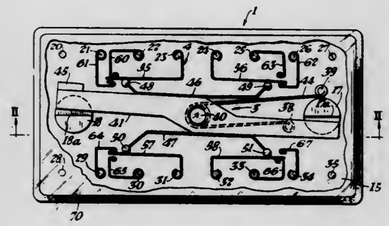
Electrical relays of the type having an armature positioned for selective contact between contact faces of pole pieces within a glass envelope under the influence of electrical flux, with or without biasing permanent magnets. Low reluctance material is connected to the exterior armature stem and extends around opposite sides of the relay and has spaced ends, each of which is magnetically coupled to one of the pole pieces of the relay. Operating coils are positioned around the low reluctance material on opposite sides of the relay envelope and are within the side projection outline of the envelope.

3,668,577
LEAKAGE CIRCUIT BREAKERS
Horst Harings, Nordenham, Germany, assignor to Felten & Guilleaume Schaltanlagen GmbH, Krefeld am Neuerhof, Germany
Filed Dec. 29, 1970, Ser. No. 98,875
Claims priority, application Germany, Jan. 2, 1970, P 20 00 138.1
Int. Cl. H01h 3/32
U.S. Cl. 335—192 21 Claims



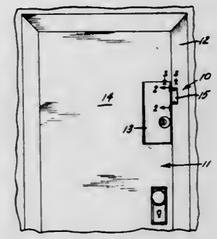
The balanced armature pivots on one pole piece and has a small contact surface that cooperates with the other pole piece. Movement of the armature is coupled to the tripping catch that operates the circuit breaker by a lever connected by an axle to the armature. One spring biases the armature open and closed when the latter is respectively closed and open. Another sprig biases the armature open at all times. The lever arms through which the springs and the magnetic attractive force act on the armature are so chosen that the magnetic tripper is highly sensitive and vibration proof.

3,668,578
LIGHTWEIGHT ELECTROMAGNETIC RELAY
Theodore C. Schroeder, Greentree, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed June 3, 1970, Ser. No. 43,114
Int. Cl. H01h 9/02
U.S. Cl. 335—202 16 Claims



A lightweight hermetically sealed electromagnetic relay has an electromagnet, an armature, and a contact assembly. An isolation barrier is interposed between the electromagnet assembly and the armature and contact assemblies and is arranged to support each of the assemblies. A transparent cover is bonded to the isolation barrier and protects the electrical contacts against external contamination from the operating environment as well as against internal contamination from impurities emitted by the coil insulative material.

3,668,579
MAGNETIC DOOR ALARM
Bennett B. Harman, Bayside, N.Y., assignor to Door Alarm Device Corp., New Hyde Park, N.Y.
Filed Nov. 9, 1970, Ser. No. 88,021
Int. Cl. H01h 51/28, 36/00
U.S. Cl. 335—207 1 Claim

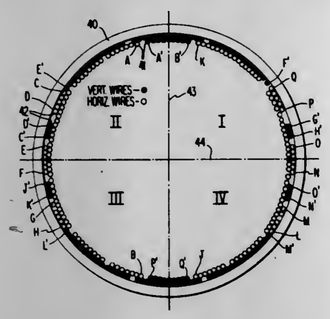


A magnetic door alarm for use in conjunction with normally unlocked emergency exit doors of a type in which an audible signal is produced when the door is opened by unauthorized persons. The device includes a housing normally mounted on an inner surface of the door which normally swings outwardly, the housing containing a first reed switch of normally open type responsive to a magnetic field to move to a closed position. A magnet is positioned within the housing adjacent the reed switch to effect this movement. Mounted on a door jamb or frame is a larger magnet, the polarity of which is opposite that of the first mentioned magnet, so that its magnetic field cancels that of the first magnet when the door is in closed position, whereby the reed switch remains open. Upon movement of the door, the field of the second mentioned magnet is removed, and the reed switch is operated by the magnetic field of the first magnet. If an attempt is made to place an additional magnet adjacent the magnet on the door jamb, the field of the door jamb magnet is either enhanced or cancelled, so that the equilibrium condition is destroyed, and the reed switch is operated by the first mentioned magnet. Additionally, a second reed switch is provided within the casing, electrically connected in parallel with the first switch, and shielded from the magnetic field of the first mentioned and second mentioned magnets, so that unauthorized use of a third magnet in the area of the second magnet will serve to close the second switch and operate the alarm irrespective of the condition of the first mentioned switch.

3,668,580
TOROIDAL DEFLECTION YOKE HAVING ASYMMETRICAL WINDINGS
Robert Lloyd Barbin, Lancaster, Pa., assignor to RCA Corporation
Filed Dec. 7, 1970, Ser. No. 95,847
Int. Cl. H01f 5/00
U.S. Cl. 335—213 8 Claims

A toroidal deflection yoke for a delta gun shadow mask color television picture tube includes windings having asymmetric conductor distributions to correct for effects such as unsymmetrical misconvergence of the electron beams across the scanned raster. For convergence which is unsymmetrical top to bottom, an asymmetric change top to bottom is made in the conductor distribution in either the horizontal or verti-

cal coil windings and for convergence which is unsymmetrical left to right an asymmetric change left to right is made in



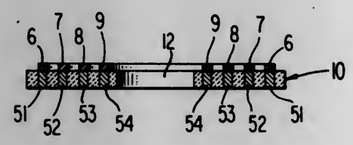
the conductor distributions in either the horizontal or vertical coil windings.

3,668,581

METHOD OF ENERGIZING FULLY PERSISTENT, HIGH FIELD, HIGH HOMOGENEITY MAGNETS

Edward Robert Schrader, Hightstown, N.J., assignor to RCA Corporation

Filed Dec. 17, 1969, Ser. No. 885,810
Int. Cl. H01f 7/22
U.S. Cl. 335—216 12 Claims



A superconductive magnet includes a plurality of concentric superconductor rings disposed on a substrate disc which has a bore in the center thereof. A magnetic field permeates through the rings which are then caused to be switched between a normal and a superconductive state according to a predetermined program. The shifting of the states of the rings creates a high flux density in the disc bore.

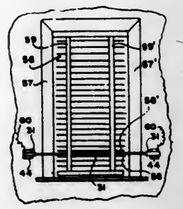
3,668,582

TRAP SWITCH CONSTRUCTIONS IN THE NORMALLY CLOSED PROTECTIVE CIRCUIT OF BURGLAR ALARM SYSTEMS

Lawrence N. Lea, No. 3601 Johnson Ave., Bronx, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 78,128
Int. Cl. G08b 13/08
U.S. Cl. 335—285 12 Claims

The trap includes a pliable elongated member which may be a wire, cord or tape having a steel terminal element serving as an armature releasably held by a permanent magnet structure which constitutes one end support holding the elongated member taut. When the armature is detached from the magnet by movement of some part of the protected structure, as for instance a window, a venetian blind or by movement of an intruder, the protective circuit will open, thereby actuating the alarm circuit. The magnet is one terminal of the trap switch. The armature is conductively connected in some manner to the other switch terminal. The pliable elongated member may be a wire offering part of the circuit path while the armature and magnet are engaged. Parts of the protected structure may serve as the pliable member or the armature, as for instance in an example shown, the ladder tapes of a venetian blind serve as the elongated pliable member, while the blind's base rail serves as the armature. Both supports for the pliable member may comprise a magnet and armature. In



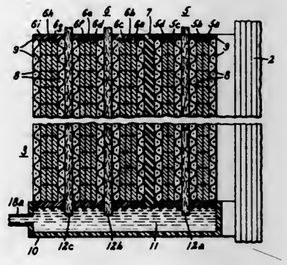
embodiments shown, a single armature is used to shunt two spaced magnets, in which instances, such pair of magnets constitute the switch terminals. The magnet structures preferrably comprise a magnetic block carried in a sheet steel channel having mounting lugs for various placements. The line of direction of the elongated pliable member, is not limited. Force required to dislodge the armature is adjustable.

3,668,583

TECHNIQUES FOR CASTING ENCAPSULATED COILS

Thomas G. Nichols, Rome, Ga., assignor to General Electric Company

Filed May 10, 1971, Ser. No. 141,734
Int. Cl. H01f 27/10
U.S. Cl. 336—58 8 Claims



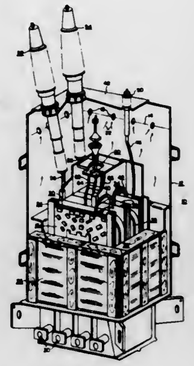
Disclosed is a vaporization cooled inductive apparatus. The apparatus comprises a winding assembly encapsulated in a cast body of solid insulating material and disposed in a sealed tank. The cast winding assembly includes at least one liquid absorbent wick and a vaporizable liquid containing reservoir. The wicks carry said liquid to hot interior regions of the winding. Condenser means are provided for recycling vapors produced during the cooling process.

3,668,584

ELECTRICAL POWER APPARATUS

Harral T. Robin, Muncie, and Virgil L. Boaz, Daleville, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 13, 1971, Ser. No. 133,488
Int. Cl. H01f 27/10
U.S. Cl. 336—60 14 Claims



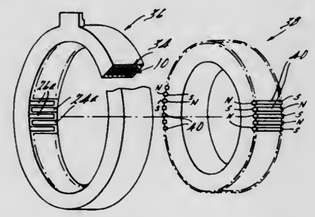
Electrical power apparatus, such as a transformer, electrical reactor, or a circuit breaker, having a casing containing fluid cooling means, and at least one electrical lead immersed in the fluid cooling means. The magnitude of the electrical stress is reduced about the electrical lead, without impeding the removal of heat from the lead by the fluid cooling means, by disposing a spirally wound electrode about the electrical lead, and connecting the electrode to the lead.

3,668,585

ELECTROMAGNETIC DEVICE WITH CAST MAGNETIC PATH

Howard R. Johnson, Ann Arbor, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Continuation of application Ser. No. 817,655, Apr. 21, 1969, now abandoned. This application Mar. 1, 1971, Ser. No. 119,951
Int. Cl. H01f 15/02
U.S. Cl. 336—83 4 Claims



An electromagnetic device utilizing a coil and having a cast magnetic path around the coil and a method of manufacture.

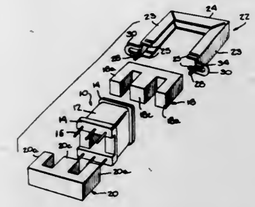
3,668,586

TRANSFORMER-INDUCTOR FRAME AND KIT

Stephen Horbach, Mountain Lakes, N.J., assignor to Electronic Associates, Inc., West Long Branch, N.J.

Filed Mar. 8, 1971, Ser. No. 121,826
Int. Cl. H01f 27/26
U.S. Cl. 336—210 8 Claims

A transformer or inductor frame for holding together two E cores and a coil. The transformer frame includes two leaf springs integral with the back of the frame and having bendable tabs integral with the forward portion of the legs of the frame. The tabs and spring act together to hold the two E



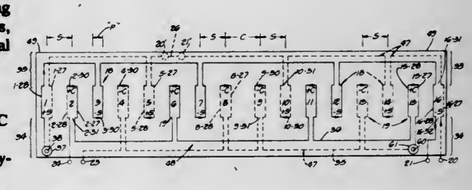
cores together and to maintain the core and coil assembly in the frame. The frame together with an E core having slightly increased leg cross section dimensions and a bobbin constitutes a kit for the winding of a transformer or inductor.

3,668,587

MULTI-LAYER POLYPHASE WINDING MEMBER AND TRANSFORMER

Vincent F. Foster, New Rochelle, N.Y., assignor to Inductosyn Corporation, New York, N.Y.

Filed May 13, 1970, Ser. No. 36,913
Int. Cl. H01f 21/04
U.S. Cl. 336—123 19 Claims



Disclosed is a polyphase member for a position measuring transformer formed by multiple layers of printed circuit active and inactive conductors. The inactive conductors connect the active conductors to form winding sections and the winding sections are interconnected by printed circuit inactive conductors to form polyphase windings. Each layer includes groups of conductors including a predetermined number, usually an equal number, of active conductors of first and of second cofunction, e.g., sine or cosine, types. The winding sections are positioned with a specific phase relationship, such as quadrature, to a reference winding. The active conductors on each layer of the polyphase member are positioned such that a blank area called an active conductor void or gap, occurs where normally in a periodic configuration an active conductor would be positioned. Still further, the layers are complementary in that they are combined into a multi-layer member so that the active conductors on one layer are superposed the active conductor voids or gaps on another layer whereby the multi-layers as a whole present to the reference winding uniformly spaced active conductors.

3,668,588

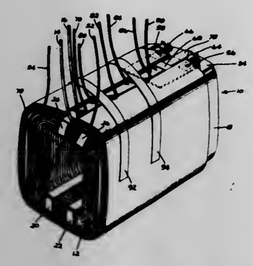
ELECTRICAL COIL ASSEMBLY

Henry Walsh, Jr., Danville, Ill., assignor to General Electric Company

Filed Oct. 19, 1970, Ser. No. 81,930
Int. Cl. H01f 15/10
U.S. Cl. 336—192 5 Claims

An electrical coil assembly wherein two or more separate windings are formed in the same intermediate layer of a

layer-wound coil. A formed insulating board is provided for insulating and positioning the pair of conductors from each winding which are brought out toward the margin of the coil



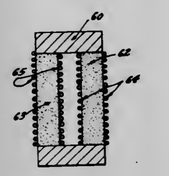
assembly. Additional layers of insulating material and other electrical windings are wound over the layer having two or more separate windings.

3,668,589

LOW FREQUENCY MAGNETIC CORE INDUCTOR STRUCTURE

Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Dec. 8, 1970, Ser. No. 96,005
Int. Cl. H01f 27/24
U.S. Cl. 336—212 4 Claims



A low frequency magnetic core inductor is provided which exhibits the desirable high quality factor (Q) and low external magnetic field of the prior art toroidal type inductor, but which is constructed to have a bobbin-like configuration for ease of assembly and winding the inductor winding on the core, and for compactness of size and efficient use of available space.

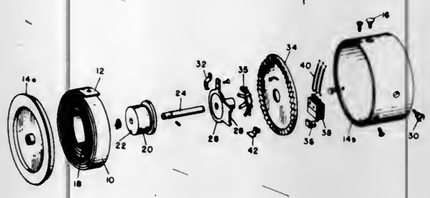
3,668,590

LONG PULSE DIURNAL TIMER

Donald Brown, Southampton, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed May 25, 1971, Ser. No. 146,765
Int. Cl. H01h 61/00
U.S. Cl. 337—51 6 Claims

A long pulse diurnal timer for initiating a utilization means, said timer comprising: a coiled bimetal spring having a fixed end and free end, said spring, through its physical expansion, responding to daily sinusoidal changes in temperature via angular displacements at the free end of said spring; a clutch means, said clutch means having its input engagement fixed to the free end of said coiled bimetal spring, said clutch means advancing angularly in response to each daily expansion of said coiled bimetal spring; a pawl means, said pawl means attached to the periphery of said clutch means; a unidirectional ratchet means having an actuation lug, said ratchet means biasingly coupled to said pawl means, said ratchet means being advanced one notch by said pawl means in response to the daily movement of said clutch means; a toggle disk disposed in the path of said actuation lug, said toggle disk being activated only after an advance of a number of ratchet notches corresponding to the angular distance which said actuation lug is initially displaced from said toggle disk, wherein initiation of said utilization means occurs upon activation of said toggle disk.

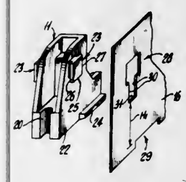


3,668,591

BUS BAR FOR ELECTRIC CONNECTIONS

Herman H. Kobryner, Forest Hills, N.Y., assignor to Murray Manufacturing Corporation, Jericho, N.Y.

Continuation of application Ser. No. 878,154, Nov. 19, 1969, now abandoned. This application Nov. 23, 1970, Ser. No. 92,220
Int. Cl. H01r 9/00, 7/12
U.S. Cl. 339—198 N 13 Claims



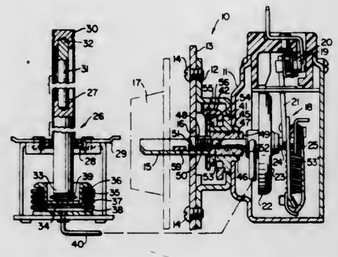
The invention contemplates a construction for parts of a neutral bus-bar assembly whereby the assembly can be unit-handling without requiring tools or special fasteners, such as bolts, to complete the assembly. At the same time, the unit-handling assembly achieves the added function of providing an insulating shield for the bus-bar and all electrical connections thereto.

3,668,592

CONTROL DEVICE AND METHOD FOR CALIBRATING THE SAME OR THE LIKE

Cloyd E. Decker, Indiana, Pa., assignor to Robertshaw-Controls Company, Richmond, Va.

Filed Feb. 18, 1970, Ser. No. 12,222
Int. Cl. H01h 37/20, 37/36
U.S. Cl. 337—319 7 Claims



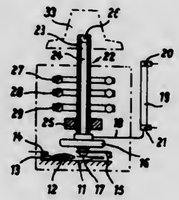
Calibrating the control shaft means and a set screw of the control shaft means so that upon a loss of fluid in an adjustable expansible and contractible power element of the control device that operates an electrical switch thereof, a subsequent movement of the set screw in a switch closing direction will be limited by stop means before that set screw can cause closing of the switch whereby a fail-safe control device is provided.

3,668,593

REGULATOR

Karl Fischer, Oberderdingen, Am Gansberg, Germany

Filed Apr. 20, 1970, Ser. No. 29,865
Claims priority, application Germany, Apr. 23, 1969, P 19 20 550.6; P 19 20 552.8; P 19 20 553.9
Int. Cl. H01h 37/10, 37/20, 37/36
U.S. Cl. 337—319 5 Claims



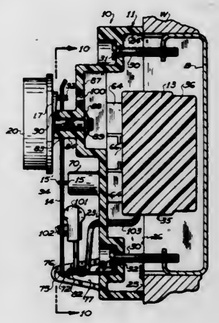
A regulator for regulating the electrical current supplied to an electrical apparatus by intermittently switching on and off said current. The regulator includes an electrically-heated expansion system acting on an electric switch for the apparatus. The invention calls for a pressure cell for bearing on the switch which is hydraulically connected to a hydraulic chamber remote from said pressure cell, an expansible liquid being contained in the hydraulic system and electric heating means being provided for treating the expansible liquid contained in the hydraulic chamber, such heating being dependent upon the magnitude of the current supplied to said electrical apparatus.

3,668,594

ROOM WALL THERMOSTAT

Andrew Kulick, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed Oct. 21, 1970, Ser. No. 82,767
Int. Cl. H01h 37/14, 37/20, 32/52
U.S. Cl. 337—380 4 Claims



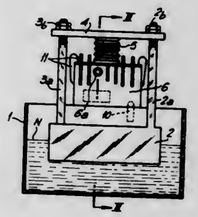
A wall thermostat comprises a molded panel frame attachable to a room wall. A switch mechanism and a plate type bimetal are supported on opposite sides of the panel with operating bars between the bimetal and switch. The bimetal is urged against three support points, comprising two spaced abutment surfaces on the frame and an adjusting cam carried by the frame by the reaction of the switch actuating mechanism against the operating bars which engage the bimetal at points inside the triangular area outlined by the three support points. The switch mechanism is supported by abutment surfaces formed on the frame panel by the same mold member which forms the two spaced abutment surfaces.

3,668,595

LIQUID RESISTOR APPARATUS

Norbert Roger Beyrard, 24 avenue Raphael, Paris, France

Filed Aug. 20, 1970, Ser. No. 65,512
Claims priority, application France, Aug. 27, 1969, 6929313
Int. Cl. H01c 13/00
U.S. Cl. 338—38 10 Claims



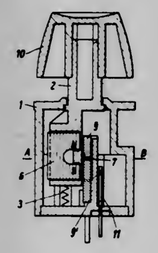
Liquid resistor apparatus in which a conductive liquid presents an adjustable electrical resistance between two immersed electrodes, adjustment being made by raising or lowering the level of the liquid, the level of the electrodes or

the level of a partition between the electrodes. The raising and lowering is effected by a mechanical linkage which is coupled to a bellows or piston actuated by vapor from a controllable vapor generator.

3,668,596
MAGNETIC KEYS

Rudolf Hubrich, Ravensburg, Germany, assignor to Rafi Raimund Finsterholzl Elektrotechnische Spezialfabrik, Ravensburg/Wurttemberg, Germany

Filed Oct. 26, 1970, Ser. No. 83,753
Claims priority, application Germany, July 1, 1970, G 70 24 643.4
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 10 Claims

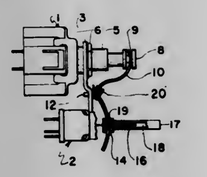


A magnetic key suitable for use with electronic equipment comprises a magnetically controllable semiconductor device mounted between two soft iron pole pieces, and a permanent magnet movable relative to the device. The magnet is carried by a slide movable between two positions and biased by a spring towards one of the positions. In one position only a substantial part of the magnetic flux of the magnet passes through the device, so the condition of the device can be controlled by movement of the slide.

3,668,597
SLIDE RHEOSTAT AND PUSH-PULL SWITCH ASSEMBLY

Yukihiko Nomura, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed June 10, 1971, Ser. No. 151,889
Claims priority, application Japan, June 11, 1970, 45/57652
Int. Cl. H01e 9/08
U.S. Cl. 338—198 4 Claims

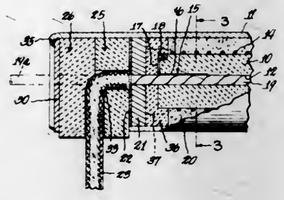


A slide rheostat and a push-pull switch are assembled together by a fixed plate. An intercoupling drive plate is engaged with the fixed plate so as to achieve a seesaw movement in response to the pull and push operation of a knob in the center hole of which is inserted a control lever of the slide rheostat, the knob being freely movable in a slit formed in the intercoupling drive plate. A shaft of the switch is coupled to the intercoupling drive plate so that in response to the seesaw movement of the drive plate the switch is switched ON and OFF.

3,668,598
ELECTRIC HEATING ELEMENTS

Lester D. Drugmand, and Lloyd S. Kozbelt, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 23, 1970, Ser. No. 83,429
Int. Cl. H01c 1/14
U.S. Cl. 338—274 7 Claims

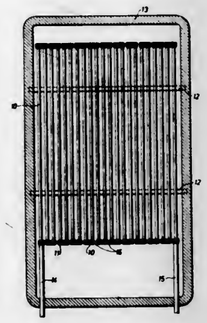


An electric heating element, particularly a cartridge heater, having leads connected to the resistor for leading current to the latter from a source. Insulator means are held in the end of the sheath and have passages through which the leads extend, each passage having an inner portion disposed parallel to the longitudinal axis of the sheath and an outer portion disposed at an angle to the inner portion, to conform the flexible lead to extend angularly relative to the sheath longitudinal axis.

3,668,599
ELECTRICAL RESISTANCE ELEMENT

Nils Gustav Schrewelius, Hallstahammar, Sweden, assignor to Aktiebolaget Kanthal, Hallstahammar, Sweden

Filed Sept. 15, 1970, Ser. No. 72,454
Claims priority, application Sweden, Sept. 16, 1969, 12710/69
Int. Cl. H01c 1/02
U.S. Cl. 338—289 5 Claims

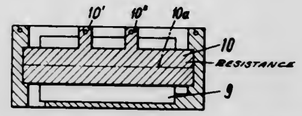


An electrical resistance element formed of an array of parallel $MoSi_2$ rods coupled in series by connecting adjacent rod ends together in pairs at one end of the array and at the other end connecting adjacent rod ends together in pairs staggered with respect to those at the first end. The connection is made by means of a flame-sprayed layer of MoSiAl or $MoSi_2$ and the array is supported by an elastic cross bar in a ceramic frame.

3,668,600
LAYER VOLTAGE DIVIDER WITH ADDITIONAL IMPEDANCES

Christian Schuberth, Herschfeld, Germany, and Wolf-Erhard Steigerwald, Porto, Portugal, assignors to PREH Elektro-Feinmechanische Werke Jakob Preh Nachf., Bad neustadt/Saale, Germany

Filed Nov. 16, 1970, Ser. No. 89,766
Claims priority, application Germany, Nov. 22, 1969, P 19 58 679.9
Int. Cl. H01c 1/16
U.S. Cl. 338—320 6 Claims

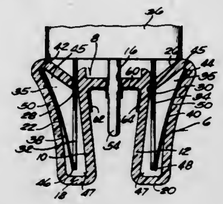


A layer voltage divider of the type having a resistance web and one or more additional impedances attached thereto, the divider comprising : one or several impedances on a supporting plate, laterally extending tabs provided on the impedance, an insulating layer covering the impedance or impedances to the exclusion of their taps, a resistance web being placed on the insulating layer and having taps, the taps of the resistance web being conductingly connected to the taps of the said one or more impedances.

3,668,601
CONTINUOUS ELECTRICAL OUTLET WITH GROUND

Robert W. McFarlin, P.O. Box 573, Pompano Beach, Fla.

Filed July 13, 1970, Ser. No. 54,377
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 7 Claims



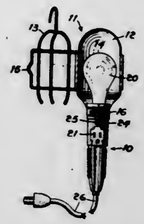
An elongated electrical outlet having an extruded case is provided with electrical contacts and with a ground inserted longitudinally into the case where it is engaged by the ground prong of a plug when the electrical contact prongs of the plug engage the electrical contacts of the outlet. The cross section of the case permits the use of flat contact strips and concurrently provides support for the ground contact.

3,668,602
PORTABLE SAFETY LAMP STRUCTURE

Richard H. Griffin, Riverside, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 26, 1970, Ser. No. 67,018
Int. Cl. H01r 3/06, 13/48
U.S. Cl. 339—14 R 8 Claims

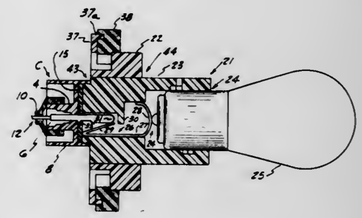
A portable safety lamp includes a socket assembly, an elongated hollow dielectric handle for housing the socket assembly therewithin and a wire mesh cage for protecting a light bulb screwed into the socket assembly. The socket assembly includes a pair of contacts that interconnect an extension cord to the socket assembly, and a freely detachable unitary dielectric adapter that acts as a spacer and resilient retainer of the pair of contacts. The adapter and the pair of contacts are uniquely designed so that they provide two-pronged and three-pronged outlets. The adapter eliminates a large number of structural pieces used in the prior art socket assembly and simplifies the socket assembly manufacture.



3,668,603
TWIST LOCK SOCKET WITH CONNECTOR

James Patton Burgess, Brighton; Melvin William Polkinghorn, Livonia, and Steve Joseph Brzozowski, Detroit, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,995
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 14 Claims



Connector and lamp socket structures are disclosed for use in establishing electrical connections between wiring harnesses and lamps. An exemplary lamp socket is designed to provide fool-proof housing panel orientation during installation and a positive pressure interlock assuring a water tight connection with the panel housing.

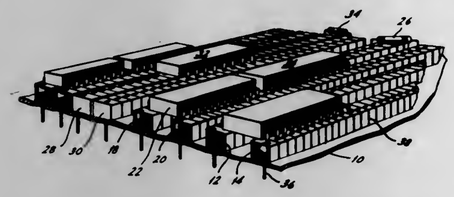
3,668,604
STRIP-TYPE DIP RECEPTACLE

Donald W. Rossman, Jenkintown, Pa., assignor to Elco Corporation, Willow Grove, Pa.

Filed Oct. 21, 1970, Ser. No. 82,672
Int. Cl. H01r 33/76; H05k 1/16
U.S. Cl. 339—17 CF 4 Claims

A strip-type DIP (Dual In-line Package) receptacle for use in pairs for removably retaining integrated circuits (IC's) or other components of the DIP type to a printed circuit board or other substrate and for providing contact tails which are electrically connected to the leads of the IC and which extend from the underside of the substrate so that interconnections between leads of IC's can be effected economically or automatically. The receptacle comprises a strip-shaped main insulator, a plurality of contacts, and a strip-shaped side insulator which preferably is welded ultrasonically to the main insulator after the nose portions of the contact are positioned in cavities of the main insulator. Each contact comprises straight, aligned body and tail portions and a thinner, C-shaped nose portion having a mating surface which is offset

from the axis of the body and tail portions. Because of said offset feature, adjacent strips may be mounted in alternate orientations (preferably by a force fit into plated-through



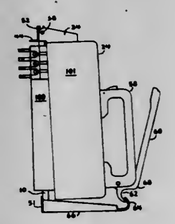
holes in a PC board), thereby to provide uniformly-spaced contact tails under IC's mounted with non-uniform lead spacing.

3,668,605

MULTI-POINT PROGRAM PLUG AND RECEPTACLE CONNECTOR ARRANGEMENT HAVING POSITIVE ALIGNMENT PRIOR TO POSITIVE MATING

Guy D. Albert, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Aug. 10, 1970, Ser. No. 62,434
Int. Cl. H01r *25/00, 13/54*
U.S. Cl. 339—18 B 8 Claims



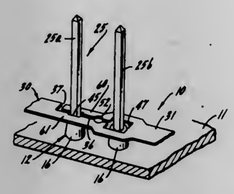
A multi-point connector arrangement including separable plug and receptacle members each having a frame portion with a selected profile camber to insure full positive engagement of the contact elements during coupling, and having cooperable interengaging portions adapted to effect proper alignment during mating of the plug and receptacle members.

3,668,606

BUSS CONNECTOR

George Walter, Westchester, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.

Filed Oct. 8, 1970, Ser. No. 79,095
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 8 Claims



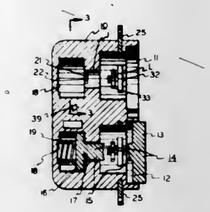
An electrical buss connector for bussing together a series of plate mounted wire-wrap pins. The connector comprises a flat strip of metal which is provided with elongated slots at intervals along its length. Cut-outs are formed in opposed edges of each slot between its ends for locating and gripping prescribed pins when the strip is pressed down on the pins. The sharp edges of the cut-outs wipe and clean the pins as the strip is forced downwardly on them so as to assure an excellent electrical connection, while the strip assumes a low profile configuration with the mounting plate.

3,668,607

ELECTRICAL SOCKET

Ivan A. Farnworth, 441 South State, Orem, Utah

Filed Jan. 25, 1971, Ser. No. 109,097
Int. Cl. H01r *13/44*
U.S. Cl. 339—41 9 Claims



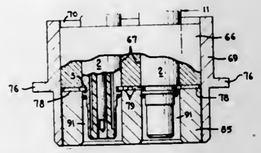
An electrical socket device incorporating at least one spool constructed to receive the prongs of an electrical plug. The spool is rotationally displaceable and coacts with the remainder of the socket structure such that the plug prongs can be locked in place upon suitable rotational displacement of the spool, and this for the purpose of providing direct electrical connection as between the plug prongs and the electrical terminals or contact of a socket construction. A socket construction is made such that there is no electrical connection as between the plug prongs and the socket electrical contacts until the prongs of a particular plug are inserted in the aforementioned rotatable spool and the spool depressed and rotated. The construction affords many safety features for children so that metal items, inadvertently positioned through the prong holes of the spool, cannot make electrical connection until after the spool is both depressed and rotationally displaced.

3,668,608

COAXIAL CONNECTOR MOUNTING MEANS

George William Ziegler, Jr., Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Original application May 27, 1968, Ser. No. 732,447, now Patent No. 3,566,334. Divided and this application Sept. 18, 1970, Ser. No. 73,653
Int. Cl. H01r *13/62*
U.S. Cl. 339—64 M 3 Claims



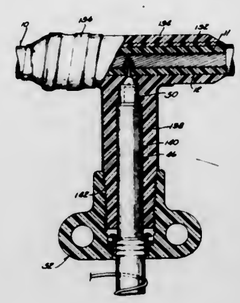
Coaxial connector mounting means comprises mounting block means connectable together to connect coaxial connector means floatably mounted in the mounting block means.

3,668,609

HOT LINE CONNECTOR

Edwin A. Liak, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation-in-part of application Ser. No. 820,142, Apr. 29, 1969, now abandoned. This application Mar. 30, 1970, Ser. No. 23,823
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 R 16 Claims



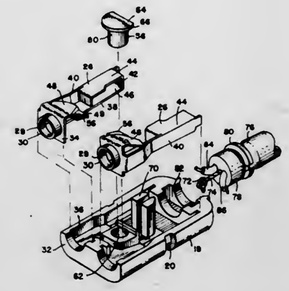
Disclosed herein is a tapping device including a resilient insulator which can be shrunk or taped into sealing engagement with the exposed cable insulation of a high voltage cable, the device including a passage to sealingly engage a cable lead, the cable tap lead having a probe to penetrate the cable insulation and electrically engage the electrical conductor for a high voltage cable, and a drive assembly to force the cable lead through the passage until the probe penetrates the cable insulation and electrically engages the cable conductor. The insulator can also be used to seal a Tee type cable splice.

3,668,610

LOCK-IN ELECTRICAL JACK ASSEMBLY

William H. Flanagan, Stamford, Conn., assignor to Nexus, Inc., Stamford, Conn.

Filed Aug. 27, 1970, Ser. No. 67,305
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R 3 Claims



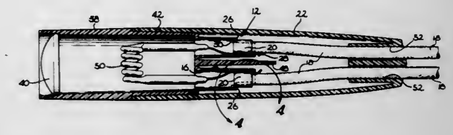
A lock-in electrical jack assembly for utilization with a communications system adapted for interlocking engagement with a mating component and having an integral push-button for disengaging the interlock for removal of the components.

3,668,611

ELECTRICAL CONNECTOR ASSEMBLY AND TIMING LIGHT EMBODYING SAME

Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed Jan. 6, 1969, Ser. No. 789,337
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 R 6 Claims



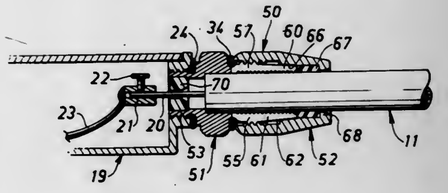
An electrical connector assembly for engine timing lights and other uses. The connector assembly embodies releasable electrical plug and socket coupling means which may be separated only by lateral movement of each coupling plug relative to its receiving socket, and a retainer sleeve surrounding the coupling means in such a way as to prevent such relative lateral separation movement and, thereby, separation of the coupling means. The disclosed embodiment of the invention is an engine timing light which utilizes the connector assembly to attach the leads of the timing light to the terminals of the timing lamp.

3,668,612

CABLE CONNECTOR

Zdenek Nepovim, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

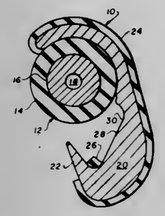
Filed Aug. 7, 1970, Ser. No. 62,112
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 C 8 Claims



A connector for attachment to the end of a coaxial cable having an axial core electrode or conductor and a conductive sheath electrode or conductor includes a housing having an integral tubular skirt formed from four rearwardly extending tongues collectively formed with a rearwardly facing external cam surface. A tubular cover sleeve formed with a forwardly facing internal cam surface for engagement with the external cam surface of the tongues screws onto the housing so that interaction of the cam surfaces causes the tongues to be flexed radially inwardly into gripping engagement with a cable disposed within the connector and into electrical contact with the conductive sheath electrode of that cable. Usefully, a radially inwardly compressible and electrically conductive collet sleeve is coaxially disposed within the tongues between their forward and rearward ends so as to receive an exposed forward end portion of the core electrode of the cable. An electrically insulating and radially inwardly compressible bushing disposed about the collet sleeve serves to transmit radially inward movement from the tongues to the collet sleeve so as to provide simultaneous gripping of the

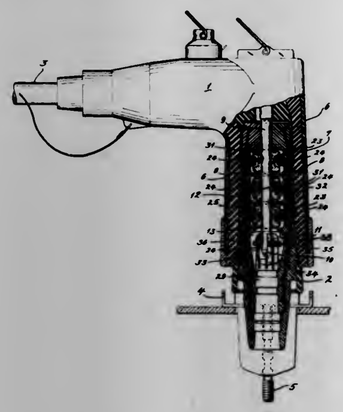
core electrode without any torsional shearing action between the sheath and core electrodes.

3,668,613
ELECTRICAL CONNECTOR
John J. Klosin, P.O. Box 0320, East Brunswick, N.J.
Filed Jan. 22, 1970, Ser. No. 5,011
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 C 21 Claims



An electrical connector for cables and the like having a current carrying means, a deformable attaching body adapted to at least partially surround a length of the cable, and at least one tooth-shaped penetrating member in electrical contact with the current carrying means of the connector. The attaching body is positioned about the cable and fixed to the cable by means of a compression tool or the like which at least partially deforms the attaching body causing the penetrating member to pierce the cable insulation and contact the inner conductive core of the cable. All external surfaces of the connector may be fully insulated including the penetrating members. Insulation on the connector may be used to seal the connection between the connector and the cable to provide a weatherproof insulated connection.

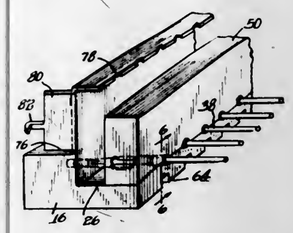
3,668,614
SEPARABLE ELECTRICAL CONNECTORS
Robert D. Ball, Tucker, Ga., assignor to Kearney-National Inc., Atlanta, Ga.
Filed Feb. 2, 1970, Ser. No. 7,942
Int. Cl. H01r *15/12*
U.S. Cl. 339—111 16 Claims



Compound copulatory separable connector with integrated arc-controlling means adapting it for safe use as a load-break and load-make switch.

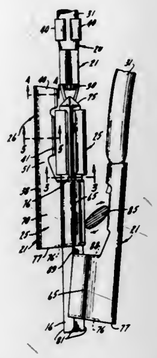
ERRATUM
For Class 339—198 OON see:
Patent No. 3,668,591

3,668,615
MULTI-CONDUCTOR ELECTRICAL SOCKET AND METHOD OF MAKING THE SAME
Allen J. Bury, Prospect Heights, Ill., assignor to Molex Incorporated, Downers Grove, Ill.
Filed May 19, 1970, Ser. No. 38,786
Int. Cl. H01r *9/14*
U.S. Cl. 339—206 R 8 Claims



A multi-conductor electrical socket comprising a substantially rectangular and partially hollow insulating housing with a plurality of external insulated electrical lead wires extending into one end of the housing and terminating therein. Each lead wire is connected or crimped at its housed end to one end of a terminal for electrical connection therewith, the other end of each terminal being exposed for engagement with an external plug. Prior to the crimping operation, the terminals and lead wires are placed on a platform or base of the housing where they are thereafter simultaneously connected or crimped together, utilizing the platform or base as an effective anvil.

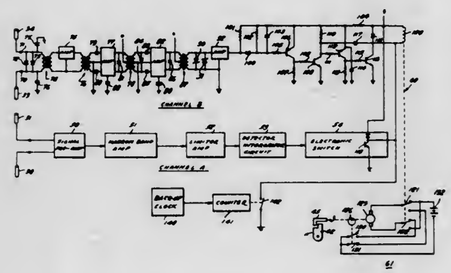
3,668,616
RECEPTACLE
Frank A. Kukla, Cicero; Harold B. Kalmar, Des Plaines, and John A. Petkunas, Westchester, all of Ill., assignors to Malco Manufacturing Company, Inc., Chicago, Ill.
Continuation-in-part of application Ser. No. 638,385, May 15, 1967, now abandoned. This application Feb. 24, 1970, Ser. No. 13,328
Int. Cl. H01r *11/22*
U.S. Cl. 339—258 R 10 Claims



A clip-type connector for joining a conductor to a generally square or rectangular cross-section terminal post.

Resiliently spreadable connector walls grip the side surfaces of the post regardless of variations in its shape or dimensions. Orientation of the connector on a post is such that multiple connectors may be stacked on adjacent posts. A connector may be simply and expeditiously removed from anywhere in a stack of connectors on a post.

3,668,617
UNDERWATER COMMUNICATION SYSTEM
Edward C. Brainard, II, Marrian, Mass., assignor to General Time Corporation, Stamford, Conn.
Filed June 9, 1969, Ser. No. 831,546
Int. Cl. H04b *13/02*
U.S. Cl. 340—4 E 23 Claims



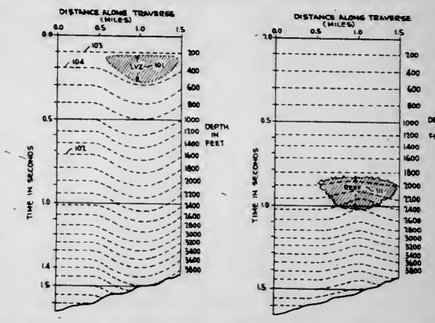
An underwater communication system wherein communication is achieved through an alternating electric field between spaced-apart pairs of transmitting and receiving electrodes in conductive contact with the water. The transmitting and receiving electrodes are horizontally oriented and two pairs of orthogonally disposed receiving electrodes can be used to provide omnidirectional communication. The receiver is responsive only to properly coded signals. According to one embodiment the receiver responds only to signals of a selected frequency and duration, and is not effected by short bursts of noise or the cumulative effect of short signals. According to other embodiments various different coding and redundancy techniques are employed.

3,668,618
IDENTIFICATION AND CLASSIFICATION OF SEISMIC REFLECTION VELOCITY PROPERTIES ON SEISMIC REFLECTION SECTIONS
Roy G. Quay, San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.
Filed Jan. 5, 1970, Ser. No. 778
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 DS 7 Claims

Velocity information is superimposed on a conventional seismic reflection section using either a transparent overlay or an optical projection. Isodepth lines are used for conventional reflection time sections and iso-time lines are used for reflection depth sections. The isodepth lines could be in the order of every 1000 feet but would depend on the time scale used on the reflection time section. Iso-time lines spaced ten milliseconds apart could be appropriate for a long depth scale and fewer lines could be used for a smaller scale.

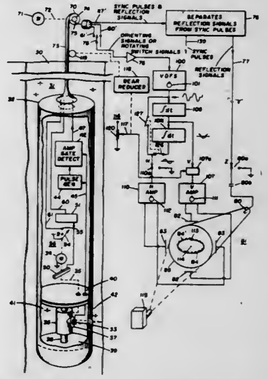
The change in spacing between these lines for specific reflections denotes a change in the interval velocity, hence stratigraphic changes which can be used to locate stratigraphic traps for minerals. The isodepth lines also permit conversion of seismic reflections on a reflection time section to depth lines. Iso-time lines convert data on a reflection depth section to a time scale.

Either isodepth lines or iso-time lines can be used to identify changes in interval velocities for specific zones of interest,



to determine the average vertical velocity to selected reflections, and to show where velocity anomalies exist.

3,668,619
THREE-DIMENSIONAL PRESENTATION OF BOREHOLE LOGGING DATA
Charles L. Dennis, De Soto, Tex., assignor to Mobil Oil Corporation
Filed July 2, 1969, Ser. No. 838,533
Int. Cl. G01v *1/28, 1/40*
U.S. Cl. 340—15.5 BH 25 Claims

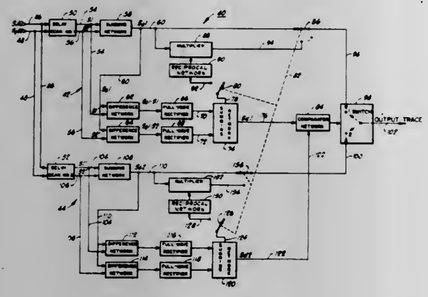


The specification discloses a technique and system for recording, on a two-dimensional recording medium, data obtained from cyclic scanning operations carried out angularly around the wall of the borehole at each of a plurality of different depths wherein subsurface parameters are sensed during each scanning operation. In one embodiment, a plurality of loop-shaped trace patterns, preferably in elliptical form, are recorded in the form of a helix to form a representation of the borehole wall. Different sides of the helix may be intensified or half sections of the helix recorded to illustrate different sections of the borehole wall.

3,668,620
METHOD AND APPARATUS FOR DETERMINATION OF SEISMIC SIGNAL EVENT COHERENCE
Paul G. Mathieu, Pittsburgh, Pa., and Paul V. Lindblade, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed July 25, 1969, Ser. No. 844,893
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 CC 12 Claims

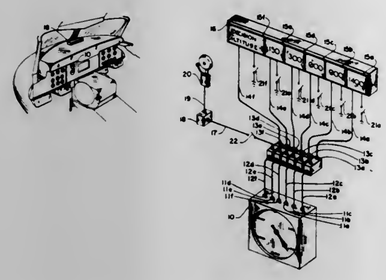
A method and apparatus for processing multitrace seismic signals to determine the most coherent dip attitude for any

selected point in time. The method serves to accentuate similar event signals from a plurality of seismic traces at selected time delays per trace for predetermined time increments along the multi-trace seismic signals. In one form, the dipping event signal accentuating process may be carried out



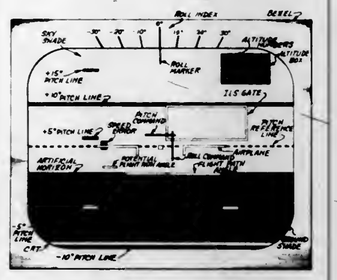
by combining each of the plural traces of selected time delays per trace to derive a plurality of signals each indicative of a selected step-out or dip angle, and thereafter combining the plurality of signals to produce an output signal indicative of the most coherent dip attitude.

3,668,621
MULTIPLE ALTITUDE SIGNALING DEVICE
Carl L. Boyd, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 1, 1970, Ser. No. 33,756
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R **8 Claims**



An apparatus particularly suitable for use during aircraft landing and departures under conditions of minimum visibility wherein a signal is provided to the pilot of the aircraft when the aircraft has reached any one of a series of preselected altitudes. The apparatus consisting of an altitude sensing device adapted to provide an output pulse as the aircraft reaches each of a series of preselected altitudes, an actuating device capable of receiving the pulse, interpreting the pulse and activating the appropriate portion of the signaling device, and a signaling device capable of warning the pilot of the aircraft altitude while he is looking through the aircraft wind screen.

3,668,622
FLIGHT MANAGEMENT DISPLAY
James R. Gannett, Redmond; Gordon D. Annis, Bellevue, and Bradley K. Gjerding, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed May 21, 1970, Ser. No. 39,370
Int. Cl. H01r *13/44*
U.S. Cl. 340—27 R **19 Claims**

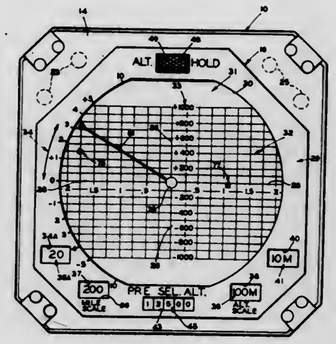


Pilot-oriented information is displayed on the screen of a cathode ray tube by electronically generated symbols superimposed on a simulated or real-world picture. The symbology uses as one datum a fixed airplane symbol and locates therefrom the airplane's degree of pitch, degree of roll, and the horizon. In addition, symbols are provided to indicate the relative position of the airplane with respect to ILS localizer and glide slope signals, pitch and roll commands obtained from an on-board flight director computer, a desired pitch reference, and actual as well as potential flight path angle. Deviation from a preset airspeed and radio or radar altitude are also shown. In all cases, the symbols are constructed by symbol generators from one or more basis rectangles, whose width is determined by a pulse of appropriate length during the CRT's horizontal scanning period, and whose height is determined by a similar pulse during the vertical scanning period. The location of each rectangle is determined by the delay between the start of the vertical or horizontal scanning period, and the start of the vertical or horizontal pulse. Modifications are described for generating rotating symbols. The outputs of the symbol generators are combined as a priority circuit and converted into a composite video signal by a video mixer.

3,668,623
AIRCRAFT VERTICAL FLIGHT POSITION DISPLAY INSTRUMENT
James Caspos, Maywood, N.J., assignor to The Bendix Corporation
Filed Aug. 14, 1969, Ser. No. 850,161
Int. Cl. B64d *45/00*
U.S. Cl. 340—27 NA **41 Claims**

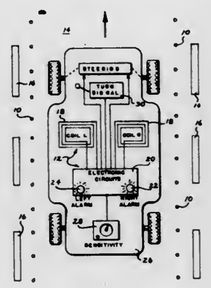
An aircraft instrument for providing a pictorial display of a vertical plane position of an aircraft, helicopter or other space operated vehicle in flight in relation to radio navigation aids or other selected reference points on the ground or in space. The instrument utilizes a computing device to establish the location of the references with respect to the vehicle in flight and the vertical pictorial display portrays the vehicle as a moving symbol, such as a red dot of light or other indicator means, positioned on a grid in a manner that shows the actual vehicle altitude above or below the reference point, distance of the vehicle from a reference point, and the vertical plane angle which would lead directly to the reference point.

The instrument also includes means to provide a display of a selected or computed angular path to the same reference point so that an observer may readily determine whether the vehicle is following a proper flight path or whether it is possible to follow the proper path from the vehicle's present position in flight. Additional means are also provided in the instrument to display the relative vertical plane position of another reference point, on the ground or in space in relation to the same vertical plane by portraying the second reference point at another symbol, such as a blue dot of light or other suitable indicator means on the same grid.



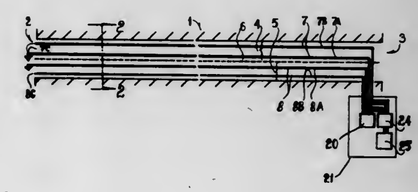
In the aforenoted instrument the relationships between the elements of the display is established so as to correspond to a mental image such as may be usually maintained by the pilot of the vehicle as he operates the vehicle in flight. In such manner the display serves to correlate and update the pilot's mental image with a minimum of confusion or interruptive mental action as the vehicle may rise or descend using vertical aimpoints or references.

3,668,624
METHOD AND APPARATUS FOR VEHICLE CONTROL AND GUIDANCE
David B. Spaulding, Carlisle, Mass., assignor to Novatek, Inc., Burlington, Mass.
Filed Nov. 20, 1969, Ser. No. 878,407
Int. Cl. G08g *1/09*
U.S. Cl. 340—32 **9 Claims**



A vehicle guidance and control system for providing information concerning the speed and direction of movement of a vehicle along a predetermined path on a roadway. The path is defined by a plurality of spaced, permanently magnetized elements located along the roadway. Vehicle mounted sensors respond to the magnetic fields of the elements and produce electrical signals representing the speed and direction of movement of the vehicle with respect to the path. In one embodiment, the electrical signals are employed as control signals in a closed loop electromechanical guidance system for the vehicle. By varying the pattern of magnetic polarization of the elements, binary information can be transferred from the roadway to the vehicle. With suitable data processing equipment in the vehicle, traffic information, such as, speed limits, directions, accident information, exit directions and the like can be visually presented to the vehicle operator.

3,668,625
MONITORING SYSTEM
David Wolf, 67 Bracket Road, Newton, Mass., and Edward Blank, 550 Turnpike St., Sharon, Mass.
Filed Sept. 21, 1970, Ser. No. 73,974
Int. Cl. G08g *1/01*
U.S. Cl. 340—38 R **7 Claims**

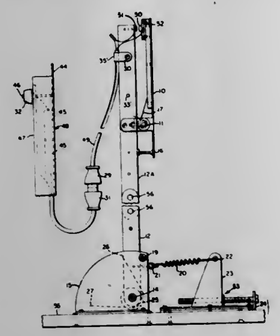


A monitoring device designed primarily for monitoring movement of automotive vehicles on highways, tunnels, bridges and the like. Cables extend the length of the highway or other route being monitored which are designed to have their characteristic impedance varied by movement of vehicles in adjacent parallel paths. The cables are connected to a pulsing circuit and receiver so that the cables may be pulsed and reflections or partial reflections of the pulsed signals received and displayed on an oscilloscope which is calibrated for an A scope visual display and indication of the highway or route being monitored. The presence of automobiles or the like along the highway cause impedance mismatches on the cables which are reflected and suitably displayed. These impedance mismatches move along the display at a rate consistent with the rate of movement of the vehicles and thereby indicate visually movement or stoppage of traffic. The system is designed to be connected automatically to traffic control signals.

3,668,626
PORTABLE PARKING INDICATOR
Harold W. Follett, 100 Reamer Ave., Wilmington, Del.
Filed Feb. 26, 1971, Ser. No. 119,269
Int. Cl. G08b *21/00*
U.S. Cl. 340—51 **8 Claims**

A portable parking indicator is provided which signals the driver of a vehicle that he has reached a predetermined parking position in a garage or other regularly assigned parking space. The signaling means can be a light bulb, whose source of power can be either a battery or line voltage, which is actuated by the vehicle bumper depressing a contact plate mounted pivotably upright on a vertically adjustable lever

and closing an electrical contact positioned between the contact plate and the lever. The lever is mounted pivotably



upright on a movable base and is connected to tension means which holds the lever in an upright position.

3,668,627
AIR CUSHION ACTUATION AND MONITORING CIRCUIT

Wendell C. Brainerd, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.

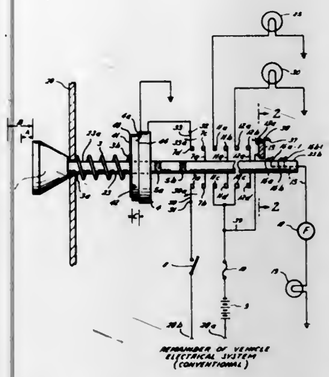
Filed Sept. 21, 1970, Ser. No. 73,687
Int. Cl. B60g 1/00; B60r 21/08
U.S. Cl. 340—52 H **5 Claims**

A control circuit for actuating an inflatable air cushion in a motor vehicle includes a series network comprising an electrically operated actuator connected between first and second normally open acceleration responsive switches. The series network is connected across the vehicle battery as well as a storage capacitor to provide redundant sources for operating the actuator upon simultaneous closure of the switches in response to acceleration or deceleration of the vehicle in excess of a predetermined magnitude and duration. A diode is connected between the first switch and the actuator and a resistor is connected across the first switch and the diode to thereby establish a normally relatively high potential at a junction between the actuator and the second switch and to reverse bias the diode and establish a relatively low potential at a junction between the diode and the first switch. Logic circuitry is provided for monitoring the voltage at the two junctions and for energizing indicator means and recording means in the event of a malfunction in the control circuit resulting in the voltages at the two junctions assuming substantially the same value.

3,668,628
MOTOR VEHICLE LIGHTING CONTROL AND EXTINGUISHING SYSTEM

Marvin A. Barrow, Houston, Tex., assignor to Benjamin F. Byerly; Jack C. Watkins; Austin L. Potts and Lloyd Osburn, part interest to each

Filed Sept. 8, 1970, Ser. No. 70,299
Int. Cl. B60q 1/00
U.S. Cl. 340—52 D **8 Claims**

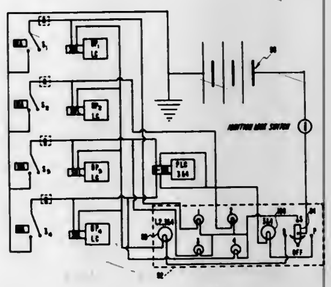


Motor vehicle lighting control system for plural exterior vehicle lights which are selectively operable in accordance with the position of a light operation switch. The system extinguishes the vehicle's lights and returns the light operation switch to its unoperated position by suitable electromagnetic force means upon opening of the vehicle's ignition switch. An override feature allowing use of the lights with the ignition switch open is provided together with circuitry to give an indication that the override feature has been engaged.

3,668,629
VEHICLE ANTI-SKID AND ANTI-SPIN SIGNAL AND CONTROL DEVICE

Walter S. Pawl, 2844 Powder Mill Rd., Adelphi, Md.

Continuation-in-part of application Ser. No. 806,344, Feb. 25, 1969, now Patent No. 3,608,980. This application Mar. 22, 1971, Ser. No. 126,601
Int. Cl. B60q 1/00; G08b 21/00
U.S. Cl. 340—53 **13 Claims**

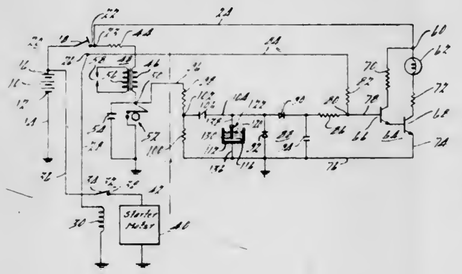


A means for detecting the point at which the braking wheel begins to skid or the driving wheel begins to spin, by using circumferential accelerometers mounted on the wheels to indicate the initiation of a skid or a spin by an inertial displacement of each of the accelerometer weights as it passes the bottom of its rotation as the wheel starts to decelerate or accelerate its rotation faster than the resulting deceleration or acceleration of the vehicle, or is actually locked while the vehicle is still in motion, or is spinning while the vehicle is motionless. This displacement is used to control the means for reducing the maximum brake pressure or the maximum power that may be applied, to a maximum that the instant conditions of load, tire and road characteristics will permit without causing skidding or spinning of the particular wheel on which the accelerometers are mounted. Thus, by having the maximum pressure that may be applied to the brakes on each wheel, separately and automatically limited in this manner to get the maximum braking without skidding, a safe stop can be made even under the most hazardous conditions, in the shortest distance possible. Likewise, by having the maximum power applied, automatically limited in the same manner, to get maximum acceleration, a fast spurt to the desired speed can be safely and most speedily accomplished, even under adverse road conditions.

3,668,630
LOW LIQUID LEVEL INDICATOR

Bernard G. Radin, Oak Park, and Lawrence J. Vanderberg, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1970, Ser. No. 48,217
Int. Cl. B60q 1/00; G01f 23/24
U.S. Cl. 340—59 **4 Claims**

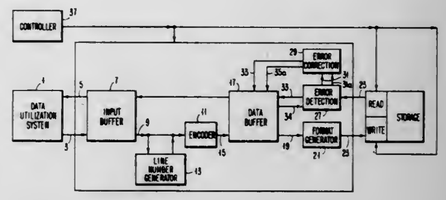


A low liquid level indicator particularly adapted for use in an automotive vehicle which employs the alternating current voltage that appears across the primary winding of the ignition system of the vehicle to energize a probe which is adapted to be immersed in a liquid. A solid state switching network is employed to control the energization of a warning means from a source of direct current electrical energy, for example, the vehicle battery. The probe and the container holding the liquid are connected in shunt with the control electrode of the solid state switching network. When the liquid is at a satisfactory operating level, the probe is effectively immersed in the liquid and the impedance of the circuit comprised of the probe, liquid and container is sufficiently low that the voltage applied to the control electrode of the solid state switching network is insufficient to switch it to a conducting state and thus energize the warning means. If the liquid level falls to an unsatisfactory operating level, however, the impedance of the probe to container circuit is increased markedly thereby increasing the voltage level applied to the control electrode of the solid state switching network. This switches the solid state switching network to a conducting state and energizes the warning means.

3,668,631
ERROR DETECTION AND CORRECTION SYSTEM WITH STATISTICALLY OPTIMIZED DATA RECOVERY

Robert L. Griffith, San Jose, and Ira B. Oldham, III, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1969, Ser. No. 798,975
Int. Cl. G06f 11/00
U.S. Cl. 340—146.1 AX **17 Claims**

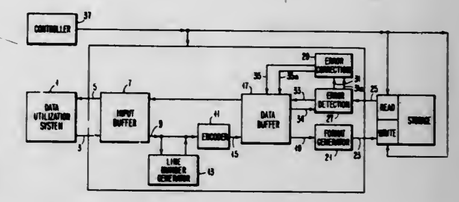


A statistically optimized data recovery apparatus in a system having data storage and retrieval means, said apparatus including error detection means, a plurality of error correction means, first schedulers for scheduling a plurality of error correction attempts, and a second scheduler and a parameter variation means, said second scheduler providing for ordered selection of the first scheduler, and said parameter variation means providing for variation of parameters of said retrieval means, in an attempt to recover data in error.

3,668,632
FAST DECODE CHARACTER ERROR DETECTION AND CORRECTION SYSTEM

Ira B. Oldham, III, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 13, 1969, Ser. No. 798,976
Int. Cl. H04l 1/10
U.S. Cl. 340—146.1 **14 Claims**

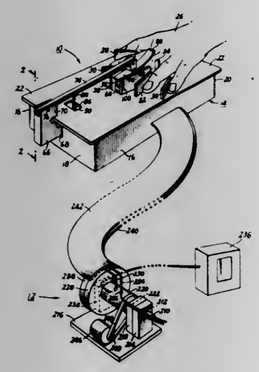


Apparatus for detecting and correcting errors in a digital computer storage system is disclosed. Data is encoded using a generalized Reed-Solomon encoder. Error detection circuitry including power sum calculating devices are used for detection of data in error. The error correction portion of the invention includes an improved decoding scheme for determining the location and magnitudes of errors within the data and has a very low average correction time. Means are provided for determining the starting area of a data block in the presence of errors in the starting area. Further means are provided for detecting a cyclic shift in a data character which, under normal conditions, would appear as an acceptable code word even though in error.

3,668,633
ORIENTATION AND LINEAR SCAN DEVICE FOR USE IN AN APPARATUS FOR INDIVIDUAL RECOGNITION

Charles Sadowsky, Great Neck, N.Y., assignor to Dectylog Company, New York, N.Y.

Continuation-in-part of application Ser. No. 855,955, Sept. 8, 1969. This application Jan. 29, 1970, Ser. No. 6,662
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3 E 15 Claims



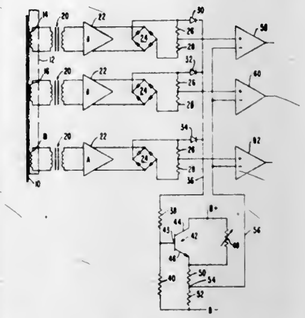
An apparatus for positively orienting a designated skin area of an individual to be identified or whose identity is to be verified with respect to a linear light scan device adapted to project a linear light scan along the designated skin area of the individual. Because each individual's skin configuration is unique, the light scan incident on the designated skin area produces a shadow effect which is unique. The incident light is detected by a photocell and transduced into electrical signals representative of, and unique to, a particular individual. These signals may then be compared with a known set of signals to identify the individual or verify the individual's identity. The designated skin area, for example the underside of a selected finger, is positively oriented with respect to the linear light scan device by means of a hand support and floating finger guide which automatically adjusts to an individual's finger size and, as it adjusts, moves the linear light scan device so that the linear light scan is always oriented along substantially the same linear scan path of a particular individual's finger. Thus, when an individual repeatedly places the designated finger in the apparatus, the linear scan is taken along the same portion of the individual's designated skin area.

3,668,634
DYNAMIC THRESHOLD VOLTAGE DETERMINATION SYSTEM

Karlis Kruklitis, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 6, 1970, Ser. No. 35,084
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3AG 3 Claims

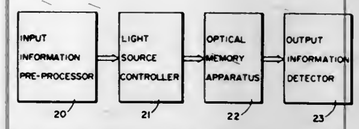
A dynamic threshold voltage system for neutralizing the unwanted electrical signals caused by intertrack crosstalk as generated in multi-track electromagnetic transducers. The system is responsive to the amplitudes of intelligence bearing electrical signals to generate a direct current voltage threshold level which is a predetermined ratio of the intelligence bearing signal. This threshold level is applied to all of the data channels for the multi-track electromagnetic transducer to effectively neutralize any unwanted crosstalk originated signal appearing on any channel.



3,668,635
DIGITAL OPTICAL PATTERN TRANSFORMATION SYSTEM WITH OPTICAL MEMORIES

Yasuo Mizobuchi, Yokohama, and Isao Hoshino, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 22, 1970, Ser. No. 48,069
Claims priority, application Japan, June 20, 1969, 44/48325; Aug. 21, 1969, 44/65683; Jan. 16, 1970, 45/3795; 45/3796; June 11, 1970, 45/49860
Int. Cl. G06r 9/00
U.S. Cl. 340—146.3 P 7 Claims



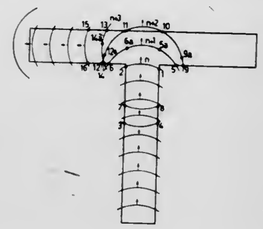
A digital optical pattern transformation system includes memories coupled in the form of a matrix into which there are introduced parallel light beams carrying digital information. The output light beams obtained from the memory pattern under a certain rule of transformation are conducted to an output information detector, to generate a given digital output information therein.

3,668,636
METHOD AND CIRCUIT ARRANGEMENT FOR THE RECOGNITION OF CHARACTERS

Reinhart Blucher, Darmstadt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,341
Int. Cl. G06r 9/16
U.S. Cl. 340—146.3AE 9 Claims

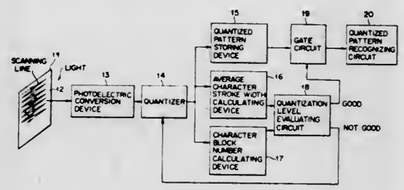
A method of recognition of signs in which a scanning beam, passed circularly across the overall line width of a sign, is caused to follow up the contour of a sign and in which a signal sequence significant of the sign is derived from further circular scanning ramifications, uninterrupted lines and termini of the signs being recognized from the number of black-white transitions per scanning period. The arc determined by the width and phase of the scanning pulse and covering a line last scanned within a scanning cycle is stored and compared with the arcs of the lines covered during the next-following scanning cycle for assessing coincidence. The coinciding arcs are used as recognition criteria so that no coincidence for one or more scanning cycle indicate a terminus of a sign, one coincidence per scanning cycle indicates the presence of a non-ramified line and a plurality of coincidences per scanning cycle indicate a ramification. The angular value for the direction of follow-up of the scanning circle is derived from the values of beginning and termination of the coinciding arcs.



3,668,637
CHARACTER READER HAVING OPTIMUM QUANTIZATION LEVEL

Kunio Sakai, Tokyo; Sumio Katsuragi, Yokohama, and Sadakazu Watanabe, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 14, 1970, Ser. No. 72,095
Claims priority, application Japan, Sept. 16, 1969, 44/72706
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3AG 9 Claims

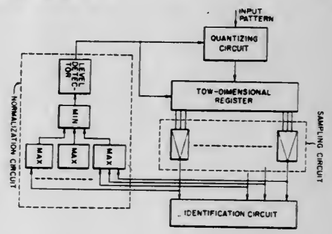


A character reader includes a photoelectric conversion device arranged to optically scan the surface of a record carrier bearing an original character to be read out, the output video signals thereof being supplied to a quantizer for quantizing each of the elemental areas on the surface which form a matrix of rows and columns at a threshold voltage level. The quantized pattern signals from the quantizer, comprised of the binary logical digits "1" and "0," are supplied to a quantized pattern storing device to be temporarily stored therein and also to an average character stroke width calculating device and a character block number calculating device. The calculating devices calculate respectively the average stroke width and block number of the original character on the record carrier from four adjacent contents in the matrix form (corresponding to four adjacent elemental areas) successively supplied from the quantizer. A quantization level evaluating device evaluates the outputs of the calculating devices and adjusts the threshold voltage level at the quantizer until it attains an optimum level. Then, the evaluating device opens a gate circuit coupled to the storing device and supplies through the gate circuit the quantized pattern corresponding to the output signals quantized by the quantizer at the optimum level to a quantized pattern recognition circuit to effect the actual reading of the original character.

3,668,638
PATTERN PROCESSING SYSTEMS

Taizo Iijima, Tokyo; Issei Yamazaki, Urawa; Shunji Mori, Chiba; Hiroshi Genchi, Kawasaki, all of Japan, and Sumio Katsuragi, deceased, late of Tokyo, Japan (by Kaoru Katsuragi, heiress), assignors to Kogyo Gijutsuin, an authority of the Japanese Government, Tokyo-to and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan, part interest to each

Filed Nov. 2, 1970, Ser. No. 86,145
Claims priority, application Japan, Nov. 5, 1969, 44/88107; 44/88108
Int. Cl. G06k 9/04
U.S. Cl. 340—146.3 H 9 Claims

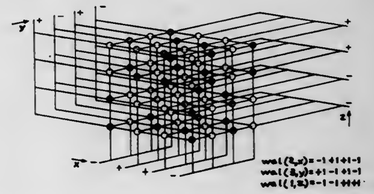


Each input pattern supplied for the purpose of identification is translated through light energy into an electrical signal which is then quantized and stored in a two-dimensional register. The quantized values in the register, consisting of binary digits 0 (representing a white spot) and 1 (a black spot), may be further subjected to a process of a blurring operation and/or that of line width normalization. The pattern blurring operation is effected by means of sampling circuits with their resistances preadjusted at specific values. The latter process is carried out by means of a line width normalization circuit capable of detecting the line width of sampled pattern obtained by the above sampling procedure and of feeding back the results of the detection of the two-dimensional register or the quantizing circuit for the readjustment, if necessary, of the line width into a desired range.

3,668,639
SEQUENCY FILTERS BASED ON WALSH FUNCTIONS FOR SIGNALS WITH THREE SPACE VARIABLES

Henning Friedolf Harmuth, Bethesda, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed May 7, 1971, Ser. No. 141,328
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R 3 Claims

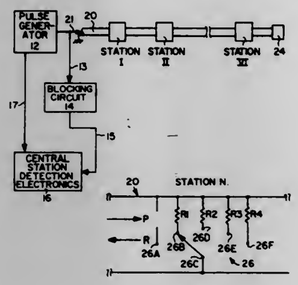


A sequency sampling filter based on Walsh Functions for signals having three space variables, x, y and z. Voltages derived from the space domain are transformed into voltages in a sequency domain. The filtering process is performed by not feeding certain voltages $a(k,m,n)$ to a circuit which performs the inverse transformation of voltages in the sequency domain back into the space domain.

3,668,640
SIGNALING AND INDICATING SYSTEM

David M. Driscoll, 86 Exeter St., Wallaston, Mass.

Filed Nov. 5, 1970, Ser. No. 87,056
Int. Cl. H04q 9/00
U.S. Cl. 340—167 B 10 Claims



A signaling system is preferably used along a limited access highway for registering an indication of the location of a motorist in distress. A plurality of remote stations may be positioned at fixed intervals along the highway and are connected to a central control station by a coaxial cable. Each such station comprises a switching means including means which when actuated change the impedance of the cable to one of a selected number of different impedances, each such impedance providing for different degrees of reflection of a pulse transmitted from the central station. Means are provided, coupled to the cable and forming part of the central control station, for transmitting electrical pulses at a predetermined repetition rate along the coaxial cable. The central control station also includes detection electronics for storing an indication of both the occurrence of the transmitted pulse and a pulse reflected from one of the remote stations, and means for indicating which of said stations has been actuated by a distressed motorist.

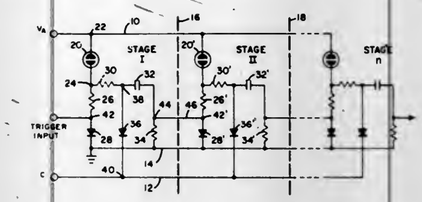
In another embodiment of the invention the detection electronics comprises means for monitoring the plurality of stations and for registering a call (actuation of a switching means at a station) from more than one remote station. In this embodiment, in addition to providing means for indicating which station has called, amplitude detection means in association with logic means may also be provided to determine which of said different impedances have been selected at any one remote station.

3,668,641
DISPLAY APPARATUS HAVING PLURAL GAS DIODE STAGES

John C. Rooks, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Mar. 30, 1970, Ser. No. 23,899
Int. Cl. H04q 3/00
U.S. Cl. 340—168 2 Claims

A sequentially addressable apparatus utilizing a drive circuit incorporating gas-filled diodes as the active element thereof. Means are provided for coupling an input signal representative of a condition to be displayed to the system, with the input signal being coupled to the first stage of the system, and with each succeeding stage being coupled to its own immediately succeeding stage such that signals representing the state of each discrete stage can be propagated from stage to stage. The breakdown of a gas-filled diode in a first stage of a multi-stage display permits current to flow through a path including a capacitor, thereby charging up the capacitor in response to the current flow. The residual charge on the capacitor when added to the voltage applied to the system provides a potential level which exceeds the ignition potential of the gas-filled diode in the second stage, thus causing ignition of the gas-filled diode for the second stage. When the condition being represented is such that the breakdown of the gas-filled diode in the first

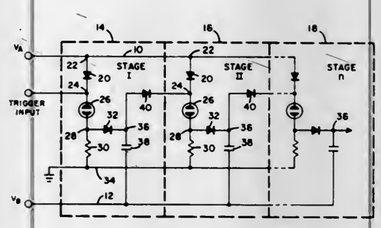


stage is not desired, the system will transfer this condition in a similar fashion. Thus, the system is capable of transferring representative conditions from the first stage to succeeding stages.

3,668,642
SEQUENTIALLY ADDRESSABLE ALPHA-NUMERIC GAS TUBE DISPLAY DEVICE

John C. Rooks, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed Mar. 31, 1970, Ser. No. 24,159
Int. Cl. H04g 3/00
U.S. Cl. 340—168 4 Claims



A sequentially addressable display system is disclosed wherein a plurality of stages, each including a series connected combination of a gas-filled diode, such as a neon glow tube, and a capacitor are coupled between a pair of voltage buses. Means are provided for coupling an input signal representative of a condition to the first stage of the system, with each succeeding state being coupled to its own immediately succeeding stage such that signals representing the state of each discrete stage can be propagated from stage to stage through the system, thus providing a transfer from the first stage to succeeding stages. A condition represented by an extinguished glow tube may also be propagated from stage to stage through the display system.

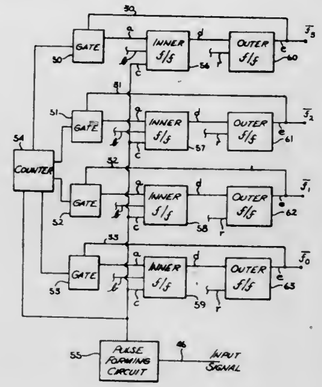
3,668,643
DATA TRANSMISSION SYSTEM

Lloyd M. Germain, Los Angeles, Calif., assignor to Data Instruments Company, Sepulveda, Calif.

Filed Aug. 14, 1970, Ser. No. 63,721
Int. Cl. H04q 9/00
U.S. Cl. 340—171 R 15 Claims

A data transmission system which utilized a plurality of predetermined frequencies to transmit data is disclosed. The system is particularly useful for synchronous data transmission for example where a change from one predetermined frequency to another is utilized to code binary or trinary data. A plurality of gating signals, each separated by a finite

time are generated and used to detect the presence of the predetermined frequencies. The coincidence of pulses representative of the period of the transmitted frequency and the gating signal associated with the transmitted frequency is

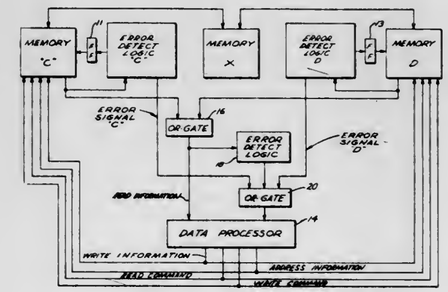


detected and utilized to identify the transmitted frequency. The predetermined frequencies and gate durations are selected so as to allow the jitter associated with transmitted frequency to go undetected.

3,668,644
FAILSAFE MEMORY SYSTEM

Floyd W. Looschen, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 9, 1970, Ser. No. 9,817
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 8 Claims

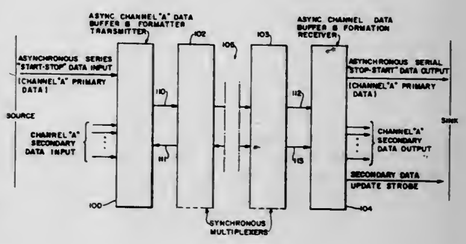


A memory system comprising a plurality of memories containing identical information stored at corresponding addresses. Information is requested simultaneously from the memories by a data processor. The requested information is simultaneously supplied to the inputs of a first OR-gate which operates to pass such requested information when it is supplied thereto from any or all of the memories. A plurality of first error detection means are associated with each memory, each operating to disable its associated memory from supplying requested information to the data processor when it detects an error in the information at the memory output, and each operating to send an error signal to the data processor informing it that an error has been detected. Second error detection means are associated with the first OR-gate for detecting an error in the information at its output being sent to the data processor. A second OR-gate couples error signals to the data processor in a manner that a signal, indicating that an error has been detected somewhere in the system, will be supplied to the data processor upon receipt, by the second OR-gate, of an error signal from any or all of the first and second error detection means. Responsive to its receipt of such signal, the data processor is programmed to re-request the originally requested information simultaneously from the memories. Any disabled memory does not respond to such re-request until repaired, updated with information from the other memories, and re-enabled into the system.

3,668,645
PROGRAMABLE ASYNCHRONOUS DATA BUFFER HAVING MEANS TO TRANSMIT ERROR PROTECTED CHANNEL CONTROL SIGNALS

Welles K. Reymond, Noroton Heights, and Walter V. Ciecierski, Ridgefield, both of Conn., assignors to General Datacomm Industries, Norwalk, Conn.

Filed May 25, 1970, Ser. No. 40,006
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 7 Claims



Programable transmitting and receiving data buffers and formatters are provided which accept start-stop data that is formatted by removing the start-stop pulses and coded for transmission with a primary data indicator bit. Secondary channel control data with an identifying indicator bit is automatically inserted in the transmission time slot when primary data is not available. A method and means are provided for separating primary data from secondary control data at the receiver and delivering error protected control signals.

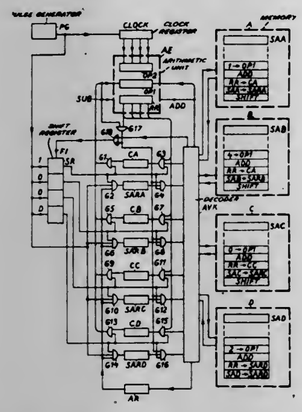
3,668,646
METHOD OF CONTROLLING JUMPS TO DIFFERENT PROGRAMS IN A COMPUTER WORKING IN REAL TIME

Goran Anders Henrik Hemdal, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed June 10, 1970, Ser. No. 45,110
Claims priority, application Sweden, June 17, 1969, 8586/69
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 3 Claims

The invention refers to a method of controlling jumps to different programs in a computer which works in real time. A number of programs associated with different priority levels are performed sequentially within subsequent primary intervals determined by a clock register. The programs associated with the different priority levels have to be addressed in periodically recurrent intervals of different length. After having performed a program a sum value is formed by addition of the contents of the clock register and a number corresponding to the number of subsequent primary intervals within which the addressing of the program has to be omitted. Within each primary interval the actual value of the clock register in priority order is compared with the sum

values associated with the respective programs. If the value of the clock register upon comparison is found to have

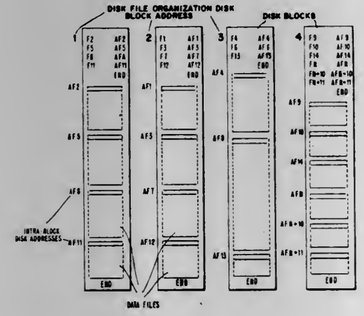


passed a sum value that one of the programs is addressed with which said sum value is associated.

3,668,647
FILE ACCESS SYSTEM

Carlo J. Evangelisti, Jefferson Valley, and Larry E. Rittenhouse, Carmel, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1970, Ser. No. 45,751
Int. Cl. G06f *15/40*
U.S. Cl. 340—172.5 **10 Claims**

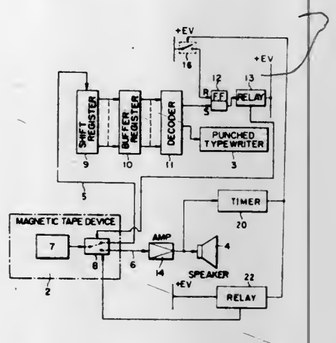


A system is shown wherein, provided with an appropriate file organization, a data file can be read from a disk master file, given the file name, by performing one seek and one read operation. The system employs hash coding to compress a data file name to a disk file address. The disk file is positioned into fixed length blocks where each hashed file address points to a block, the block being as large as one cylinder or as small as one sector. Each block is organized such that it includes a directory for the files contained in the block and also contains the data files. Each entry in the directory contains the data file name and the address of that data file in the block. The process of locating and reading a data file entails the hash coding of a file name to yield a block address, the moving of the read head to the disk area having the block address and the reading of the directory and the remainder of the block to read out the data file. In the directory reading, the data file names are compared in real time, as they are read from the disk, with the name of the desired data file. When a name match occurs, the address of the data file in the block and the address of the next file address are read and stored. As the disk rotates, the desired data file address just read is constantly compared with the active disk address. When a match occurs, the file has been located and is read out. The reading is terminated at the address of the beginning of the next file. If the file name is not found in the directory of the block indicated by the hash coding of the file's name, then the file is not present therein.

3,668,648
DATA PROCESSING SYSTEM

Kinichi Yoshikawa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed June 15, 1970, Ser. No. 46,370
Claims priority, application Japan, June 18, 1969, 44/47627
Int. Cl. G05b *19/38, 19/42*
U.S. Cl. 340—172.5 **4 Claims**



The invention provides a data processing system wherein a data processing equipment such as punched typewriter is operated by a magnetic tape upon which are recorded in alternating sequence digitally coded signal groups and audio signal groups which are used to give an operator instructions as to the operation of the equipment, tape, etc. A special code inserted at the end of each of the digitally coded signal groups indicates the switching from the digitally coded signal group to the audio signal group. A switching audio signal (for example an 800 Hz tone) is inserted at the end of the audio signal group to indicate switching from the audio signal group to the digitally coded signal group.

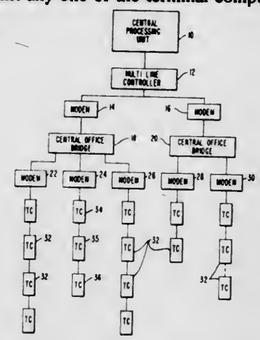
3,668,649
MULTIPLE TERMINAL COMPUTER CONTROL SYSTEM FOR GROUP POLLING

John H. Pedersen, Brussels, Belgium, and Michael J. Bedford, Northville, Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,251
Int. Cl. G06f *3/04*; H04l *5/00*
U.S. Cl. 340—172.5 **5 Claims**

A control system for permitting each one of a plurality of transmit ready terminal computers to reply to a single polling command from a central processor. In an environment wherein a plurality of remote-terminal computers are concatenated to a single modem, a single polling command from the central processor will permit all of the transmit ready terminal computers to transmit data information to the central processing unit. Each terminal computer, being individually controlled through its program, will periodically contend for

the communication channel. Logic circuitry is disclosed herein to permit any one of the terminal computers to seize

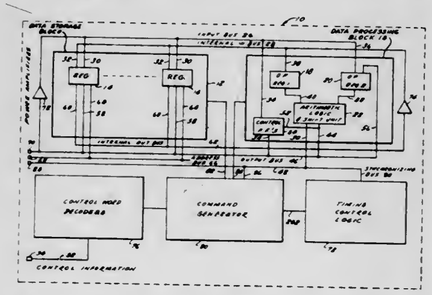


the communication line and to prevent interruption by another terminal computer.

3,668,650
SINGLE PACKAGE BASIC PROCESSOR UNIT WITH SYNCHRONOUS AND ASYNCHRONOUS TIMING CONTROL

Fuh-Lin Wang, Wappinger Falls, N.Y., assignor to Contrologic, Inc., New York, N.Y.

Filed July 23, 1970, Ser. No. 57,586
Int. Cl. G06f *13/00, 15/16*
U.S. Cl. 340—172.5 **15 Claims**



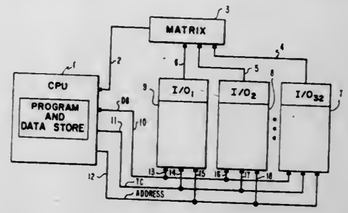
A basic processor unit for use in a data processing system is disclosed. The unit comprises in combination, a data storage unit including a plurality of registers, input and output buses, a data processing unit, a timing control including a timing element adapted to operate in a synchronous or an asynchronous mode, means for controlling the asynchronous operation of the timing element, decoding means and suitable interconnections between the various components. The present processor unit is so designed as to enable it to be connected to another similar unit, in series and/or in parallel whereby to increase either the number of bits per facility or the number of facilities or both. An improved data processing system utilizing the present processor is also disclosed.

3,668,651
WORKING DEVICE CODE METHOD OF I/O CONTROL

Louis Michael Hornung, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,685
Int. Cl. G06f *3/04*
U.S. Cl. 340—172.5 **13 Claims**

A technique of I/O control in which each of the devices in the system has a unique actual device code which is used during an input and output instruction execution. The I/O instruction instead of containing the actual code of the device will contain a working device code. For purposes of illustration in a thirty-two device system, a three-bit working device code is used instead of the five bit actual device code. During execution of an I/O instruction the three-bit working device code is used to address a portion of memory in which the actual device codes are stored. The actual device code associated with the working device code is then output both to a decoder to cause selection of an associated input/output address register and along the device code buss to the I/O devices. A comparison is made between the local actual device code wired into each I/O device and the transmitted code to determine which I/O device has been selected. The function to be performed as defined by the I/O instruction is stored in the selected I/O device. During subsequent interrupts each I/O device will activate its own interrupt line and a matrix is employed to determine which of the I/O devices simultaneously requesting service is of highest priority. The output of the matrix is then used to address the input/output



address register store to obtain the address in memory which is associated with the particular device selected. In addition, the output of the matrix is applied to a device code encoder which provides a five-bit device code to the device code buss. This code is broadcast to the I/O devices so that the devices can determine by means of a comparison of the transmitted device code with its local stored device code, which device is to be interrupt serviced.

Overlap operation of all thirty-two I/O devices can be accomplished through use of the working device code technique under control of the supervisory program which selectively loads different actual device codes into the actual device code store in a manner such that for one operation a working device code will be associated with a first I/O device and during subsequent operations be associated with different I/O devices in accordance with the actual device code stored in the actual device code store by the supervisory program. Program sharing can thus be accomplished by switching of actual device codes associated with a given working device code in the actual device code store.

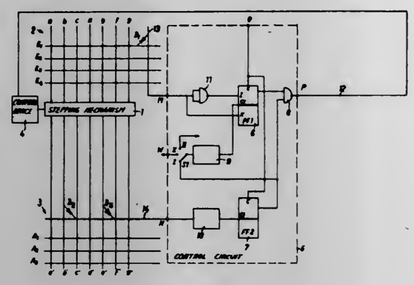
3,668,652
APPARATUS FOR CONTROLLING JUMPING OPERATIONS FOR A PROGRAM CONTROL EQUIPPED WITH STEPPING MECHANISM

Ulrich Zahn, Aargau, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Feb. 11, 1971, Ser. No. 114,573
Claims priority, application Switzerland, Apr. 2, 1970, 4924/70
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **18 Claims**

There is disclosed an apparatus for controlling the jump operations of a program control which is generally manifested by the features that, there is provided a control circuit which can be optionally connected at any one of the output lines of a stepping mechanism and controlled by the signal of the output line, this control circuit serving for generating the jump or stepping signals for the switching

stages of the switching mechanism which are to be momentarily jumped. This control circuit is coupled with the input side of an electrical control device for the stepping

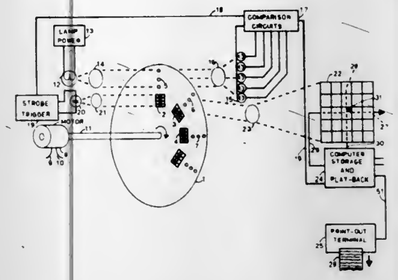


mechanism. In response to a jump signal, the control device advances the stepping mechanism independent of the switching signals of the input line and blocks the delivery of positioning signals at the output rails.

3,668,653
CONTROL SYSTEM
Donald G. Fair, Belvidere; Harold L. Baeverstad, and William G. Fisher, both of Rockford, all of Ill., assignors to Sundstrad Corporation
Continuation-in-part of application Ser. No. 706,365, Feb. 19, 1968, now abandoned. This application Oct. 22, 1968, Ser. No. 769,500
Int. Cl. G05b *15/02*; G06f *15/02, 15/20*
U.S. Cl. 340—172.5 **95 Claims**

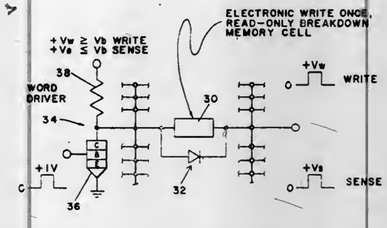
An on-line data processing machine controls the operation of one or more machine tools. A general purpose communications link allows each machine tool and/or the operator therefore to communicate with the data processing machine and either change the operations which the machine tool would otherwise perform under control of an existing stored program, or add new or partly new operations, which if desired can thereafter immediately be performed by the machine tool.

3,668,654
COMMUNICATING COMPUTER
Charles H. Doersam, Jr., 4 Dogwood Hill, Brookville, N.Y.
Filed Nov. 19, 1969, Ser. No. 877,995
Int. Cl. G06f *3/02*
U.S. Cl. 340—172.5 **10 Claims**



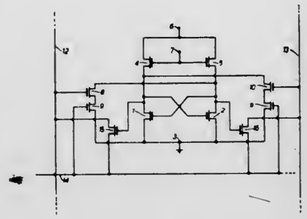
A computer containing stored programs and stored information is programmed by selecting a series of partial commands finally assembled into a complete command. Instead of selecting commands from a great plurality of commands, one from each of a relatively few possible partial commands is selected in sequence to form the complete command. Frames carrying a sequence of these few commands are projected on a touch sensitive selection screen and selection is performed by the operator simply by touching one of the touch sensitive panels corresponding to the selected command. The computer programs the presentation of the sequence of available commands, receives and assembles the partial commands and then responds to the complete command. The completed command is an action command and may, for example, answer questions posed, send out questions to be answered by the operator, issue instructions or store information all to an appropriate terminal such as a hard copy teletypewriter.

3,668,655
WRITE ONCE/READ ONLY SEMICONDUCTOR MEMORY ARRAY
Charles A. Allen, Poughkeepsie, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.
Filed Mar. 26, 1970, Ser. No. 23,234
Int. Cl. G06f *13/00*
U.S. Cl. 340—173 SP **2 Claims**



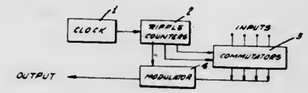
This disclosure relates to a write once/read only semiconductor memory array which utilizes a single voltage (above the memory cell breakdown voltage) on a word drive line to effect writing into any selected memory cell of the array. Each memory cell of the array is preferably provided with a protective diode connected in parallel to the cell to prevent breakdown of unselected memory cells.

3,668,656
MEMORY CELLS
Clive William Hoggar, Chelmsford, England, assignor to The Marconi Company, Limited, London, England
Filed Aug. 14, 1970, Ser. No. 63,679
Claims priority, application Great Britain, Aug. 18, 1969, 41,076/69
Int. Cl. G11c *11/40*; H03k *3/286*
U.S. Cl. 340—173 FF **12 Claims**



An electronic memory cell consists of a bistable circuit and three access paths. Two of the access paths are used to control the state of the bistable, one of these paths being used to set the bistable, to one of its two stable states and the other of these access paths to set the bistable to the other stable state. A low impedance path is provided between one of these two access paths and the third access path in dependence on the state of the bistable to permit read-out of the memory cell.

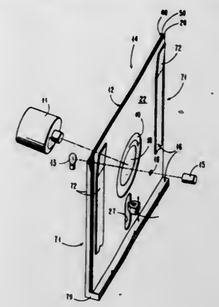
3,668,657
AUTOMATION CONTROL SYSTEM
Edwin R. Deloach, 7733 Dorsette Dr., New Orleans, La.
Filed Nov. 21, 1969, Ser. No. 878,625
Int. Cl. G11c *11/00*
U.S. Cl. 340—173 R **9 Claims**



A pulse sampling multiplex system with analog capabilities including a modulating means necessary for direct recording on magnetic tape, an analog DC output, a direct DC output, an AC power output and a servomotor control output, a means for revising information on any channel without altering data on other channels, a "memory" means whereby information can be retained in the system after input data has been discontinued and a means for controlling direct DC and AC power output by punched tape or other parallel digital input means.

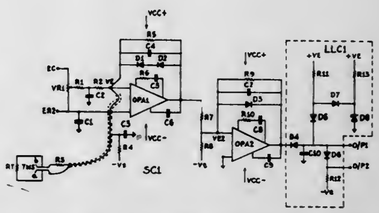
3,668,658
MAGNETIC RECORD DISK COVER
Ralph Flores, San Jose, and Herbert E. Thompson, Santa Clara, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,017
Int. Cl. G11b *5/82, 23/02, 25/04*
U.S. Cl. 340—174.1 C **7 Claims**

In a magnetic recording system, the combination comprising a rotary magnetic record disk and a cover for containing the disk. The cover has its inner surfaces in frictional contact with the adjacent surfaces of the disk. Furthermore, the disk



is rotatable while the cover is maintained stationary in the magnetic recording system. The cover includes means for cleaning the surface of the disk during rotation of the disk.

3,668,659
TOUCH-WIRE DETECTION SYSTEMS
Leonard Henry Hutchings, Liverpool, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland
Filed Dec. 10, 1970, Ser. No. 96,845
Claims priority, application Great Britain, Dec. 12, 1969, 60,684/69
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 **5 Claims**

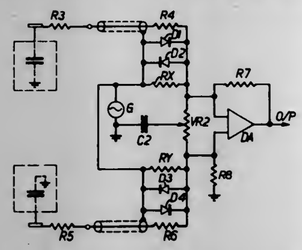


Each touch-wire consists of a pair of contacts and touch is sensed in an operational amplifier by detecting the effect of the direct current change resulting from placing a human finger across the contacts, the contacts having a potential difference between them. The operational amplifier, connected in a current summation mode, is used to produce a voltage change as a function of the change in current at the summation point. The voltage change is amplified by the operational amplifier before being applied to a logic-level clamp.

3,668,660
TOUCH WIRE DISPLAYS
Laurence Ernest Watten, Langley, England, assignor to Plessey Handel Und Investments AG, Zug, Switzerland
Filed Dec. 16, 1970, Ser. No. 98,799
Int. Cl. H03k *13/00*
U.S. Cl. 340—365 **2 Claims**

Each touch-wire contact is connected, by a screened cable in series with a resistor and a 150 K Hz sine wave produced by the generator. A field-effect transistor detection circuit is connected across the resistor. The transistor is not provided with bias and is thus normally cut-off. When a human finger touches the touch-wire contact an a.c. waveform is applied to

the base of the transistor causing it to conduct. An important feature of the circuit is the connection of the screen of the

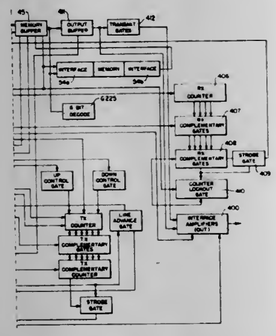


screened lead to the generator thereby preventing the cable capacitance from shunting the touch mechanism.

3,668,661
CHARACTER CODING, MEMORY, AND DISPLAY SYSTEM

Duncan E. Cull, and Alvin E. Culbertson, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 25, 1969, Ser. No. 836,270
Int. Cl. G06f *13/02*
U.S. Cl. 340—172.5 **8 Claims**



Characters each identified by a bit code are advanced serially to a memory comprising continuously cycling shift registers, one for each bit of the code. The bits for each character enter the shift registers in parallel. The character codes are placed one behind the other in the shift register memory by operation of a character counter and a second counter which is its complement.

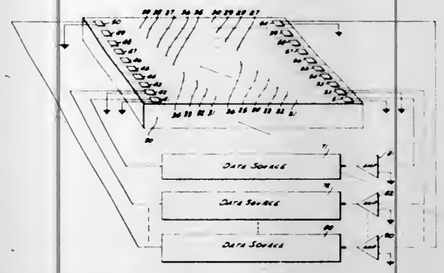
The memory is formatted for control of a cathode ray tube display operating to legibly display all characters in the memory. A major raster traces lines of character positions. A minor raster traces each character in a dot matrix at each character position.

3,668,662
ACOUSTIC DELAY LINE MEMORY SYSTEM

Robert L. Zimmerman, Northridge; Bernard P. Schweitzer, Los Angeles; Hugh L. Garvin, Malibu; Melvin E. Pedinoff, Canoga Park, and Michael Waldner, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 20, 1970, Ser. No. 82,229
Int. Cl. G11c *21/00*
U.S. Cl. 340—173 RC **19 Claims**

An information storage system utilizing an acoustic medium having its surface subdivided into a plurality of individually isolated acoustic transmission channels upon which a plurality of transmit and receive transducers are selectively placed. Each respective transmit transducer is electrically excited by a signal containing information from at least a preselected one of a plurality of data sources in order to cause a resultant acoustic stress wave to be propagated upon the surface of the medium within the associated

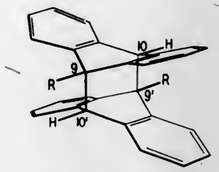


acoustic transmission channel until the resultant stress wave is converted by an associated receive transducer into a plurality of charges which, in turn, are applied to a data source which, on command, either selects a new data to be stored or the old data that was circulated to be reconstituted into a transmit format to be recirculated within the associated acoustic transmission channel of the system.

3,668,663
OPTICAL STORAGE DEVICES

Edwin Arthur Chandross, Murray Hill; Richard Lynn Fork, Holmdel; Angelo Anthony Lamola, Warren, and Walter John Tomlinson, III, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1970, Ser. No. 92,430
Int. Cl. G11c *11/42, 13/04*
U.S. Cl. 340—173 LS **14 Claims**



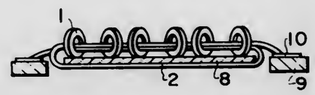
A new class of optical, switching and memory devices is based on the different refractive indices associated with each of the two states of the reversible photochemical interconversion between dimer and monomer states in a broad class of organic materials. Reversibility is expedited by use of a rigid medium. The active material may be a solution or suspension of the photosensitive species in a transparent matrix or may be a single-crystal form of the photosensitive material itself.

The particular chemical systems upon which operation is based are so chosen as to result in a relatively large spacing between absorption peaks associated with each of the two states. This class, in which change of state results in a significant change in the resonant character of the material, is further characterized by strong absorption bands (resulting in reasonably complete reaction), by ready reversibility, by thermal stability in either state at usual ambient temperatures, and by refractive index changes within the visible spectrum which are of sufficient magnitude for holographic and other switching or memory use.

3,668,664
MAGNETIC CORE MEMORY PLANE

Seihin Kobayashi, and Michihiro Torii, both of Shizuoka, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1970, Ser. No. 82,465
Claims priority, application Japan, Oct. 27, 1969, 44/102342
Int. Cl. G11c *5/04, 11/06*
U.S. Cl. 340—174 MA **6 Claims**

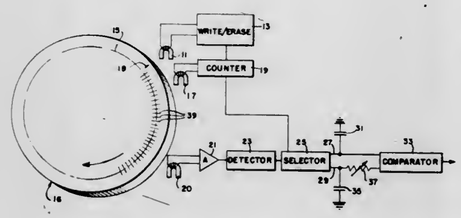


A magnetic core memory plane is provided in which magnetic cores arranged in matrix are strung by a plurality of turns of drive windings. Each drive winding is (1) strung through the magnetic cores in an alignment, (2) turned back along an optically transparent plate superposed upon the cores, and (3) again strung through the same cores to form the plurality of turns of the winding. Both ends of each drive winding are connected to terminal plates provided at the top surface of a frame.

3,668,665
APPARATUS FOR ENSURING TIMING TRACK ACCURACY

Robert J. Reynolds, Ann Arbor, and Virgilio J. Quiogue, Northville, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 30, 1970, Ser. No. 33,365
Int. Cl. G11b *27/12*
U.S. Cl. 340—174.1 A **10 Claims**

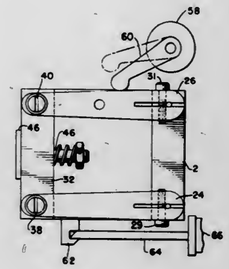


A method and apparatus for precisely checking the accuracy of the placing of timing track marks or bits on the periphery of a rotating recording member, such as a magnetic disc or drum, where the spaces between all the timing track marks or bits must be exactly equal and the variations in spacing, if any, cannot be electronically measured. The timing track bits or marks are written during one revolution of the disc or drum and then read back and used as one input to a comparator. The timing track is erased and then the timing track bits are written during two successive resolutions of the disc or drum and read back as the other input to the comparator. If the amplitudes of the two inputs to the comparator are equal then the writing during the second of the two successive revolutions was directly on top of the writing during the first of the two successive revolutions and all the bit spaces are equal.

3,668,666
FLYING HEAD ON PANTOGRAPH ASSEMBLY WITH PRESSURE RESPONSIVE WITHDRAWAL

Hubert John Heffernan, 316 Forrest Drive, Falls Church, Va., and Charles L. Fontana, 22 Silverspruce Rd., Levittown, Pa.

Filed Apr. 11, 1969, Ser. No. 815,350
Int. Cl. G11b *5/60, 21/12, 21/20*
U.S. Cl. 340—174.1 E **11 Claims**

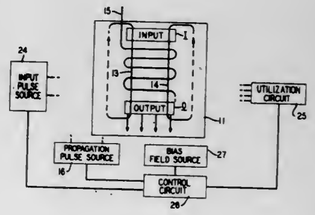


A flying transducer head mounting for use with rapidly moving magnetic data storage devices such as drums of discs having a magnetizable surface is disclosed. The disclosed mounting is a pantograph type support for supporting a multiple transducer head pad on which the transducer heads are mounted. The heads are brought into flying position after the data storage device has reached its operating speed. The entire assembly includes circuit means for bringing the heads into flying position and circuitry to provide fail-safe operation.

3,668,667
MULTILEVEL DOMAIN PROPAGATION ARRANGEMENT

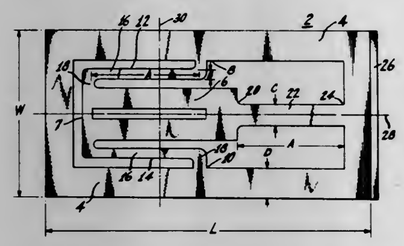
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 30, 1970, Ser. No. 76,823
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 TF **9 Claims**



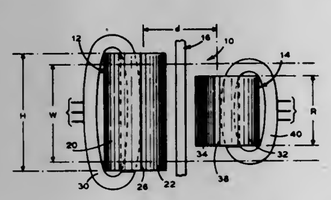
A multilevel coding arrangement for a multistage single wall domain propagation channel is provided by a number of parallel magnetically soft rails adjacent a sheet in which single wall domains can be moved. The rails define laterally displaced stable positions for the domains, n rails defining $n+2$ domain positions in each stage in the domain channel.

3,668,668
TRANSDUCING HEAD MOUNT APPARATUS
George Conrad Rohitschek, Los Angeles, Calif., assignor to RCA Corporation
Filed Dec. 7, 1970, Ser. No. 95,778
Int. Cl. G11b 5/60
U.S. Cl. 340—174.1 E 5 Claims



An arrangement is disclosed for supporting a transducer head on an air bearing. The system includes a planar three point resilient suspension system. The suspension system when acted upon by the air bearing deflects to form a parallelogram support for the transducer which provides desired mobility of the transducer.

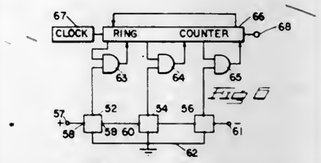
3,668,669
MAGNETIC HEAD WITH WRITE GAP WIDER THAN TAPE AND READ GAP NARROWER THAN TAPE
Francis C. Marino, Huntington, and Edgar Wolf, New Hyde Park, both of N.Y., assignors to Digitronics Corporation, Albertson, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,659
Int. Cl. G11b 5/26, 5/44
U.S. Cl. 340—174.1 F 11 Claims



The head construction is adapted to be used with a magnetic tape medium having a preselected width and comprises a first magnetic head having a first air gap having a height substantially in excess of the tape medium and a second magnetic head having a second air gap having a height substantially less than the width of the tape medium. The first air gap is in spaced relationship to the second air gap and first and second coils are respectively magnetically linked with the first and second magnetic heads.

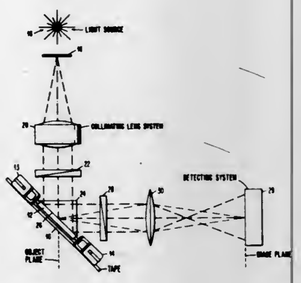
3,668,670
METHODS AND MEANS FOR RECORDING AND READING MAGNETIC IMPRINTS
Robert D. Andersen, 1014 S. Hillborn, West Covina, Calif.
Filed Oct. 27, 1969, Ser. No. 869,500
Int. Cl. G11b 5/38
U.S. Cl. 340—174.1 F 6 Claims

A method of recording and then reading magnetic imprints in any of the several magnetizable areas of a magnetic storage surface by the steps of inducing magnetism in selected ones of those areas and then detecting the presence of a magnetic field at those areas by detecting in which of a number of Hall effect devices associated with those areas respectively the Hall effect is exhibited. Also disclosed are in-



line and matrix magnetic readers employing Hall effect devices, and a unitary Hall effect reader and differential amplifier assembly, and a printer employing only a grid of conductors deposited on a substrate so that the conductors are in close proximity at the crossover points.

3,668,671
METHOD AND APPARATUS FOR READING SUPERIMPOSED MAGNETIC RECORDINGS
Larry H. Everett, Boulder, Colo., and Jack H. Judy, Minneapolis, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 15, 1969, Ser. No. 884,880
Int. Cl. G11b 7/28, 11/10
U.S. Cl. 340—174.1 M 4 Claims

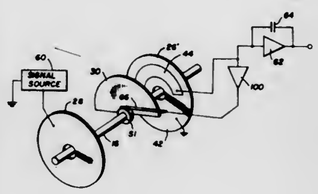


Superimposed tracks of magnetic recordings are read by use of a magneto-optic transducer. The recordings are on a magnetic tape which is passed in close proximity to a magnetic thin film layer coated to the reflecting side of a prism. The superimposed recordings on the tape are selectively transferred to the magnetic thin film by an external bias field. The bias field may be selectively energized or selectively positioned to enhance the transfer of one of the plurality of magnetic recordings to the magnetic thin film. The magnetic recording whose transfer is enhanced is the only recording which will be read by use of the magneto-optic effect.

3,668,672
CAPACITIVE TRANSDUCER
James A. Parnell, Houston, Tex., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation of application Ser. No. 688,500, Dec. 6, 1967, now abandoned. This application Nov. 13, 1970, Ser. No. 89,514
Int. Cl. G08c 19/10
U.S. Cl. 340—200 12 Claims

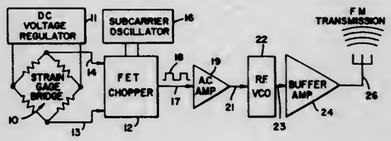
A variable capacitance displacement transducer is disclosed for developing an electrical signal having an amplitude

precisely controlled by the position of a mechanical input element, which in turn varies the capacitance of the transducer. The transducer includes three spaced conductive places arranged in parallel relation. Electrical signals are applied to one of the outer plates. The other two plates are maintained at substantially the same signal level for minimiz-



ing the capacitance therebetween so that the center plate functions as a shield to control the capacitive coupling between the two outer plates. An amplifier including a negative feedback circuit is coupled to the other outer plate to develop output signals having amplitudes determined by relative position between the inner plate and the two outer plates.

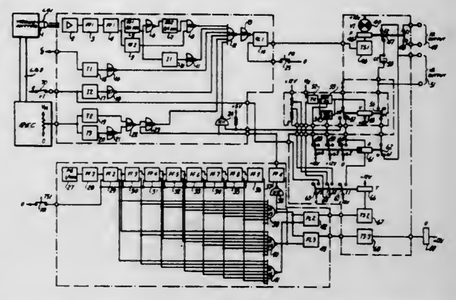
3,668,673
APPARATUS FOR TELEMETERING D.C. SIGNALS
Alan J. Adler, Palo Alto, Calif., assignor to Aerotherm Corporation, Palo Alto, Calif.
Filed Sept. 23, 1970, Ser. No. 74,641
Int. Cl. G08c 19/16
U.S. Cl. 340—208 5 Claims



A telemetry transmitter where a d.c. voltage from for example a strain gage which is to be telemetered is converted to an a.c. square wave by a chopper. This amplitude modulated signal drives a voltage controlled oscillator which produces a frequency modulated signal which is then transmitted to a receiver by an antenna or wire.

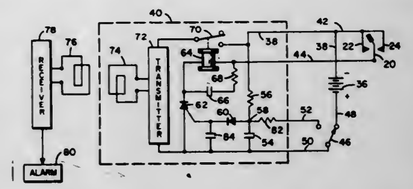
3,668,674
METHOD AND ARRANGEMENT FOR TESTING OF VISIBILITY MEASURING ARRANGEMENTS
Werner Westendorf, Hamburg-Grossflottbek, Germany, assignor to Impulsphysik GmbH, Hamburg, Germany
Filed Jan. 30, 1970, Ser. No. 7,155
Claims priority, application Germany, Feb. 1, 1969, P 19 05 016.9
Int. Cl. G08b 29/00
U.S. Cl. 340—214 17 Claims

A normal light input of a visibility meter is blocked and a light guide transmits light directly from the transmitter to the receiver. If the signal generated in the receiver as a function of the received test light is outside a given range, a failure alarm is generated. Proper operation of the visibility alarm relay, the supply voltage source, and the light flash generator



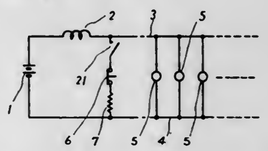
are also furnished. The visibility measuring arrangement is tested automatically at predetermined time intervals.

3,668,675
REMOTE ALARM SYSTEM
Allan D. Joens, 8115 Clinton Ave., Minneapolis, Minn.; Robert W. Johnson, 5452 Nokomis Ave., Minneapolis, Minn., and Michael Riggle, 1232 Oakmont Dr., Temperance, Mich.
Filed Apr. 3, 1970, Ser. No. 25,330
Int. Cl. H04b 7/00; G08b 13/00; B60r 25/10
U.S. Cl. 340—224 9 Claims



A vehicle alarm system is disclosed which incorporates an acceleration-sensitive pendulum connected to a relay operated radio transmitter so as to signal silently to a remote station any movement of the vehicle on which the apparatus is magnetically mounted. A charge storage circuit in parallel with the relay keeps the transmitter on for about a 1 second interval.

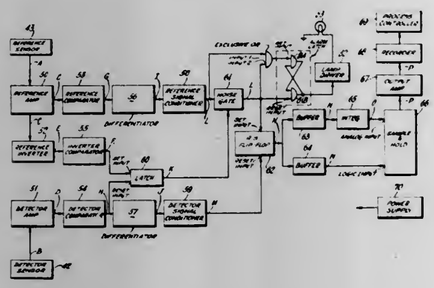
3,668,676
ALARM DEVICE WITH MEANS TO LOCATE AN ERRONEOUSLY ACTIVATED DETECTOR
Koju Sasaki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan
Filed May 7, 1970, Ser. No. 35,331
Claims priority, application Japan, July 1, 1969, 44/61795
Int. Cl. G08b 19/00
U.S. Cl. 340—227 R 1 Claim



An alarm device for the detection of smoke, fire, and the like having a plurality of detectors connected in parallel and

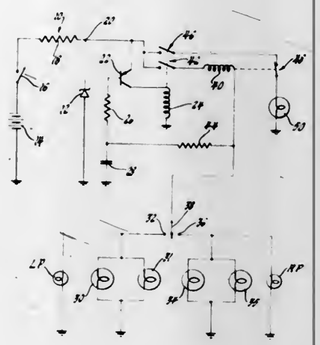
energized by a power supply with the coil of a relay in series with the power supply. Relay contacts are arranged to close when the current through the relay exceeds a predetermined value, said contacts being connected through a resistor and in parallel with the detectors so that when a detector operates, it will cause a current in excess of said predetermined value to flow through the coil closing said contacts which in turn will produce sufficient holding current in the relay to maintain the contacts in a closed condition and at the same time permit the actuated detector to continue to draw current. In this way, a detector erroneously actuated can be easily located.

3,668,677
ALARM SYSTEM FOR CONSISTOMETER
Kenneth O. Higgs, Port Neches, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,690
Int. Cl. G08b *21/00*
U.S. Cl. 340—236 **11 Claims**



An alarm system for indicating whether or not a valid signal is being recorded, as distinguished from spurious signals occurring outside of selected time intervals when valid signal information should normally be passed through a noise gate. The alarm circuit comprises an exclusive-OR circuit having its respective input terminals coupled to opposite sides of the noise gate for providing an alarm pulse at its output only when a spurious signal is applied to the input of the noise gate at times when it is not passed through the gate. The output of the exclusive-OR circuit is coupled to the set input of an alarm latch circuit comprising a bistable multivibrator for producing an output signal which is employed to activate an indicator. The output of the noise gate is also coupled to the reset input of the alarm latch circuit in order to reset the alarm circuit automatically when normal signal pulses are passed through the noise gate. It applies to consistometer apparatus of the type wherein the consistency of a stream of material such as grease is measured by measuring the deflection of a flexible resilient member located in the stream and rotated at a constant rate about an axis which is parallel to the direction of flow of the stream by measuring any time delay of the resilient member due to such deflection as compared to a rigid reference member rotated in synchronism with the resilient member. Means are provided for periodically detecting the resilient member and rigid reference member as they are rotated past respective magnetic sensors. Means are coupled to the respective magnetic sensors for generating respective electric pulses, the first of which has a leading edge corresponding to the time when the reference member crosses the center of the reference sensor, and the second of which has a leading edge corresponding to the time when the resilient detector member crosses the center of the detector sensor. The first pulse is supplied through a noise gate to the set input of an RS flip-flop circuit for initiating a third pulse and the second pulse is supplied to the reset input of the RS flip-flop for terminating the third pulse after a time duration corresponding to the interval between the respective leading edges of the first and second pulses. The noise gate is controlled by a latch circuit having its set and reset inputs coupled to means including the reference and detector sensors, respectively, for controlling the gate so that it passes pulses to the set input of the RS flip-flop only during selected time intervals when the rotating members are in the vicinity of their respective sensors.

3,668,678
BULB OUTAGE INDICATOR FOR MULTI-LAMP CIRCUITS
Philip J. Porter, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1970, Ser. No. 77,230
Int. Cl. B60q *1/38*
U.S. Cl. 340—251 **1 Claim**

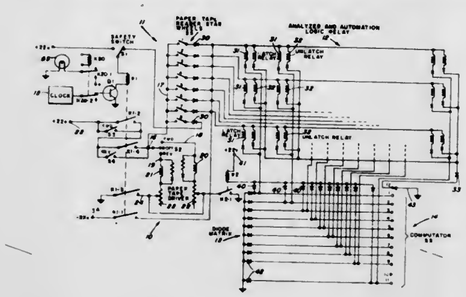


A bulb outage indicator in conjunction with a vehicle turn signal flasher circuit. The flasher circuit includes a relay periodically energized and deenergized to control a set of normally open contacts to supply current from a source to the turn signal lamps. The relay also includes a second set of normally open contacts in series with the source, a set of normally closed contacts, and an indicating lamp. The set of normally closed contacts is controlled by a current sensitive coil in series with the vehicle turn signal lamps. The current sensitive coil is sensitive to the total current supplied to the lamps when all the lamps are operating and is insensitive to the current supplied to the lamps when one or more of the lamps have failed. When one of the turn signal lamps has failed, the set of normally closed relay contacts remains closed and the two sets of normally open relay contacts periodically flash the remaining turn signal lamps and the indicator lamp to indicate a lamp failure.

3,668,679
AUTOMATED ANALYZER OF MACHINE OPERATION
Martin A. Vallent, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 18, 1971, Ser. No. 116,426
Int. Cl. G01m *15/00*
U.S. Cl. 340—267 R **7 Claims**

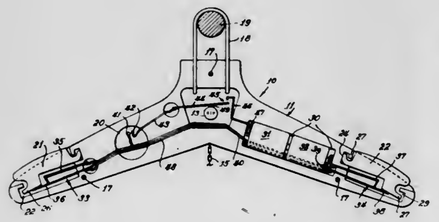
An automatic analyzer of the operation of machinery having sensors coupling various machine components to produce electrical signals which sensor output signals are applied to the analyzer in accordance with a program of sampling by a taped program controlling relay switches to compare the voltage amplitude of an electrical signal from the machine component or to compare the harmonics of noise from the

machine component with a predetermined reference to shut down the analyzer to further sampling and to indicate a fault



whenever the machine component signal is in excess of the reference until the fault is corrected.

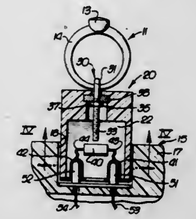
3,668,680
COAT HANGER HAVING THEFT ALARM
Donald P. Spalding, 102 Minges Circle, Battle Creek, Mich., and James G. Close, 3215 29th St., Lubbock, Tex.
Filed Nov. 9, 1970, Ser. No. 87,749
Int. Cl. G08b *13/14*, *21/00*
U.S. Cl. 340—280 **4 Claims**



A garment hanger having an alarm buzzer and actuating battery, and a key the insertion of which disables the alarm system and the removal of which places the system in actuatable condition. One or more switches are provided in the circuit adapted to be maintained in the open condition when a garment is supported by the hanger and to close the circuit to actuate the alarm when the garment is removed while the key is not disposed in the key socket of the hanger for instituting the disabling condition.

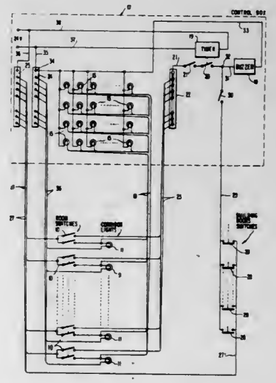
3,668,681
ANTITHEFT MERCHANDISE DISPLAY SYSTEM
Selwyn Kaplan, 7924 Cowan Ave., Los Angeles, Calif.
Filed Feb. 4, 1971, Ser. No. 112,600
Int. Cl. G08b *13/14*
U.S. Cl. 340—280 **10 Claims**

A multiplicity of pedestals, each individually locked to a ring or other article of merchandise, each receivable in a socket in a jewelry box or other display apparatus with a resistor in each of the pedestals. The resistors in a particular system desirably differ among themselves in value of their resistance. When the pedestals are all inserted in their sockets, their resistors form one leg of a Wheatstone bridge circuit to balance the bridge and illuminate a pilot lamp to indicate that the system is in operation. Removal of one of the pedestals, or the substitution of a pedestal having a resistor of incorrect value, will unbalance the Wheatstone bridge circuit and thereby extinguish the pilot lamp and illuminate a warning signal lamp, which, unless extinguished by switch means under the operator's control, remains lighted until a pedestal



having the proper resistance is replaced. The pedestal has a rectangular cross section for properly orienting the ring with respect to the jewelry box, and has a hook with an extended leg which is threaded into a fastener rotatable relative to the pedestal, to move the hook toward and away from the pedestal to releasably lock the ring to the pedestal.

3,668,682
NURSE CALL AND ALARM SYSTEM FOR NURSING HOMES AND THE LIKE
Charles L. Barbee, Hawley; Harlan D. Williams, and James R. Stracener, both of Abilene, all of Tex., assignors to Texas Oil Electric Co., Abilene, Tex.
Filed Nov. 20, 1970, Ser. No. 91,307
Int. Cl. H04n *7/00*
U.S. Cl. 340—286 R **3 Claims**

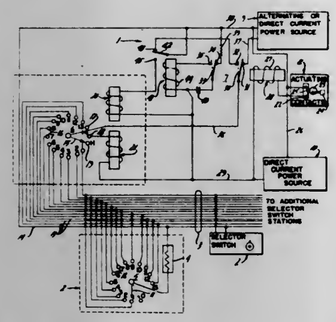


An integrated nurse call, fire alarm and building door protection system embodies a central control box and panel at the nurse station having individual room indicator lights and a common buzzer, responsive to individual patient-actuated room switches. Corridor lights are also provided at the doors of individual rooms. The system also embodies building exit door switches which respond to the opening of an exit door to sound the buzzer, thus preventing patients and others entering or leaving the building unnoticed. The buzzer can be silenced by a nurse at the central control panel but the indicator lights must be extinguished in the patients' rooms and cannot be extinguished from the beds. The fire alarm system features plural zones, each having fire sensing means, a common alarm bell, indicator lights for the zones on the central control panel, and individual testing switches for the zones.

3,668,683
PERIODIC TIMED SWITCHING APPARATUS

John W. Cremer, Elm Grove, and Norman A. Krohne, West Allis, both of Wis., assignors to Cremer Engineering Company, Inc., Milwaukee, Wis.

Filed Oct. 29, 1969, Ser. No. 872,097
Int. Cl. G08b 1/08
U.S. Cl. 340—309.4 9 Claims

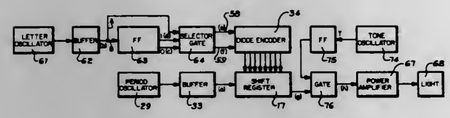


This disclosure relates to a motel call system for waking the room occupants at a requested time. Each room is connected to the central station by a single cable having one common return line and a signal line for each time. A rotary selector switch selectively connects a bell to one of the cable signal lines. The central station includes a rotary stepper relay switch selectively connecting the signal line to a power supply via a double pole, double throw control relay which is energized periodically via timed contacts. The control relay supplies power to the stepper relay and to a timing capacitor in one position. In the alternate position, the relay short circuits the stepping relay contacts and the room stations, and connects the capacitor to energize the stepping relay to move to the next time position. When the stepper relay has scanned all of its operating times, a reset contact is connected to energize the reset coil to reset the stepper relay.

3,668,684
PORTABLE MORSE CODE SIGNALING DEVICE

Donald W. Johnson, Linton; Ronald J. Stovall, Crane, and Larry A. Wheelock, Bloomfield, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Dec. 28, 1970, Ser. No. 101,693
Int. Cl. H04f 15/04
U.S. Cl. 340—321 R 3 Claims

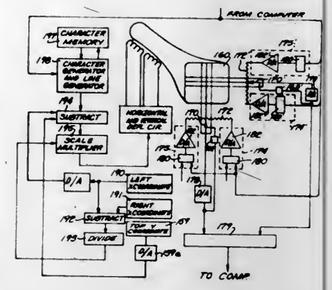


A signaling device for producing a light that flashes a Morse code signal. A light source is energized by a source of energy and circuit means are provided to energize the light source according to an output signal from a shift register comprised of a plurality of flip-flops. A diode encoder having a plurality of switches is provided to select flip-flops that are to be set which, upon clearing of the shift register, provides a Morse code signal. A first oscillator is provided to pulse the shift register and a second oscillator is provided to pulse the diode encoder for resetting the flip-flops.

3,668,685
COMPOSING METHOD AND APPARATUS

Robert M. Horvath, Parma, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Feb. 20, 1970, Ser. No. 16,626
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 6 Claims

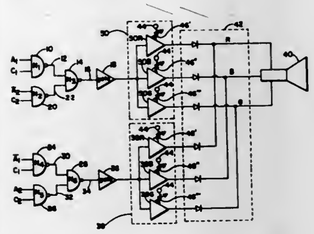


Composing method and apparatus for publications such as newspapers in which copy from various sources is entered into a computer in coded form f or use in controlling a phototypesetter to prepare a page copy. Certain copy including artwork which may be half tone or continuous tone is scanned to provide the numerical data necessary for controlling the phototypesetter while text material is first edited on an editing terminal and then stored with or without phototypesetting instructions in the computer. Each item to be included in the publication is identified by a heading and a layout department instructs the computer as to where the items are to appear. For this purpose the layout department has a layout terminal for displaying page areas with previously assigned sections outlined and identified and for entering coordinates of newly assigned sections into the computer. The terminal can display magnified portions of the page area. In reproducing continuous tone copy, dot characters are stored in a character memory and used to provide different half-tone screen sizes.

3,668,686
CONTROL APPARATUS

Garry G. Strohmeyer, Hacienda Heights, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 6, 1969, Ser. No. 831,185
Int. Cl. G08b 5/22
U.S. Cl. 340—324 A 1 Claim

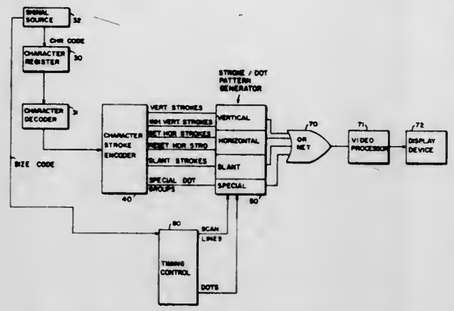


Information is displayed on a color cathode ray tube in a color that contrasts with a background color. This information may be optionally obliterated by causing the information and background to be displayed in the same color. Logic circuitry combines information and color data to control display color.

3,668,687
RASTER SCAN SYMBOL GENERATOR

David B. Hale, Claremont, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 17, 1969, Ser. No. 877,323
Int. Cl. H04n 3/00
U.S. Cl. 340—324 A 15 Claims

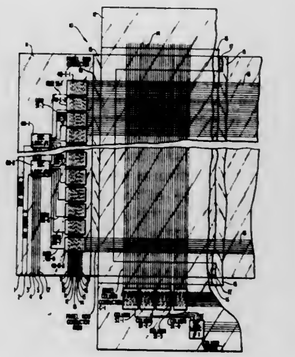


A raster scan character generator which forms different sized characters with dot pattern forming nets which are shared by characters employing common dot patterns. The generator includes a timing control which responds to a size code to selectively change the dot signal frequency as well as to perform a size conversion operation on the odd and even scan line signals. A character stroke or dot pattern encoder responds to a selected character to provide dot pattern or stroke identifier signals to a stroke/dot pattern generator. The dot pattern generator includes vertical, horizontal and slant dot pattern forming networks which respond to the dot pattern identifier stroke signals as well as to the scan line and dot signals to provide a signal pattern indicative of a selected character of a selected size.

3,668,688
GAS DISCHARGE DISPLAY AND MEMORY PANEL HAVING ADDRESSING AND INTERFACE CIRCUITS INTEGRAL THEREWITH

Larry J. Schmersal, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Dec. 29, 1969, Ser. No. 888,741
Int. Cl. H01j 17/48; H05b 41/44
U.S. Cl. 340—324 R 8 Claims

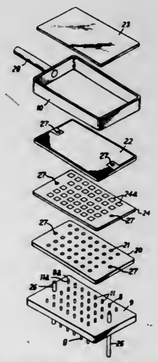


There is disclosed a method and apparatus for reducing the number of wires to gaseous discharge display/memory panels. Logic circuit circuits are combined with interface pulsing circuits which are electrically floated on the sustainer voltage for the panel and the interfacing and logic circuits are mounted integrally on panel support plate extensions. In addition to conductor arrays forming matrix cross points for locating a discrete discharge site, edge extension of support plates carry directly on the plates or on substrates bonded thereto additional conductor arrays to the interfacing and logic circuits which, in turn, are electrically connected to the matrix conductor arrays for supplying sustaining and discharge condition manipulating potentials thereto.

3,668,689
ALPHA-NUMERIC DISPLAY TUBES

James John Drage, The Island, Uxbridge, England

Filed Dec. 12, 1969, Ser. No. 884,486
Claims priority, application Great Britain, Dec. 12, 1968, 59,143/68
Int. Cl. G08b 5/22
U.S. Cl. 340—344 7 Claims

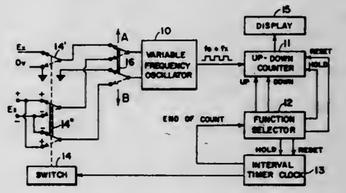


A display tube has a plurality of cathodes extending into an atmosphere of rare gas within a transparent envelope to form a visible matrix of cathode glow electrodes. Each cathode is surrounded by an anode plate with shaped apertures putting a compartment about each separate cathode. Electronic coding, decoding and buffering circuits are connected to form individually recognizable patterns from excitation of selected cathodes.

3,668,690
METHOD AND APPARATUS FOR ANALOG TO DIGITAL CONVERSION

Alfred Newman Ormond, 11969 East Rivera Road, Santa Fe Springs, Calif.

Filed June 8, 1970, Ser. No. 44,245
Int. Cl. H03k 13/02
U.S. Cl. 340—347 NT 7 Claims



An analog voltage signal is converted to a digital output reading by applying it to a variable frequency oscillator, the

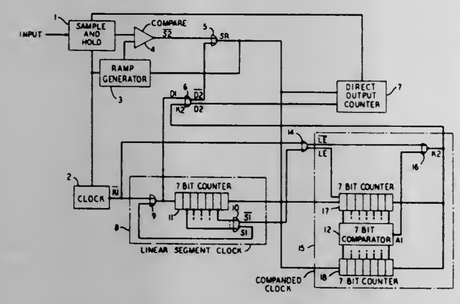
output frequency of which is proportional to the applied signal. Initially, the oscillator is set to oscillate at a given reference frequency for zero voltage input signals. The analog signal is then applied to the oscillator for a first given time interval. The output of the oscillator is counted by an up-down counter during this first period to provide a count proportional to the sum of the reference frequency and frequency resulting from the analog signal. The input applied to the oscillator is then changed to either zero volts or the reversed polarity of the analog signal during a second given time interval and the direction of the counter is changed to count the output of the oscillator in a down direction during this second time interval. The resulting counting total after the first and second time intervals registered in the counter is then directly proportional to the value of the analog signal, the count from the reference frequency having been subtracted out over the two time intervals. Any drift effects in the variable frequency oscillator are thus cancelled and a more accurate digital output reading corresponding to the analog signal results. Further features of the method and apparatus contemplate providing an output count in the form of a ratio of a number corresponding to the analog signal and a fixed number provided by a constant input signal so that a scaling factor is provided.

3,668,691

ANALOG TO DIGITAL ENCODER

John Robert Sergo, Jr., Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 12, 1970, Ser. No. 63,171
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **4 Claims**



An encoder employing level elimination companding for higher level input signals wherein a progressively increasing number of quantum levels are eliminated between selected levels with the number of levels eliminated increasing by one for each level selected during the companding phase.

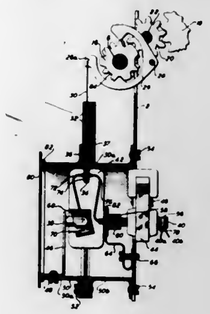
3,668,692

CONVERTING DEVICE

Gosta Roland Englund, Stockholm, and Richard Reuben Tice, Skarholmen, both of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed June 25, 1969, Ser. No. 836,398
Claims priority, application Sweden, June 28, 1968, 8847/68
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **9 Claims**

A device for converting the value in a mechanical register into electrical output signals. The value in the register is transferred to coded means, each one cooperating with a number of wires and set to an operative or inoperative position, (being able to cover or uncover apertures in a stationary disc). A rotating sensing finger, comprising optical fibers, scans the apertures in sequence and depending on the apertures being covered or exposed transmits light from a stationary light source to a stationary light sensitive device to generate electrical signals. These signals represent the value in the register.

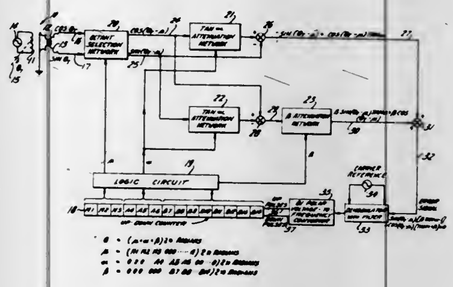


3,668,693

ANALOG-TO-DIGITAL CONVERTER

Bradley C. Eaton, Pompton Plains, and Marvin Masel, West Englewood, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed July 20, 1970, Ser. No. 56,603
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 SY **6 Claims**



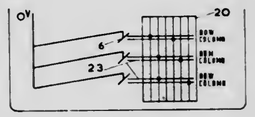
An analog-to-digital converter is provided for converting analog signals representing the sine and cosine of an angle into a 14 bit binary digital output signal from an up-down counter. Selected groups of bits from the counter control attenuation networks which generate an analog representation of the angular value to which the counter is set. The first group of bits, comprising the three most significant bits, controls an octant selection network. A second group of bits, comprising the next three most significant bits, controls two ladder attenuation networks which generate analog representations of the tangent of the portion of the angle in the counter represented by this group of bits. A third group of bits, comprising the remaining bits from the counter output, is employed to control a third ladder attenuation network which generates an analog representation of the portion of the angle in the counter represented by the third group of bits. The octant selection network and three ladder attenuation networks are arranged to modify the two-phase analog input signals to produce an a-c analog error signal representing the magnitude and sense of the angular deviation between the counter setting and the angle represented by the analog input signals. The AC error signal is multiplied by a carrier voltage in a phase-sensitive demodulator to produce a bipolar DC signal which is then applied to a bipolar voltage-to-frequency converter. The output of the voltage-to-frequency converter consists of two series of pulses which are employed to drive the up-down counter to a null setting wherein it produces a binary digital output signal representing the angle defined by the analog input signals.

3,668,694

ELECTRICAL CONTACT-MAKING KEYBOARDS

Haydn V. Purdy, Down Cottage, Down Place, Windsor, and Ronald C. McIntosh, 7 Avenue Road, St. Albans, both of England

Filed Aug. 10, 1970, Ser. No. 62,530
Int. Cl. G08c *9/08*
U.S. Cl. 340—365 **9 Claims**



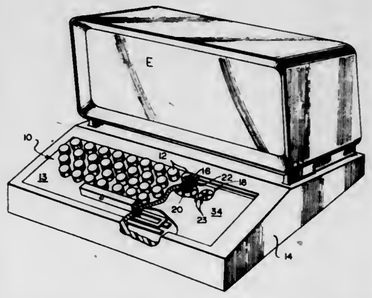
A series of laterally spaced brackets are secured together by a printed circuit board on which is mounted a parallel array of L-shaped wires having their short legs molded in a plastic block and their long legs disposed in slots in a plastic guide member. Plastic keys are pivoted at one end to a bar supported by the brackets, and have plugs at an intermediate position which are guided into predetermined slots in the guide member when the keys are depressed. Key circuits are molded into each key and, upon contact of the plug with the long leg of an L-shaped wire in the selected slot, connect two binary bit wires constituting the binary code of the depressed key to a binary code terminal strip.

3,668,695

KEYBOARD APPARATUS

William D. Gabor, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Original application Oct. 10, 1966, Ser. No. 598,558, now Patent No. 3,588,875, dated June 28, 1971, which is a continuation-in-part of application Ser. No. 496,031, Oct. 14, 1965, now abandoned. Divided and this application July 1, 1970, Ser. No. 60,200
Int. Cl. G08c *9/00*
U.S. Cl. 340—365 **5 Claims**



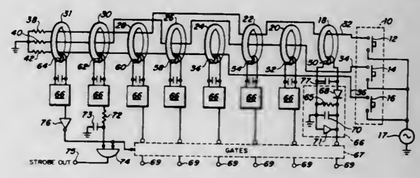
A keyboard encoder comprises a set of keys. Each key is in juxtaposition with one or more field-responsive elements associated with that key, the outputs of the field-responsive elements being conveyed to output terminals of the encoder. Actuation of a key alters the field to which the elements associated therewith respond. The number of elements associated with each key and the connections of these elements to the output terminals correspond to the output code for the character represented by the key. Consequently, the responses of the field-responsive elements to actuation of a key provide a directly encoded representation of the corresponding character at the output terminals. Also disclosed is an elongated switch bar in which contact is readily made even though the switch bar is depressed at either of the two ends thereof.

3,668,696

RING CORE KEYBOARD ENTRY DEVICE

Harry E. Brawley, Jr., Lexington, Mass., assignor to Data Electronics Corporation, Burlington, Mass.

Filed Sept. 28, 1970, Ser. No. 76,163
Int. Cl. G08c *1/00*; G11c *17/00*
U.S. Cl. 340—365 **5 Claims**



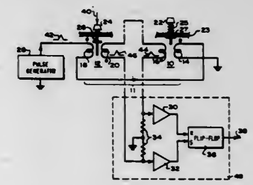
A keyboard entry device which employs a plurality of ring cores which are selectively threaded in a different combination by leads from a plurality of keys in a keyboard. The keys serve to connect the cores to an a-c power source, and each core is coupled to an output circuit which is resonant at about the frequency of the power source.

3,668,697

NONCONTACTING KEYBOARD

David S. Cochran, Palo Alto, and Glenn E. McGhee, Los Altos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 24, 1970, Ser. No. 74,949
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 **9 Claims**



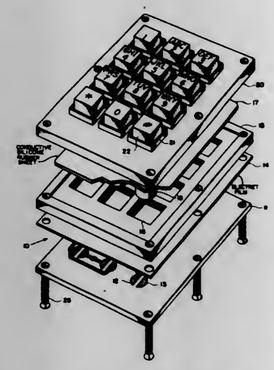
An array of keys is suspended over an array of transformers. The transformer secondaries are series connected together and the primaries are arranged in series connected pairs, the transformers of each pair being oppositely poled. A ferrite core is attached to each key. The primary pairs are electrically energized one at a time by a scanner, and the series connected secondaries are connected to a comparator. When a key is depressed the ferrite core on the key changes the mutual inductance between the primary and secondary of the corresponding transformer, causing the comparator to register a depressed key. An information output available from

the scanner and comparator tells which key is depressed, and the scanner halts when a key is depressed to prevent an erroneous output due to more than one simultaneously depressed key.

3,668,698
CAPACITIVE TRANSDUCER

Sayman Fadil Demirdjioghlou, Ottawa, and Robert Maarten Van Dyk, Dunrobin, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 17, 1970, Ser. No. 99,108
Int. Cl. G08c 9/02
U.S. Cl. 340—365 9 Claims

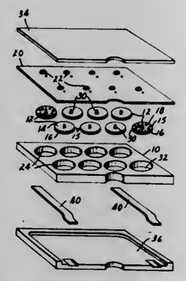


A capacitive transducer, for a contactless switch, which utilizes an electret sandwiched between two conductors, one of which is a conductive elastomer. Depression of the conductive elastomer produces a voltage pulse across the two conductors which is utilized to turn on a field-effect transistor, thus providing a low impedance path for the switch.

3,668,699
MAGNETIC VIEWER FOR DISKS HAVING MAGNETIC POLARITY ALIGNMENT

Peter J. Vogelgesang, Roseville, and John D. Holm, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 12, 1970, Ser. No. 88,589
Int. Cl. G08b 5/24, 5/26
U.S. Cl. 340—373 10 Claims

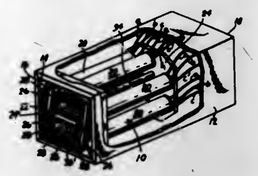


A device for providing a visual indication of data represented by magnetic polarity alignments at each of a plurality of disparate magnetized regions defining a fixed two-dimensional pattern. The device comprises a board containing a plurality of disks positioned in said fixed pattern, which disks are constrained to rotate with their flat surfaces in the plane of the fixed pattern. Each disk comprises magnetized magnetic material having a magnetic polarity alignment parallel to a given flat surface of the disk and a plurality of visible indicia positioned on the given flat surface of the disk in a predetermined order in relation to the polarity alignment. A mask is positioned on the board to cover the disks and contains apertures aligned over a predetermined portion of each disk position for providing a view of whichever ones of the visible indicia on the disks are rotatably aligned with the apertures.

3,668,700
SEGMENTAL READOUT DEVICE

Alfred Skrobisch, Huntington Station, N.Y., assignor to Allard Instrument Corp., Westbury L. I., N.Y.

Filed Nov. 14, 1969, Ser. No. 876,763
Int. Cl. G09f 11/02
U.S. Cl. 340—378 5 Claims

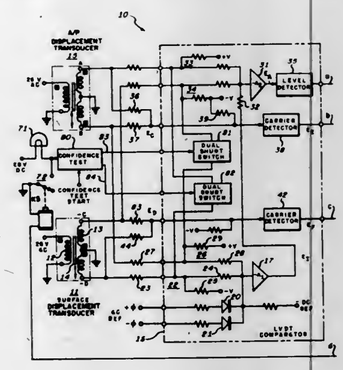


A segmental readout device of the digital or alphanumeric type comprising an assembly of a plurality of closely spaced elongated electromagnetic coils, each having a core of ferrous metal, and in which the display elements comprise cylindrical magnet segments each provided with a surface character to be displayed or exhibited, magnetization of each electromagnet being effective to polarize its core to effect a bodily movement and a rotation of its related magnet segment between character exhibiting and non-exhibiting positions. A specially structured arrangement is devised for providing return magnetic flux paths to eliminate strays in the magnetic interaction between the separate magnet segments and their cores that is the cause of false displays taking place.

3,668,701
MONITORING APPARATUS

Billy T. Mayberry, Scottsdale, and Edwin B. Sirrine, Phoenix, both of Ariz., assignors to Sperry Rand Corporation

Filed Aug. 20, 1970, Ser. No. 65,573
Int. Cl. G08b 19/00
U.S. Cl. 340—409 9 Claims

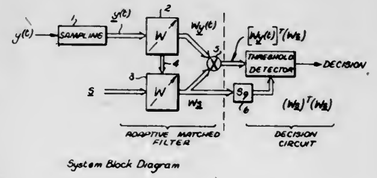


A monitoring circuit monitors separate transducers energized by an alternating current carrier for determining if a failure to track occurs and for detecting failure of components of the monitoring circuit. The amplitude and phase of the transducer outputs and a.c. and d.c. tracer signals normally combine to produce a tracking-within-tolerance signal. The transducers are individually monitored for carrier output indicative of their operativeness. A pair of relay driver amplifiers responsive to the tracking signal and each carrier signal are normally alternately energized to maintain relays in a normally energized condition. Tracking failure or failure of any component in the monitoring circuitry causes disruption of the alternate energization of the relay driver amplifiers causing one or more relays to deenergize and actuate an alarm. A test sequence provides for a system check by progressively short circuiting portions of a tracking monitoring input circuit to produce an alarm signal followed by an alarm off condition.

3,668,702
ADAPTIVE MATCHED FILTER FOR RADAR SIGNAL DETECTOR IN THE PRESENCE OF COLORED NOISE

James W. Jones, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,426
Int. Cl. G01s 9/02
U.S. Cl. 343—5 R 7 Claims



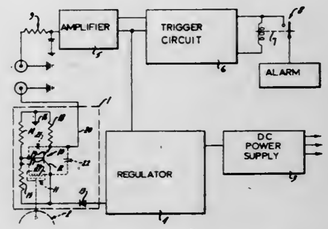
System Block Diagram

A system for electromagnetic signal detection having an adaptive circuit generating a time-varying matched filter characteristic whereby the statistical properties of additive noise appearing in a receiver output may be "tracked." The statistical behavior of "colored" noise is evaluated and the matched detection filter characteristics are modified accordingly, so that detector performance for signals in "colored" noise is comparable to that achieved by an optimum invariant matched filter for signal detection in "white" noise.

3,668,703
MOTION DETECTOR

Carl F. Klein, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 31, 1969, Ser. No. 796,945
Int. Cl. G01s 9/02; G08b 13/22
U.S. Cl. 343—5 PD 11 Claims



This disclosure relates to an intrusion detector having a microwave transmitter and receiver employing a single antenna. A transistor is interconnected through the inductive cavity of a coaxial line to define a Colpitts' oscillator for transmitting of energy of a given frequency into the area to be protected. The transistor is exposed to both the transmitted and the echo signal in the cavity. The non-linear characteristic of the transistor mixes the transmitted and the received signals and includes an output across an emitter resistor which is equal to the difference of the transmitter frequency and the echo frequency i.e., the Doppler frequency. The latter signal is amplified and actuates a Schmitt trigger circuit for controlling an alarm.

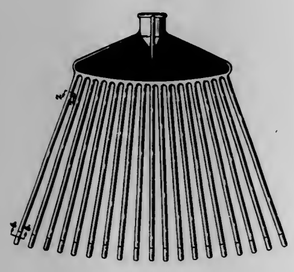
DESIGNS

JUNE 6, 1972

223,742
HAT
Sinclair L. D. Johnson, 5200 Kelway Road, Baltimore, Md. 21212
Filed Nov. 21, 1969, Ser. No. 20,211
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—257

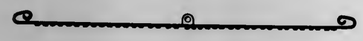


223,743
RAKE HEAD
Woodrow E. Vaughan and Gerald D. Reed, Independence, Mo., assignors to Modern Plastic Sales, Independence, Mo.
Filed Oct. 5, 1970, Ser. No. 25,327
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



223,744
FILE
James Alva Coon, West Sacramento, and Elwin Theobald, Fair Oaks, Calif.; said Theobald assignor to said Coon
Filed Dec. 18, 1970, Ser. No. 26,564
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—90

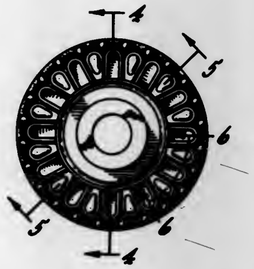




223,745
DOOR HANDLE AND LOCK PLATE UNIT
John R. Geriach, 1461 Solar Drive, Monterey Park, Calif. 91754
Filed July 29, 1970, Ser. No. 24,203
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170

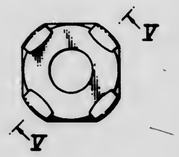


223,746
ESCUTCHEON PLATE
Martin R. Lambertz, New Hamburg, Ontario, Canada, assignor to Amerock Corporation, Rockford, Ill.
Continuation-in-part of design application Ser. No. 17,346, May 26, 1969. This application May 25, 1970, Ser. No. 23,119
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

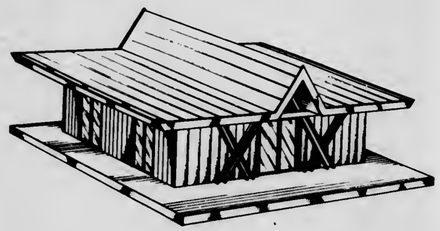


223,747
LOCKING NUT
Katsumi Shinjo, 8, 6-chome, Asahi Minamidori, Nishinariku, Osaka-shi, Japan
Filed June 26, 1970, Ser. No. 23,685
Term of patent 14 years
Int. Cl. D8—*10*
U.S. Cl. D8—274

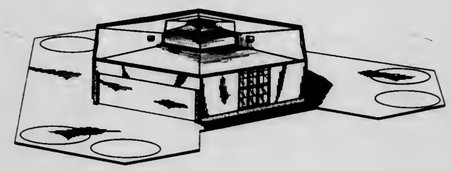




223,748
DWELLING STRUCTURE
Jack P. Gensemer, 50 Follen St., Cambridge, Mass. 02138
Filed Sept. 4, 1970, Ser. No. 24,832
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



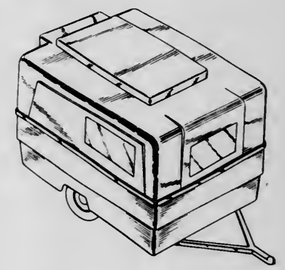
223,749
AIRCRAFT SERVICE STRUCTURE
Jack Jones, Wichita, Kans., assignor to Cessna Aircraft Company, Wichita, Kans.
Filed Oct. 30, 1970, Ser. No. 25,732
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,750
SEALING ELEMENT
William J. Berchou, Buffalo, and Freel F. Bryan, Williamsville, N.Y., assignors to Acme Highway Products Corporation, Buffalo, N.Y.
Filed Sept. 10, 1969, Ser. No. 19,098
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



223,751
CAMPER TRAILER
William J. Palumbo, Milwaukie, Oreg., assignor to Mel-Mar Industries, Inc., Milwaukie, Oreg.
Filed Jan. 8, 1971, Ser. No. 105,139
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



223,752
BUMPER
Paul B. Nunn, P.O. Box 19043, Oklahoma City, Okla. 73119
Filed June 29, 1970, Ser. No. 23,706
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



223,753
VEHICLE TIRE CARRIER ACTUATING LEVER
Bob J. Seals, 8324 NW. 33rd, Oklahoma City, Okla. 73123
Filed Mar. 20, 1970, Ser. No. 21,991
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6

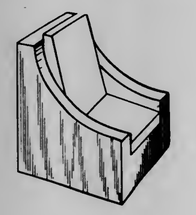
223,754
TONNEAU COVER FOR DUNE BUGGIES
Henry C. Arnoldy, 30417 J. Caris, and William C. Stanko, 30233 J. Caris, both of Roseville, Mich. 48066
Original design application Dec. 3, 1968, Ser. No. 14,760, now Patent No. 216,783, dated Mar. 10, 1970. Divided and this application Jan. 7, 1970, Ser. No. 20,789
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27



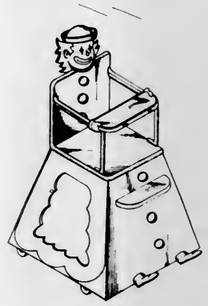
223,755
CAMPER FOR A PICK-UP TRUCK
Joseph R. McNamee, P.O. Box 253, Northport, Wash. 99157
Filed June 1, 1970, Ser. No. 23,248
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27



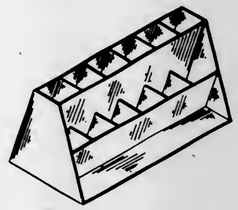
223,756
ARM CHAIR
Saul G. Steinhart, 21 Austin Road, Hamden, Conn. 06512
Filed Sept. 3, 1970, Ser. No. 24,824
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



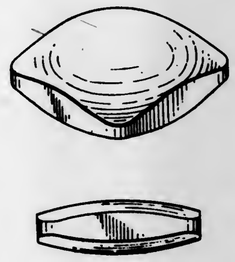
223,757
HIGH CHAIR
Paul S. Kinstley, Portland, Tex., assignor to Oro-Lanza Enterprises, Inc.
Filed Sept. 3, 1970, Ser. No. 24,826
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



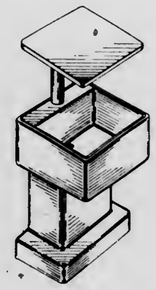
223,758
PIPETTE STORAGE RACK
David E. Berg, 3326 S. 78th St., Omaha, Nebr. 68124
Filed Oct. 15, 1970, Ser. No. 25,498
Term of patent 14 years
Int. Cl. D24—*02*; D6—*09*
U.S. Cl. D16—1



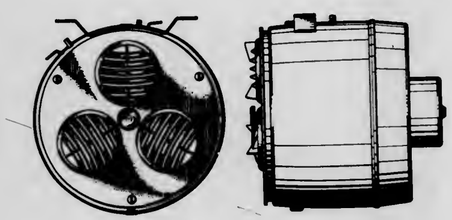
223,759
TABLET
Harold Thomas File, Gerrards Cross, England, assignor to Aspro-Nicholas Limited, London, England
Filed May 25, 1970, Ser. No. 23,125
Claims priority, application Great Britain Feb. 18, 1970
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D16—3



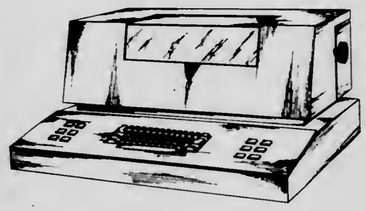
223,760
COMBINATION BABY BATH AND DRESSING STAND
Shirley Daniels Chestine, 3500 Gibson Bldg. 402, Unit 961, Detroit, Mich. 48201
Filed Oct. 28, 1970, Ser. No. 25,691
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52



223,761
AIR CONDITIONER FOR VEHICLES
Earnest H. Patrick, Fort Lauderdale, Fla.
Filed Apr. 22, 1969, Ser. No. 16,849
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



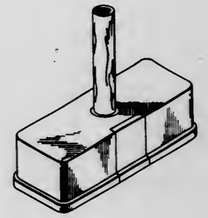
223,762
DATA PRINTER KEYBOARD CONSOLE
Loring C. Bixler, Vestal, Arnold M. Davis and Walter S. McCormick, Jr., Poughkeepsie, and Edward R. Wiener, Vistal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1970, Ser. No. 26,608
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



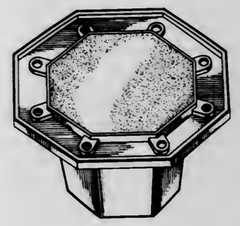
223,763
SWITCH
Yasuo Kodaira, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 11, 1970, Ser. No. 24,414
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



223,764
ENTERTAINMENT CENTER
DeWitt Y. Gorman, P.O. Box 23323, Houston, Tex. 77032
Filed Aug. 26, 1970, Ser. No. 24,699
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



223,765
TABLE WITH REVERSIBLE TOP OR SIMILAR ARTICLE
Charles M. O'Leary, 525 S. Irving Blvd., Los Angeles, Calif. 90005
Filed Oct. 27, 1969, Ser. No. 19,725
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



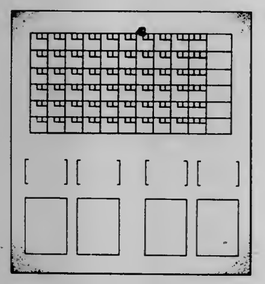
223,766
GOLF CLUB HEAD OR THE LIKE
Ted G. Houghtaling, 541 S. State Rte. 19, Fremont, Ohio 43420
Filed Mar. 13, 1970, Ser. No. 21,887
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



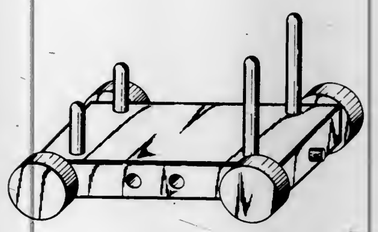
223,767
GOLF CLUB HEAD OR THE LIKE
Ted G. Houghtaling, 541 S. State Rte. 19, Fremont, Ohio 43420
Filed Mar. 16, 1970, Ser. No. 21,922
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



223,768
GAME BOARD
Robert E. Anti, 94 Federal St., Springfield, Mass. 01105
Filed Sept. 14, 1970, Ser. No. 24,206
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



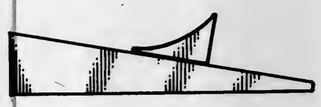
223,769
CHILD'S WHEELED TOY
Erkki Ruokonen, Helsinki, Finland, assignor to Asrikka-Koru, Helsinki, Finland
Filed Aug. 31, 1970, Ser. No. 24,776
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



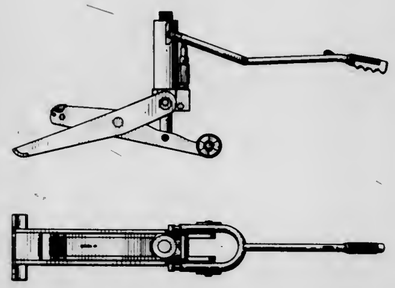
223,770
TOY AIRPLANE
Harold Goodman, 65 Kings Highway, Middletown, N.J. 07748
Filed Dec. 14, 1970, Ser. No. 26,483
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,771
COMBINATION VEHICLE LEVELING AND CHOCKING UNIT
Johnny Roney, Jr., 1626 Berkley Ave., Columbus, Ga. 31907
Filed Apr. 10, 1970, Ser. No. 22,373
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D41—1



223,772
FORK LIFT JACK
Roger L. Craft, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.
Filed July 15, 1970, Ser. No. 23,969
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1



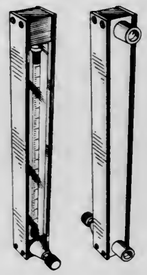
223,773
VACUUM CLEANER
Karl Hugo Lindstrom, Sollentuna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 3, 1971, Ser. No. 112,508
Claims priority, application Sweden Aug. 10, 1970
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—14



223,774
MOP WRINGER
Walter A. Swanson, 3615 Federal, Denver, Colo. 80211, and Michael E. De Souza, 5573 S. Washington, Littleton, Colo. 80120
Filed Feb. 6, 1970, Ser. No. 21,370
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—29



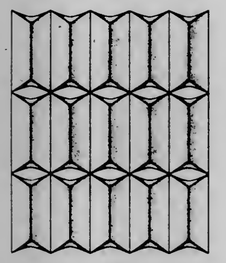
223,775
GLASS TUBE FLOWMETER
Harold W. Metzger, Warminster, Pa., assignor to Fischer & Porter Company, Warminster, Pa.
Filed Oct. 6, 1970, Ser. No. 25,351
Term of patent 14 years
Int. Cl. D10—*08*
U.S. Cl. D52—6



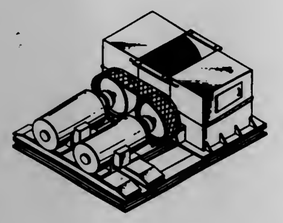
223,776
LIQUID LEVEL GAUGE OR SIMILAR ARTICLE
Donald G. Gruett, Manitowoc, Wis., assignor to Oil-Rite Corporation, Manitowoc, Wis.
Filed Feb. 8, 1971, Ser. No. 113,780
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



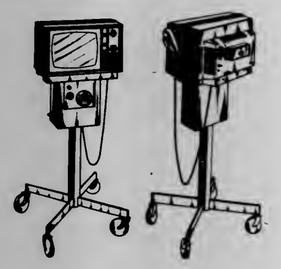
223,777
DECORATIVE GRILLE
Patrick L. Zampetti, Cranford, N.J., assignor to Construction Specialties, Inc., Cranford, N.J.
Filed Dec. 30, 1969, Ser. No. 20,698
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2



223,778
HAMMERMILL
Ernest F. Boger, 9018 37th SW., Seattle, Wash. 98126
Filed Oct. 14, 1970, Ser. No. 25,487
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



223,779
COMBINED MOBILE PEDESTAL MOUNT AND HOUSING FOR A COIN-OPERATED TELEVISION RECEIVER
Walter Leroy Abell, Jr., 6045 Round Hill Court, Columbus, Ga. 31904, and Harold C. Hogencamp, Rte. 2, Box 486, Smiths, Ala. 36867
Filed Aug. 31, 1970, Ser. No. 24,765
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4



223,780
MICRO FICHE READER
Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed July 23, 1970, Ser. No. 24,089
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



223,781
CYLINDRICAL DRINKING FOUNTAIN
Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.
Filed Nov. 30, 1970, Ser. No. 26,231
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D67—4



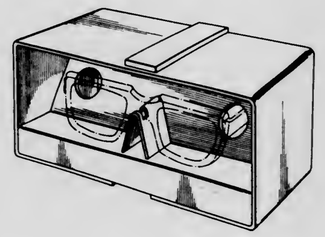
223,782
POLYGONAL DRINKING FOUNTAIN
Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.
Filed Nov. 30, 1970, Ser. No. 26,232
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D67—4



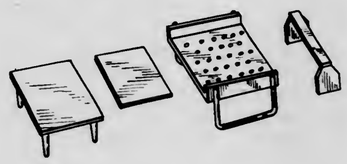
223,783
MOVEABLE SIGNAL LIGHT FOR STORE SALES
Robert M. Akers, Oklahoma City, Okla., assignor of a fractional part interest to Thomas Pickering
Filed Sept. 10, 1970, Ser. No. 24,924
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D72—1



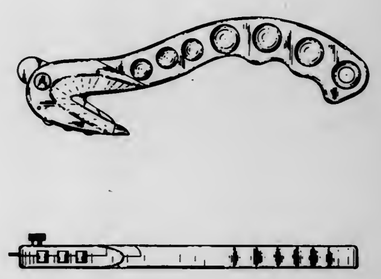
223,784
EYEGLASSES DISPLAY HOLDER
Gilbert Rios, Los Angeles, Calif., assignor to Superior Optical Company, Los Angeles, Calif.
Filed Dec. 9, 1970, Ser. No. 26,366
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



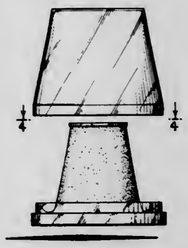
223,785
TRIPLEX BOARD USED IN PATHOLOGY
Joseph Navara, 2105 Walton St., Chicago, Ill. 60622
Filed Mar. 13, 1970, Ser. No. 21,885
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



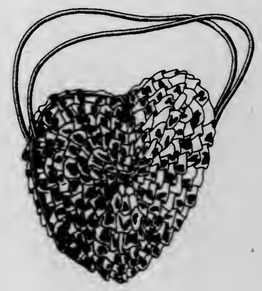
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TAPE AND BANDAGE CUTTER
Cecil E. Phillips and Fay M. Bennett, Eugene, Oreg., assignors to Saf-Pla Corporation, Eugene, Oreg.
Filed Dec. 31, 1970, Ser. No. 26,717
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—12



223,787
FALSE EYELASH HOLDER
David Seidler, 69—10 108th St., Forest Hills, N.Y. 11375
Filed June 1, 1970, Ser. No. 23,224
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



223,788
POCKETBOOK
Juliana M. Corridon, 7805 Takoma Ave., Takoma Park, Md. 20012
Filed Nov. 15, 1968, Ser. No. 14,477
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3



223,789
SHADE UMBRELLA
Hercules Economou, 812 NW. 8th Ave., Fort Lauderdale, Fla. 33311
Filed Sept. 1, 1970, Ser. No. 24,802
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D68—3



223,790
MOTORCYCLE
Einosuke Miyachi, Tokyo, and Norio Aratani, Kawasaki-shi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 22, 1970, Ser. No. 21,034
Claims priority, application Japan Aug. 11, 1969
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—8



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TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JUNE, 1972

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Aglaghanian, Jacques; and Drevet, Jean. Binding machine. 3,667,076, Cl. 11-1.00a
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Amland, Ronald D.; and Castle, Robert L., to Gar Honing Service, Inc. Tapered bore probe. 3,667,284, Cl. 73-37.900

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Daniel, William H. Apparatus for collecting oil from the surface of a body of water. 3,667,610, Cl. 210-242.000
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Fenton, Donald M., to Union Oil Company of California. Cyclic hydrocarboxylation process for production of straight-chain acids, anhydrides or esters. 3,668,249, Cl. 260-546.

Fenton, Francis Michael, to Bell Telephone Laboratories, Incorporated: Key telephone system link switching network. 3,668,289, Cl. 179-1.0cn

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Fioravanti, Jean; Carriere, Robert Lucien; Thibault, Paul; and Fioravanti, Alain J. F. R. Devices for cutting a channel in a layer of ice, and an ice-breaker ship equipped with said devices. 3,667,416, Cl. 114-42.000

Firestone, Jerome, to Saxton Products, Inc. Telephone adapter. 3,668,324, Cl. 179-1.0pc

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Fischer, Karl. Regulator. 3,668,593, Cl. 337-319.000

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Fisher, Robert C. Locking seat belt retractor. 3,667,698, Cl. 242-107.400

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Flanagan, William H., to Nexus, Inc. Lock-in electrical jack assembly. 3,668,610, Cl. 339-74.00r

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Flesch, Keith E., to Eckrich, Peter, & Sons, Inc. Weight controlled slicing system including gross error detecting means. 3,667,520, Cl. 146-94.00r

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Forman, Harold M. Tear string for shrink film packages. 3,668,061, Cl. 161-175.000

Forschirm, Alex S.; and Trepasso, Louis E., to Celanese Corporation. Anti-soiling polyester textile material. 3,668,000, Cl. 117-138.8

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Frankenfeld, John W.; Karel, Marcus; and Labuza, Theodore P., to Esso Research and Engineering Company. Baked flour compositions containing aliphatic diols. 3,667,965, Cl. 99-90.00p

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Franz, Thomas C., to United Aircraft Corporation. Fuel cell system with pneumatic fuel flow control. 3,668,013, Cl. 136-86.00b

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Freelander, Israel Robert. Jack-in-the box including box with integral inner cylindrical wall. 3,667,155, Cl. 46-146.

Freiberger, Ronald D.; and Woolley, James L., to General Motors Corporation. Heater blower motor delay energizing means. 3,668,497, Cl. 318-471.000

French, William H.; and Ossanna, Oliver A., to Ashland Oil, Inc. Ultraviolet light bleaching of carboxylic acid esters and epoxy compounds. 3,668,091, Cl. 204-158.00r

French, William H.; and Ossanna, Oliver A., to Ashland Oil, Inc. Bleaching of carboxylic acid esters and/or epoxy compounds employing ultraviolet light. 3,668,092, Cl. 204-158.000

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Fritkin, George A., to Tel-Tech Corporation. Frequency modulation system for transmitting binary information. 3,668,562, Cl. 332-9.

Fritsch, Rudolf Paul. Device for the plastication of powdery plastic materials. 3,667,733, Cl. 259-6.000

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Frost, Lincoln J.; and Stadler, Arnd J., to Continental Can Company, Inc. Electrophoretic coating of metal substrates using elevated pressures. 3,668,100, Cl. 204-181.000

Fry, Millard E.; and Bremer, Robert D., to General Motors Corporation. Circuit arrangement for accelerated continuous cleaning of self cleaning oven coatings. 3,668,371, Cl. 219-413.000

Fuchs, Francis J., Jr., to Western Electric Company, Incorporated. Apparatus and method for continuous material feeding and deformation. 3,667,267, Cl. 72-60.

Fuchs, Otto, to Dynamit Nobel AG. Process for the manufacture of open-pore poly- vinyl chloride foams having hydrophilic qualities which are capable of a reversible absorption and yielding of moisture. 3,667,997, Cl. 117-98.

Fuhrmann, Robert; Pisanchyn, John; and Koff, Fred William, to Allied Chemical Corporation. Beta hydroxyethoxy phenyl isopropylidene benzoic acid and ester derivatives method of preparation and polymers of said compounds. 3,668,182, Cl. 260-47.00c

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Fujimoto, Kentaro: *See—*
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Godard, Pierre, to Societe des Accumulateurs Fixes et de Fraction (Societe Anonyme). System for controlled charging of stand-by storage batteries that supply a load on failure of power supply to the load from power mains. 3,668,418, Cl. 307-66.

Goetz, Frederick J., to Allied Chemical Corporation. Fluorescent polycarbonamides. 3,668,189, Cl. 260-78.00r

Goldberg, A. George, to Selig, I. I. & Sons, Ltd. Method for crushing metal turnings. 3,667,691, Cl. 241-24.000

Goldin, Morris; and Price, Leonard W., to United States of America, Army, mesne. Rising block rifle and feed mechanism therefor. 3,667,147, Cl. 42-15.000

Goloviznin, Vladimir Ilich: *See—*
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Gomi, Shinpei: *See—*
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Goodkind, Karen B.; Hamilton, Brett B.; Larson, Ake L.; and Whittington, Jimmie L., to Mattel, Inc. Sound reproducing educational toy bank. 3,667,136, Cl. 35-8.00a

Goodloe, Alfred H., deceased0 (by Goodloe, Edith Jamison; executrix). Compression pad of knitted elastic. 3,667,142, Cl. 38-66.000

Goodloe, Edith Jamison: *See—*
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Goodrich, B. F., Company, The: *See—*
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Goossens, Urbaan Paul Marguerite, to U.S. Philips Corporation. Gas and/or vapour discharge lamp having a U-shaped discharge tube. 3,668,390, Cl. 313-220.000

Gordon, John Edward. Cable feed device. 3,667,552, Cl. 173-147.

Goslin, Gerald E.; Herschberger, Russell R.; and Mach, George J., to General Motors Corporation. Adjustable rear view mirror assembly. 3,667,718, Cl. 248-487.000

Gottauf, Georg, to Stahlgruber Otto Gruber & Company. Spike for motor vehicle tires. 3,667,528, Cl. 152-210.000

Gough, John Richard Cox; Meaden, Geoffrey William; and Price, Michael Stuart Thomas, to United Kingdom Atomic Energy Authoritiy. Manufacture of nuclear fuel elements. 3,668,284, Cl. 264-0.500

Grace, Richard C., to Environment/One Corporation. Pump storage grinder. 3,667,692, Cl. 241-36.

Grace, W. R., & Co.: *See—*
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Graf, Edwin H. Auxiliary carrier for portable boxes. 3,667,646, Cl. 220-85.00r

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Grain Processing Corporation: *See—*
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Grantham, Max Edward, to Tecalemit (Engineering) Limited. Chassis lubrication systems. 3,667,574, Cl. 184-7.00r

Grantham, Rodney E.; Malloy, John H.; and Warnock, Frederick E., to United States of America, Navy. Ordnance fuze encoding and decoding system. 3,667,392, Cl. 102-70.20r

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Gray, Claude W. Releasing and circulating overshot. 3,667,795, Cl. 294-86.170

Gray, John V. Portable tire breaker. 3,667,530, Cl. 157-1.260

Gray, Kenneth Russell: *See—*
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Great Salt Lake Minerals & Chemicals Corporation: *See—*
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Greeman Laboratories, Inc.: *See—*
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Green, Larry Q.; and Light, Larry L., to Du Pont de Nemours, E. I., and Company. Method for coating glass. 3,667,926, Cl. 65-60.000

Greenwood, William S., to H & G Industries, Inc. Cam lock device for telescoping tubing. 3,667,788, Cl. 287-58.0ct

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Griffin, William C., to United States of America, Navy. Method and apparatus for investigation of projectile flight. 3,667,847, Cl. 356-138.000

Griffith, Robert L.; and Oldham, Ira B., III, to International Business Machines Corporation. Error detection and correction system with statistically optimized data recovery. 3,668,631, Cl. 340-146.1ax

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Grodkiewicz, William H.; and Van Uitert, Le Grand G., to Bell Telephone Laboratories, Incorporated. Flux growth of rare earth fluorides. 3,667,921, Cl. 23-300.000

Groeber, David P.: *See—*
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Haag, Werner O.; and Whitehurst, Darrel Duayne, to Mobil Oil Corporation. Hydrogenation of unsaturated hydrocarbons using ion exchange resin containing zero-valent metal as catalyst. 3,668,271, Cl. 260-683.900

Haase, Elmer A. Mass air flow measuring means. 3,667,494, Cl. 137-100.000

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Hackney, Ralph H., to Hackney, J. A., & Sons, Inc. Combined truck body and wheeled rack and method of loading and unloading a van. 3,667,635, Cl. 214-515.000

Hada, Yukihiro, to Unitika Ltd., and Fujikeiki Kabushiki Kaisha. Device for checking whether each of running yarns is twisted at the standard turns per minute. 3,667,292, Cl. 73-160.

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Haggas, Robert H.; and Haggas, John S. Flexible colour printed laminate and method of making same. 3,667,983, Cl. 117-15.

Hagglund, John Martin. Device for scraping off and collection of medical refuse and for prevention of its spread. 3,667,079, Cl. 15-105.

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Harbeson, William D., to Ohmega Laboratories. Automatic gain control circuit. 3,668,556, Cl. 331-109.

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Hawthorne, John O.; and Mihelic, Edward L., to United States Steel Corporation. N-substituted 2-aminomethyl-2'-biphenyl- carboxylic acid and derivatives. 3,668,232, Cl. 260-471.00a

Hayasaka, Enakichi. Homopole-type AC generator. 3,668,447, Cl. 310-166.

Hayasaka, Enakichi. Homopole type AC generator. 3,668,448, Cl. 310-166.000

Hayes, Stanley I., Jr., to USM Corporation. Integral microporous article and process of making. 3,668,056, Cl. 161-159.000

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Hearne, Ian Keith. Hooks for use in fishing. 3,667,150, Cl. 43-44.600

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Hedler, Robert A., to Sylvania Electric Products, Inc. Opaque composition for forming a windowed web in a cathode ray tube screen structure. 3,667,986, Cl. 117-33.5cm

Hefferman, Hubert John; and Fontana, Charles L. Flying head on pantograph assembly with pressure responsive withdrawal. 3,668,666, Cl. 340-174.1

Heflinger, Lee O.: *See—*
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Heirich, William C. Wall paneling system. 3,667,183, Cl. 52-497.

Heitmann, Guenter, 1/2 to Metallgesellschaft Aktiengesellschaft, and 1/2 to Steel Company of Canada Limited, The. Rotary kiln reduction of iron oxides with pneumatic feeding of a portion of the charge. 3,667,933, Cl. 75-33.

Heitzman, James O., to Hughes Aircraft Company. Receiver timing and synchronization system. 3,668,315, Cl. 178-69.5

Heller, Kenneth G. Bonding machine. 3,668,047, Cl. 156-541.000

Hellwig, Helmut W., to United States of America, Army. Molecular frequency standard. 3,668,293, Cl. 13-31.000

Helmig, Richard W.; and Steinmetz, Floyd, to Rotographic Machinery Company, The. Loop stabilize web fed variable repeat cutter-creaser system. 3,667,352, Cl. 93-58.20r

Hemdal, Goran Anders Henrik, to Telefonaktiebolaget L M Ericsson. Arrangement for controlling devices transmitting digital pulses in a computer controlled telecommunication system. 3,668,330, Cl. 179-18.

Hemdal, Goran Anders Henrik, to Telefonaktiebolaget L M Ericsson. Method of controlling jumps to different programs in a computer working in real time. 3,668,646, Cl. 340-172.5

Hendel, Hans W.; Chu, Tsu-Kai; and Simonen, Thomas C., to United States of America, Atomic Energy Commission. Dynamic stabilizer for plasma instabilities to improve plasma confinement and to increase plasma density. 3,668,066, Cl. 176-5.000

Henderson, John Keller. Directional drilling apparatus. 3,667,556, Cl. 175-73.

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Herbert, William C., Jr., to Herbert Products, Inc. Web drier and method of treating a web in continuous sheet printing machines. 3,667,132, Cl. 34-18.000

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Higgs, Kenneth O., to Texaco, Inc. Alarm system for consistometer. 3,668,677, Cl. 340-236.

Hilaire, Marcel Marius Adrien, to Societe Forezienne de Moulinage et Texturation. Process for obtaining a sponge-textured thread from natural silk thread. 3,667,208, Cl. 57-156.

Hill, George L. Collar salvaging device. 3,667,106, Cl. 29-2.

Hill, Lewis J. Key operated lock. 3,667,262, Cl. 70-384.

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Hobbs, Marcus E.; and Bonnet, Carroll W., to Bethlehem Steel Corporation. Apparatus for improved payout of wire strand from strand packages. 3,667,699, Cl. 242-129.000

Hobbs, Oliver K. Continuous corrugated belt with wire screen. 3,667,599, Cl. 209-12.000

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Hofmann, Detlef. Control transmission. 3,667,303, Cl. 74-190.

Hogg, Walter R., to Coulter Electronics, Inc. Pulse analyzing apparatus. 3,668,531, Cl. 328-150.000

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Hohn, Richard E., to Cincinnati Milacron Inc. Method and apparatus for estimating the force generated by a motor as a function of an external load imposed thereon. 3,667,290, Cl. 73-133.000

Hokanson, Lyle W.; and McBean, John W., to Heath & Sherwood Drilling Limited. Drill rod structure. 3,667,784, Cl. 285-173.000

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Hope, Frederick John Charles, to Self Energising Disc Brakes Limited. Anti jack-knifing coupling device. 3,667,778, Cl. 280-432.

Hopkins, William C. N. Releasable connector, particularly for tilt cab vehicles. 3,667,566, Cl. 180-89.

Horbach, Stephen, to Electronic Associates Inc. Transformer-inductor frame and kit. 3,668,586, Cl. 336-210.000

Horiki, Seinosuke, to Nagoya Yukagaku-Kogyo Kabushiki Kaisha. Masking in surface treatment of articles. 3,667,988, Cl. 117-38.000

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Hosokawa, Kenjiro; Matsui, Masao; Endo, Norio; Ichikawa, Michio; and Tokura, Susumu, to Kanegafuchi Boseki Kabushiki Kaisha. Fibrous structure having during elasticity and crease-resistivity and its manufacture. 3,668,001, Cl. 117-139.400

Hotta, Yasue: *See—*
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Hubble, William Schenck; Woods, Kenneth K.; and Tramuta, Salvatore S., to General Electric Company. Modular combined moisture separator and reheater. 3,667,430, Cl. 122-483.000

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Hunderford, Roy E. Protective footgear for karate participants. 3,667,140, Cl. 36-4.000

Hundstad, Richard L., to Westinghouse Electric Corporation. Contact structures for vacuum-type circuit interrupters having radially outwardley-extending spokes. 3,667,871, Cl. 200-144.

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Iijima, Taizo; Yamazaki, Issei; Mori, Shunji; Genchi, Hiroshi; and Katsuragi, Sumio, deceased0 (by Katsuragi, Kaoru; heiress), 1/2 each to Kogyo Gijutsuin, and Tokyo Shibaura Denki Kabushiki Kaisha. Pattern processing systems. 3,668,638, Cl. 340-146.30h

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Irie, Kouhei; Kobayashi, Misao; and Shimamura, Masaru, to Kabushiki Kaisha Meidensha. Explosively actuated ground interrupting device. 3,668,458, Cl. 313-325.000

Irie, Namio, to Nissan Motor Company, Limited. Hydraulic control system for automatic transmission. 3,667,323, Cl. 74-752.00c

Irie, Tadasu; and Doi, Kaname, to Sumitomo Electric Industries, Ltd. Hydraulic pressure actuated pressing device for disc brake. 3,667,576, Cl. 188-345.000

Isaac, Anthony Leonard, to Thorn Electronics Limited. Lighting control apparatus with a signal switching matrix. 3,668,467, Cl. 315-292.000

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Itano, Kohei; Nakano, Masashi; and Hashimoto, Mitsuru, to Keuffel & Esser Company. Tribromomethyl sulfonyl pyridazine or phthalazine photoactivators. 3,667,954, Cl. 96-90.000

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Ito, Shin; Kubo, Seitoku; and Mori, Takakazu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic shift control system for an automatic transmission for vehicles. 3,667,325, Cl. 74-866.000

Ito, Susumu: *See—*
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Iwano, Haruhiko: *See—*
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Jamison, Joel D., to Hercules Incorporated. Certain 2-benzoxazolinone and 2- benzothiazolinone derivatives of O, O-dialkyl S- (2-haloethyl)phosphorothioates and dithioates. 3,668,213, Cl. 260-304.000

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Jasinsky, Victor; and Upfold, Ambrose T., to Polymer Corporation Limited. Flare stack. 3,667,408, Cl. 110-119.000

Jaszka, Daniel J., to Hooker Chemical Corporation. Chemical production of chlorine. 3,667,912, Cl. 23-219.000

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Jenness, Raymond C., to Allis-Chalmers Manufacturing Company. Thrust bearing and mounting arrangement therefor. 3,667,819, Cl. 308-135.

Jennings, George H. Continuous production of aluminium sulphate. 3,667,905, Cl. 23-123.000

Jerit, John, to Brand Insulations, Inc. Self-locking prefabricated panels. 3,667,187, Cl. 52-582.

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Jocteur, Robert, to Cable de Lyon Alsacienne. Corrugated metal tube for an external conductor or sheath of an electric cable. 3,667,506, Cl. 138-156.

Joens, Allan D.; Johnson, Robert W.; and Riggle, Michael. Remote alarm system. 3,668,675, Cl. 340-224.

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Johnson, Alfred D., to Sylvania Electric Products, Inc. Cathode ray tube faceplate having diverse optical means therein. 3,668,387, Cl. 313-92.00r

Johnson, Charles H., to United States of America, Navy. Low frequency blocking oscillator. 3,668,557, Cl. 331-112.000

Johnson, Donald W.; Stovall, Ronald J.; and Wheelock, Larry A., to United States of America, Navy. Portable Morse code signaling device. 3,668,684, Cl. 340-321.00r

Johnson, Howard R., to Kelsey-Hayes Company. Electromagnetic device withcast magnetic path. 3,668,585, Cl. 336-83.000

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Johnson Service Company: *See—*
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Johnston, Norris; and Latker, Mark, 1/5 each to Clark, Albert M. Manning, John C., and Troster, John G. Apparatus for the dry separation of granular materials. 3,667,601, Cl. 209-466.000

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Mandineau, Daniel Paul Henri; Mourey, Michele Yvonne Christiane; Pizzini, Georges Philippe Henri; and Poulain, Jacques Constant, to Ecole Nationale Superieure des Mines de Paris, Societe Nationale d'Etude et de Construction de Moteurs d'Aviation S.N.E.C.M.A. Tungsten boride-containing articles and production thereof. 3,668,017, Cl. 148-6.300

Mann, Arthur S. Camera including sequential exposure apparatus for a film plate. 3,667,364, Cl. 95-37.000

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Marilleau, Jacques, to Commissariat a l'Energie Atomique. Device for producing rectangular voltage pulses of very small width between two outputs. 3,668,416, Cl. 307-106.000

Marino, Francis C.; and Wolf, Edgar, to Digitronics Corporation. Magnetic head with write gap wider than tape and read gap narrower than tape. 3,668,669, Cl. 340-174.1

Markowitz, Ivan N.; and Bower, Robert G., to Honeywell Information Systems Inc. Single revolution crank system. 3,668,496, Cl. 318-466.000

Marsan, Arthur E. Post-surgical drainage pouch. 3,667,469, Cl. 128-283.000

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Rapp, Theodore Clyde, to Du Pont de Nemours, E. I., and Company. Emulsions of water in halogenated solvents which contain fluorinated oil and water repellents. 3,668,163, Cl. 260-28.50d

Raskin, Jerome S. Communication system having means for causing a distress signal. 3,668,526, Cl. 325-64.000

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Reinfeld, Nyles V. Control apparatus for injection molding press. 3,667,884, Cl. 425-149.000

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Ren, Chung-Li; and Wang, Han-Chiu, to Bell Telephone Laboratories, Incorporated. Waveguide channel diplexer and mode transducer. 3,668,564, Cl. 333-6.000

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Riemhofer, Franz; Dittmann, Walter; Hornung, Karl-Heinz; and Schutze, Ernst-Christian, to Chemische Werke Huels A.G. Coating compositions comprising a polyester from 1,4-bis(hydroxymethyl)cyclohexane. 3,668,275, Cl. 260-850.000

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Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Aromatic acid chloride process. 3,668,247, Cl. 260-544.00m

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Rooks, John C., to Schjeldahl, G. T., Company. Sequentially addressable alpha-numeric gas tube display device. 3,668,642, Cl. 340-168.

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Ross, Donald Alexander, to RCA Corporation. Method of and apparatus for reproducing a colored image by electrophotographic means. 3,667,841, Cl. 355-4.000

Ross, Donald H., to Super Tire Engineering Company. Industrial tire mold. 3,667,882, Cl. 425-117.000

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Schaedler, Raymond J.; and Amtsberg, Lester A., to Chicago Pneumatic Tool Company. Air shut-off torque responsive control valve unit for pneumatically powered tools. 3,667,345, Cl. 91-59.
Schaeffer, William D., to Union Oil Company of California. Oxidation of olefins. 3,668,257, Cl. 260-604.0ac
Schappell, Frederick G., to Hercules Incorporated. 1,3,3-Trimethylbis(α-r-butylperoxyisopropyl) -1-phenylindane. 3,668,259, Cl. 260-610.00r
Scheid, James E., to United States of America, Navy. Miniaturized tape recorder. 3,667,762, Cl. 274-4.00d
Scheide, Juergen, to Farbenfabriken Bayer Aktiengesellschaft. Process for preserving meat. 3,667,970, Cl. 99-169.
Scheiter, Milton H., to General Motors Corporation. Roller traction drive mechanism. 3,667,319, Cl. 74-665.00k
Schenck, William G.; and Stark, Earl T. Exercise chair. 3,667,453, Cl. 128-24.00r
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Schlecht, Karl. Dual cylinder-concrete pump. 3,667,869, Cl. 417-346.000
Schletzbaum, John Wayne; and Rodeghiero, Reno Antonio, to Deere & Company. Pressure-modulated hydraulic control valve. 3,667,496, Cl. 137-116.300
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Schmersal, Larry J., to Owens-Illinois, Inc. Gas discharge display and memory panel having addressing and interface circuits integral therewith. 3,668,688, Cl. 340-324.00r
Schmidt, Bernard H., Jr., to Motorola, Inc. Complementary metal oxide semiconductor exclusive or gate. 3,668,425, Cl. 307-216.000
Schmidt, Richard, to United States of America, Navy. Method of making a beryllium titanium composite. 3,667,108, Cl. 29-480.000
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Schneider, Klaus, to Bosch, Robert, G.m.b.H. Electromagnetic detent means for sliding spools of directional control valves. 3,667,723, Cl. 251-68.000
Schnell, Gerhard, to Bosch, Robert, G.m.b.H. Transporting apparatus. 3,667,564, Cl. 180-79.100
Schnepel, Lawrence S. Torque release adapter for power-operated tools. 3,667,250, Cl. 64-29.000
Schoenbeck, Delbert L.; and Kincaid, Reece, to Richardson Chemical Cleaning Service, Inc. Integrated chemical cleaning apparatus. 3,667,487, Cl. 134-108.
Schoenlaub, Robert A., to Edward Orton, Jr., Ceramic Foundation, The. Apparatus for thermal analysis. 3,667,294, Cl. 73-190.00r
Schrader, Edward Robert, to RCA Corporation. Method of energizing fully persistent, high field, high homogeneity magnets. 3,668,581, Cl. 335-216.
Schrewelius, Nils Gustav, to Aktiebolaget Kanthal. Electrical resistance element. 3,668,599, Cl. 338-289.
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Schroeder, Peter, to Weber, Paul AG. Apparatus for keeping a state of tension constant on a material web which runs between successive pairs of driving rollers. 3,667,664, Cl. 226-30.
Schroeder, Theodore C., to Westinghouse Air Brake Company. Lightweight electromagnetic relay. 3,668,578, Cl. 335-202.000
Schuberth, Christian; and Steigerwald, Wolf-Erhard. Layer voltage divider with additional impedances. 3,668,600, Cl. 338-320.000
Schuler, Hansjorg; and Dopslaff, Hartmut, to Dopslaff, Julius, KG. Proportioning device, especially for water treatment systems. 3,667,495, Cl. 137-101.21
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Sessler, Gerhard Martin; Wallace, Robert Lee, Jr.; and West, James Edward, to Bell Telephone Laboratories, Incorporated. Touch-sensitive switch employing electret foil. 3,668,417, Cl. 307-113.000
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Setina, John R. Automobile partition apparatus having horizontal sliding window portion mounted on guard plate. 3,667,801, Cl. 296-24.00r
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Sewell, Curtis O. Door threshold and fastener assembly. 3,667,192, Cl. 52-213.
Sexton, Paul A. Hand type fish scaling device. 3,667,086, Cl. 17-66.
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Shapiro, Alan R., to Bio-Design, Incorporated. Instrument for testing three-wire electrical outlets. 3,668,518, Cl. 324-51.000
Shapiro, Justin J. Device for deriving limited reciprocating motion from rotation motion. 3,667,651, Cl. 222-63.000
Sharpe, James F., to Acme Highway Products Corporation. Strip inserting apparatus. 3,667,105, Cl. 29-235.
Shea, Frank Joseph. Portable security vault. 3,667,406, Cl. 109-57.000
Shea, Frederick L.; Joo, Louis A.; and Martin, Thomas W. Pitch treatment means. 3,668,110, Cl. 208-45.000
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Shepard, Leonard F., to ILC Industries, Inc. Ventilation system for inflatable pressure garments. 3,667,460, Cl. 128-142.5
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Snyder, Stephen L. Automatic control system for parachutes. 3,667,705, Cl. 244-150.000

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Zimmerman, Robert L.; Schweitzer, Bernard P.; Garvin, Hugh L.; Pedinoff, Melvin E.; and Waldner, Michael, to Hughes Aircraft Company. Acoustic delay line memory system. 3,668,662, Cl. 340-173.
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Zoppi, Bruno, to Fabbrica Italiana Magneti Marelli S.p.A. Servo distributors in pneumatic braking systems of vehicles with trailer. 3,667,815, Cl. 303-7.
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Wright, Allen C., to Haws Drinking Fountain Co. Cylindrical drinking fountain. 223,781, 6-6-72, Cl. D67—4.
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Yasuo, Kodiara, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Switch. 223,763, 6-6-72, Cl. D26—13.
Zampetti, Patrick L., to Construction Specialties, Inc. Decorative grille. 223,777, 6-6-72, Cl. D54—2.

CLASSIFICATION OF PATENTS

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145R 3,668,090

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244 3,667,611
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10.5D 3,667,625
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569 3,667,658
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96.5 3,667,662
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CLASS 229
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15 3,667,668
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60MT 3,667,670
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412 3,667,682
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553.3 3,667,687
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106 3,668,381
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24 3,667,691
36 3,667,692
99 3,667,693
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48.2 3,667,717
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8.5P 3,668,129
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2.5FP 3,668,155
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29.6T 3,668,165
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343.2R 3,668,222
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345.3 3,668,224
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535R 3,668,243
543R 3,668,248
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570R 3,668,253
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586R 3,668,255
593P 3,668,256
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50A 3,667,741
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40R 3,667,744
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.5 3,668,283
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24 3,667,747
33R 3,667,745
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53 3,667,752
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8P 3,667,754
70.1 3,667,755
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106.5C 3,667,758
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157R 3,667,760
186A 3,667,761
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4D 3,667,762
9R 3,667,763
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22 3,667,766
95 3,667,767
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CLASS 280
11.35M 3,667,771
11.35T 3,667,769
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30 3,667,773
43.17 3,667,774
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150R 3,667,776
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473 3,667,779
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58CT 3,667,788
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CLASS 302
59 3,667,814
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6C 3,667,810
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8.2 3,668,442
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96 3,668,389
109 3,668,455
220 3,668,390
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325 3,668,458
346 3,668,457
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3.5 3,668,459
3,668,460
3,668,461
3,668,462
3,668,464
27GD 3,668,463
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169TV 3,668,466
292 3,668,467
323 3,668,468
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18R 3,668,472
28R 3,668,474
33SC 3,668,483

61.5 3,668,475
100 3,668,477
101DH 3,668,476
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141S 3,668,479
234R 3,668,473
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234 3,668,480
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116 3,668,486
128 3,668,487
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305 3,668,491
314 3,668,492
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373 3,668,494
400 3,668,495
466 3,668,496
471 3,668,497
568 3,668,498
587 3,668,499
601 3,668,500
632 3,668,501
653 3,668,502
665 3,668,503
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64 3,668,504
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2 3,668,505
8C 3,668,506
11 3,668,507
18 3,668,508
3,668,509
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28 3,668,514
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8 3,668,510
22SC 3,668,515
43.5S 3,668,511
45 3,668,512
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28R 3,668,516
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106 3,668,520
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158D 3,668,523
158T 3,668,522
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64 3,668,526
115 3,668,527
352 3,668,528
CLASS 328
129 3,668,529
147 3,668,530
150 3,668,531
151 3,668,532
168 3,668,533
207 3,668,534
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18 3,668,540
23 3,668,541
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3,668,547
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96 3,668,551
100 3,668,552
107G 3,668,553
107R 3,668,554
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109 3,668,556
112 3,668,557
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7.51 3,668,558
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174TF	3,668,667		3,668,686		CLASS 350	29	3,667,843	230	3,667,857		CLASS 418
174.1A	3,668,665		3,668,687	55	3,667,827	54	3,667,844		CLASS 415	9	3,667,874
174.1C	3,668,638	324R	3,668,688	150	3,667,828	91	3,667,845	148	3,667,859	56	3,667,875
174.1E	3,668,666	344	3,668,689	160	3,667,829		CLASS 356	150	3,667,860	68	3,667,876
	3,668,668	347AD	3,668,691	161	3,667,830	120	3,667,846		CLASS 416	121	3,667,877
174.1F	3,668,669	347NT	3,668,690	162SF	3,667,831	138	3,667,847	14	3,667,861	173	3,667,878
	3,668,670	347SY	3,668,693	175GN	3,667,832	152	3,667,849	61	3,667,862	202	3,667,879
174.1M	3,668,671	347P	3,668,692	303	3,667,833	153	3,667,848	138	3,667,863		CLASS 425
200	3,668,672	365	3,668,659		CLASS 351	186	3,667,850		CLASS 417	3	3,667,880
208	3,668,673		3,668,660	118	3,667,834	197	3,667,851	53	3,667,864	40	3,667,881
214	3,668,674		3,668,694		CLASS 352		CLASS 401	122	3,667,865	117	3,667,882
224	3,668,675		3,668,695	72	3,667,835	263	3,667,852	203	3,667,866	119	3,667,883
227R	3,668,676		3,668,696	91	3,667,836	291	3,667,853	222	3,667,867	149	3,667,884
236	3,668,677		3,668,697	242	3,667,837		CLASS 402	273	3,667,868	155	3,667,885
251	3,668,678		3,668,698		CLASS 353	17	3,667,854	346	3,667,869	192	3,667,886
267R	3,668,679	373	3,668,699	26	3,667,838		CLASS 408	357	3,667,870	242	3,667,887
280	3,668,680	378	3,668,700	27	3,667,839	16	3,667,326	423R	3,667,872	307	3,667,888
	3,668,681	409	3,668,701		CLASS 355	114	3,667,855	424	3,667,873	314	3,667,889
286R	3,668,682		CLASS 343	3	3,667,840	158	3,667,856			406	3,667,890
309.4	3,668,683	5PD	3,668,703	4	3,667,841	229	3,667,858			408	3,667,891
321R	3,668,684	5R	3,668,702	8	3,667,842						CLASS 431
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										79	3,667,893
										114	3,667,894
										255	3,667,895

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D 2—	257	223,742	D14—	3	223,751	3	223,759		223,767	D52—	6	223,775	D72—	1	223,783
D 8—	13	223,743		6	223,752	D23— 52		223,760		223,768		223,776	D80—	9	223,784
	90	223,744			223,753	142		223,761	15	223,769	D54—	2	223,777	D83—	1	223,785
	170	223,745		27	223,754	D26— 5		223,762		223,770	D55—	1	223,778		12	223,786
	179	223,746			223,755	13		223,763	D41—	1	223,771	D56—	4	223,779	D87—	1	223,787
	274	223,747	D15—	1	223,756	14		223,764		223,772	D61—	1	223,780		3	223,788
D13—	1	223,748			223,757	D33—		223,765	D49—	14	223,773	D67—	4	223,781	D88—		223,789
		223,749	D16—		223,758	D34— 5		223,766		29	223,774			223,782	D90—	8	223,790
	6	223,750															

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PATENTS

1 : 3,667,093	3,667,361	3,667,839	3,668,479	3,667,491	3,668,259
3,667,219	3,667,386	3,667,845	3,668,494	3,667,636	3,668,267
3,667,231	3,667,417	3,667,846	3,668,514	3,667,677	3,668,311
3,667,483	3,667,424	3,667,847	3,668,525	3,667,712	3,668,626
3,668,290	3,667,435	3,667,858	3,668,526	3,667,978	11 : 3,667,948
4 : 3,667,123	3,667,439	3,667,863	3,668,532	3,668,020	12 : 3,667,101
3,667,629	3,667,448	3,667,928	3,668,538	3,668,040	3,667,159
3,667,639	3,667,449	3,667,961	3,668,540	3,668,041	3,667,161
3,667,780	3,667,450	3,668,026	3,668,543	3,668,087	3,667,232
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3,668,428	3,667,509	3,668,065	3,668,556	3,668,296	3,667,364
3,668,440	3,667,526	3,668,079	3,668,560	3,668,322	3,667,379
3,668,481	3,667,544	3,668,108	3,668,567	3,668,344	3,667,453
3,668,701	3,667,547	3,668,109	3,668,589	3,668,347	3,667,478
5 : 3,667,073	3,667,553	3,668,111	3,668,611	3,668,348	3,667,482
3,667,407	3,667,559	3,668,125	3,668,631	3,668,349	3,667,693
3,667,609	3,667,562	3,668,130	3,668,632	3,668,359	3,667,755
3,667,610	3,667,566	3,668,159	3,668,643	3,668,374	3,667,774
3,667,773	3,667,567	3,668,174	3,668,644	3,668,375	3,667,838
6 : 3,667,107	3,667,569	3,668,176	3,668,658	3,668,386	3,667,939
3,667,122	3,667,573	3,668,209	3,668,662	3,668,389	3,668,169
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3,667,136	3,667,601	3,668,249	3,668,670	3,668,470	3,668,382
3,667,147	3,667,602	3,668,257	3,668,673	3,668,471	3,668,383
3,667,160	3,667,611	3,668,264	3,668,681	3,668,490	3,668,385
3,667,163	3,667,612	3,668,268	3,668,686	3,668,549	3,668,491
3,667,169	3,667,618	3,668,282	3,668,690	3,668,550	3,668,531
3,667,170	3,667,651	3,668,287	3,668,697	3,668,610	3,668,601
3,667,174	3,667,659	3,668,299	3,668,702	3,668,645	13 : 3,667,570
3,667,184	3,667,660	3,668,301	8 : 3,667,243	3,668,679	3,667,625
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3,667,197	3,667,672	3,668,315	3,667,454	3,667,459	3,667,689
3,667,198	3,667,683	3,668,327	3,667,469	3,667,460	3,668,326
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3,667,216	3,667,715	3,668,335	3,667,533	3,667,926	3,668,614
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3,667,311	3,667,807	3,668,453	3,667,306	3,668,166	3,667,222
3,667,318	3,667,814	3,668,459	3,667,412	3,668,168	3,667,226
3,667,328	3,667,830	3,668,460	3,667,421	3,668,184	3,667,244
3,667,332	3,667,833	3,668,461	3,667,465	3,668,247	3,667,266

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PATENT OFFICE NOTICES

United States Adopted Names

List No. 31

November 1, 1971 to February 29, 1972

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distiguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill. 60610.

amicloral: veterinary feed additive
amoxicillin: antibiotic
butamirate citrate: antitussive.
capobenic acid: anti-arrhythmic
carbidopa: decarboxylation inhibitor
cephasolin: antibiotic
clindamycin phosphate: antibacterial; antiparasitic
dacarbazine: antineoplastic
dimethicone 350: soft tissue augmentation
econasole: antifungal
floxacillin: antibiotic
homosalate: sunscreen
lenperone: tranquilizer
methynodiol diacetate: oral progestin
nandrolone cyclotate: anabolic
pentapiperium methylsulfate: anticholinergic; antisecretory
polyglactin: absorbable suture
seclazone: anti-inflammatory; uricosuric
sudoxicam: anti-inflammatory
taclamine: CNS agent
tolindate: antifungal
tralonide: topical steroid

Legal Journals

[37 CFR Parts 1, 2]

Proposed Placing of Announcements

Notice is hereby given that pursuant to the authority contained in section 31 of the Act of July 19, 1952 (66 Stat. 795; 35 U.S.C. section 31), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.345(b) and 2.14(b).

All persons are invited to present their written views, objections, recommendations, or suggestions in connection with the proposed changes on or before July 18, 1972. Such views, objections, recommendations, and suggestions should be addressed to the Commissioner of Patents, Washington, D.C. 20232. No oral hearing will be held.

The proposed changes, if adopted, will permit agents and attorneys who practice before the Patent Office in patent or trademark matters to place dignified announcements in legal journals, intended essentially for lawyers only, to the effect that they are available to act as consultants to or as associates of other lawyers in the practice of patent or trademark law before the Patent Office.

These changes would bring Patent Office regulations into conformance with that portion of disciplinary rule, DR 2–105(A)(3) of the Code of Professional Responsibility of the American Bar Association, which provides that "(a) lawyer shall not hold himself out publicly as a specialist or as limiting his practice except (that) * * * (a) lawyer available to act as a consultant to or as an associate of other lawyers in a particular branch of law or legal service may * * * publish in legal journals a dignified announcement of such announcement, but the announcement shall not contain a representation of special competence or experience."

The proposed changes, however, would not be construed to permit a registered attorney or agent to "distribute (such announcements) to other lawyers," as now permitted by DR 2–105.

The sections, if amended as proposed, would read as follows:

§ 1.345 *Advertising.*

* * * * * * *

(b) The use of simple professional letterheads, calling cards, or office signs, simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of listings in common form (not display) in a classified telephone or city directory, dignified announcements addressed to lawyers, in legal journals intended essentially for lawyers only, of availability to act as a consultant to or as an associate of other lawyers in the practice of patent law before the Patent Office where such announcements are permitted by local custom, and listings and professional cards with biographical data in standard professional directories shall not be considered a violation of the rule.

* * * * * * *

§ 2.14 *Advertising.*

* * * * * * *

(b) The use of simple professional letterheads, calling cards, or office signs; simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends; listings in common form (not display) in a classified telephone or city directory; dignified announcements addressed to lawyers, in legal journals intended essentially for lawyers only, of availability to act as a consultant to or as an associate of other lawyers in the practice of trademark law before the Patent Office where such announcements are permitted by local custom; and listings and professional cards with biographical data in standard professional directories are not prohibited.

* * * * * * *

Dated: May 2, 1972.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved: May 3, 1972.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72–7160; Filed 5–10–72; 8:49 am]

Published in 37 FR 9488; May 11, 1972

United States District Court for the District of Columbia

RIPPLE TWIST MILLS, INC., Plaintiff
v.
INDUSTRIAL KNITTING CORPORATION, Defendant

Civil Action No. 791—72

ORDER OF PUBLICATION ON ABSENT DEFENDANT IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA

The object of this suit under the Patent Laws of The United States is to secure (1) an adjudication of invalidity of United States Letters Patent 3,513,668 granted May 26, 1970, (2) preliminary and permanent injunction against Defendant, its agents, servants, employees and attorneys enjoining them and each of them from asserting or threatening to assert the aforesaid Letters Patent against customers or potential customers of Plaintiff and restraining them and each of them from filing or prosecuting any civil action or action against Plaintiff and/or its customers for infringement of said Letters Patent, (3) costs and attorneys fees, and (4) such other and further relief as may to this Court appear to be just and equitable.

On motion of the Plaintiff, it is this 27th day of April 1972, ordered that the Defendant, INDUSTRIAL KNITTING CORPORATION, a Canadian corporation having a principal place of business at 500 Sauve Street W, Montreal, Quebec, Canada, cause its appearance to be entered herein on or before the fortieth day exclusive of Sundays and legal holidays, occurring after the day of the first publication of this order; otherwise the cause will be proceeded with as in case of default.

WILLIAM B. BRYANT,
Judge.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Appeal to U.S. Court of Customs and Patent Appeals

The Commissioner of Patents is amending §§ 1.301 and 2.145 of the rules of practice to set forth the time in which an order for transmitting a transcript to the Court of Customs and Patent Appeals should be filed in the Patent Office. Additionally, for the purpose of clarification, all references to "subsection" in § 2.145 have been amended to read "paragraph." These amendments do not effect any change in practice, but merely notify parties filing appeals of the time necessary for the Patent Office to copy and certify a transcript. Since these changes impose no burden on any person, notice and public procedure thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Parts 1 and 2 of Chapter I of Title 37 of the Code of Federal Regulations are hereby amended as follows:

1. Section 1.301 is amended by adding a new sentence at the end. As amended, § 1.301 reads as follows:

§ 1.301 *Appeal to U.S. Court of Customs and Patent Appeals.*

Any applicant dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (a) In the Patent Office give notice to the Commissioner and file the reasons of appeal (see §§ 1.302 and 1.304); (b) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

2. In § 2.145, paragraph (a) is amended by adding a sentence at the end; paragraphs (b), (c), and (d) are amended by substituting "paragraph" for "subsection." As amended, § 2.145 reads as follows:

§ 2.145 *Appeal to court and civil action.*

(a) *Appeal to U.S. Court of Customs and Patent Appeals.* An applicant for registration, or any party to an interference, opposition, or cancellation proceeding or any party to an application to register as a concurrent user, hereinafter referred to as inter partes proceedings, who is dissatisfied with the decision of the Trademark Trial and Appeal Board and any registrant who has filed an affidavit or declaration under section 8 of the act or who has filed an application for renewal and is dissatisfied with the decision of the Commissioner (§§ 2.165, 2.184), may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (1) In the Patent Office give notice to the Commissioner and file the reasons of appeal (see paragraphs (b) and (d) of this section); (2) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

(b) *Notice and reasons of appeal.* (1) when an appeal is taken to the U.S. Court of Customs and Patent Appeals, the appellant shall give notice thereof to the Commissioner, and file in the Patent Office, within the time specified in paragraph (d) of this section, his reasons of appeal specifically set forth in writing.

(2) In inter partes proceedings, the notice and reasons must be served as provided in § 2.119.

(c) *Civil action.* (1) Any person who may appeal to the U.S. Court of Customs and Patent Appeals (paragraph (a) of this section), may have remedy by civil action under section 21(b) of the act. Such civilization must be commenced within the time specified in paragraph (d) of this section.

(2) If an applicant or registrant in an ex parte case has taken an appeal to the U.S. Court of Customs and Patent Appeals, he thereby waives his right to proceed under section 21(b) of the act.

(3) If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the case shall, within 20 days after the appellant shall have filed notice of the appeal to the court (paragraph (b) of this section), file notice with the Commissioner that he elects to have all further proceedings conducted as provided in section 21(b) of the act, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in § 2.119.

(d) *Time for appeal or civil action.* The time for filing the notice and reasons of appeal to the U.S. Court of Customs and Patent Appeals (paragraph (b) of this section), or for commencing a civil action (paragraph (c) of this section), is 60 days from the date of the decision of the Trademark Trial and Appeal Board or the Commissioner, as the case may be. If a petition for rehearing or reconsideration is filed within 30 days after the date of the decision, the time is extended to 30 days after action on the petition. No petition for rehearing or reconsideration filed outside the time specified herein after such decision, nor any proceedings on such petition shall operate to extend the period of 60 days hereinabove provided. The times specified herein are calendar days. If the last day of time specified for appeal, or commencing a civil action falls on a Saturday, Sunday, or legal holiday, the time is extended to the next day which is neither a saturday, Sunday, nor a holiday. If a party to an inter partes proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals and an adverse party has filed notice under section 21(a)(1) of the act that he elects to have all further proceedings conducted under section 21(b) of the act, the time for filing a civil action thereafter is specified in section 21(a)(1) of the act.

Effective date. This amendment will become effective upon its publication in the Federal Register (5–11–72).

Dated: May 1, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved: April 28, 1972.
JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 72–7159; Filed 5–10–72; 8:49 am]

Published in 37 F.R. 9175; May 11, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,599,333, T. Miller, MAGNIFYING AND LIGHT CONCENTRATING DEVICE FOR TELEPHONE DIALS, filed Nov. 16, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–349, *Tobias Miller* v. *General Telephone Company.*

2,730,200, Earle and Covington, FLUID APPARATUS, filed Aug. 28, 1969, D.C., N.D. Ga. (Atlanta), Doc. 13052, *Carl A. Covington, Dorothy B. Marsh and G. W. Murphy Industries, Inc.* v. *D–K Pneumatics, Inc.* Dismissed by consent of both parties under Rule 41(a), Oct. 26, 1971.

2,734,236, W. H. Willert, INJECTION MOLDING APPARATUS, filed Dec. 10, 1971, D.C. Conn. (Bridgeport), Doc. B–424, *Egan Machinery Company and William H. Willert* v. *Bipel International, Inc.*

2,761,015, J. D. Banning, PUSH BUTTON TELEPHONE NUMBER SELECTOR, filed Nov. 4, 1971, D.C., S.D. Tex. (Houston), Doc. CA 71–H–1234, *Joe Doyle Banning* v. *Southwestern Bell Telephone.*

2,784,955, C. E. Compton, ROTARY MINING MACHINE CUTTER HEAD WITH REAR HELICALLY EXTENDING TRANSVERSE OPENING, filed Apr. 9, 1969, D.C., N.D. Va. (Elkins), Doc. 69–3–C, *Charles E. Compton, Joy Manufacturing Company and Polan Industries* v. *Rish Equipment Company.*

2,804,461, B. A. Cousino, MAGNETIC SOUND TAPE, filed Nov. 8, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2679, *Faraday, Inc.* v. *RCA Corporation.* Case Dismissed, Nov. 11, 1971.

2,827,065, Rogers, Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, filed Nov. 14, 1969, D.C.N.J. (Newark), Doc. C–1365–69, *Diamond Shamrock Corporation* v. *The Goodyear Tire & Rubber Company.* Stipulation and order of dismissal of action, Jan. 6, 1972.

2,945,582, Abraham and Metzger, BOWLING BALL CARRYING CASE, filed Nov. 20, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2923, *Triangle Leather Goods Company* v. *Paul Abraham and Romain Metzger.* On stipulation, ordered first amended complaint be dismissed with prejudice, Aug. 5, 1971.

3,068,948, Little and Poonj, PRODUCTION OF TRIS-2-HYDROXYALKYL ISOCYANURATES, filed Aug. 26, 1970, D.C., N.D.N.Y. (Utica), Doc. 70–CV–300, *Allied Chemical Corporation* v. *Schenectady Chemicals, Inc.* Stipulation of dismissal without prejudice, Jan. 14, 1972.

3,093,177, J. P. Villo, THREAD LOCK AND METHOD OF MAKING THE SAME, filed Dec. 8, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c2538, *Standard Pressed Steel Company* v. *Coral Corporation and USM Corporation.* Consent judgment; plaintiff owner of patent and said patent is valid, defendants have infringed, May 3, 1971.

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUBSOIL PLOW, filed Jan. 17, 1972, D.C., W.D. Okla (Oklahoma City), Doc. 72–39–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.*

3,474,553, G. E. Moore, FABRIC SPREADING AND FEEDING MACHINE, filed Nov. 17, 1969, D.C. Conn (New Haven), Doc. 13537, *R. L. Sjostrom Company (Formerly Sheetmaster Corporation)* v. *Julius Kupferschmid.* Stipulation and order dismissing action, Oct. 8, 1971.

3,477,466, M. Fujinaga, METHOD OF CULTIVATION OF PENAEID SHRIMP, filed Jan. 5, 1972, D.C. Del. (Wilmington), Doc. 4306, *United States of America* v. *Marifarms, Inc. and Motosaku Fujinaga also known as Gensaku Hudinaga.*

3,478,150, P. D. Olson, COLLAPSIBLE KEYBOARD TEACHING AID EMPLOYING EARPHONE SETS AND PLURAL KEYBOARDS, filed Jan. 14, 1971, D.C., N.D. Ill. (Chicago), Doc. 72c118, *Musitronic, Inc.* v. *The Wurlitzer Company.*

3,500,600, V. L. Gliniecki, SURFACE TREATMENT OF EXTRUDED PLASTIC FOAM, filed Dec. 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2918–EC, *Huntsman Container Corp.* v. *Dow Chemical Co. et al.*

3,599,953, E. L. Smith, METHOD AND APPARATUS FOR PLUGGING FURNACE TAPS, filed Oct. 27, 1971, D.C. Idaho (Boise), Doc. C–4–71–29, *Elwin L. Smith* v. *Roy E. Thorn.*

3,610,815, Gould, Lieberman and Sarabia, MOTION PICTURE FILM COLOR CORRECTION SYSTEM AND METHOD, filed Oct. 27, 1971, D.C., S.D.N.Y., Doc. 71–C–4681, *Teletronics International, Inc.* v. *Reeves Telecom Corp.*

Dedications

2,772,909.—*Sigurd M. Moberg,* Pompton Plains, N.J. BAG SEAL. Patent dated Dec. 4, 1956. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,796,277.—*Winfred M. Brooks,* West Orange, and *Sigurd M. Moberg,* Pompton Plains, N.J. SHACKLE SEAL. Patent dated June 18, 1957. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,890,552.—*William Ernest Henderson,* Lockport, Ill. METHOD OF PACKAGING. Patent dated June 16, 1959. Dedication filed May 24, 1971, by the assignee, *Union Carbide Corporation.*

Hereby dedicates to the People of the U.S. the remaining term of said patent.

2,899,230.—*Sigurd M. Moberg,* Pompton Plains, N.J. CORD SEAL AND METHOD OF MAKING THE SAME. Patent dated Aug. 11, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,170,830.—*Sigurd M. Moberg,* Pompton Plains, N.J. APPARATUS FOR APPLYING POULTRY TAGS. Patent dated Feb. 23, 1965. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,175,938.—*Sigurd M. Moberg,* East Orange, N.J. POULTRY TAGGING DEVICE. Patent dated Mar. 30, 1965. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,241,844.—*James P. Morley,* Morton Grove, Ill. END FACE SEAL ASSEMBLY WITH INSTALLATION RETENTION MEANS. Patent dated Mar. 22, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Mfg. Company.*

Hereby dedicates to the Public the remaining term of said patent.

3,265,426.—*Winfred M. Brooks,* West Orange, and *Sigurd M. Moberg,* East Orange, N.J. SHACKLE SEAL. Patent dated Aug. 9, 1966. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,278,214.—*Sigurd M. Moberg,* East Orange, N.J. SELF-LOCKING SHACKLE SEAL. Patent dated Oct. 11, 1966. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company.*

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,301,961.—*Martin A. Odom,* Oakland, Calif. AUTOMATIC TELEPHONE CALL TRANSLATING AND FORWARDING APPARATUS. Patent dated Jan. 31, 1967. Dedication filed Jan. 3, 1972, by the assignee, *Ford Industries, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,649,722.—*Densel Allen Nicholson,* Springfield Township, Hamilton County, Ohio. HALOGENATED PHOSPHONOACETATE ESTERS. Patent dated Mar. 14, 1972. Dedication filed Mar. 8, 1972, by the assignee, *The Procter & Gamble Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,083,595.—*Gerard A. Frank,* Allentown, and *Karl A. Schmuldt,* Emmaus, Pa. THERMO-COMPRESSION BONDING APPARATUS. Patent dated Apr. 2, 1963. Disclaimer filed Mar. 29, 1972, by the assignee, *Western Electric Company, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,197,920.—*Ralph W. Moore,* Hagerstown, Md., and *Joseph E. Bowling, Jr.,* Waynesboro, Pa. THROWING WHEEL AND PARTS THEREFOR. Patent dated Aug. 3, 1965. Disclaimer filed Mar. 17, 1972, by the assignee, *The Carborundum Company.*

Hereby enters this disclaimer to claims 11, 12 and 14 of said patent.

3,376,272.—*John E. Masters* and *Darrell D. Hicks,* Louisville, Ky. POLYESTER RESINS. Patent dated Apr. 2, 1968. Disclaimer filed Mar. 16, 1972, by the assignee, *Celanese Coatings Company.*

Hereby enters this disclaimer to claims 2, 3, 5 and 6 of said patent.

3,404,357.—*Wolfgang Krank, Gerhard Schickle* and *Erich Schuttloffel,* Backnang, Germany. WAVEGUIDE. Patent dated Oct. 1, 1968. Disclaimer filed Jan. 14, 1972, by the assignee, *Telefunken Patentverwertungs G.m.b.H.*

Hereby enters this disclaimer to claims, 5, 6, 7 and 8 of said patent.

3,540,886.—*Robert E. Ansel* and *Charles M. Taubman,* Cook County, Ill. ACIDIC PHOTOCONDUCTIVE RESIN BINDERS. Patent dated Nov. 17, 1970. Disclaimer filed Dec. 17, 1971, by the assignee, *DeSoto, Inc.*

Hereby enters this disclaimer to all the claims of said patent.

3,573,042.—*Terry W. Milligan, Belmont,* and *Richard W. Young,* Wellesley Hills, Mass. PHOTOGRAPHIC COLOR DIFFUSION TRANSFER PROCESSES AND FILM UNIT FOR USE THEREIN. Patent dated Mar. 30, 1971. Disclaimer filed Mar. 29, 1972, by the assignee, *Polaroid Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 21, 1986.

3,575,085.—*William E. McAdam, Jr.,* Thousand Oaks, Calif. ADVANCED FIRE CONTROL SYSTEM. Patent dated Apr. 13, 1971. Disclaimer filed Feb. 10, 1972, by the assignee, *Hughes Aircraft Company.*

Hereby enters this disclaimer to claims 3, 4, 5, 8, 10, 11, 12, 13, 14, 15, 16, 22, 23, 24, 25 and 33 of said patent.

3,606,566.—*Dale L. Bethke,* West Covina, Calif. BUSHING FOR DRILL JIGS AND THE LIKE. Patent dated Sept. 20, 1971. Disclaimer filed Mar. 8, 1972, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

3,608,809.—*Robert Holbrook Cushman,* Princeton, N.J. APPARATUS FOR UNIFORM MULTIPLE-LEAD BONDING. Patent dated Sept. 28, 1971. Disclaimer filed Jan. 24, 1972, by the assignee, *Western Electric Company, Incorporated.*

Hereby enters this disclaimer to claims 11, 12, 13 and 15 of said patent.

Certificates of Correction for the Week of June 13, 1972

Re. 27,075	3,591,204	3,615,955	3,622,845	3,625,848	3,629,421	3,633,945	3,640,604
Re. 27,132	3,591,784	3,616,253	3,622,460	3,625,369	3,629,423	3,634,041	3,640,611
Re. 27,163	3,591,911	3,616,344	3,622,468	3,625,408	3,629,585	3,634,583	3,640,640
Re. 27,173	3,593,027	3,616,447	3,622,514	3,625,479	3,629,682	3,634,644	3,640,654
3,453,263	3,593,034	3,616,460	3,622,562	3,625,509	3,629,731	3,634,738	3,640,906
3,475,886	3,594,277	3,616,462	3,622,563	3,625,858	3,629,786	3,634,819	3,641,029
3,489,425	3,595,725	3,616,573	3,622,579	3,625,812	3,629,788	3,634,821	3,641,120
3,490,984	3,596,145	3,616,602	3,622,618	3,625,827	3,629,845	3,634,993	3,641,140
3,494,936	3,596,682	3,616,693	3,622,627	3,625,857	3,630,082	3,635,132	3,641,178
3,498,786	3,596,712	3,617,335	3,622,654	3,626,024	3,630,351	3,635,158	3,641,383
3,509,194	3,597,062	3,617,349	3,622,821	3,626,327	3,630,379	3,635,241	3,641,487
3,509,195	3,597,647	3,617,363	3,622,826	3,626,438	3,630,390	3,635,410	3,641,706
3,535,291	3,598,252	3,618,032	3,622,974	3,626,805	3,630,437	3,635,679	3,642,087
3,537,373	3,598,455	3,618,069	3,622,982	3,626,829	3,630,465	3,635,686	3,642,102
3,551,865	3,598,778	3,618,102	3,622,984	3,626,905	3,630,561	3,635,785	3,642,168
3,558,621	3,599,009	3,618,116	3,623,044	3,627,499	3,630,672	3,635,844	3,642,258
3,561,003	3,601,913	3,618,371	3,623,217	3,627,578	3,630,677	3,635,845	3,642,495
3,563,122	3,602,043	3,618,522	3,623,323	3,627,603	3,630,679	3,635,861	3,642,627
3,567,683	3,603,572	3,618,730	3,623,467	3,627,648	3,630,840	3,635,863	3,642,740
3,567,895	3,604,643	3,618,792	3,623,579	3,627,702	3,631,024	3,636,074	3,642,799
3,568,783	3,604,698	3,619,136	3,623,623	3,627,726	3,631,094	3,636,164	3,642,914
3,569,660	3,604,790	3,619,434	3,623,656	3,627,745	3,631,105	3,636,167	3,643,299
3,569,682	3,606,743	3,619,483	3,623,677	3,627,755	3,631,134	3,636,300	3,643,397
3,575,920	3,607,000	3,619,524	3,623,684	3,627,786	3,631,368	3,636,308	3,643,637
3,577,156	3,607,010	3,619,652	3,623,937	3,627,789	3,631,385	3,636,495	3,643,670
3,578,574	3,607,817	3,619,762	3,623,990	3,627,870	3,631,510	3,637,559	3,643,698
3,579,493	3,608,030	3,620,340	3,623,994	3,627,920	3,631,597	3,637,586	3,644,015
3,580,800	3,608,173	3,620,372	3,624,000	3,627,930	3,631,726	3,637,880	3,644,182
3,581,228	3,608,508	3,620,433	3,624,026	3,628,237	3,631,911	3,638,435	3,644,199
3,582,003	3,609,112	3,620,630	3,624,124	3,628,266	3,631,950	3,638,453	3,644,206
3,582,734	3,609,160	3,620,685	3,624,145	3,628,285	3,632,070	3,638,496	3,644,562
3,584,048	3,609,746	3,620,705	3,624,200	3,628,296	3,632,211	3,638,535	3,644,630
3,584,312	3,610,465	3,620,712	3,624,202	3,628,371	3,632,294	3,638,649	3,644,947
3,584,718	3,611,312	3,620,788	3,624,224	3,628,379	3,632,335	3,639,078	3,644,953
3,585,305	3,611,395	3,620,899	3,624,246	3,628,502	3,632,411	3,639,197	3,645,121
3,585,374	3,612,176	3,620,924	3,624,335	3,628,559	3,632,445	3,639,377	3,645,730
3,585,518	3,613,072	3,621,055	3,624,430	3,628,692	3,632,473	3,639,479	3,646,048
3,585,977	3,613,782	3,621,222	3,624,522	3,628,712	3,632,662	3,639,502	3,647,132
3,586,306	3,614,582	3,621,308	3,624,643	3,629,091	3,632,684	3,639,651	3,647,143
3,587,618	3,614,978	3,621,328	3,624,772	3,629,172	3,632,714	3,639,696	3,647,560
3,587,716	3,615,426	3,621,392	3,624,868	3,629,199	3,632,804	3,640,081	3,647,805
3,589,253	3,615,499	3,621,478	3,624,937	3,629,223	3,632,878	3,640,222	3,647,920
3,590,708	3,615,512	3,621,617	3,625,040	3,629,287	3,633,335	3,640,288	3,649,390
3,591,026	3,615,560	3,622,013	3,625,194	3,629,351	3,633,339	3,640,420	3,649,655
3,591,153	3,615,751	3,622,341	3,625,224	3,629,367	3,633,436	3,640,570	3,649,998

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 16, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-09-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powdar Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	3-01-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-19-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	5-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 161:

Patents..... Numbers 2,709,208 to 2,712,130, inclusive
Plant Patents..... Numbers 1,396 to 1,403, inclusive

REISSUES

JUNE 13, 1972

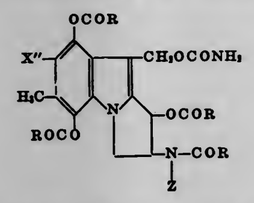
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,384
ACYLATED MITOSENES

Masuno Matsui and Yasuhiro Yamada, Tokyo, Keizo Uzu, Shizuoka, and Tadashi Hirata and Shigetoshi Wakaki, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Original No. 3,429,894, dated Feb. 25, 1969, Ser. No. 511,018, Nov. 8, 1965. Application for reissue Dec. 31, 1969, Ser. No. 889,760
Claims priority, application Japan, Nov. 7, 1964, 39/62,806
Int. Cl. C07d *27/80*
U.S. Cl. 260—326.3 12 Claims

Acylated mitosenes having the formula

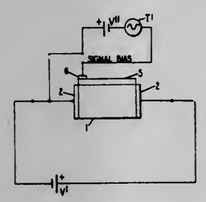


wherein X" is OCH_3, NHCOR or OCOR, R is H or CH_2 and Z is H or CH_3. These compounds are produced by the reductive acylation of the corresponding mitosene compound. They are useful antibacterial agents.

27,385
SCANNED LINE RADIATION SOURCE USING A REVERSE BIASED P-N JUNCTION ADJACENT A GUNN DIODE

Carl Peter Sandbank, Bishop's Stortford, and Michael Brian Neilson Butler, Sawbridgewarth, England, assignors to International Standard Electric Corporation, New York, N.Y.

Original No. 3,447,044, dated May 27, 1969, Ser. No. 643,201, June 2, 1967. Application for reissue Oct. 20, 1969, Ser. No. 871,810
Int. Cl. H01l *15/06*
U.S. Cl. 317—235 R 6 Claims



A solid state display device employing a light emitting P-N junction adjacent a body of semiconductive material exhibiting moving high field instability effects. As the high field domain travels through said body, electrons from said domain traverse the reverse-biased P-N junction to cause the emission of visible light from the vicinity of said junction. The intensity of the emitted light may be modulated by varying the magnitude of the reverse bias applied to the junction.

27,386
PROCESS FOR AFTERTREATMENT OF COLORED POLYAMIDE FIBERS

Karl Soiron, Riehen, Switzerland, Hans Rafael, Weil am Rhein, Germany, and Walter Stockar, Binningen, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Original No. 3,490,859, dated Jan. 20, 1970, Ser. No. 665,220, Sept. 5, 1967, which is a continuation of Ser. No. 515,774, Oct. 22, 1965, which in turn is a division of Ser. No. 296,392, July 19, 1963. Application for reissue Sept. 1, 1970, Ser. No. 68,805
Claims priority, application Switzerland, July 31, 1962, 9,156
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 10 Claims

An improvement in the dyeing and printing of polyamide fibers, comprising as an after-treatment, the introduction of such fibers which have been freshly dyed or printed with a fiber-reactive dyestuff, prior to the conventional drying, into an aqueous bath which contains a condensation product of dicyanodiamide, urea or an ammonium salt of a mineral acid capable of splitting off ammonia, and formaldehyde; the pH of the bath is adjusted to about 4 to 5.5, and the bath containing the fibers is then heated; also the aforesaid after-treatment baths per se.

27,387
INCREASING THE THERMOSTABILITY OF MICELLAR DISPERSIONS

John A. Davis, Jr., and William J. Kunzman, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Original No. 3,493,047, dated Feb. 3, 1970, Ser. No. 746,282, July 22, 1968. Application for reissue Oct. 15, 1970, Ser. No. 81,191
Int. Cl. E21b *43/22, 47/06*
U.S. Cl. 166—252 16 Claims

Thermostability of micellar dispersions containing hydrocarbon, aqueous medium, and surfactant can be shifted to higher temperatures by increasing the ratio of surfactant to hydrocarbon within the micellar dispersion. Such dispersions are useful to recover crude oil in a tertiary oil recovery process wherein the temperature of the subterranean formation is as high as 200° F. or more. For example, a subterranean formation at a temperature above about 80° F. can be flooded by designing the surfactant to hydrocarbon ratio within the micellar dispersion to be stable at the temperature of the formation.

27,388
ACCELERATED EPOXY-AMINE RESINOUS COMPOSITIONS CATALYZED WITH —SH YIELDING MATERIAL

Heinz Uelzmann, Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company

No Drawing. Original No. 3,554,967, dated Jan. 12, 1971, Ser. No. 792,853, Jan. 21, 1969. Application for reissue Mar. 22, 1971, Ser. No. 127,020
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EC 6 Claims

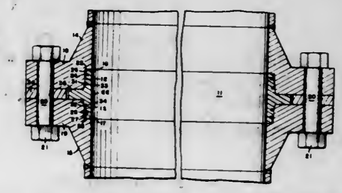
A sulfur compound, which can form a cure-accelerating, SH-containing compound in the presence of an amine curing agent, e.g., ethylene trithiocarbonate, is added to an epoxy resin composition. The resulting composition is stable, but will undergo rapid curing at low temperatures upon the addition of an amine curing agent.

27,389
PIPE JOINT

Cassius L. Tillman III, 343 Peters Road, Harvey, La. 70058

Original No. 3,507,506, dated Apr. 21, 1970, Ser. No. 667,260, Sept. 12, 1967, which is a continuation-in-part of Ser. No. 616,714, Feb. 16, 1967. Application for reissue June 5, 1970, Ser. No. 43,988
Int. Cl. F16r *15/00;* F16l *23/00*
U.S. Cl. 277—171 9 Claims

A pipe joint seal for large size pipes (such as 10" diameter or larger) in the form of a tubular member having blunt ends is adapted to be disposed in blunt end recesses of aligned flanged pipes connected together under stressed conditions, such as by studs. Outer annular marginal grooves near the ends of the tubular members are provided to form noses that concentrate distortion under the stressed condition at the ends. A stiffening collar is provided integral with the middle section of the tubular member for disposition between adjacent flanges of the pipes. The collar may extend outwardly beyond the studs that hold the flanges together and are provided with apertures aligned with the studs; or, alternatively, it may not extend



as far as the studs, in which case shims or washers are provided about the studs between the flanges to prevent distortion of the flanges.

PLANT PATENTS

GRANTED JUNE 13, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,205
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,996
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,206
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,997
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance of disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,207
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,998
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,208
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 78,999
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity through the life cycle.

3,209
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,001
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,210
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,002
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

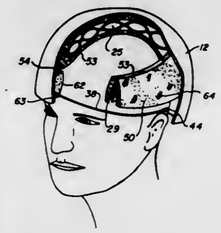
A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

PATENTS

GRANTED JUNE 13, 1972

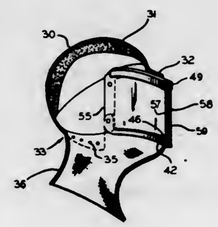
GENERAL AND MECHANICAL

3,668,704
PROTECTIVE HEADGEAR
Robert E. Conroy, 305 South Clifton, Park Ridge, Ill., and John H. Hauger, 739 Lee Boulevard, Hillside, Ill.
Continuation-in-part of application Ser. No. 12,805, Feb. 19, 1970, now abandoned. This application July 13, 1970, Ser. No. 54,513
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **16 Claims**



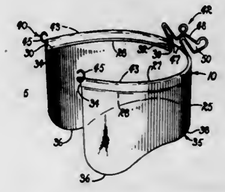
An inflatable member dimensioned to be mounted to the inside curvature of a rigid shell, and to be preferably inserted within a slightly oversized foamed elastomeric envelope which is bonded to the inside curvature of said shell. Air fill means are provided so that the user can inflate the member by introducing air to a plurality of communicating compartments within the member, and thereby both size the head gear assembly and cushion the head of the user against shocks.

3,668,705
PROTECTIVE HELMET WITH HOOD
Walter E. Garbisch, 4215 W. Hawthorne Trace, Brown Deer, Wis.
Continuation-in-part of application Ser. No. 23,209, Mar. 27, 1970. This application Oct. 29, 1971, Ser. No. 193,635
Int. Cl. A61f *9/04*; A42b *1/18*
U.S. Cl. 2—10 **9 Claims**



A helmet has an integral hood which fits over the neck, and part of the shoulders of a person wearing the helmet. A transparent, double-walled face shield is pivotally attached to the hood to protect the face of the wearer of the helmet.

3,668,706
SHIELD ATTACHMENT FOR SAFETY HELMETS
Willie Velasquez, 311 North Effie, Fresno, Calif.
Filed June 10, 1970, Ser. No. 44,982
Int. Cl. A61f *9/00*
U.S. Cl. 2—10 **5 Claims**



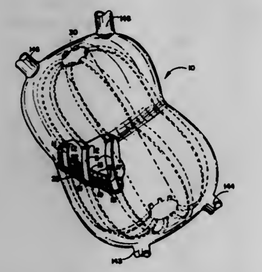
A shield attachment for safety helmets and the like having front and back portions and a brim circumscribing a lower edge of the helmet providing a band of shielding material and a wire frame selectively detachable suspending the band from the brim of either the front or back portions of the helmet in wrap-around relation to the head of a wearer of the helmet so as to provide additional protection for the face and/or back of the neck of the wearer.

3,668,707
LADY'S HEADPIECE
Gathalee H. Williams, 2808 35th Street, Astoria, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,839
Int. Cl. A42b *1/16*; A42b *5/00*
U.S. Cl. 2—207 **2 Claims**



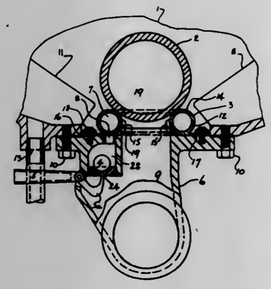
The headpiece disclosed herein is constituted of a sheath in which is slidably mounted a spring headclip. The central portion has a length materially greater than that of the clip so that the latter has a range of movement which permits of many variations in the lengths of the sheath beyond the ends of the clip, thereby enabling the accomplishment of many different dress effects.

3,668,708
ARTIFICIAL HEART
James A. Tindal, Gardena, Calif., assignor to North American Rockwell Corporation
Filed Dec. 23, 1969, Ser. No. 887,566
Int. Cl. A61f 1/24
U.S. Cl. 3—1 8 Claims



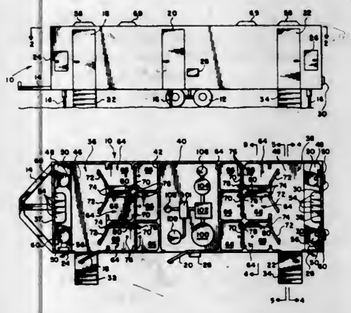
An artificial heart has a number of flat structural members arranged circumferentially about a central support. An inner layer of material confines blood to chambers of the artificial heart and an outer layer of material, which fully encloses the flat structural members, defines cavities between the inner layer of material and the outer layer. Fluid is pumped into the cavities for expanding the structural members to cause heart pumping action in response to measured values of preselected blood chemistry parameters. The structural members contact to their original positions to complete the pumping action.

3,668,709
LIQUID RESERVOIR
David Harold Sharp, 318 Linnet Crescent, Strathmore, Quebec, Canada
Filed Dec. 1, 1970, Ser. No. 93,986
Int. Cl. E03d 3/00, 3/10
U.S. Cl. 4—28 7 Claims



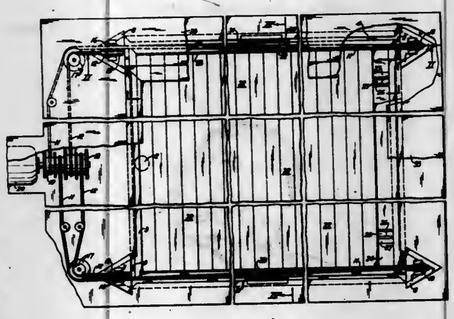
A discharge arrangement for a liquid reservoir such as a toilet cistern, in which the cistern is of an airtight type. The arrangement of the present invention is that the cistern is provided with a liquid outlet port with a compressible seat surrounding the port. The seat includes a liquid passageway with a liquid inlet hole, a vent hole and a liquid outlet hole. Sealing means, such as floatable ball, is adapted to mate in sealing arrangement with the seat. There is also provided suitable means for preventing the seal from coming into sealing engagement with the seat during discharge from the cistern. In the case of manual operation, means such as a handle is employed for initiating liquid discharge from the cistern.

3,668,710
SHOWER FACILITY
Joseph F. Dowd, P.O. Box 92, Hatch, N. Mex.
Filed Feb. 23, 1971, Ser. No. 118,071
Int. Cl. A47k 3/22
U.S. Cl. 4—145 7 Claims

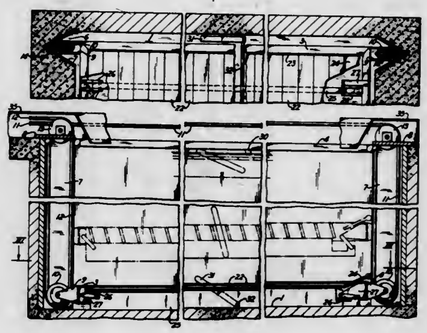


A shower facility mounted on a wheeled frame having towing and safety equipment for transporting the facility by a powered vehicle from place to place over public roadways. The facility is divided into a central utility section and two end shower sections. The utility section contains the equipment necessary to supply water and power to the shower sections with the shower sections each containing a plurality of individual shower units. Each shower unit is divided into a dressing unit and a shower stall and is provided with a coin-operated means which can spray shower water and disinfectant into the shower stall and can actuate a heat lamp to warm the dressing room.

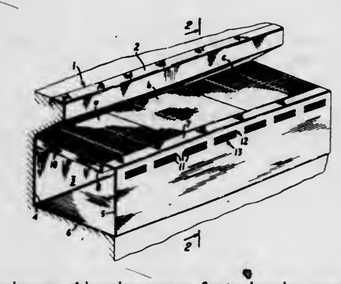
3,668,711
SWIMMING POOL COVER AND RESCUE DEVICE
Charles J. Liermann, 3591 School Road, Murrysville, Pa., and Joseph G. Moore, 200 Fairview Road, Fox Chapel Borough, Pa.
Filed Jan. 21, 1971, Ser. No. 108,278
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.13 9 Claims



A vertically movable frame fits around the inside of a swimming pool and is normally located at its bottom. Extending across the frame is a plurality of parallel slats pivotally mounted in the opposite sides of the frame on horizontal axes. While the frame is at the bottom of the pool the slats are disposed edge to edge in a common plane to form a floor. Means are provided for raising the frame to the top of the pool, during which the slats pivot on their axes so that they are turned on edge. At the top of the pool the slats are turned back into a common plane to form a solid cover for the pool.

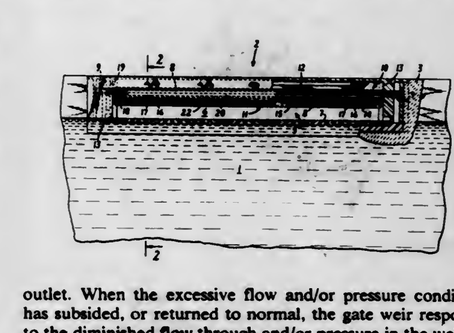


3,668,712
PERIMETER SKIMMING GUTTER FOR SWIMMING POOLS
William J. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,186
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.17 22 Claims



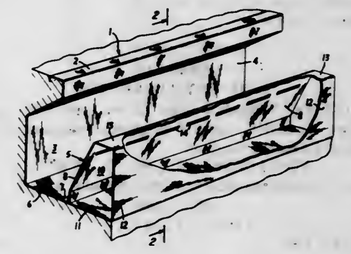
A perimeter skimming gutter for swimming pools is provided including a gutter conduit for disposition about the perimeter of a swimming pool and adapted to carry water at a level below a predetermined level of water in the swimming pool, a retaining wall on the pool-side of the conduit, over the top of which wall water may flow from the pool into the gutter conduit, and a plurality of narrow elongated substantially horizontally disposed openings through the wall at a height to maintain a predetermined water flow, the top of the wall being spaced above the openings at a height to retain the pool water within the pool perimeter at water flows, wave actions and surges up to a predetermined maximum, while allowing excessive water flows, wave actions and surges beyond such maximum to flow over the top of the wall into the gutter conduit.

3,668,713
FLUID FLOW AND/OR FLUID PRESSURE RESPONSIVE GATE WEIR
William H. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,187
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.17 30 Claims



A fluid flow and/or fluid pressure responsive gate weir for the water outlet of swimming pools is provided, which responds to an increase in fluid flow through and/or fluid pressure in the weir, due to a flow surge or other condition that raises the water level of the pool at the weir, to close the outlet. When the excessive flow and/or pressure condition has subsided, or returned to normal, the gate weir responds to the diminished flow through and/or pressure in the weir to open the outlet again.

3,668,714
NONFLOODING PERIMETER SKIMMING GUTTER FOR SWIMMING POOLS
William H. Baker, 403 Loudonville Road, Albany, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,188
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.17 28 Claims

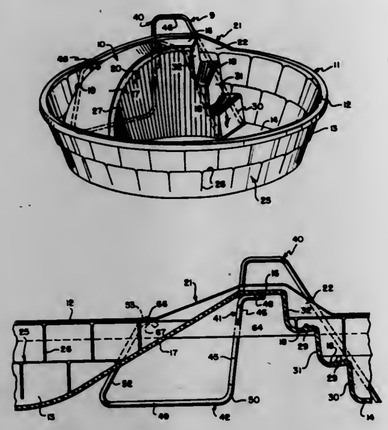


A nonflooding perimeter skimming gutter for swimming pools is provided, including a first gutter conduit for disposition about the perimeter of a swimming pool, and adapted to carry water at a level below a predetermined level of water in the swimming pool, a retaining wall on the pool-side of the first gutter conduit over the top of which wall a skimming flow of water may run from the pool into the first gutter conduit, a second gutter conduit adapted to carry water at a level below a predetermined level of water in the first gutter conduit, and a fluid flow connection between the two gutter conduits at such level and below the top of the retaining wall allowing water flow from the first gutter conduit into the second gutter conduit whenever the water level on the first gutter conduit reaches the fluid flow connection, thereby inhibiting filling of the first gutter conduit appreciably above such level.

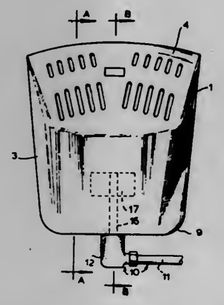
3,668,715
POOL STRUCTURE WITH BUILT-IN EXTERNALLY SUPPORTED STEP-SLIDE
Archer Chase, Norfolk, Va., assignor to General Foam Plastics Corp., Norfolk, Va.
Filed Feb. 5, 1971, Ser. No. 113,023
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172 11 Claims

A molded tub-like structure, with a peripheral flange, having an integrally molded sliding surface projecting well above

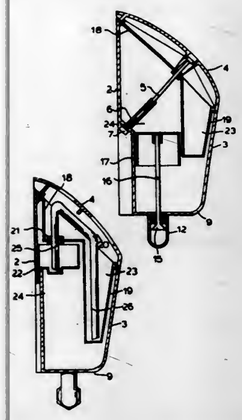
the peripheral flange thereof and having integrally molded steps is disclosed herein. The tub, sliding surface, and steps are unitarily formed of comparatively lightweight thermoplastic sheet material. An elevated platform is disposed between the sliding surface and steps, and it is reinforced and structurally supported by a tripod structure having plural tubular support members.



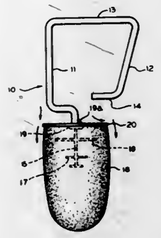
3,668,716
SANITARY APPARATUS
James O'Hara, Willaston, near Crewe, and Charles Lewis Gibbins, Nantwich, both of England, assignors to Calmic Limited, Cheshire, England
Filed July 28, 1970, Ser. No. 58,877
Claims priority, application Great Britain, Aug. 1, 1969, 38,652/69
Int. Cl. E03d 9/02
U.S. Cl. 4—226 **10 Claims**



The invention provides a deodorizing apparatus in which a flow of air generated by movement of water at some stage in a flushing cycle of a urinal, water-closet basin or the like convenience is directed into a vessel capable of receiving a liquid and thence passes upwardly through the shorter leg of a syphon tube and downwardly through the longer leg of the syphon tube to bubble from the longer leg of the syphon tube through a deodorant liquid contained in a second vessel from which it emerges to deodorize the surrounding atmosphere. The two vessels are disposed in respective chambers defined by a common container and isolated from one another by a partition through which the syphon tube passes. In one embodiment flushing water flows into the first chamber during a flush and drains therefrom at the end of a flush. In another embodiment an open-bottomed container adapted to be disposed in a flushing system is connected to the first chamber.



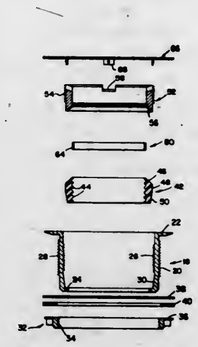
3,668,717
HANGER FOR DEODORANT AND/OR CLEANER BARS
Frank J. Curran, Downers Grove, Ill., assignor to Frank J. Curran Co.
Filed Oct. 5, 1970, Ser. No. 77,919
Int. Cl. E03d 9/02
U.S. Cl. 4—231 **7 Claims**



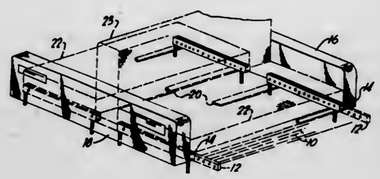
A hanger for water soluble toilet deodorant bars having a hook shaped upper portion for attachment and a lower portion embedded within a deodorant bar. A plastic plate overlies the upper portion of the deodorant bar to retard washing away of the bar.

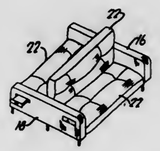
3,668,718
DRAIN CONNECTION
Casper Cuschera, 31650 Nedlaah Street, Hayward, Calif.
Filed Aug. 24, 1970, Ser. No. 66,262
Int. Cl. E03c 1/26
U.S. Cl. 4—288 **7 Claims**

A drain for showers or the like which eliminates the need for conventional caulking materials. An internally and externally threaded member found in most drains is modified adjacent its lower internal end, and between such member and a drain pipe there is provided a specially designed gasket. The internal threads of the member adjacent its upper end receive a nut, the latter bearing on the upper end of the gasket, urging the latter into sealing engagement between the pipe and drain member.



3,668,719
CONVERTIBLE SOFA BED
Addie B. Romero, New Iberia, La., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Oct. 9, 1970, Ser. No. 79,509
Int. Cl. A47c 17/14
U.S. Cl. 5—17 **1 Claim**

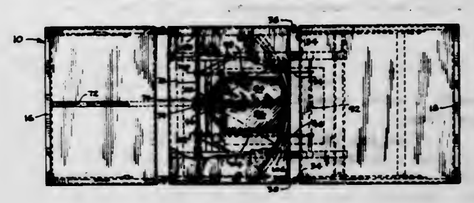




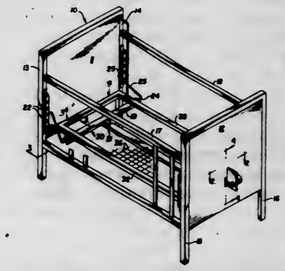
A double bed is convertible into twin sofas having a common back and disposed back to back. Headboards and footboards of the bed form end arm supports for the sofas.

3,668,720
MATTRESS SUPPORT STRUCTURE
Justin J. Wetzler, 703 Sheridan Road, Evanston, Ill.
Filed Dec. 29, 1969, Ser. No. 888,357
Int. Cl. A61g 7/02
U.S. Cl. 5—91 **6 Claims**

A mattress support structure of the type having a mattress thereon with the mattress having a central opening and means associated with the support structure and mattress to change the configuration of the opening from closed to open position and with a waste receptacle position below the opening in the mattress.

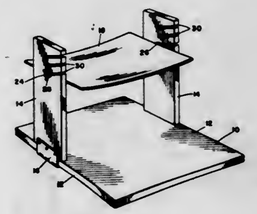


3,668,721
BABY CRIB
Levaughn Jenkins, 704 West Tichenor Street, Compton, Calif.
Filed Jan. 25, 1971, Ser. No. 109,479
Int. Cl. A47d 9/02, 9/04
U.S. Cl. 5—109 **5 Claims**



A baby crib and bed which includes a mattress supporting means having spaced apart parallel rail members supported on rollers carried by an underlying frame and attached to electrically powered mechanism arranged to give said supporting means a planar reciprocating motion.

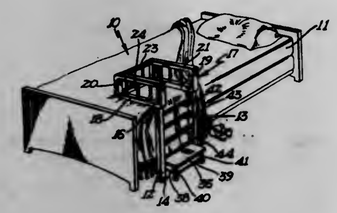
3,668,722
DUAL OCCUPANCY CRADLE
Bernie Edward Gallant, 860 Loring Street, San Diego, Calif.
Filed June 12, 1970, Ser. No. 45,709
Int. Cl. A47c 21/00, 9/00
U.S. Cl. 5—327 **7 Claims**



A cradle for use by two adults simultaneously. More specifically it is easily portable equipment for accomodation of one prone person and for supporting the weight of a superimposed prone adult person, the item consisting essen-

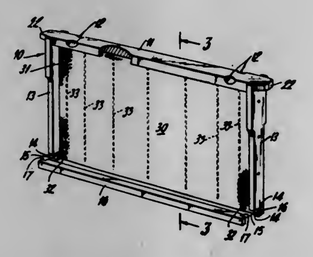
tially of an upholstered base with a hammock swung thereover. The item is collapsible and the height of the hammock is adjustable. The disclosure includes a foot rest or bench which may be used concurrently.

3,668,723
PATIENT RISER
Francis H. Bratton, Avon, Conn., assignor to Aprand, Inc., Avon, Conn.
Filed Jan. 14, 1971, Ser. No. 106,487
Int. Cl. A47c *21/00*
U.S. Cl. 5—327 9 Claims



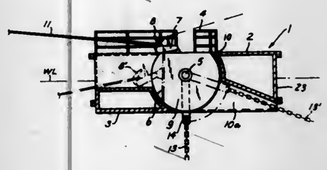
Support means for use in combination with a generally horizontally disposed seating surface for supporting persons while in a sitting position, such as a chair, bed, hospital bed, chaise lounge or the like. The support means comprises a pair of generally vertically disposed, preferably adjustable posts, adapted to extend from the floor to the support surface, these posts each having a lateral side wall secured thereto and extending rearwardly therefrom and adapted to flank a person sitting on the support surface. The lateral side walls are each provided with a base rail portion which is adapted to engage the support surface, along with a riser rail coupled to the top of the lateral side wall and adapted to be engaged by a person sitting on said support surface for assistance in rising. The post support means connected rigidly together below the lateral side walls to hold them rigid in the absence of a rigid rear wall, or a rigid rear wall means is coupled across the rear of the lateral side walls, and is adapted to be disposed in back of a person resting on the support surface. Preferably, the rigid rear wall means is provided with a base rail portion for engaging the support surface.

3,668,724
HONEYCOMB FOUNDATION
Young T. Cho, 118-23 83rd Avenue, Kew Gardens, N.Y.
Filed June 12, 1970, Ser. No. 45,791
Int. Cl. A01k *47/04*
U.S. Cl. 6—11 8 Claims



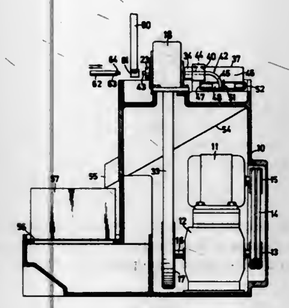
A honeycomb foundation resists honeycomb stretch and in a honeycomb frame, the honeycomb foundation has a movable bottom which may be adjusted to induce bees to make honeycomb over the entire foundation area.

3,668,725
MOORING BUOY
Eberhard Renz; Siegfried Voss, and Gunter Ecke, all of Bremerhaven, Germany, assignors to Aktiengesellschaft "Weser", Bremen, Germany
Filed May 11, 1970, Ser. No. 36,089
Claims priority, application Germany, May 10, 1969, P 19 23 955.5
Int. Cl. B63b *21/52, 21/04*
U.S. Cl. 9—8 R 10 Claims



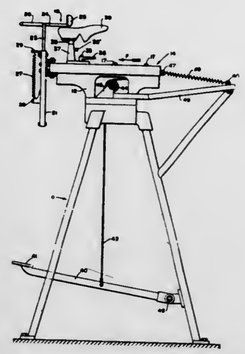
A mooring buoy wherein a horizontal pivot which is mounted in the center of an upright cylindrical buoyant body supports a freely pivotable carrier for one or more mooring hooks and is connected to the bottom by one or more chains. The carrier normally assumes an angular position in which the hook or hooks are located at the general level of the upper side of the swimming body to facilitate attachment of hawsers. The carrier is held in such position by one or more counterweights and/or by one or more floats which can form integral parts of the carrier.

3,668,726
AUTOMATIC NUT-TAPPING APPARATUS
Katsumi Shinjo, 8, 6-chome, Asahi Minamidori, Mishinariku, Osakashi, Japan
Filed Jan. 16, 1970, Ser. No. 3,405
Claims priority, application Japan, Jan. 20, 1969, 44/4607
Int. Cl. B23g *1/04, 1/16*
U.S. Cl. 10—129 4 Claims



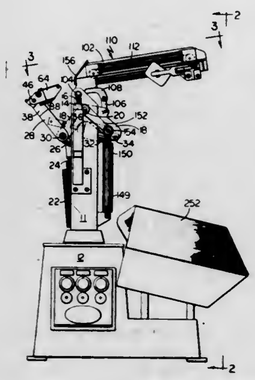
A bent tap in a nut-tapping apparatus is provided with an anti-friction sliding means arranged in parallel with the tap, which sliding means helps the tap to advance by the lead of its own screw threads during the tapping operation when it is engaged by the bent portion of the tap due to cutting moment.

3,668,727
MACHINE FOR LASTING SHOES
Thomas A. McCann, Via di Scorcola 15, 34100 Trieste, Italy
Filed Nov. 5, 1969, Ser. No. 874,120
Int. Cl. A43d *3/12*
U.S. Cl. 12—15 6 Claims



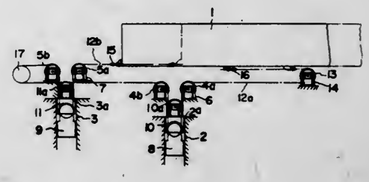
The present invention refers to a machine acting as a mechanical shoehorn to put lasts in shoes such as prefabricated moccasins, shoes with stitched insoles and other types which must be placed on a last, the shoehorn being foot operated.

3,668,728
MACHINE FOR DISASSEMBLING A SHOE FROM A LAST
Jacob S. Kamborian, West Newton; Wladyslaw Typrowicz, Belmont, and Gordon S. Anderson, Framingham, all of Mass., assignors to Jacob S. Kamborian, West Newton, Mass., by said Typrowicz and Anderson
Filed Feb. 9, 1971, Ser. No. 113,831
Int. Cl. A43d *3/10*
U.S. Cl. 12—15.1 19 Claims



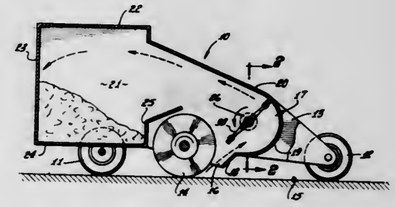
A machine for disassembling a shoe from a last supported bottom-up by concomitantly causing a pad to press against and raise the quarter of the shoe above the bottom of the last and push the raised quarter toewardly over the bottom of the last and causing a bar to move downwardly against the bottom of the forepart of the shoe to break the last. Grippers are provided that grip the forepart portions of the shoe and move toewardly to remove the shoe from the broken last and a second bar is provided that is raised to close the last after the shoe has been removed from the last.

3,668,729
SLIDING APPARATUS OF A MOVABLE BRIDGE
Kunio Mori, Sohka, and Yoshio Shirage, Fujisawa, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 28, 1970, Ser. No. 76,068
Claims priority, application Japan, Dec. 28, 1969, 44/105076
Int. Cl. E01d *15/10*
U.S. Cl. 14—43 6 Claims



There is disclosed a bridge extendable away from, and retractable back towards, a quay, and including winch means, at least one flexible connection for extending the bridge and at least one flexible connection for retracting the bridge, said flexible connections coupling the winch means to the bridge, one of said flexible connections being wound and the other unwound by the winch means upon operation thereof to extend or retract the bridge, and weights suspended from said flexible connections between the winch means and the bridge. When a boat is secured to the outboard end of the extended bridge, movement of the weights allows the bridge to follow movement of the boat.

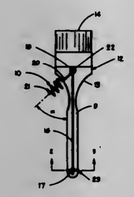
3,668,730
ROAD SWEEPER CONVEYOR
Garred N. Scharmann, Pomona; Kermit W. Warn, Yorba Linda, and Donald G. Mortensen, Upland, all of Calif., assignors to Wayne Manufacturing Company, Pomona, Calif.
Filed Sept. 4, 1970, Ser. No. 69,853
Int. Cl. E01h *1/04*
U.S. Cl. 15—83 3 Claims



A rotary road sweeper conveyor operable within a shroud is provided with debris displacement units in the form of spaced longitudinally flexible arms interconnected by terminal squeegees so that large or stiff debris pieces displaced

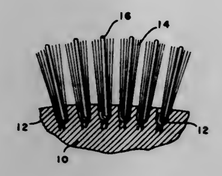
by the squeegees may pass through the open spaces between the flexible arms.

3,668,731
PAINT BRUSH HOLDER
Herbert J. McBride, 2936 Pariso Way, La Crescenta, Calif.
Filed July 20, 1970, Ser. No. 56,619
Int. Cl. A46b 5/02, 17/02
U.S. Cl. 15—146 2 Claims



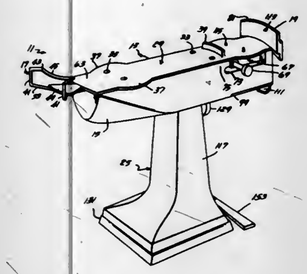
A paint brush holder designed for mounting on an extension handle to allow painting of high places without the use of a ladder. It employs a unitary spring member securable to the handle of the paint brush and includes a helical portion which engages the threads of standard extension handles. The helical thread portion is positioned such that the brush is supported at the throat of the paint brush handle in approximately the same position as a normally held brush is supported. The spring characteristic of the member provides a flexibility comparable to the human wrist in painting operation. The body of the holder lies along the brush handle and is out of the way so that the brush may be used in a conventional hand-held manner without removal or interference. The helical portion acts as a holder for the brush when removed from an extension handle whereupon the helical portion can engage the lip of a paint can or pail.

3,668,732
HAIR BRUSH
Robert A. Lardenois, Hermes (Oise), France
Filed May 8, 1970, Ser. No. 35,867
Int. Cl. A46b 3/16
U.S. Cl. 15—159 A 3 Claims



Hair brush having a solid rigid base member with a plurality of spaced recesses formed therein, each recess having a plurality of tufts of fine bristles being bent back upon themselves and a single thick strand of a length greater than the length of tuft of fine bristles.

3,668,733
SHOE HOLDING APPARATUS
Raymond M. Ring, Seminole, Fla., assignor to Aloma Products, Inc., Altamonte Springs, Fla.
Filed Mar. 1, 1971, Ser. No. 119,459
Int. Cl. A47l 23/18
U.S. Cl. 15—267 4 Claims



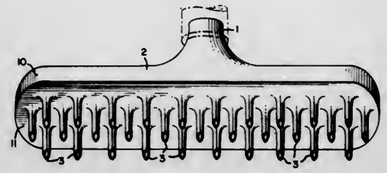
A shoe-holding apparatus for use in removably supporting a shoe for repairing, polishing, or the like, including an elongate frame having an upper surface adapted to supportingly engage the undersurface of the shoe sole. A shoe-gripping construction includes convergingly operative forward and rearward grip members for clampingly engaging respectively the forward sole edge at the shoe toe and the heel edge at the back of the shoe. The forward grip member is operative through a leaf spring and a helical tension spring, causing compound gripping action on the shoe sole toe edge in directions both rearwardly and downwardly of the shoe sole supporting frame. The shoe gripping mechanism and action is selectively variable in position and tension for accommodating various shoe shapes and sizes.

3,668,734
VACUUM CLEANER SHAG RUG NOZZLE CONSTRUCTION
Max L. Fairaizl, Chagrin Falls, Ohio, and John F. Schneerman, Winfield, Ill., assignors to Health-Mor, Inc., Chicago, Ill.
Filed Oct. 21, 1970, Ser. No. 82,565
Int. Cl. A47l 9/02
U.S. Cl. 15—328 3 Claims



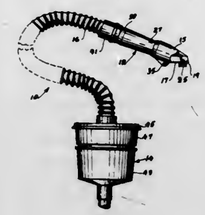
A vacuum cleaner nozzle construction having a usual nozzle body formed with an elongated cleaning mouth between a pair of rug surface contacting lips. The nozzle body is connected to a usual source of cleaning suction. A skid having a pair of spaced parallel sledlike runners extends below the nozzle lips transversely beneath the nozzle body raising the nozzle lips a sufficient distance above a deep pile shag rug being cleaned so that the nozzle lips will not seal into the pile, thus allowing air to circulate through the pile for removal of dirt. The nozzle and skid are pushed through the shag rug, the suction stands the rug fibers upright for cleaning and for uniform appearance of pile.

3,668,735
VACUUM CLEANER HEAD FOR CLEANING AND COMBING SHAG CARPETING
Fred W. Dupea, 4501 North 25th Street, Tacoma, Wash.
Filed Oct. 1, 1970, Ser. No. 77,277
Int. Cl. A47l 9/02
U.S. Cl. 15—397 2 Claims



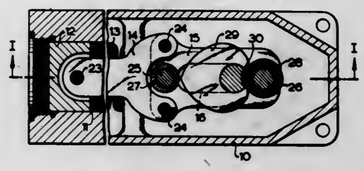
Vacuum cleaner head in the form of a rake for cleaning and combing the pile of a shag rug, having a hollow stem, a hollow body and a number of hollow rake-like fingers with elliptical cross-sections extending downward from the body section parallel to one another and arranged in a number of off-set rows. The head when moved back and forth through the pile in the fashion of a rake will lift and untangle the individual strands exposing the dirt deep within the carpet to the cleaning action of the vacuum air stream.

3,668,736
GROOMING AND CLEANING DEVICE
Nicholas R. Loscalzo, Melville, N.Y., assignor to Petcraft Industries Incorporated, Melville, N.Y.
Filed Apr. 13, 1970, Ser. No. 27,721
Int. Cl. A47l 9/06
U.S. Cl. 15—402 3 Claims



For grooming the coat of an animal, a device having a working appliance and a collecting appliance connected to a vacuum source, and a flexible hose joining the appliances. The working appliance comprises a tubular handle section connected to a hose, a nozzle end defining a substantially planar opening, a plurality of slotted ribs behind the opening to receive a removable currycomb and a removable depth-stop comprising a rigid member extending below the plane of the nozzle opening. The collecting appliance is a filter which includes a container enclosing a removable filter basket. The container has a base with a tubular vacuum port for connection to the vacuum source; the lid is similarly provided with a tubular opening but for connection to the flexible hose and the base and the filter basket are cooperatively flanged to support the filter basket.

3,668,737
AUTOMATIC DOOR CLOSER
Horst Tillmann, Ennepetal-Voerde, Germany, assignor to Dorken & Mankel KG, Ennepetal-Voerde, Germany
Filed Nov. 6, 1969, Ser. No. 874,599
Claims priority, application Germany, Nov. 7, 1968, P 18 07 399.9
Int. Cl. F05f 3/20
U.S. Cl. 16—55 8 Claims



An automatic door in which a closer shaft is connected at one end thereof to a door for turning movement therewith and carries in a housing in which the closer shaft is turnably mounted a cam fixed to the closer shaft. A pair of followers carried by a carriage are arranged to opposite sides of the shaft and cooperate with the cam to move the carriage in a first direction during turning of the shaft and cam to either side of a rest position in which the door is closed, and spring means cooperate with the carriage to be stressed to an increasing degree during movement of said carriage in this first direction, while damping means cooperate with the carriage to dampen the movement of said carriage in a direction opposite to said first direction.

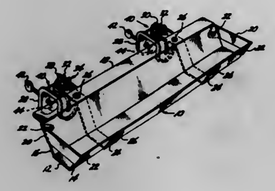
3,668,738
DEVICE FOR MAKING A LONGITUDINAL CUT INTO THE NECK OF POULTRY
Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands
Filed Feb. 26, 1970, Ser. No. 14,494
Claims priority, application Netherlands, Mar. 25, 1969, 6904551
Int. Cl. A22c 21/00
U.S. Cl. 17—11 4 Claims



A device for making a longitudinal cut into the back of the neck of poultry by means of a rotating disc provided along its circumference with outwardly protruding knives, separated by downwardly and outwardly protruding guide members the

whole cooperating with a fixed guide and having an inclined position with respect to the horizontal.

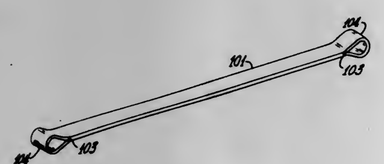
3,668,739
FISH CLEANING TROUGH FOR BOATS
Elbert G. Lewis, 10435 17th Street, Seattle, Wash.
Filed July 31, 1970, Ser. No. 59,945
Int. Cl. A22c *25/06*
U.S. Cl. 17—53 2 Claims



A fish-cleaning trough adapted to be easily mounted to or removed from the gunwale of a boat provides a convenient means of supporting a fish as it is cleaned during motions of a boat. The trough is suspended over the water as the fish are cleaned to facilitate disposal of wastes and it is partially open at the ends so that rinse water and organic wastes can easily run out, while the fish remains confined to the trough.

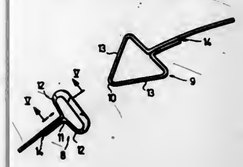
The trough is attached to the side of a boat by utilizing securing means including pivotal brackets, hinges, and/or adjustable clamps. Materials used are plastic, wood, galvanized metals, or other protected metals to avoid and/or to inhibit corrosion and rusting.

3,668,740
HIGH STRENGTH STRAP AND METHOD OF MAKING IT
Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 27, 1970, Ser. No. 93,190
Int. Cl. B32b *5/12*; B65d *63/00*; B65j *1/22*
U.S. Cl. 24—16 PB 18 Claims



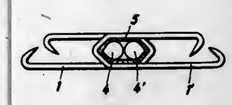
A high strength non-corrodible strap of composite materials for support or securement of articles and a method of making the strap. The strap is reinforced with filaments, such as glass fibers, looped into a continuous band having two sides merged in the middle to form an elongated body portion between end connecting loops. The matrix material, such as polyester resin, surrounds and protects the filaments from abrasion and corrosion while the filaments impart high strength to the strap. Loop-shaped thimbles can be fabricated into the loops to provide bearing surfaces at the connections. The strap with associated guides is particularly useful as a hold down strap to anchor underground storage tanks.

3,668,741
WIRE JOINTS
Willi Grossbuddе, Holkesode 23, 56 Wuppertal-Langerfeld, Germany
Filed Sept. 28, 1970, Ser. No. 76,055
Claims priority, application Germany, Sept. 30, 1969, P 19 49 203.6
Int. Cl. B65d *63/10*
U.S. Cl. 24—27 1 Claim



A joint for wires serving as ties for bales of cotton, wool, synthetic fibers and the like, the wire ends to be connected each comprising a rebent portion forming loops which define male and/or female members to be hooked one in to the other, the joint having means to reinforce the male member so that it withstands the maximum tensile stress applied to the tie without disengaging from the female member, the distal ends of the wire preferably being secured to the wire length by spot welding.

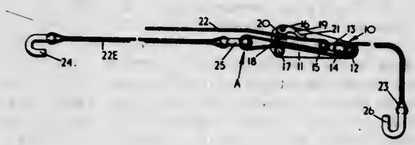
3,668,742
COUPLING FOR WEBS
Otto Bartmann, 6 Waldstr., Birgel, Duren, Germany
Filed July 23, 1970, Ser. No. 57,446
Claims priority, application Germany, July 24, 1969, G 69 29 255.3
Int. Cl. F16g *3/02*
U.S. Cl. 24—33 C 9 Claims



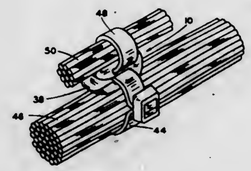
A coupling is disclosed for securing adjacent end web portions without overlap of the webs. The coupling includes series of spaced loops which project endwise from the end portions of the webs and are held in intermeshing relationship by a connector which is threaded through the intermeshing loops and comprises a pair of parallel rods which are freely movable related to one another and convexly curved in cross-sectional profile at least where the rods make contact with each other and which are enclosed in a resilient tube.

3,668,743
STRAP TENSIONING DEVICES
Richard Walter Roberts, Tarporley, England, assignor to B. Dixon-Bate Limited, Chester, Cheshire, England
Filed Nov. 24, 1970, Ser. No. 92,493
Claims priority, application Great Britain, Nov. 25, 1969, 57,520/69
Int. Cl. A43c *11/00*; A44b *21/00*; A62b *35/00*
U.S. Cl. 24—68 CT 3 Claims

A tensioning device for a strap which is used to secure cargo in position and in which the tensioning device has at one end a slidable locking means and at the other end a pivotal locking means and with the strap wound around and through the tensioning device such that a mechanical advantage of at least 3:1 is obtained when tautening the strap.

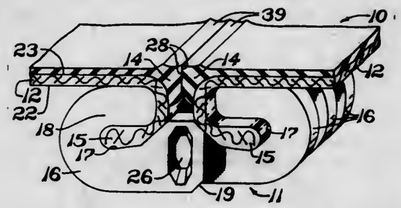


3,668,744
CONNECTOR CLIP
Roy A. Moody, Flossmoor; John F. Sullivan, South Holland, and Arlie J. Thayer, Tinley Park, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.
Filed Oct. 21, 1970, Ser. No. 82,699
Int. Cl. B65d *63/06*; A44b *21/00*
U.S. Cl. 24—73 PB 16 Claims



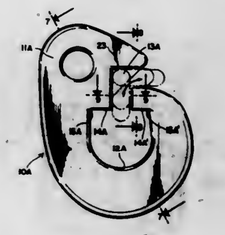
A connector clip for linking a pair of looped straps holding bundles of wires or similar items including, a solid walled passage, and an open walled passage, the open walled passage being adapted to clip onto a primary strap in an already looped position after which the second strap is placed longitudinally through the closed passage prior to looping around a second bundle of wires.

3,668,745
SEALING CLOSURE
Carroll P. Krupp, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Dec. 18, 1969, Ser. No. 873,760
Int. Cl. A44b *19/32*
U.S. Cl. 24—205.1 9 Claims



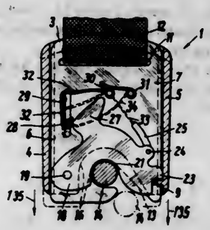
A sealing closure between two margins of sheet material in which each margin has a sealing strip continuously applied to one face of the margin at a position spaced from the edge thereof and interlocking teeth of a slide fastener fastened to the edge of the margin at the sides of the teeth so that the edges are turned under and the teeth overlie the other face of the margin when the slide fastener is in the locked position. As the slide fastener closes, sealing lips on the sealing strips are pulled into engagement and resiliently oppose the forces produced by the turning under of the edges of the margins.

3,668,746
HOOK HAVING SLOTTED ENTRY
Roger L. Gower, Room 302, 1191 Jefferson Davis Highway, Arlington, Va.
Filed Nov. 18, 1970, Ser. No. 90,736
Int. Cl. A43c *11/08*; A44b *13/00*
U.S. Cl. 24—230.5 4 Claims



Hook means for fastening a chain-bound article securely in connected position, access to the throat of the hook being gained through a slotted entry of diameter sufficiently greater than the diameter of the bar stock of the chain with which said hook is used to permit clearance of a link of such chain through said slotted entry, and thus permit rapid connection and disconnection thereof while minimizing the possibility of accidental disengagement of said hook and said chain.

3,668,747
SNAPLOCK FOR SAFETY BELTS
Gustav Ockel, Norderstedt, Germany, assignor to Firma Klippan GmbH, Kelsfurth, Germany
Filed Dec. 3, 1970, Ser. No. 94,678
Claims priority, application France, Dec. 8, 1969, 6942338
Int. Cl. A44b *13/00*, *19/00*
U.S. Cl. 24—241 8 Claims



A snap or clip-on lock for safety belts particularly suitable for motor vehicles which is capable of being clipped onto a bow or a hoop locked to the vehicle body consisting of a movable lock housing and a locking plate slidably disposed in the housing and including a recess for receiving the bow. The locking plate also includes one or more arresting hooks on the sides of the plate, the arresting hooks being pivotably mounted against the plate and including a spring urging the arresting hooks into their locking position. The lock housing

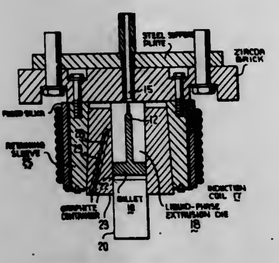
includes an abutment which prevents pivoting of the arresting hooks into a release position while the arresting hooks are locked to the bow.

3,668,748

PROCESS FOR PRODUCING WHISKER-REINFORCED METAL MATRIX COMPOSITES BY LIQUID-PHASE CONSOLIDATION

Amarnath P. Divecha, Falls Church, Va.; Paul J. Lare, Bowie, Md.; Fred Ordway, Jr., Bethesda, Md.; Robert A. Hermann, Rockville, Md.; Orville B. Van Blaricon, Alexandria, and Henry Haba, Fairfax, both of Va., assignors to American Standard Inc., Falls Church, Va.

Filed Sept. 12, 1969, Ser. No. 857,376
Int. Cl. B23p *17/00*; B22f *3/24*
U.S. Cl. 29—419 10 Claims



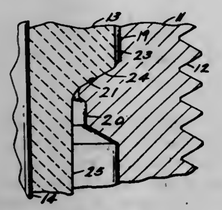
A fiber-reinforced metal composite of desired shape is produced by consolidating a mixture of the metal matrix and the fibers under pressure with the mixture maintained at a temperature in which the matrix system is partly in the liquid phase and partly in the solid phase, utilizing a liquid-phase extrusion die cavity of predetermined volume. With approximately one quarter of the matrix system in the liquid phase, and containing up to approximately 50 percent by volume of oriented fibers or whiskers, the material of the composite billet is extruded into the die cavity in order to consolidate the composite billet to the volume of the die cavity, in which the desired shape is to be formed. Heating is discontinued when the cavity is filled completely by the semi-molten metal fiber composite.

3,668,749

SPARK PLUG SEAT

Richard S. Podiak, Maumee; James M. Mack, and Michael A. Bretsch, both of Toledo, all of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed May 6, 1970, Ser. No. 35,043
Int. Cl. F23q *3/70*; H01t *13/00*
U.S. Cl. 29—25.12 7 Claims



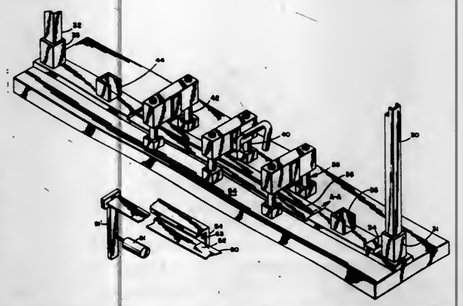
A method for forming a gasketless seat between an insulator and a shell in a spark plug. A downwardly facing shoulder is formed on the insulator to define an angle within a range between 20° and 45° to a plane perpendicular to the insulator axis. An upwardly facing shoulder is formed within a reduced opening in the shell to define an angle within a range between 0° to a plane perpendicular to the shell axis and 5° less than the insulator shoulder angle. The insulator is then inserted into the shell opening until the downwardly facing shoulder on the insulator abuts the upwardly facing shoulder within the shell opening. In completing assembly of the spark plug, the insulator is forced into the shell to deform the shell shoulder by cold working it against the insulator shoulder, thereby forming a thermally conducting seat between the shell and the insulator.

3,668,750

AUTOMATIC PROCESSING EQUIPMENT FOR MICROELECTRONIC CIRCUITS

Lewis L. McAllister, Marion, and Wencil D. Popek, Cedar Rapids, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Jan. 11, 1971, Ser. No. 105,394
Int. Cl. B23p *23/04*, *21/00*
U.S. Cl. 29—33 M 18 Claims



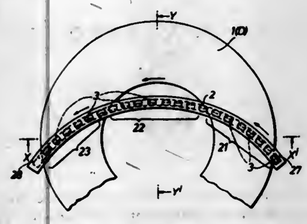
Equipment for automatically processing microelectronic circuits for application in circuits defined on printed circuit boards and the like. A plurality of work stations apply insulative backing to the circuit cases, trim and form the leads, and cold-flow solder ribbon about the formed leads. Circuits may be automatically loaded into the equipment, processed, and unloaded following the completed processing.

3,668,751

APPARATUS FOR CHAMFERING TABLETS

Haruji Saeki, Suita, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed June 29, 1970, Ser. No. 50,400
Claims priority, application Japan, June 30, 1969, 44/52031; Aug. 28, 1969, 44/68424; May 11, 1970, 45/40406
Int. Cl. B23d *67/00*; B24b *7/00*
U.S. Cl. 29—76 15 Claims



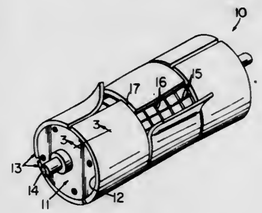
An apparatus for chamfering the sharp edges of pharmaceutical tablets. The apparatus has abrading means having at least two moving surface portions having a grinding or abrading surface which is sufficiently hard and rough to scrape the tablets. A guiding member is disposed above the surface portions which has a channel interconnecting inlet and outlet openings and having a cross section permitting the unobstructed passage of the tablets while holding the tablets oriented in a predominantly upright yet slightly inclined position with one of the sharp edges toward the surface of the surface portions. Two grooved segments extend along parts of the length of the guiding member connected by a tubular segment. Each of the grooved segments extends across a respective moving surface portion along a line which intersects the direction of movement of the surface portion at an angle other than a right angle. The portions of the channel extending through each of the grooved segments is a groove opening out of the segment and opposed to the corresponding grinding and abrading surface portion and spaced therefrom to leave a small clearance between the segment and the surface portion. One of said grooved segments orients the tablets with one of the circular edges against the corresponding surface portion and the other of the grooved segments orients the tablets with the other of the circular edges against the corresponding surface portion. The tubular portion has the portion of the channel extending therethrough twisted, if necessary, to change the orientation of the tablets from the position with one edge against the surface portion to the position with the other edge against the surface portion.

3,668,752

COATING ROLLER AND METHOD OF MANUFACTURE

Edward A. Clifton, Englewood, and Artemio P. Carrandi, Dayton, both of Ohio, assignors to Dayco Corporation, Dayton, Ohio

Continuation-in-part of application Ser. No. 6,623, Jan. 28, 1970, now abandoned. This application Sept. 2, 1970, Ser. No. 70,926
Int. Cl. B21b *31/08*
U.S. Cl. 29—124 7 Claims



A coating roller and method of manufacture is disclosed wherein the roller is comprised of a magnetic cylinder and a plurality of magnetically attracted roller coverings individually supported on the outside surface of the roller. The edges of the coverings are separated to define distinct coating impressions on the product which is coated. Each covering of the roller is easily removed and replaced as required while keeping the remaining coverings substantially intact.

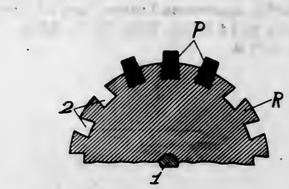
3,668,753

CONTACT ROLLER IN A SANDING DEVICE

Katsuji Hasegawa, Nagoya City, Japan, assignor to Kabushiki Kaisha Meinan Seisakusho, Nagoya City, Japan

Continuation of application Ser. No. 757,278, Sept. 4, 1968, now abandoned. This application Sept. 14, 1970, Ser. No. 72,137
Int. Cl. B24b *21/14*
U.S. Cl. 29—121 1 Claim

In a sanding device, a contact roller is steel material having grooves provided at an equal pitch and at an angle in relation to a longitudinal axis of the contact roller on an outer peripheral surface thereof and each having a larger width at a bottom portion thereof in comparison with that of a top portion; and pressure elements fitted displaceably into said grooves for applying pressure to a material to be processed in contact with a belt sander mounted thereon.

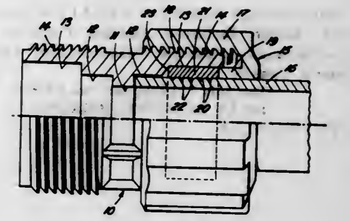


3,668,754

METHODS OF FORMING PIPE JOINTS

Derek Walter Boast, Penhurst, Hill Crescent, Totteridge, London, No. 20, England

Filed Apr. 22, 1970, Ser. No. 30,834
Int. Cl. B23p *11/02*
U.S. Cl. 29—157 2 Claims



A method of forming a pipe joint, which pipe joint is of the kind in which an external peripheral flange is provided on the pipe and a nut or other retaining device encircles the pipe so as to abut the flange (or a member in engagement therewith), which nut or retaining device can be engaged with a threaded or other suitably shaped part of the fitting to which the pipe is to be joined in such manner that the flange is trapped between the nut or retaining device and part of the fitting. The method comprises forming the flange as an annular element which is expanded by heating and is then shrunk on to the pipe. The inner periphery of the annular element and the outer periphery of the pipe are formed with inter-engaging projections and recesses.

3,668,755

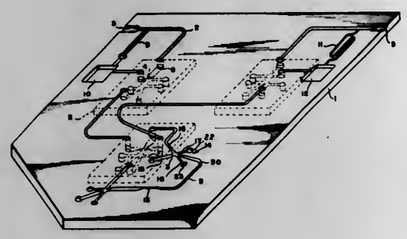
BONDING OF METALLIC MEMBERS WITH LITHIUM AND LITHIUM CONTAINING ALLOYS

Earl I. Larsen, Indianapolis, Ind., and Richard H. Kreck, Weston, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 25, 1971, Ser. No. 109,329
Int. Cl. B32b *15/16*, *15/20*
U.S. Cl. 29—199 42 Claims

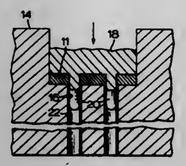
Bonding of copper and copper containing alloys or silver or silver containing alloys to copper or copper alloys or to silver or silver containing alloys through the use of lithium or a lithium containing alloys.

3,668,756
METHOD FOR MAKING FLUID CHANNELS
Andre A. Wieme, Zwevegem, Belgium, assignor to N. V. Bekaert S. A., Zwevegem, Belgium
Filed Apr. 18, 1969, Ser. No. 817,431
Claims priority, application France, Apr. 23, 1968, 149016
Int. Cl. B21d 53/02; B21k 29/00; B23p 15/26
U.S. Cl. 29—157 R 7 Claims



A method of making flow channels in fluid control devices comprising coining into the surface of the device a length of hard drawn wire having an appropriate form, and removing the length of wire from the channel thus formed.

3,668,757
METHOD OF FORMING A HEAT EXCHANGER
Otto E. Rieder, Etobicoke, Ontario, Canada, assignor to General Impact Extrusions (Manufacturing) Ltd., Toronto, Ontario, Canada
Filed July 7, 1970, Ser. No. 52,919
Int. Cl. B21d 53/02; B21k 29/00
U.S. Cl. 29—157.3 R 4 Claims

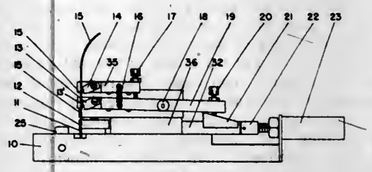


An improved method of forming a heat exchanger including the step of forming a plurality of heating tubes integrally with an end plate and by an impact extrusion process and connecting the interior passages of the tubes in a heat exchanger circuit.

3,668,758
BONDING OF METALLIC MEMBERS WITH ALKALI METALS AND ALKALI METAL CONTAINING ALLOYS
Richard H. Krock, 126 Conant Road, Weston, Mass., and Earl I. Larsen, 9565 Copley Drive, Indianapolis, Ind.
Continuation-in-part of application Ser. No. 109,329, Jan. 25, 1971. This application July 8, 1971, Ser. No. 160,931
Int. Cl. B32b 15/16, 15/20
U.S. Cl. 29—199 70 Claims

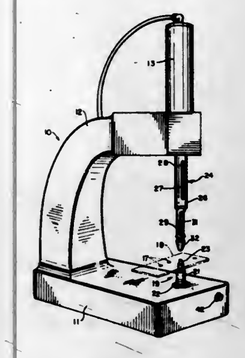
Bonding of copper and copper containing alloys or silver or silver containing alloys to copper or copper alloys or to silver or silver containing alloys through the use of alkali metal or alkali metal containing alloys.

3,668,759
CASSETTE HUB LEADERING HEAD
Trevor William Kendall, Ronkonkoma, N.Y., assignor to Dictaphone Corporation, Bridgeport, Conn.
Filed Mar. 12, 1970, Ser. No. 18,863
Int. Cl. B23p 19/00
U.S. Cl. 29—200 B 6 Claims



A device is provided for securing a length of leader tape from a supply thereof to a reel hub having a slot on its peripheral side wall. The hub is initially positioned on the base of the device with a segment of a leadering tape positioned adjacent the slot. A pair of spaced die members are mounted on the base and have vertically aligned apertures therein through which a supply of frangible rod is advanced. A shearing blade is slidably mounted in the device for movement between the die members and is reciprocated by an air cylinder between extended and retracted positions. Upon movement of the blade from its retracted position to its extended position, the blade shears the portion of the frangible rod between the die members and forces the sheared rod portion, with the tape adjacent the hub, into the slot in the reel hub.

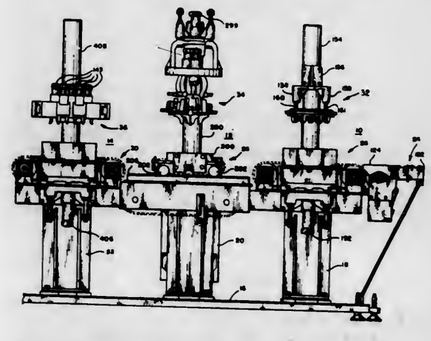
3,668,760
AIR OPERATED TERMINAL INSERTION DEVICE
Stuart J. Biederman, Floral Park, and Walter E. Jezewski, Tuckahoe, both of N.Y., assignors to North American Philips Corporation, New York, N.Y.
Filed Feb. 27, 1970, Ser. No. 14,998
Int. Cl. H05k 13/04
U.S. Cl. 29—203 B 11 Claims



An air operated terminal insertion device comprising a first reciprocating member and a second reciprocating member which is attached to a double acting pneumatic cylinder and frictionally engages the first member concentrically to actuate the same. One of the members contains a stop which interacts with the other member to limit the axial movement therebetween. A pushrod is attached at one end to the second member and terminates at the other end in an inserter portion. The first member is provided with a transverse

slot through which the terminals are fed for insertion, and elastic means on this member provide support for the terminal immediately prior to insertion by the inserter portion of the pushrod.

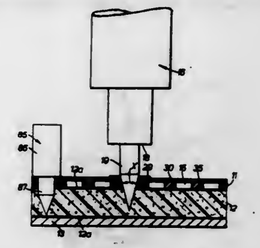
3,668,761
MACHINE FOR MANUFACTURING ELECTRIC STORAGE BATTERIES
Richard A. Buttke; Anthony Sabatino; Daniel Orlando, all of Milwaukee, and William H. Behrens, Racine, all of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Original application Mar. 27, 1963, Ser. No. 268,359, now Patent No. 3,544,754. Divided and this application Sept. 4, 1970, Ser. No. 69,828
Int. Cl. H01m 37/00
U.S. Cl. 29—204 D 9 Claims



Apparatus for aligning conductive portions of adjacent cell element assemblies on opposite sides of battery partition walls so that an intercell weld can be made through those walls between the aligned conductive portions includes a plurality of pairs of bifurcated aligning extensions depending from an aligning head. A battery support is positioned below the aligning head and provision is made for producing relative movement between the aligning extensions and the battery support so that the extensions can be brought into engagement with conductive portions of cell element assemblies contained in a battery resting on the battery support. The pairs of extensions are relatively spaced in accordance with the relative spacing of the adjacent conductive portions of the battery cell element assemblies and the bifurcations in each pair of aligning extensions are relatively aligned so that the extensions will engage and align conductive portions of adjacent assemblies. Provision is also made for testing the position of the cell element assemblies in the battery as well as the position of the battery per se on the battery support. The testing arrangement is effective to produce a signal in the event of a completely misaligned battery or misaligned battery cell element assemblies.

3,668,762
PREPARATION OF ARTWORK MASTERS
Alfred Charles Clark, Conduit Lane, Woodham, Mortimer near Maldon, England
Filed Oct. 13, 1970, Ser. No. 80,379
Claims priority, application Great Britain, Oct. 13, 1969, 50,279/69
Int. Cl. H01r
U.S. Cl. 29—203 B 7 Claims

There is provided apparatus and method for the preparation of artwork masters used for the manufacture of printed circuit boards. A grid having uniformly spaced perforations onto which a work sheet for the master is applied is used for proper alignment of pressure sensitive pads on the sheet, the pads being applied by a spiked tool adapted to be centered in and by the perforations and press the pads against the sheet.



There is also provided a dispenser and running "conductor" lines between spaced pads on the work sheet.

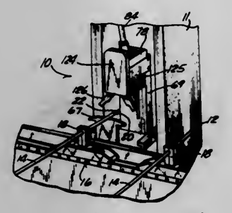
3,668,763
WIRE STRIP AND WRAP BIT
Percy Leonard Micklewright, Sawbridgeworth, and Ernest Victor Scaddan, London, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,015
Claims priority, application Great Britain, May 9, 1969, 23,745/69
Int. Cl. H05k 13/04
U.S. Cl. 29—203 DT 5 Claims

A wire-wrapping bit cuts and strips a wire end and wraps a terminal in one operation using "free" ends of insulated wire (that is, not intended to be drawn up tight). The cutting elements are removed, and an easy-feed wire hold guide and length gauge are provided, whereby wire may be fed through the guide up to a striker flange on the shank of the bit, for determining the skinner length and the wire held against withdrawal by being trapped in the skinner plate. A collar surrounding the feed guide assists the feed and permits wire to be fed at 45° to the bit and prevents "snatch." An expanding bit shank, and a feed channel extending its length, both assist in ejection of the insulation after the wrapping operation.

3,668,764
AUTOMATIC TERMINAL APPLICATOR FOR INSULATED NON-METALLIC IGNITION TYPE WIRES
Magnus Randar, Menomonee Falls, Wis., assignor to Artos Engineering Company, New Berlin, Wis.
Filed Dec. 24, 1970, Ser. No. 101,206
Int. Cl. H01r 43/04, 9/00
U.S. Cl. 29—203 D 13 Claims

A terminal applicator for attaching an electric terminal to the end of an insulated non-metallic ignition type wire having one or both ends of the wire insulation stripped to expose a short section of the non-metallic conductor. The wire is conveyed in a step by step manner to the terminal applicator. The applicator includes a die set having a movable die and a fixed die. The movable die includes a pusher plate which is

moved downwardly with the movable die to partially bend the exposed conductor at the end of the wire downward into the path of motion of the movable die. The whole terminal applicator is moved toward the wire to seat the end of the wire in the terminal ears of an electric terminal. The motion



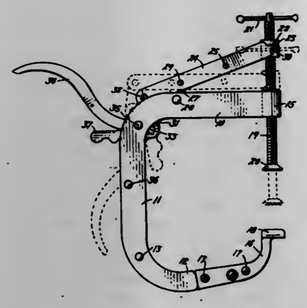
of the applicator is used to bend the downwardly bent conductor back against the outside surface of the insulation so that on crimping of the terminal ears around the insulation, the exposed end of the conductor of the wire will be in electrical contact with the terminal.

3,668,765

AUTOMOTIVE VALVE SPRING COMPRESSING TOOLS

James T. Clark, Ft. Morgan, Colo., assignor to Clark-Feather Manufacturing Co., Fort Morgan, Colo.

Filed Aug. 28, 1970, Ser. No. 67,799
Int. Cl. B25b *5/12*
U.S. Cl. 29—219 **5 Claims**



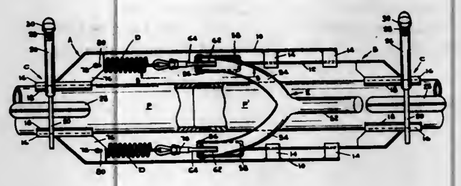
A C-shaped frame having an upper horizontal portion, a vertical side portion, a lower horizontal portion and an open side with an elongated, threaded presetting screw vertically slidable in a vertical screw slide sleeve on the forward extremity of the upper horizontal portion in axial alignment with a valve spring seat mounted on the forward extremity of the lower horizontal portion. A tiltable lever medially mounted on and above the upper horizontal portion and pivotally connected at its forward extremity to an actuating nut threaded on the presetting screw above the screw slide sleeve. A handle member pivoted on the vertical side portion in the plane of the frame and a toggle link connecting the rear extremity of said tiltable lever to the handle member so that vertical movement of the handle member will impart vertical movement to the presetting screw to compress the valve spring between the valve seat and the presetting screw without rotation of the latter.

3,668,766

PIPE COUPLING DEVICE

J. Warne Carter, Wichita Falls, and Martin Duane Neher, Burkburnett, both of Tex., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 27, 1970, Ser. No. 92,996
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 **9 Claims**



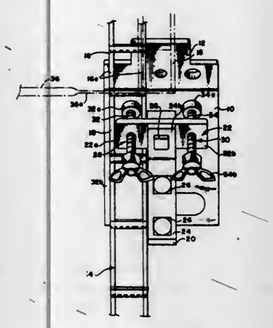
A pipe coupling device is provided which comprises a pair of parallel, telescopically arranged frames. Each frame is provided with means for holding or clamping a pipe section. The frames are connected to one another by tension springs. Manually operable means is employed to place the springs in tension so that the joint provided by the mating ends of pipe sections coated with a cement has constant, resilient pressure applied thereto.

3,668,767

LINK CHAIN DETACHER

Vernon H. Bebo, Academy, S. Dak.

Filed Sept. 22, 1969, Ser. No. 859,889
Int. Cl. B23g *7/04*; B25b *1/00*
U.S. Cl. 29—283 **5 Claims**



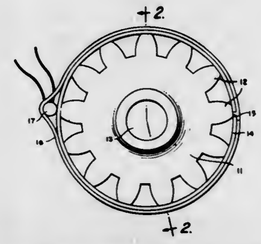
A portable support device for facilitating the detachment of one link of a link chain from another includes a base plate, an abutment plate extending at an angle outwardly of the base plate, and a "bumping" or abutment block located centrally of the base plate. A clamping arrangement mounted on the bumping block clamps a first link in the chain in the area of the intersection between the base and abutment plates. The abutment plate is angled with respect to the base plate so as to permit an adjacent link lying thereagainst to be displaced transversely with respect to the first link and so disconnected therefrom, this displacement being manually effected by impacting forces and the bumping block serving in absorbing these forces.

3,668,768

METHOD OF REBUILDING WORN GEAR TEETH BY EXPLOSIVE SWAGING

Fred De Core; Thaddeus A. Peake, and Ted R. Marshall, all of Louisville, Ky., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 10, 1970, Ser. No. 45,162
Int. Cl. B22d *19/10*; B23p *7/00*
U.S. Cl. 29—401 **2 Claims**



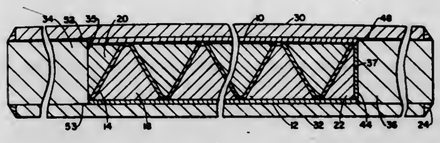
A method of rebuilding worn gear teeth by fitting a metallic driver plate around the top lands of the teeth on a gear and then wrapping a sheet of explosive material around the driver plate. Upon detonation of the explosive material, the driver plate is driven against the gear teeth and the gear teeth are swaged or bulged. The driver plate is then removed and the teeth are then machined or ground to a desired dimension.

3,668,769

ROLL DIFFUSION BONDING METHOD

Charles E. Conn, Jr., Manhattan Beach, and Robert P. Neumann, Torrance, both of Calif., assignors to North American Rockwell Corporation

Original application Dec. 28, 1966, Ser. No. 605,419, now Patent No. 3,444,608, dated May 20, 1969. Divided and this application Jan. 27, 1969, Ser. No. 801,913
Int. Cl. B23p *17/00*
U.S. Cl. 29—421 **4 Claims**



This disclosure pertains to a method of facilitating removal of magnetically responsive filler elements from an assembled and bonded non-magnetically responsive workpiece by subjecting the workpiece to a magnetic force in an amount sufficient to distort and loosen the filler elements.

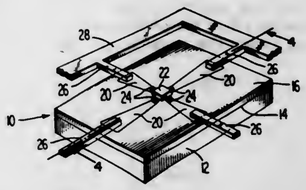
3,668,770

METHOD OF CONNECTING SEMICONDUCTOR DEVICE TO TERMINALS OF PACKAGE

Saleem Yness Husni, Mendham Township, Morris County, N.J., assignor to RCA Corporation

Filed May 25, 1970, Ser. No. 39,989
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **4 Claims**

The contacts of a semiconductor device are connected to the terminals of a package for the semiconductor device through metal interconnecting strips. The strips are formed on the surface of a plate from which the strips can be easily pulled away. The semiconductor device is seated on the plate with each contact of the semiconductor device engaging a separate one of the strips and the semiconductor device contacts are bonded to the strips. The terminals, which are connected to a frame, are placed in contact with and bonded to



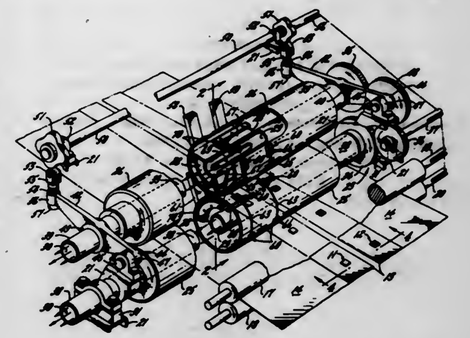
the strips. The assembly of the terminals, interconnecting strips and semiconductor device is then removed from the plate. A package is formed around the assembly with the terminals projecting from the package.

3,668,771

METHOD AND APPARATUS FOR AFFIXING FASTENERS TO A MOVING WEB

Toivo A. Helminen, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 12, 1970, Ser. No. 45,862
Int. Cl. B23p *19/00*; B23q *7/10*
U.S. Cl. 29—431 **15 Claims**



High speed apparatus and method for affixing male or female snap fasteners to a moving web of material are described. The web is advanced continuously, while snap fastener components are periodically positioned in recesses on rotating platens above and below the web. The platens are synchronized with web velocity, and as the snap fastener components rotate and are brought into contact with the web a pressure is applied between the platens to affix the components to each other through the web.

3,668,772

AUTOMATED SYSTEM INCLUDING INDEXING MECHANISM

Frank J. Fink, Chardon, Ohio, assignor to Imperial Manufacturing and Engineering Company, Middlefield, Ohio

Continuation-in-part of application Ser. No. 712,743, Mar. 13, 1968, now abandoned. This application Dec. 22, 1969, Ser. No. 886,970
Int. Cl. B23p *23/00*; B23q *1/10*
U.S. Cl. 29—563 **19 Claims**

An indexing system including an indexing table and a press unit is disclosed in which a device is provided to prevent sub-

stantial forces from being applied to the table support bearings. In a first embodiment, a coupling arm is connected to a press tool support unit which floats radially relative to the indexing table and is positioned to provide contact between the indexing table and the floating press. The indexing table is provided with a bearing surface normal to the direction of the force applied by the press at a location adjacent to the point where the press contacts the work piece secured to the table. The coupling arm bears against the

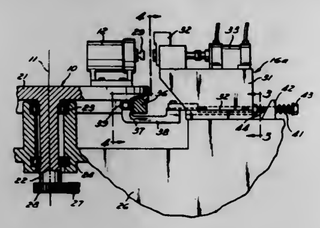


table bearing surface so that the force applied to the outer edge of the indexing table by the press is returned directly to the tool support to minimize the force applied to the table support bearing. In a second embodiment, a pair of jaws are provided on the press tool support unit which are closed behind a mating surface on the work piece to transmit the reaction force directly between the work piece and the press unit and to prevent any of the reaction force from being applied to the table structure.

3,668,773

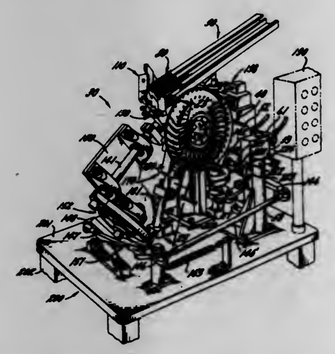
AUTOMATIC INSERT ASSEMBLY SYSTEM EMPLOYING ROTARY TRANSFER OF THE WORKPIECE

Raymond C. Achterberg, Janesville, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Sept. 17, 1970, Ser. No. 73,068

Int. Cl. B23p 19/00, 15/02; B23q 7/10

U.S. Cl. 29—429 **31 Claims**



An assembly machine and method are provided for automatically inserting and fixing blade-like inserts in a torque converter turbine drum or like article. The assembly mechanism includes automatic apparatus for accomplishing the requisite assembly motions, including securely grasping a turbine drum or housing at a load-unload station, moving the drum or housing to a work station, stripping a blade-like insert from a feeding magazine, rolling the stripped insert into the drum or housing, angularly indexing the drum or housing to a successive position so as to receive the next blade-like insert, counting the number of angular indexing steps imparted to the drum, and returning the drum or housing with its assembled blade-like inserts to the load-unload station when the requisite number of blades have been inserted.

3,668,774

METHOD OF SEPARATING SEMICONDUCTOR CHIPS FROM A SEMICONDUCTOR SUBSTRATE

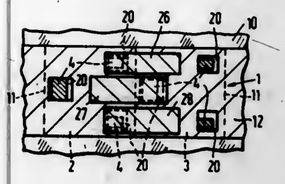
Helmut Eger, Olching, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 13, 1970, Ser. No. 80,400

Claims priority, application Germany, Oct. 16, 1969, P 19 52 216.8

Int. Cl. B01j 17/00; H01l 5/00

U.S. Cl. 29—578 **9 Claims**



A method of separating semiconductor chips from a semiconductor substrate, the semiconductor chips being arranged within the substrate and including circuit components with electrodes, interconnects or the like conductive members disposed on one side of the substrate, the method including the steps of coating the one side of the substrate with an etchable film that etches without attacking other materials arranged on the semiconductor substrate, forming contact holes through the film to expose the conductive members by photoresist and chemical etching, growing additional conductive members at the exposed first-mentioned conductive members, so that the additional conductive members partially cover the etchable film and extend over to neighboring semiconductor chips, etching away the etchable film so that the additional conductive members extending over to neighboring semiconductor chips are exposed, sticking the semiconductor substrate on to an elastic foil so that the one side thereof faces the latter, scoring the other side of the semiconductor substrate not facing the elastic foil so as to provide scribe lines outlining the semiconductor chips to be separated, breaking and stretching the semiconductor substrates adhering to the elastic foil, so that the semiconductor chips provided with the additional conductive members are separated from each other, and removing the individual semiconductors from the elastic foil.

3,668,775

METHOD FOR MANUFACTURING MAGNETIC HEADS

Minoru Morita, Toyonaka; Takashi Shiraki, Neyagawa, and Sadao Masuoka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 9, 1970, Ser. No. 9,545

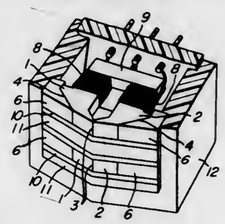
Claims priority, application Japan, Feb. 13, 1969, 44/11273

Int. Cl. G11b 5/42; H01f 7/06

U.S. Cl. 29—603 **1 Claim**

A method for manufacturing magnetic heads having the tape travel surface partially covered with a non-magnetic material, comprising the steps of mounting a head core with the front side including a gap of a predetermined width substantially identical with a predetermined tape travel surface

in a mating recess of the same contour as the core front formed in a non-magnetic frame member, and grinding said



head core and said frame member to expose part of the core front.

3,668,776

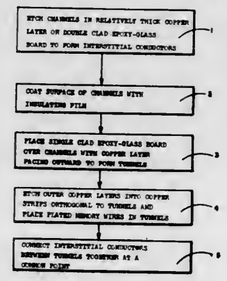
METHOD OF MAKING INTERSTITIAL CONDUCTORS BETWEEN PLATED MEMORY WIRES

Joseph M. Shaheen, La Habra, and John Simone, Garden Grove, both of Calif., assignors to North American Rockwell Corporation

Filed June 12, 1970, Ser. No. 45,738

Int. Cl. H01f 7/06

U.S. Cl. 29—604 **4 Claims**



Channels are etched in a relatively thick conducting metal layer of a double metal clad dielectric board. The channels are coated with an insulating film. The uncovered dielectric surface of a single metal clad dielectric board is placed over the coated channels to form tunnels for plated memory wires. The exposed conducting layers of the boards are etched into strips orthogonal to the tunnels to form word straps for the plated memory. The conducting metal layers comprising the interstitial conductors between the tunnels are interconnected at a common point.

3,668,777

METHOD OF FORMING A LASER TUBE

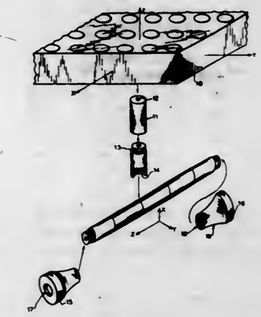
William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915, dated Dec. 1, 1970. Divided and this application Mar. 9, 1970, Ser. No. 17,770

Int. Cl. H01r 43/00; H05k

U.S. Cl. 29—628 **3 Claims**

A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electrical character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.



3,668,778

METHODS FOR JOINING ENDS OF WIRES AND THE LIKE

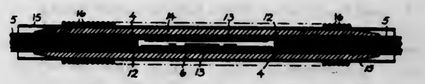
Torleif Lindtvelt, Minister Ditlefsvei 15; Leif Johnsen, Betzy Kjelsbergvei 13, both of Oslo, Norway, and Borge F. Haegland, deceased, late of Christian Michelsensgt. 16, Oslo, Norway (by Marit Haegland, legal representative)

Filed Apr. 3, 1969, Ser. No. 32,321

Claims priority, application Norway, Apr. 5, 1968, 1325/68

Int. Cl. H01r 9/00

U.S. Cl. 29—630 F **5 Claims**



A method for joining ends of wires and the like by means of an explosive charge. A connecting tube with a bore adapted to receive the ends to be connected is provided with an external layer of explosive charge having a varying geometrical shape longitudinally of said tube so as to produce after detonation alternating parts of different compression so that the contact surface between the tube and the ends therein after compression forms a more or less corrugated profile in the longitudinal direction in order to form an axially locked connection of the assembled components.

3,668,779

METHOD OF MANUFACTURING DOUBLE INSULATED PLUGS

Prescott K. Turner, Fairfield, Conn., assignor to General Electric Company

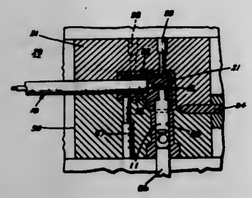
Filed Apr. 2, 1969, Ser. No. 812,624

Int. Cl. H02g 15/00

U.S. Cl. 29—629 **3 Claims**

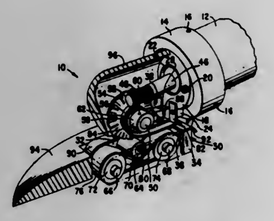
A method of manufacturing an electrical wiring device in which the electrical connections of the wiring device are positioned within double insulation. The contacts are electrically and mechanically connected to the conductors of a

cord to form connections. A portion of each contact is inserted in a mating recess in a mold and a preformed insert of insulating material is positioned overlying the connections.



The insert is held in its position overlying the connections and the contacts are maintained in the recesses while a body of insulating material is molded around the insert and connections.

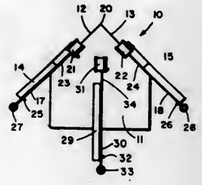
3,668,780
SELF PROPELLED PINKING DEVICE
Roy M. Cowdrey, Lake Hiawatha, N.J., assignor to The Singer Company, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,150
Int. Cl. B26b *25/00*
U.S. Cl. 30—178 7 Claims



A hand held power driven pinking cutter having a rotary pinking blade driven by a worm and worm wheel arrangement from an electric motor. The pinking blade cooperates with a complimentary rotary anvil to drive the same and to cut a pink edge on fabric material placed therebetween. An endless belt positioned about two guide rollers on opposite sides of the anvil is driven by frictional contact with the rotary anvil to drive the device forwardly at substantially the same speed at which the cutting action is taking place. The endless belt may have molded projections or spikes extending from the surface thereof and cooperate with complementary depressions in the anvil such that the frictional contact between the belt and the anvil is substantially great. The blade may be imbedded between resilient members to increase the frictional contact between the blade and the anvil.
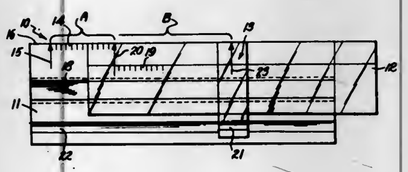
3,668,781
BASEBALL DIAMOND LAYOUT DEVICE
Harold P. Teter, 3929 Lor Ron Avenue, Kent, Ohio
Filed Feb. 24, 1970, Ser. No. 13,533
Int. Cl. A63c *19/06*; G01b *3/10*
U.S. Cl. 33—1 6 Claims

A device for laying out the base lines and the locations of the bases and pitcher's mound of a baseball diamond. A flat five-sided plate overlies home plate and has a pair of rails which extend below the first plate and abut against the edges of the home plate on the base lines to the first and third bases. A pair of reels of non-elastic cord are mounted on the flat plate and the cords from these reels drawn along the right and left rails, respectively. The cords have marks to indicate where their ends are a distance of 90 feet from the point of the home plate. A second mark on each cord indicates a distance of 180 feet from the point of the home plate. A third reel is also provided and the cord from this reel extends along the bisector of the angle between the first two



cords. A third rail is provided on the flat plate to indicate when the third cord is being drawn along the proper line. This cord has a mark indicating the distance from the home plate to second base and from hole plate to the pitcher's mound.

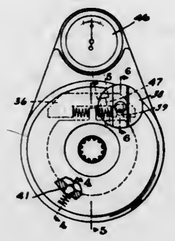
3,668,782
SLIDE RULER TO ADJUST LENGTH OF TYPEWRITTEN LINE
Herbert Hanft, 1412 Ivanhoe Street, Alexandria, Va.
Filed Oct. 20, 1970, Ser. No. 82,424
Int. Cl. G06g *1/02*
U.S. Cl. 33—174 R 4 Claims



A slide ruler is provided to determine how draft copy should be marked in order that the draft might be recopied with spaces added or taken away as needed in order that each line in the final copy will end at a predetermined point to provide an even right hand border. In the ruler, the slide base carries a first scale with fixed left hand index and the slide carries a second set back scale with a fixed left hand index, and a movable right hand index is provided so that a part of the final copy line can be measured between the fixed indices and the remainder of the final copy line can be measured between the fixed index on the slide and the movable index.

3,668,783
SPLINE WEAR GAUGE
Vernon A. Riddell, Mt. Clemens, Mich., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Mar. 5, 1970, Ser. No. 16,668
Int. Cl. G01m *13/02*
U.S. Cl. 33—179.5 R 7 Claims

The spline wear gauge disclosed herein comprises several forms which may be utilized for gauging external or internal splines. Each form comprises two gauge members having circumferentially spaced spline teeth, the teeth on one of the members having an addendum longer than the teeth on the other of the members. The members are rotatable relative to one another so that when they are brought into position adjacent the spline being gauged and rotated relative to one another, one of the members contacts the spline teeth of the spline being gauged at a different position when the other of the members. Any wear on the teeth will be evident by a



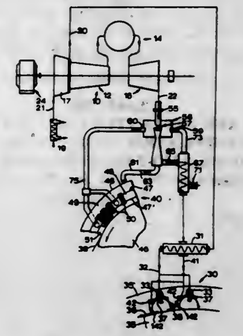
relative rotational movement that is shown visually by a dial indicator on the gauge body.

3,668,784
METHOD AND APPARATUS FOR DRYING LAUNDRY
Walter Dorwin Teague, Jr., Nyack, N.Y.; Anthony Philip Montalbano, Fresh Meadow, N.J.; Andrew A. Oakes, East Rutherford, N.J.; Keith Osborne, Ridgefield, N.J., and Peter E. Susey, Columbus, Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.
Filed May 19, 1970, Ser. No. 38,722
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 21 Claims

A laundry drying method and apparatus wherein a continuous flow of warm relatively dry air is forced tangentially into the curved lower portion of a stationary drying chamber adapted to contain wet laundry to form an air flow following the contours of the chamber and which separates and carries the laundry along the flow path for full exposure to the warm air and rapid drying of the laundry.

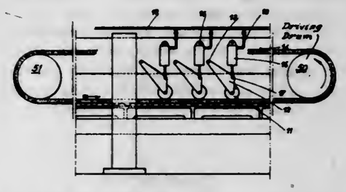
3,668,785
INTEGRATED DRYING PROCESSES AND APPARATUS
Stephen Anthony Rodwin, Montreal, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada
Filed June 19, 1970, Ser. No. 47,643
Claims priority, application Canada, Aug. 18, 1969, 59,712
Int. Cl. F26b *5/14*
U.S. Cl. 34—14 6 Claims

Paper or other webs are dried in a composite drying cycle having pre-heated air compressed in a gas turbine to provide compressed air as a mechanical input to whistles of a dryer section, with thermal input to a succeeding dryer section provided directly or by heat exchange from the turbine exhaust



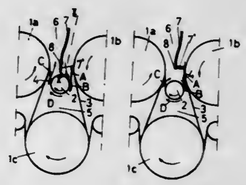
gases, at least one section using impingement air in drying relation to remove moisture from the web.

3,668,786
FACILITY FOR HEATING A PRODUCT IN STRIP
Jean Jacques Barny, Lyon, France, assignor to Societe D'Etudes et de vante de Materiels Pour la Fabrication et le Faconnage du Carton Ondule-Martin, Rhone, France
Filed May 8, 1969, Ser. No. 823,123
Claims priority, application France, May 10, 1968, 151405
Int. Cl. F26b *13/10*
U.S. Cl. 34—43 6 Claims



A heating facility for strip product including a heating bed over which the strip travels and variable pressure devices which urge the strip toward the bed.

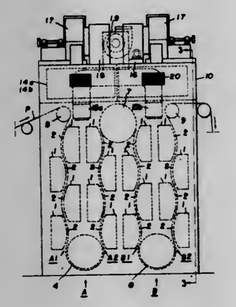
3,668,787
VENTILATING DEVICE FOR A MULTICYLINDER DRIER
Nils-Christian Berg, Turuku, and Mauri Aatos Soininen, Naantali, both of Finland, assignors to Valmet Oy, Helsinki, Finland
Filed Sept. 1, 1970, Ser. No. 68,684
Int. Cl. F26b *11/02*
U.S. Cl. 34—111 6 Claims



A device is used for ventilating a pocket of a multicylinder drier. The pocket consists of a felt guided by a felt roll. A

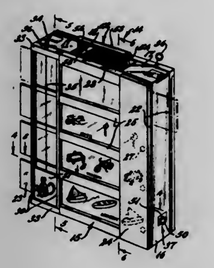
partition extends transversely to the felt and is located opposite the felt roll belonging to the pocket. The invention is particularly characterized in that the marginal part of the partition pointing toward the felt roll consists of sections each of which has its own adjusting device so that a gap of desired width for the flow of air may be produced between the surface of the felt roll and the edge of the section.

3,668,788
METHOD AND APPARATUS FOR DRYING WAVILY RUNNING STRIP WITH HOT BLASTS
Tadashi Kobayashi, 1560-2 Higashihara Ienma, Fuji, Japan
Filed Aug. 20, 1970, Ser. No. 65,539
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 2 Claims



An arrangement for drying a strip of stock comprising the steps of running a long, thin, continuous strip of stock having a liquid coating thereon through a drying zone between overlaping convex blowing faces which cause said strip to travel along in a regular wavy running pattern by blowing film of hot air onto either side of said stock which consequently is dried while running in a practically tension-free, extensible and shrinkable state.

3,668,789
TEACHING AID FOR RETARDED CHILDREN
Jean Ferguson, 721 South Green Street, Apt. 223, Longview, Tex.
Filed Dec. 4, 1970, Ser. No. 95,281
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 E 5 Claims



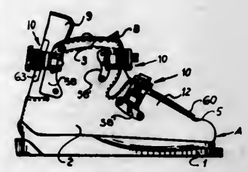
An apparatus to aid in teaching retarded children which utilizes word association cards and offers rewards for correct answers. The proper identification of a word or a picture by a student results in the student's receipt of a token which will be exchanged for a reward. The student is further rewarded by being allowed to move an indicator to a position adjacent a different word association card after each correct answer.

3,668,790
VARIABLE TERRAIN MODEL
Raymond C. Wilton, Worthing, England, assignor to The Singer Company, Binghamton, N.Y.
Filed Dec. 8, 1969, Ser. No. 883,009
Claims priority, application Great Britain, Dec. 12, 1968, 59,219/68
Int. Cl. G09b *9/08*; B64g *7/00*
U.S. Cl. 35—12 N 2 Claims



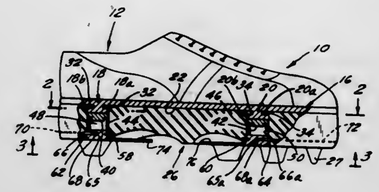
A terrain model suitable for use with a viewing device to simulate terrain features of the real world with means for varying in a controlled manner the elevation of various portions of the model, thereby allowing the contour of the terrain to be changed quickly and easily. The changes are accomplished by movable actuators located beneath a deformable, elastic sheet. Means are also provided for maintaining permanent features, such as buildings, in the proper vertical relationship as the slope of the surface thereunder is varied.

3,668,791
FASTENER FOR SKI BOOTS AND THE LIKE FOOTWEAR
Otto Salzman, 380 Roy Avenue, Dorval, Quebec, and Paul Salzman, 976 Moncrieff Road, Mount Royal, Quebec, both of Canada
Filed June 29, 1970, Ser. No. 50,559
Claims priority, application Great Britain, July 8, 1969, 34,356/69
Int. Cl. A43b *23/00*
U.S. Cl. 36—50 12 Claims



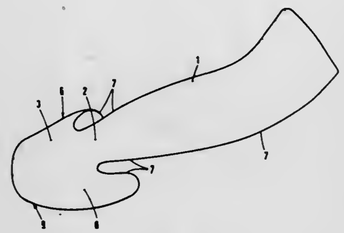
A fastener device for securing the flaps of ski boots while adjustably varying the tightness of the boot for maximum skiing efficiency, comprising a longitudinally extensible and contractable strip assembly, hinged at one end to one flap of the boot and having its other end adapted to be hooked to the other flap of the boot, manually rotatable means for extending and contracting the strip assembly and means to releasably retain the strip assembly against extension.

3,668,792
BREAKAWAY ATHLETIC SAFETY SHOE
William A. York, 41-56 Denman Street, Elmhurst, N.Y.
Filed Jan. 8, 1971, Ser. No. 104,994
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R 12 Claims



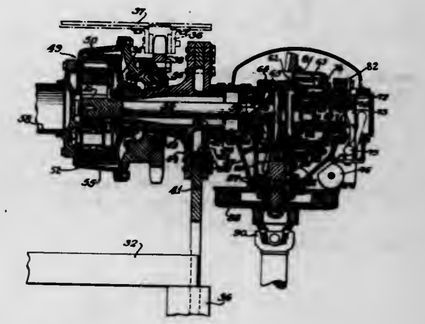
The athletic safety shoe has an upper sole mounted on the body of the shoe and a lower breakaway safety sole having traction means on the underside thereof and releasibly attached to the upper sole by a breakaway safety mechanism. The upper sole has a downwardly extending rib with an enlarged head portion attached to the upper sole by a relatively narrow neck portion. The safety sole has a generally transversely extending grooved track configured to slideably receive the rib. The track prevents longitudinal movement of the soles relative to each other when the rib is disposed in place in the track. The safety sole has a retaining part engaged with the rib adjacent the neck portion to prevent upward movement of the rib out of the track. A pressure piece is engaged with the rib and mounted on the safety sole under the grooved track. A spring biases the pressure piece into frictional engagement with the rib to prevent the rib from sliding in the track until a predetermined transverse force is applied.

3,668,793
FOOTWEAR AND INSERT THEREFOR
Rudolf Stohr, Tuttlingen/Wurtt, and Werner Stelzer, Rottweil, both of Germany, assignors to Justus Rieker & Co., Tuttlingen/Wurtt, Germany
Filed June 22, 1970, Ser. No. 48,372
Claims priority, application Germany, Feb. 8, 1969, P 19 34 490.2
Int. Cl. A61f *5/00*
U.S. Cl. 36—71 9 Claims



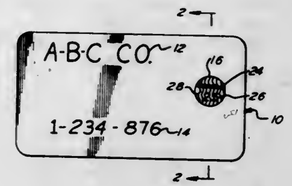
An insert member for fitting within footwear, having a toe cap portion, a flexible connecting portion and a tongue portion supported in an elevated position with respect to the sole of the footwear. The insert member is a synthetic plastics material molding, and can have a cover of leather.

3,668,794
CHANGE-SPEED REDUCTION DRIVE FOR A CONVEYOR
Julius F. Marquardt, Westchester, and Ronald A. Wade, Chicago, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Nov. 13, 1969, Ser. No. 876,507
Int. Cl. B60p *1/36*; E02f *3/16*; B65g *19/00*
U.S. Cl. 37—8 1 Claim



Mechanical change-speed reduction drive for a conveyor or elevator associated with a bowl for scooping up earth. The drive comprises a hydraulic motor, a pinion coupled thereto, a flywheel in the coupling, a crown gear meshing with the pinion, a planetary change-speed unit fixed to the crown gear, and a planetary reducer connecting the change-speed unit with driving sprockets for the conveyor.

3,668,795
IDENTIFICATION MEANS
Ronald C. Barker, Weston, Mass., assignor to Applied Laser Technology, Incorporated, Wilmington, Del.
Filed May 27, 1969, Ser. No. 828,183
Int. Cl. G09f *3/02*
U.S. Cl. 40—2.2 4 Claims

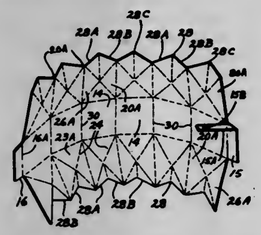


Identification means having concealed bearer identifying indicia in the form of a hologram.

3,668,796
COMBINATION GREETING CARD AND THREE DIMENSIONAL ORNAMENT
Michael P. Patterson, Wayzata Way Apartments, Apt. 101, Wayzata, Minn.
Filed Dec. 14, 1970, Ser. No. 97,665
Int. Cl. G09f *19/00*
U.S. Cl. 40—126 A 8 Claims

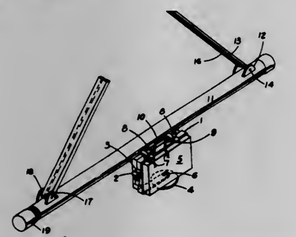
The present invention relates to a greeting card that folds flat for mailing, and can be folded into a three dimensional

ornament or point of purchase display for decorative purposes, if desired, by having the card formed into prescored



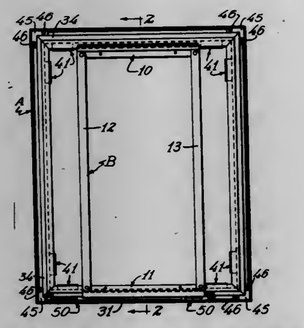
panels. After the card has been received it can be easily folded and assembled into its ornamental form.

3,668,797
ILLUMINATED SIGN
Rowland H. Gray, 303 Sparks Avenue, Jeffersonville, Ind.
Filed June 13, 1969, Ser. No. 833,096
Int. Cl. G09f 13/02
U.S. Cl. 40—130 5 Claims



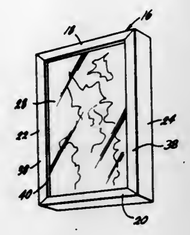
A device for storing, displaying, and illuminating selected message-carrying signs having a bracket adapted to receive a battery where a tubular receptacle for storing such signs is secured to the bracket and carries means for displaying the signs. A light removably connected to the bracket is provided to illuminate the signs in place in the display means.

3,668,798
MIRROR FRAME
Donald N. Mehl, Minneapolis, Minn., assignor to Designward Industries Inc., Minneapolis, Minn.
Filed May 26, 1970, Ser. No. 40,629
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 11 Claims



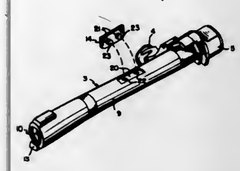
A mirror frame includes a mounting member and a supporting frame. The supporting frame comprises a pair of channel-shaped members connected by links. The mounting member encloses the mirror and includes downwardly extending flanges engageable in said channel-shaped members. The mounting member is wider than the supporting frame. A pair of resilient members are slideable on a horizontal ledge in the lower end of said mounting member and engage between said ledge and said frame member to hold the parts assembled.

3,668,799
ART FRAME ASSEMBLY
Paul A. Sharron, Windsor, Ontario, Canada, assignor to Profab, Inc., River Rouge, Mich.
Filed Aug. 3, 1970, Ser. No. 60,519
Int. Cl. G09f 1/12
U.S. Cl. 40—152.1 22 Claims



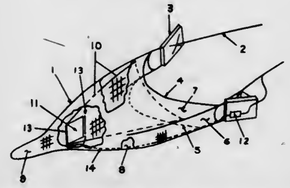
An art frame assembly made of four aluminum extrusions having identical transverse cross sections where the art object is retained in the frame by extruded plastic retainer clips of a particular construction. In the fully assembled frame, the clips are stressed with one end of the clip releasably locked in a cooperating portion of the frame and the other end of the clip engaging the art object. Extruded plastic spacer strips can be mounted on the frame to provide a shadow box effect where desired. Modified retainer clips are used to mount objects of different thicknesses and depending on whether the shadow box spacer is used.

3,668,800
RIFLE BOLT WITH A REMOVABLY SECURED STABILIZING LUG THEREON
Harry H. Setried, II, New Haven, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.
Filed Aug. 24, 1970, Ser. No. 66,482
Int. Cl. F41c 11/00
U.S. Cl. 42—16 8 Claims



A cylindrical breech bolt for a bolt action rifle, the bolt having a lug-receiving recess formed in the exterior cylindrical surface thereof that is adapted to receive a separate stabilizing lug member. The separate stabilizing lug member is removably secured to the bolt by inwardly extending projections integrally formed on the inner surface of the lug member, the inwardly extending projections being received in holes formed in the annular wall of the bolt.

3,668,801
DEVICE FOR SEPARATING SHRIMP FROM OTHER SEA ANIMALS
Charles B. Metcalf, Jr., 3601 Swan Lane, Pensacola, Fla.
Filed July 6, 1970, Ser. No. 52,626
Int. Cl. A01k 73/02
U.S. Cl. 43—17.1 3 Claims



A system generally employing a net and an electrical pulse generator that is used for separating shrimp from trash fish, undesirable sea animals and miscellaneous objects. The catch is subjected to an electrical field within the separator which effects only the shrimp. The unwanted portion of the catch not effected by the electrical field passes through the separator and back into the water as it is. No electronarcosis or electrolaxis is produced nor is any of the fish or other undesirables effected in any manner other than possible mechanical diversion, associated with the physical characteristics of the various types and sizes of separators.

3,668,802
COMPACT TACKLE AND UTILITY BOX
Harold Benward, 501 North Eaton Street, Albion, Mich.
Filed Nov. 30, 1970, Ser. No. 93,797
Int. Cl. A01k 97/06
U.S. Cl. 43—57.5 1 Claim



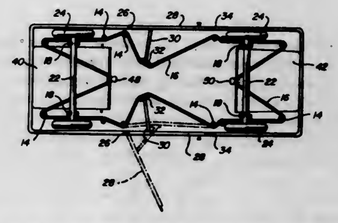
A container box and a holder for receiving the box, the holder having a clip so to be conveniently supported from a belt which is worn by a person such as a fisherman, the box being used for containing tackle which is thus located in a convenient and handy location for quick and easy reach thereto.

3,668,803
BALL ROLLING TOY
George J. Miller, 2441 Arthur Street, Hollywood, Fla.
Filed Feb. 11, 1971, Ser. No. 114,576
Int. Cl. A63h 33/00
U.S. Cl. 46—1 R 4 Claims



A ball rolling toy including a ball and an oblong device that includes two side rails, an intermediate anti-wedge rail, two handles and two hubs connecting the device together. The side rails are positioned in parallel relation to one another and connected together by connecting means or hubs. Each side rail has a side track positioned about its outer inside edge that is a mirror image of the other side track. The distance between each side track is nearly equal to the diameter of the ball. The anti-wedge rail is connected to the hubs. The anti-wedge rail has an anti-wedge track having an outline that is shaped similar to but of a smaller scale than the outline of each side track. The distance between the anti-wedge track and each side track is equal to the radius of the ball times the square root of two. The centerline of each rotatable handle is offset from the centerline of the other handle. Each handle projects outwardly from opposite sides of the device.

3,668,804
ELASTIC BAND LOADED TOY
Emanuel A. Winston, 2925 West Touhy Avenue, Chicago, Ill.
Filed Jan. 27, 1970, Ser. No. 6,118
Int. Cl. A63h 33/06
U.S. Cl. 46—17 6 Claims



A toy structure having an elastic band spanned in the interior of its body to power the opening of its elements, or to project elements, upon actuation or impact.

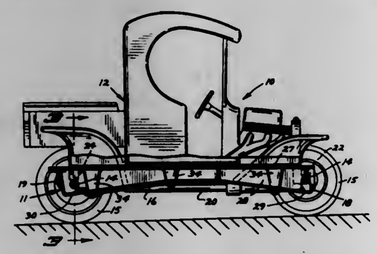
3,668,805
FLAT DOLL
Patricia A. Coleman, 820 West Avenue A, Elk City, Okla.
Filed June 19, 1970, Ser. No. 47,252
Int. Cl. A63h 3/00
U.S. Cl. 46—151 2 Claims



A doll with a flat side supported by projections extending from the feet of the doll into a base and felt clothes cor-

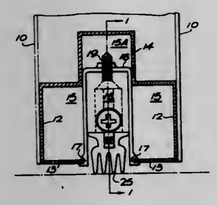
responding to the doll's figure to be worn by the doll and secured thereto by means of tab portions extending behind the neck of the doll and snapping together.

3,668,806
AXLE MOUNTING FOR TOY VEHICLES
Ronald R. Pauly, Mound, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed Apr. 5, 1971, Ser. No. 130,896
Int. Cl. A63h 17/26
U.S. Cl. 46—201 **3 Claims**



An axle mounting for a toy vehicle wherein the vehicle chassis has side walls provided with transversely aligned upwardly opening notches having their lower closed ends offset longitudinally of the chassis from the open ends, an axle disposed transversely across the chassis with its end portions seated in the lower ends of the notches, and a body member seated downwardly on the chassis and having rigid projections depending vertically in alignment with the open ends of the notches and into the horizontal plane thereof to engage and retain the axle in seated position.

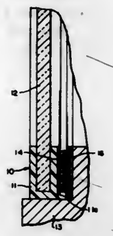
3,668,807
MOUNTING DEVICE FOR WEATHER SEALING INSERTS IN DOORS
Edwin R. Thompson, Canfield, Ohio, assignor to Thompson-Canfield Inc., Canfield, Ohio
Filed Aug. 5, 1970, Ser. No. 61,096
Int. Cl. E06b 7/16
U.S. Cl. 49—482 **5 Claims**



A mounting device for snap in registry in the bottom edge of a hollow metal door provides a channel in which a weather sealing insert is mounted in vertically adjustable relation thereto so as to be operable therein.

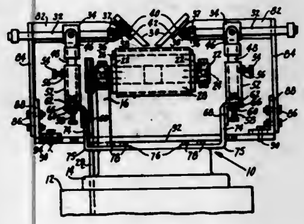
3,668,808
WINDOW GLASS RETENTION SYSTEM
Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc.
Filed May 12, 1971, Ser. No. 142,575
Int. Cl. E05c 21/02
U.S. Cl. 49—465 **3 Claims**

A retention system for window frames incorporating hook and loop fastener elements and novel sealing means which



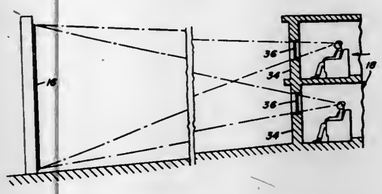
discourages unauthorized tampering with the retaining elements.

3,668,809
BEVELING ATTACHMENT FOR BELT SANDERS
James A. Coon, 929 Drever Street, West Sacramento, Calif.
Filed Sept. 4, 1970, Ser. No. 69,787
Int. Cl. B24b 21/04, 21/16, 41/06
U.S. Cl. 51—135 R **15 Claims**



Upwardly diverging elongated boards or guide plates are arranged above the upper run of a sanding belt and either is adapted to support a board or other element to be beveled on the sander, the plates being adjustable individually toward and away from each other to determine the depth of the beveling operation and being bodily movable to take advantage of the sanding surface on the belt at any point across the width thereof.

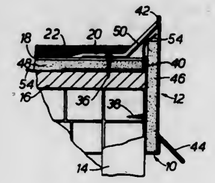
3,668,810
THEATER WITH SEPARATE VIEWING BOOTHS
Earl F. Bankston, Jackson, Tenn., assignor to Cabana Theatres, Inc., Jackson, Tenn.
Continuation-in-part of application Ser. No. 796,952, Feb. 6, 1969, now Patent No. 3,545,143. This application July 17, 1970, Ser. No. 55,661
Int. Cl. E04h 3/30
U.S. Cl. 52—6 **7 Claims**



Theater construction with a series of separate viewing booths arranged in one or more rows with the rows curving

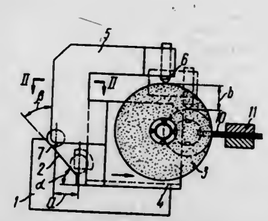
about the screen area and the individual booths being directed toward the screen for a clear viewing thereof by the occupants. Each booth is provided with an observation window which, in size, so relates to the screen as to approximately mask at least three edges of the screen and present an impression of viewing a scene occurring immediately occuring outside the window. The areas around both the screen and the window are painted a flat black to enhance the impression of viewing a scene rather than a projection on a screen.

3,668,811
COPING AND FASCIA TRIM
Kenneth Lloyd Pollard, 73 Satok Terrace, West Hill, Ontario, Canada
Filed Apr. 9, 1970, Ser. No. 26,842
Int. Cl. E04d 13/15
U.S. Cl. 52—94 **12 Claims**



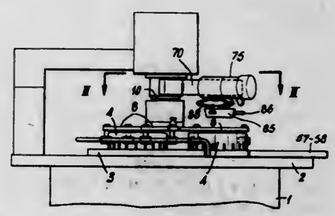
Coping and fascia trim for the edge of a building structure is comprised of a pair of elongated interconnectable trim strips each having a continuous anchor flange securable to the roof and a skirt depending to overlie the building facade. The strips are interconnected by a tongue and stirrup at the skirt edges and are dimensioned to provide spacing between the anchor flanges for a roofing layer. Optionally the trim may accommodate fascia insulating board between the skirts and roof insulation board between the anchor flanges.

3,668,812
CUTTER-GRINDING MACHINES
Vladimir Viktorovich Idel, ulitsa Graftio 15, Kv. 6, Zavolzhie, Gorkovskoi oblasti, U.S.S.R.
Filed Mar. 12, 1970, Ser. No. 18,958
Claims priority, application U.S.S.R., Apr. 1, 1969, 1316567
Int. Cl. B24b 49/00
U.S. Cl. 51—165.87 **1 Claim**



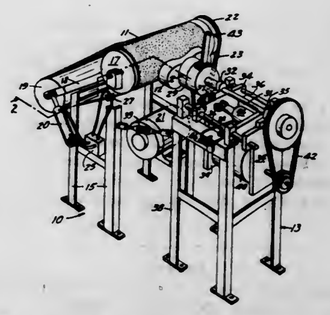
A device for dressing abrasive wheels, whose essence resides in making the working zone free with a view to utilizing large diameter abrasive wheels and working large-sized articles, characterized by the provision of vertical guide members in a member that carries an abrasive wheel, whereby the holder of a dressing tool, which travels along a guide member inclined at an angle of 45° to the horizon, moves the abrasive wheel towards the article being worked.

3,668,813
LAPPING MACHINE
Jacques Barragan, Sceaux, France, assignor to R. A. Stokvis & Fils, Paris, France
Continuation of application Ser. No. 781,212, Dec. 4, 1968, now abandoned. This application Mar. 23, 1971, Ser. No. 127,397
Int. Cl. B24b 5/34, 7/04, 10/10
U.S. Cl. 51—128 **7 Claims**



In a surface lapping machine in which workpieces to be lapped are confined in rings placed on the rotatable bed of the machine, the workpiece or workpieces in each ring being loaded by a cover and the rings being retained on the bed by arms provided with rollers, the arms being disposed in star formation and forming a rotary assembly which is movable stepwise around a vertical or substantially vertical shaft disposed coaxially or substantially coaxially with the bed, while at the periphery of the bed adjacent to the stopping positions of the rings there is disposed a plane, smooth table permitting the feeding of the rings to, and the withdrawal of rings from, the bed by sliding, there is provided an articulated arm with vertical pivoting axes which is pivotally mounted on said shaft, this articulated arm carrying a vertically guided raising means engageable with said cover.

3,668,814
SURFACE GRINDING DEVICE
Conrad T. Freerks, St. Paul, and Fred R. Luecke, Jr., White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 30, 1970, Ser. No. 23,749
Int. Cl. B24b 1/00, 21/04
U.S. Cl. 51—144 **13 Claims**



A method of and an apparatus for grinding a planar surface on a workpiece when the workpiece is pressed against an abrasive belt moving in an arcuate path. The workpiece is held by the apparatus with the plane at which the planar surface is to be formed oriented generally parallel to the axis of the arcuate path of the abrasive belt, and is moved about an axis normal to and intersecting the axis of the arcuate path

while it is pressed into high pressure grinding contact with the abrasive belt to move the workpiece toward the abrasive belt in a direction normal to the axis of the path of the abrasive belt. When the plane at which the planar surface to be formed is tangent to the abrasive belt, the movement of the workpiece toward the belt is halted so that the desired planar surface is formed on the workpiece.

ERRATA

For Classes 52—28 thru 52—591 see:
Patent Nos. 3,668,826 thru 3,668,832

ERRATA

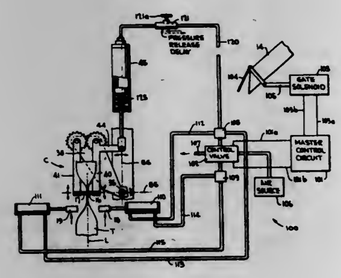
For Classes 52—6 and 52—94 see:
Patent Nos. 3,668,810 and 3,668,811

3,668,815

VIBRATING CLAMP PRODUCT SETTLER

Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Continuation-in-part of application Ser. No. 714,862, Mar. 21, 1968. This application Mar. 12, 1970, Ser. No. 18,934
Int. Cl. B65b *1/22*
U.S. Cl. 53—24 26 Claims



A product settling arrangement for packages of flexible sheet material wherein the package is vigorously agitated by gripping of the package at the bottom for a presettling operation and at the top for a final settling operation. The movement of the package is in the up and down direction with the preferred action being along an oscillatory path whereby multiple component force is applied to the product for more efficient settling. A control circuit is provided insuring proper actuation of the gripper members in timed relationship with the sealing jaws when a form and fill machine is utilized.

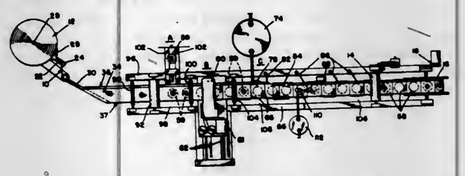
3,668,816

METHOD AND APPARATUS FOR CONSTRUCTING FABRIC ENCLOSED SPRINGS

Lloyd W. Thompson, deceased, late of High Point, N.C. (by Mildred B. Thompson, administratrix), assignor to Cone Mills Corporation, Greensboro, N.C.

Filed July 10, 1970, Ser. No. 53,785
Int. Cl. B65b *63/02*
U.S. Cl. 53—28 10 Claims

Web material is folded to form two overlying plies integrally connected along one longitudinal edge for receiving compressed coil springs therebetween. The springs are enclosed within individual pockets formed by sewing the plies



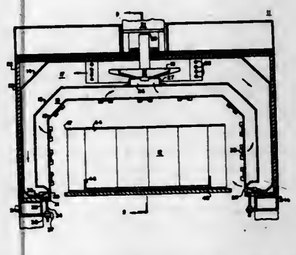
transversely between adjacent springs and by adhering longitudinally the plies along one edge portion.

3,668,817

SHRINK TUNNEL AND METHOD OF SHRINKING FILM ON ARTICLES

Sydney George Frederick Bell, Altona, Victoria, Australia, assignor to W. R. Grace & Co., New York, N.Y.

Original application Nov. 13, 1967, Ser. No. 682,306, now Patent No. 3,526,752. Divided and this application May 27, 1970, Ser. No. 51,407
Claims priority, application Australia, Nov. 18, 1966, 14135
Int. Cl. B65b *53/06*
U.S. Cl. 53—30 3 Claims



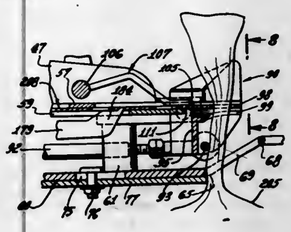
This invention is directed to shrink tunnel including an inverted U-shaped housing having a hot air inlet on each side near the bottom thereof and an air outlet below the top of the packages passing through the housing with the inlets and outlets positioned to impinge air against the ends of a package passing through the tunnel and withdraw a large part of the air from the tunnel before it can rise above the top of the package; all as further described herein.

3,668,818

SEMI-AUTOMATIC CLOSURE APPLICATOR

Jack H. Holmes, Cowichi, Wash., assignor to Kwik Lok Corporation, Yakima, Wash.

Filed Feb. 8, 1971, Ser. No. 108,401
Int. Cl. B65b *51/00*, *57/02*
U.S. Cl. 53—67 14 Claims



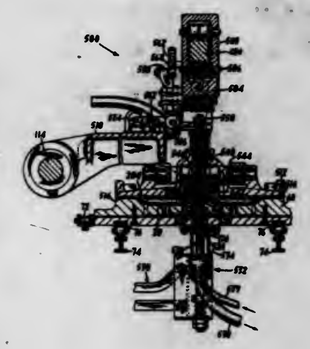
A power-cycled machine triggered by the manual vertical presentation thereto of a bunched bag neck, to apply in conjoining relation to said neck a "Kwik Lok" type of bag closure. The machine receives closures in strip form, each closure having a narrow forward opening connecting with a heart-shaped closure aperture forming jaws preventing escape of the bag neck forced through said opening into said aperture. This strip is advanced during the second half of each cycle to feed the foremost closure into a slot in a closure applying rocker with the latter rocked upwardly into horizontal position. As the cycle is concluded, the rocker is rocked 60° downward to thus incline downward the foremost closure. The next cycle is initiated by presenting a vertically bunched bag neck manually to the middle of the rocker, the bag neck engaging a trigger starting the motor which rocks the rocker to swing the foremost closure back up to horizontal position, thus flexing the jaws thereof about the bunched bag neck and trapping the latter in the closure aperture. The motor automatically stops when this occurs, and starts again to complete the cycle when the closed bag is pulled forwardly to separate the foremost closure from the strip. The next following closure then becomes the foremost in the strip and is automatically fed into the rocker and swung downwardly 60° in readiness to be applied to a bag in the next following cycle. An automatic indexer prevents escape rearwardly of the foremost closure while being applied to a bag neck. The indexer also secures the balance of the closure strip against being pulled forwardly by the separation of the closure on the bag from the rest of the closure strip. Provision is also made for optionally feeding through the machine bare closures in strip form or strips of such closures having labels glued on the individual closures. The machine also has a printer for printing dates or code markings on the individual closures or labels as they pass through the machine.

3,668,820

PACKAGING MACHINE

Allan I. Parvin, Millburn, and Douglas P. Reeme, Cedar Grove, both of N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Original application Mar. 11, 1968, Ser. No. 712,209, now Patent No. 3,540,186. Divided and this application July 9, 1970, Ser. No. 53,434
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 R 10 Claims



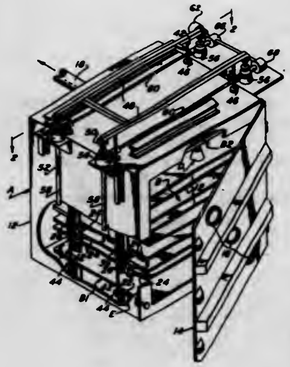
A packaging machine for applying cover sheets to substantially rigid, product-containing trays and evacuating and sealing the covered trays. The product-containing trays are moved in succession along a conveyor at a substantially uniform speed, and a cover web is tack-sealed to the leading edge of each tray. As each tray moves along a conveyor, it draws the cover web over it, the web is severed at the trailing edge, and an initial seal is then formed between the cover sheet and tray. Next, the tray is evacuated through openings left in the initial seal between the cover sheet and the tray and final seals to close the evacuation openings are made.

3,668,819

VACUUM DRYING AND STOPPERING APPARATUS

Charles Edward Henshaw, Delran, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 8, 1971, Ser. No. 113,182
Int. Cl. B65b *31/02*
U.S. Cl. 53—102 3 Claims



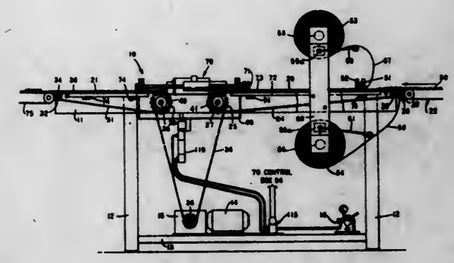
Vacuum drying and stoppering chamber with elevator shelves for sealing and capping bottles, the shelf spacing being infinitely adjustable to accommodate bottles of various sizes with maximum efficiency.

3,668,821

CUTTING AND WRAPPING MACHINE

Ernest J. Benson, Berkeley Heights, N.J., and Charles G. Fischer, Norwalk, Conn., assignors to Benson Equipment Co., Inc., Berkeley Heights, N.J.

Filed June 2, 1970, Ser. No. 42,611
Int. Cl. B65b *63/00*
U.S. Cl. 53—123 6 Claims



This invention relates to an apparatus for wrapping shingled meat products with paper and then cutting the wrapped

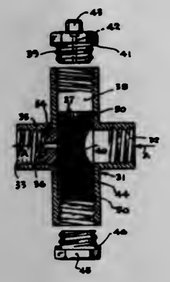
product in predetermined lengths. The shingled meat product is fed between two layers of wrapping paper and is then fed through a cutting mechanism which periodically moves at the speed of the fed paper and meat. A reciprocating blade on the cutting mechanism slices through the paper and meat at predetermined intervals leaving an individually wrapped portion ready to be stored or transported.

3,668,822

FLOW RESISTANCE EQUALIZER FOR LIQUID CIRCULATION SYSTEM

Gerald F. Mannion, 608 Bowlingreen Court, Naperville, Ill., and James R. Mannion, 10336 South Kolmar, Oak Lawn, Ill.

Filed Nov. 16, 1970, Ser. No. 89,848
Int. Cl. B01d *19/00*
U.S. Cl. 55—159 7 Claims



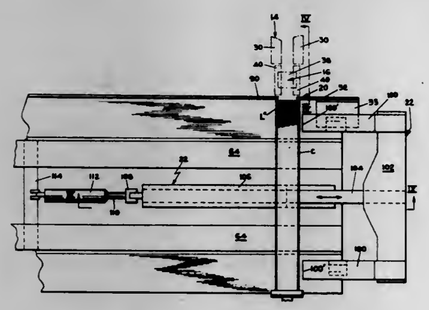
A flow equalization fitting for balancing a water circulation system by equalizing the flow resistances of a number of water utilization devices in the system, comprising a replaceable orifice member mounted in the outlet of the fitting, a strainer and trap located in the fitting ahead of the orifice, with a clean-out for the trap, and a vented air chamber for trapping entrained air released ahead of the orifice.

3,668,823

FORWARD HORIZONTAL PACKER

Melvin E. Larson, Grand Rapids, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.

Filed Sept. 8, 1970, Ser. No. 70,126
Int. Cl. B65b *5/10*; B65g *57/00*
U.S. Cl. 53—250 3 Claims



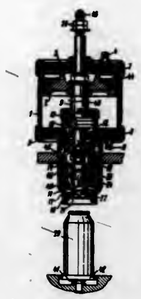
This specification discloses the packing of small planar or sheet-like items, particularly clothing labels, into containers, including an item support that shifts the items arcuately and then through a restricted opening into packed array in a container, and container advancing means that also operates a gate to close the opening during container advancement.

3,668,824

DEVICE FOR SECURING A VALVE IN THE NECK OF AN AEROSOL VESSEL

Nikolai Nikolaevich Solomonov, ulitsa Blaumana, 16/18, kv. 16; Vladimir Pavlovich Ishanin, ulitsa Blaumana, 8, kv. 6, and Talvaldis-Olavs Arnoldovich Apsalons, ulitsa Dikju, LL, kv. 2, all of Riga, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,404
Int. Cl. B65b *7/28*
U.S. Cl. 53—330 1 Claim



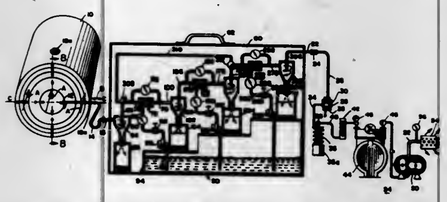
A device for securing a valve in the neck of an aerosol vessel by forming a projection on the setting portion of the valve body, in which a rod is mounted in a housing for movement in an axial direction, and a series of spreadable levers concentric with respect to the rod are secured in the housing for swinging movement in longitudinal planes relative the rod. The rod cooperates with the inner surfaces of the working ends of the levers so that during the working stroke of the rod, the lever spread in a radial direction and form a projection on the setting portion of the valve body. The levers are provided with auxiliary arms, and the rod with a projection adapted to cooperate with the auxiliary arms during the reverse stroke to return the levers to the initial position.

3,668,825

METHOD AND APPARATUS FOR DETERMINING THE DIFFICULTY OF REMOVING POLLUTANTS BY WET SCRUBBING ACTION

Robert W. McIlvaine, Northbrook, Ill., assignor to National Dust Collector Corporation, Skokie, Ill.

Filed Aug. 28, 1969, Ser. No. 853,767
Int. Cl. B01d *47/00*, *45/12*
U.S. Cl. 55—21 20 Claims



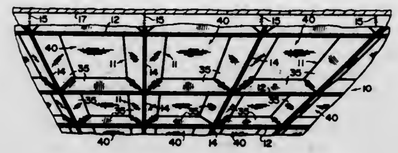
A method of determining the difficulty of removing pollutants from gas including the steps of passing a sample of the gas through a wet scrubber stage for removing some of the pollutants therefrom, measuring the amount of pollutants remaining in said gas sample after passage through the wet scrubber stage, and adjusting the pressure drop across the scrubber stage to obtain the desired level of pollutants remaining after passage therethrough.

3,668,826

SUSPENDED CEILING SYSTEM

Richard N. White, Des Plaines, Ill., and Joseph D. Wilkin, Tampa, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Feb. 9, 1970, Ser. No. 9,885
Int. Cl. E04b *5/52*
U.S. Cl. 52—28 9 Claims



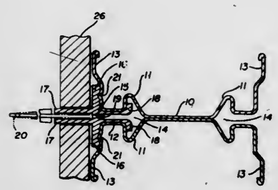
A suspended ceiling system having a repetitive modular appearance includes unique, removable, collapsible frame portions in which either finished panels or lighting fixtures can be centrally positioned away from the lower plane of the modules to form upwardly recessed coves.

3,668,827

METAL STUDDING AND ADJUSTABLE SHELF CARRIER

Paul Schwartz, 249 Brainard Drive, Youngstown, Ohio

Continuation-in-part of application Ser. No. 826,427, May 21, 1969, now Patent No. 3,562,970, dated Feb. 16, 1971. This application Sept. 21, 1970, Ser. No. 74,005
Int. Cl. A47b *57/06*; E04c *3/32*
U.S. Cl. 52—36 3 Claims



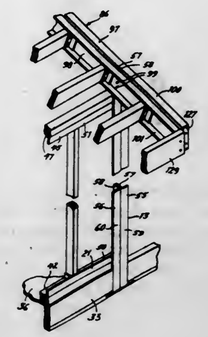
A metal studding having a web portion with spaced apart sections therein and oppositely disposed flanges on said spaced apart sections and oppositely disposed longitudinally extending channels formed in said spaced apart sections together with an elongated metal member slidably engageable against said flanges and partially within said channels so as to be adjustable thereof, the metal member having a configuration providing for the reception and attachment of an elongated shelf supporting arm, portions of the flanges being distorted into the area of the metal member so as to hold the same in adjusted position in the metal studding.

3,668,828

BUILDING CONSTRUCTION FRAMEWORK WITH RECEIVERS FOR BRACING MEANS

George E. Nicholas, 25 East Delilah Road, Pleasantville, N.J., and Howard G. Watkins, 137 East Revere Avenue, Northfield, N.J.

Filed Mar. 10, 1970, Ser. No. 18,129
Int. Cl. E04b *7/04*
U.S. Cl. 52—92 3 Claims



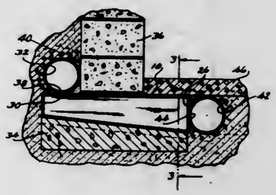
A building construction wherein a precut building framework is initially elected, and provided with receivers for interposing between a plurality of strengthening and bracing members.

3,668,829

FOOTING TILE FOR TRANSVERSE FLOW OF SEEPAGE

Melvin J. Nelson, 1608 Machinac Avenue, So. Milwaukee, Wis.

Filed Mar. 16, 1970, Ser. No. 19,907
Int. Cl. E02d *31/02*
U.S. Cl. 52—169 2 Claims

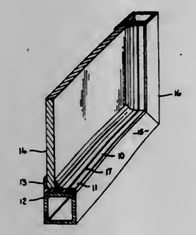


A transverse tile, preferably of molded material, to be embedded transversely in the concrete of a foundation footing to convey seepage water from an exterior drain tile to an inner drain tile. A means is included to subsequently provide a drain opening in the panel of the transverse tile after the mason work has been done, for the purpose of allowing seepage to flow into the tile.

3,668,830
CHANNEL MEMBER HAVING A REMOVAL SIDE WALL

Peter M. Frank, Islington, Ontario, and Frank M. Watts, Toronto, Ontario, both of Canada, assignors to Beautiline Showcase Systems, Downsview, Ontario, Canada

Filed Aug. 3, 1970, Ser. No. 60,587
Int. Cl. E06b 3/62
U.S. Cl. 52—400 8 Claims

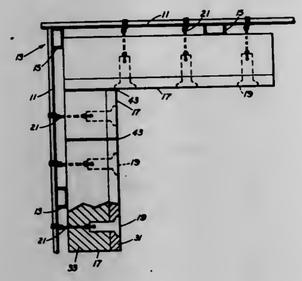


A molding strip for removably mounting and securing the marginal edges of a panel to a support structure such as a window, showcase and the like. The underside of the strip is attachable to the support structure, preferably by a pressure sensitive adhesive. The topside of the strip has a permanent flange along one side edge and a removable flange having a bead which fits into a groove formed in the top side, the permanent flange and removable flange forming a channel which receives the marginal edges of the panel. The removable flange can be removed when mounting the panel on the support structure. The removal flange when replaced is biased by the panel to releasably lock the bead in the groove. Several grooves may be provided so that several different thicknesses of panels can be accommodated by a single strip.

3,668,831
FURNACE WALL CONSTRUCTION

Larrie H. Sweet, Ramsomville, and Nelson H. Baker, Jr., Niagara Falls, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 28, 1969, Ser. No. 880,526
Int. Cl. F23m 5/04, 5/02
U.S. Cl. 52—484 2 Claims

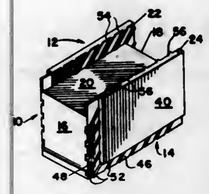


A furnace lining wall is provided by securing refractory insulating blocks in place with refractory anchors having enlarged heads fitting in depressions in the working face of the blocks and having shanks extending into the block and fastened by ties to the furnace frame.

3,668,832
PLASTIC BUILDING BLOCK

James D. Harman, R.D. #1, Hegins, Pa.

Filed June 5, 1970, Ser. No. 43,758
Int. Cl. E04c 1/10
U.S. Cl. 52—591 6 Claims

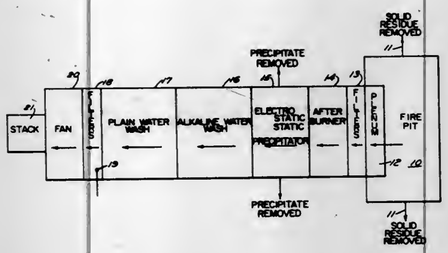


A plastic building block comprising a pair of spaced side walls, a front end wall, a rear end wall, and a bottom wall that form a rectangular box-like shape with an open top. Each side wall has a thickened reinforced layer and a thinner border area. The rear end of each side wall has a cut-away section of reduced thickness and the forward end of each side wall includes a leading section that extends beyond the front end wall. Complementary, angularly oriented tongues and grooves are defined between the leading sections of a first block and the cut-away sections of a second block. Adjacent, identical blocks are assembled into wall sections by sliding the tongues of the first block into the grooves of the second block, or vice versa, so that the thinner leading sections of the first block straddle the cut-away sections of the second block and overlap the joints formed therebetween. THe thinner border area of an upper block, which is coextensive with the exterior face of said block, straddles the border area of a lower block, said border area being coextensive with the interior face of said block. Thus, the joints formed between the upper block and the lower block are overlapped.

3,668,833
APPARATUS AND METHOD FOR INCINERATING RUBBISH AND CLEANING THE SMOKE OF INCINERATION

William Francis Cahill, Jr., 8 Danecroft Avenue, Greenville, R.I.

Filed Aug. 25, 1970, Ser. No. 66,682
Int. Cl. B01d 50/00
U.S. Cl. 55—7 14 Claims

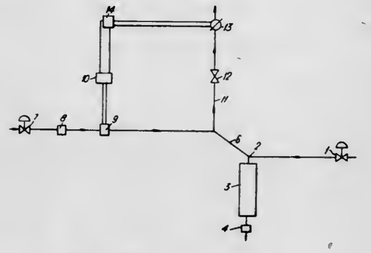


This specification discloses apparatus for carrying out a method of incinerating rubbish and cleaning the resultant smoke. The apparatus comprises essentially a fire pit, a plenum where smoke is collected, a filter, an after burner, an electrostatic precipitating chamber, an alkaline water wash, a plain water wash, a filter, and a motor driven exhaust fan which passes clean gas to a stack.

3,668,834
SAMPLE INJECTION IN GAS CHROMATOGRAPHY

David Robert Deans, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 31, 1970, Ser. No. 59,912
Claims priority, application Great Britain, Aug. 14, 1969, 40,648/69
Int. Cl. B01d 15/08
U.S. Cl. 55—67 12 Claims

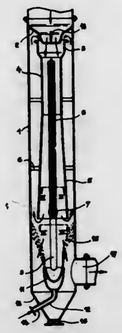


Sample injection in gas chromatography is accomplished by passing a sample stream separate from the carrier gas stream and diverting it into the carrier gas stream through an unrestricted limb by adjusting the relative pressures of the two streams.

3,668,835
ELECTROSTATIC DUST SEPARATOR

Pierre Vicard, 15 Cours Eugenie, Lyon, France

Filed Feb. 3, 1970, Ser. No. 8,295
Claims priority, application France, Feb. 13, 1969, 6903675; Mar. 24, 1969, 6907777
Int. Cl. B03c 3/36, 3/41
U.S. Cl. 55—107 7 Claims

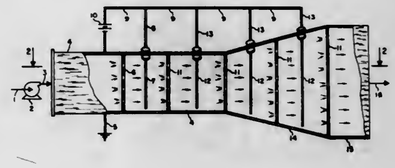


In an electrostatic dust separator having a ionizing electrode axially disposed within a Venturi, an annular nozzle produces a spray of an auxiliary substance in the gas stream issuing from the Venturi, around a polarizing electrode. The coarse particles of the spray are electrified by influence and they attract and retain the finer ionized dust particles carried by the gas. The spraying nozzle may be disposed within an auxiliary Venturi to increase the velocity of the gas and to improve impact effects between the dust particles and the sprayed particles. The ionizing electrode is preferably formed with fins to enhance the ionizing corona discharge, while the polarizing electrode is on the contrary smooth to avoid any noticeable discharge effect. The gas to be treated may be fed into the inlet of the main Venturi by an injector nozzle to produce a negative pressure whereby a portion of the gas issuing from the main Venturi may be recycled into same through an annular passage provided around the said main Venturi.

3,668,836
ELECTROSTATIC PRECIPITATOR

Harry L. Richardson, New York, N.Y., and Robert C. Craig, Morristown, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,947
Int. Cl. B03c 3/47
U.S. Cl. 55—131 5 Claims

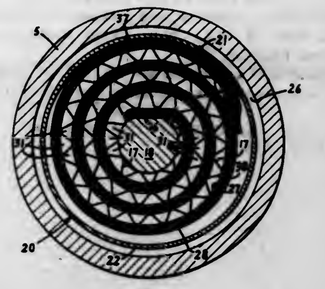


An electrical or electrostatic precipitator is provided with a grounded collector plate upstream of the electrically charged wires. The plate is juxtaposed adjacent to the wires and provides greater overall removal of entrained discrete particles from a gas stream.

3,668,837
SEPARATOR OF THE SEMIPERMEABLE MEMBRANE TYPE

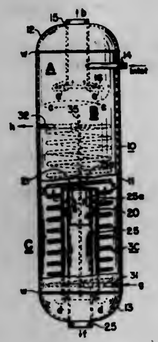
Robert I. Gross, Roslyn Hgts., N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,236
Int. Cl. B01d 53/22
U.S. Cl. 55—158 21 Claims



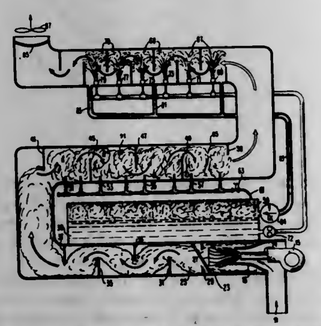
A separator is provided that is particularly suited for separating gases from liquids by selective diffusion through a semipermeable membrane. The membrane forms an enclosure into which diffusate passes and is attached to a flat portion on a surface of a supporting core, so that a strong and leaktight flat seal between the membrane enclosure and the core is formed, with the enclosure interior communicating with a discharge passage in the core. A valve is provided for shutting off flow through the core whenever diffusate flow rate or viscosity exceeds a predetermined maximum.

3,668,838
FLASH ECONOMIZER
Dalph C. McNeil, 43 Pine Street, and John A. McNeil, 161 Franklin Avenue, both of Brookville, Pa.
Filed Dec. 7, 1970, Ser. No. 95,527
Int. Cl. B01d 19/00
U.S. Cl. 55—191 20 Claims



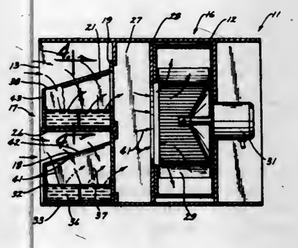
Apparatus and procedure are provided for, in one device or apparatus unit, effectively separating out pure flash or steam from a blow-down discharge and simultaneously effectively recovering heat from the blow-down discharge and, particularly from the more dense portions thereof. Flash separation is accomplished in an upper portion of an enclosed elongated container, condensate recovery and circulation are accomplished in a lower portion, and pressure reduction and heat recovery are principally accomplished in a baffle arch area below the flash separation. The liquid or condensate as discharged from the container has a minimized temperature such that it can be directly discharged into a sewage system without tempering it with and wasting added cooling water. A maximized efficiency of cooling and heat recovery are accomplished in the same container with an efficient to a maximum recovery of pure steam or flash.

3,668,839
AIR POLLUTION CONTROLLER
Joseph Misarek, Oodstock, and William W. Jaxheimer, Kingston, both of N.Y., assignors to Combustion Control Devices, Paterson, N.J.
Continuation of application Ser. No. 758,445, Sept. 9, 1968, now abandoned. This application May 28, 1971, Ser. No. 148,190
Int. Cl. B01d 47/12; B01j 6/00
U.S. Cl. 55—223 7 Claims



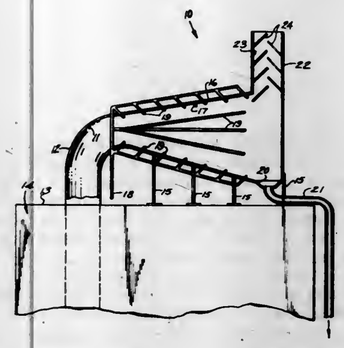
A system for sequential removal of various air pollutants or contaminants such as fly ash, chemicals and hydrocarbons from exhaust systems consists of a series of afterburning, steam, fog, spray and washing chambers which remove toxics, hydrocarbons, fly ash and other undesirables before the fumes are emitted to the atmosphere. The sulfides or other chemicals removed during this process are placed in water solution which can be further refined, reclaimed, neutralized or disposed of.

3,668,840
AIR CLEANER
Richard L. Pierick, 3256 Hampshire Avenue N, Minneapolis, Minn.
Filed Mar. 6, 1970, Ser. No. 17,096
Int. Cl. B01d 47/02
U.S. Cl. 55—239 6 Claims



An air cleaner utilizing a series of elongate, inverted U-shaped air foils is disclosed herein. An oil retaining tray is disposed adjacent the air inlet of an enclosure which also has an air outlet. The air foils are disposed in the air inlet above the tray with the legs of the air foils extending downwardly to proximate the top of the tray. A fan is utilized to force air through the air inlet, over the legs of the air foils and then up through the inside of the air foils. Air and particles of dirt entrained in the air are accelerated along the legs of the air foils. The dirt particles attain sufficient inertia to plunge into the oil in the tray where those particles are retained while the clean air passes into the inside of the air foils.

3,668,841
ANTI-POLLUTION CHAMBER
Howard R. Nunn, 2397 Main Street, Napa, Calif.
Filed Nov. 4, 1970, Ser. No. 86,873
Int. Cl. B01d 47/00
U.S. Cl. 55—257 1 Claim

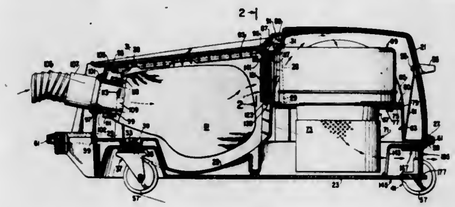


A device for replacing common smoke stacks on industrial building roofs. This device includes a multiple number of pol-

lution sensing devices on the interior of a chamber which contains a multiple number of spray nozzles which produce a high pressure fog.

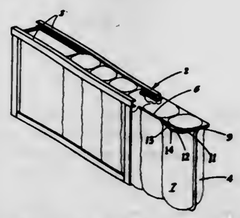
The chamber also includes a catch basin which allows the fluid to drain off into the sump.

3,668,842
VACUUM CLEANER AND EXHAUST HOUSING
William A. Batson, Pickens, and Charles T. Fromknecht, Anderson, both of S.C., assignors to The Singer Company, New York, N.Y.
Filed Mar. 20, 1970, Ser. No. 21,334
Int. Cl. B01d 46/02
U.S. Cl. 55—417 3 Claims



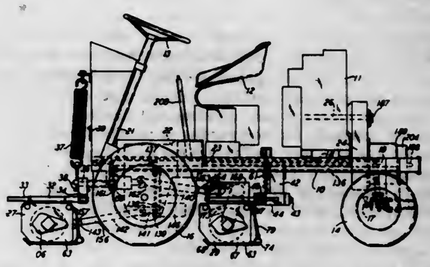
A vacuum cleaner of the canister variety for domestic use having upper and lower housing sandwiching an intermediate housing therebetween. An air inlet is formed at the front of the upper housing and an exhaust housing is secured to the rear of the lower housing. A dust bag is positioned between the upper and intermediate housing and is separated from a motor blower assembly by an apertured partition wall. A washable permanent secondary filter, fitted about a wire form frame, is positioned on the dust bag side of the aperture in the partition wall by means of a pair of slotted ribs which receive a portion of the wire frame and a cam shaped rib which also holds a portion of the wire frame. The exhaust housing includes a sliding door having spaced air slots and a rear wall having similar spaced air slots alternately offset from those of the door. A hose assembly blower connection aperture is formed in the exhaust housing adjacent to the slotted rear wall. During vacuum operation the sliding door is positioned in front of the hose assembly blower aperture and air is exhausted from the motor-blower assembly through both sets of slots, but during blower operation the door is positioned in front of the rear wall with the solid portion of the door closing off the slots in the wall of the exhaust housing to concentrate all the exhaust air through the hose assembly blower connection aperture.

3,668,843
FILTER SUPPORT CONSTRUCTION
Karl L. Westlin, and Allan R. Getzin, both of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.
Filed Apr. 6, 1970, Ser. No. 25,929
Int. Cl. B01d 25/22
U.S. Cl. 55—501 3 Claims



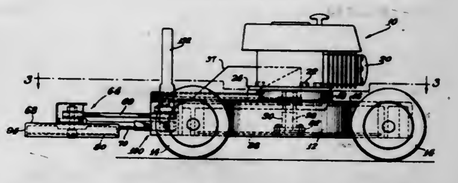
Gas filter apparatus including a flow-through filter support frame having opposed channels to receive a filter cell header frame and means cooperating with opposed sides of the filter cell header frame to resiliently urge the header frame into sealing engagement in the support channels.

3,668,844
GANG LAWN MOWER WITH SELF-SHARPENING MEANS
Sahag C. Akgulian; Donald G. Haffner, and Sherman C. Heth, all of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
Filed Apr. 9, 1970, Ser. No. 26,997
Int. Cl. A01d 75/30
U.S. Cl. 56—7 7 Claims



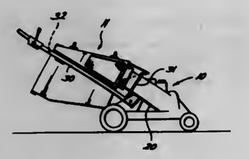
A gang lawn mowing machine having a tractor with a prime mover and ground supporting wheels. A plurality of mowers are supported on the tractor and are driven by the tractor in the cutting action of the mowers so that the mowers are powered. Pivot mountings support the mowers on the tractor for articulation of the mowers to adjust to irregular ground and for raising the mowers to a transport position compact with the tractor. A mower cutter drive train extends between the tractor prime mover and each of the mowers for rotating the mower cutter in a mowing direction of rotation. A reversing drive exists between the prime mover and the mowers for reversing the direction of rotation of the mower cutters and thereby sharpening the cutters when they are rotated in the reverse direction.

3,668,845
LAWN MOWER APPARATUS
James M. Parker, Deerfield, Ill., assignor to Parkton Corporation, Alsip, Ill.
Filed Mar. 9, 1970, Ser. No. 17,753
Int. Cl. A01d 35/26
U.S. Cl. 56—11.6 18 Claims



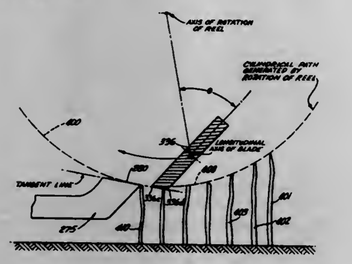
An improved rotary lawn mower having a self-contained power take-off arranged in one corner of the forward edge of the mower deck. An auxilliary unit, having a blade driven by a pulley and a belt extending to the power take-off, is supported from the deck and is movable between a trimming position in which the blade is substantially horizontal and an edging position in which the blade is substantially vertical. A cam means automatically compensates for distance changes between the pulley and the power take-off as the unit is moved between the trimming and edging positions.

3,668,846
QUICK DUMP GRASS CATCHER FOR LAWN MOWER
Warner P. Knight, 1301 Thomas Place, Fort Worth, Tex.
Filed May 12, 1971, Ser. No. 142,463
Int. Cl. A01d *35/22*
U.S. Cl. 56—205 5 Claims



A grass catcher for use with a power driven lawn mower having a grass discharge duct which terminates on one side of the mower, and is arranged to discharge grass cuttings in an upward and rearward direction, in admixture with a stream of air, and having a pair of elongated handles which are inclined upwardly and rearwardly, in parallel, spaced apart relation to each other, and a cross bar extending between the handles, forwardly thereof, the cross bar being bent right angularly intermediate its ends and having end portions which are perpendicular to its intermediate portion and which extend upwardly, perpendicular to the handles. Comprises an elongated, substantially six sided box, formed of sheet metal, which has generally parallel sides and ends, and has a height greater than its width and a length greater than its height, which in use is arranged substantially horizontally between the upwardly and rearwardly inclined handles, rearwardly of the cross bar, and extends above and below the handles. The box has means whereby it is loosely supported on the handles, and on the cross bar, and is secured by its own weight. It has a grass inlet on its front end which in its operative position loosely surrounds the opposing end of the grass discharge duct, and has air vents on its two opposite sides, near the top thereof. The back end of the box is hinged at the top whereby it may be swung open, for convenience in dumping the contents of the box. The box has handles on the top thereof for lifting it in and out of engagement with the mower, and for dumping.

3,668,847
ROTARY CUTTING REEL, LEDGER BLADE AND BAFFLE ASSEMBLY
Carl Van Arsdall, P. O. Box 178, Bradenton, Fla.
Continuation of application Ser. No. 849,964, Aug. 14, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 504,792, Oct. 24, 1965, now Patent No. 3,461,656, dated Aug. 19, 1969. This application Feb. 26, 1971, Ser. No. 119,365
Int. Cl. A01d *55/20*
U.S. Cl. 56—252 2 Claims



A reel, bedplate and baffle combination wherein the reel includes a central shaft, a plurality of spiders of plate-like material anchored to the shaft at equally spaced points, blades mounted on said spiders and twisted both helically about the reel axis and about their own axes the bedplate having a surface cooperating with said blades and an open front baffle surrounding the reel at top and back and cooperating with the blades and spiders to discharge cuttings ahead of the advancing reel.

3,668,848
FRUIT PICKER
Harry H. Gerkin, East 1st Street, Loogootee, Ind.
Filed May 21, 1971, Ser. No. 145,655
Int. Cl. A01g *19/08*
U.S. Cl. 56—334 1 Claim



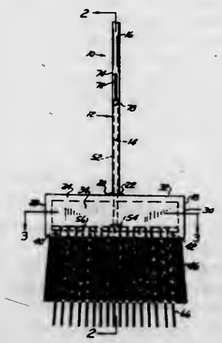
Fruit harvester apparatus for removing fruit from trees and including an elongated hollow pole with a fruit picker head mounted on one end and a pair of movable jaws mounted on the picker head to close behind a piece of fruit to permit the fruit to be separated from a tree. The jaws and the linkage which operates the jaws are retained in a non-protruding position with respect to the pole and picker head when the jaws are not in use.

3,668,849
LOCKABLE ASSEMBLY AND RAKE-CULTIVATOR IMPLEMENT FOR USING
Robert W. Bunker, 1519 West Fourth Avenue, Sault Ste. Marie, Mich.
Filed Oct. 15, 1970, Ser. No. 80,995
Int. Cl. A01d *7/00*
U.S. Cl. 56—400.17 9 Claims



A novel gripping assembly for holding a strap element to an elongated element by means of a rotatable flat wedging cam element. A rake-cultivator implement which uses the gripping assembly is also described. This implement includes a plurality of tines which fan in and out for cultivating and raking, respectively, by movement of the lockable gripping assembly along the handle of the implement.

3,668,850
RAKE AND BROOM COMBINATION
Alan D. Horkey, 5221 Tokay Drive, Lot 108, Flint, Mich.
Filed May 13, 1970, Ser. No. 36,900
Int. Cl. A01d *7/04*; A46b *15/00*
U.S. Cl. 56—400.04 3 Claims



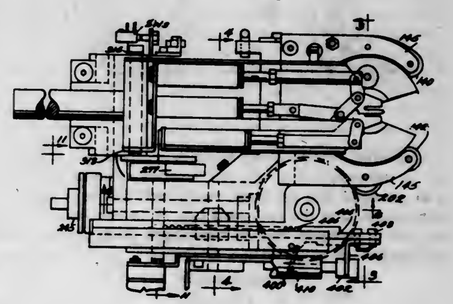
A rake and broom combination including a hollow handle having a hollow broom head secured to its lower end. The broom bristles are secured to the broom head and form an elongated hollow oval-shaped structure. A shaft is slidably mounted within the hollow handle and has a rake teeth bar transversely secured to its lower end and disposed within the broom head. Rake teeth are secured to the rake teeth bar and extend downwardly within the oval formed by the broom bristles. When the shaft is secured in its upper position, the broom bristles extend beyond the lower end of the rake teeth and the combination may be used as a broom. When the shaft is secured in its lower position, the rake teeth extend beyond the broom bristles and the combination may be used as a rake.

3,668,851
APPARATUS FOR MANUFACTURING FLEXIBLE SIGNAL TRANSMISSION CABLE FOR AERODYNAMIC BODY
Werner Heinzmann, Ottobrunn, and Siegfried Pfahl, Hagen Holthausen, both of Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Munchen, Germany
Original application Apr. 1, 1969, Ser. No. 812,277. Divided and this application Mar. 25, 1970, Ser. No. 25,616
Claims priority, application Germany, Apr. 6, 1968, P 17 65 133.1
Int. Cl. H01b *13/26*
U.S. Cl. 57—18 2 Claims



The apparatus is used to form a small diameter flexible electrical cable for transmitting control signals between a control station and a rapidly moving aerodynamic body, and the cable includes at least two parallel enamel-insulated conductor wires cemented together in parallel relation and extending centrally through a tension member formed by a large number of thin individual filaments extending parallel to the conductor wires, and further includes a comprising superposed layers wound around the tension member in opposite respective angular directions. The apparatus includes two serially arranged wire spinning devices, the first of which has a fixed spindle provided with an axial bore therethrough and a stationary guide plate arranged close to the spinning head. The guide plate has a central opening for the conductor wires and plural openings for the tension member filament strands, these openings being arranged in a circle concentric with the central opening and at angular interval of 120°. The first wire spinning device wraps a first covering layer in one direction about the tension strands or filaments, and the second wire spinning device wraps an outer covering layer in the opposite direction around the inner covering layer.

3,668,852
AUTOMATIC SPLICING APPARATUS
Vito A. Fusco; Charles T. Ogden, both of Chicago, Ill., and Walter F. Ilman, Greensboro, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed May 4, 1970, Ser. No. 34,574
Int. Cl. B65h *69/06*, *69/00*
U.S. Cl. 57—22 35 Claims

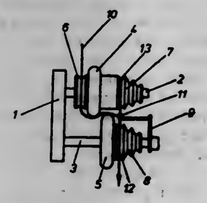


An automatic splicing apparatus for splicing yarn by wrapping filament around the yarn, comprising a housing and a drive means mounted therein which rotates a filament wrapping wheel. The filament wrapping wheel has a filament supply mounted thereon and clamping and cutting means secured to the housing hold and cut the yarn being spliced. A filament holder means mounted to the housing retains an end of the filament during the slicing cycle and cuts the filament at the end of the cycle.

3,668,853
FRICTION CRIMPING OF SYNTHETIC THREADS
Otto Lang, Schweinfurt, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany
Filed June 19, 1970, Ser. No. 47,685
Claims priority, application Germany, June 20, 1969, P 19 31 207.3
Int. Cl. D02g *1/08*
U.S. Cl. 57—34 HS 9 Claims

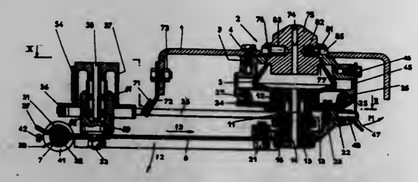
Friction crimping of synthetic threads with the aid of rotating discs characterized by the employment of the thread to be crimped for driving the discs. There may be a simultane-

ous crimping of two threads with twists of the same or of opposite hand, of which only one thread serves to drive the



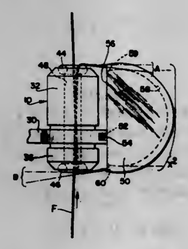
discs. Apparatus for carrying out the method of friction crimping is also provided.

3,668,854
SPINNING FRAMES
Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France
Filed July 28, 1970, Ser. No. 58,931
Claims priority, application France, Aug. 4, 1969, 6926659
Int. Cl. D01h *1/12, 1/20*
U.S. Cl. 57—58.89 **8 Claims**



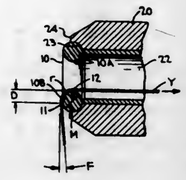
A spinning frame having spindles comprising a fixed part for the admission of slivers, and a rotary spinning bowl part, is so arranged that the bowl can be belt driven at relatively high speeds, and the two parts can be pivoted apart for inspection or cleaning, without handling of driving belts, and so that the drive is automatically disengaged.

3,668,855
TWISTER AND METHOD OF TWISTING
Richmond T. Leeson, East Greenwich, and Hans H. Richter, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed June 22, 1970, Ser. No. 48,167
Int. Cl. D02g *1/02, 1/04*
U.S. Cl. 57—77.4 **28 Claims**



Method and apparatus are disclosed for imparting false twist to textile strand wherein a plurality of turns of twist are imparted to the strand for each revolution of a friction twister. The disclosed friction twister comprises a single hollow spindle having a pair of oppositely positioned frictional engagement means therein. The twister also includes reversing guide means which allow the strand to enter in a substantially rectilinear path through one end of the axial bore of the spindle, come into engagement with a first one of the frictional engagement means to twist the yarn, pass through the reverse guide means, thereafter contact the second of the frictional engagement means, and finally exit in a generally rectilinear path through a second end of the axial bore of said spindle. In practice with the present invention a single strand or a plurality of strands can be twisted by the use of a single friction twister spindle and a plurality of turns of twister are inserted in the strand or strands for each single revolution of the twister spindle.

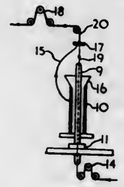
3,668,856
FRICTION TWISTER ELEMENT
Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation-in-part of application Ser. No. 25,559, May 6, 1970. This application Nov. 16, 1970, Ser. No. 89,552
Int. Cl. D02g *1/04;* D01h *7/92*
U.S. Cl. 57—77.4 **19 Claims**



Disclosed is an improved friction twisting element for use in a textile yarn false twist spindle. The disclosed friction twisting element, mounted in a false twist spindle capable of rotation about its longitudinal axis, engages a strand of yarn and imparts a plurality of turns of twist to the yarn for each revolution of the spindle. The size and shape of the friction twist element are such that tension fluctuations in the yarn are minimized during the operation of the device. The size and shape of the friction element will also maximize the frictional engagement between the element and the yarn and will avoid yarn slippage that is characteristic of a friction twisting element that has a large variation between the inside and outside diameter of the yarn engaging surface.

3,668,857
METHOD FOR THE MANUFACTURE OF CORD
Ronald S. Goy, and Peter L. E. Moring, both of Sutton Coldfield, England, assignors to Dunlap Holdings Limited, London, England
Filed Sept. 28, 1970, Ser. No. 76,008
Claims priority, application Great Britain, Oct. 11, 1969, 50,034/69
Int. Cl. D02g *3/48*
U.S. Cl. 57—157 TS **14 Claims**

A method for the manufacture of cord which comprises passing upwards through a rotating hollow spindle a continuous filament yarn substantially free from twist and simultaneously drawing off from the spindle a continuous filament yarn initially in a twisted condition, passing the yarn through a guide means thus causing the yarns to become doubled and form a cord in which the yarns are substantially free from twist. Instead of two separate yarns a continuous length of yarn may be used, the first portion being twisted and then



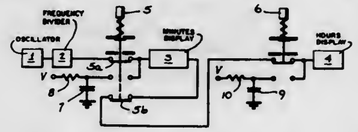
doubled with the second portion of yarn of which the following is a specification.

3,668,858
CLOCK
Rudiger Hartwig, Dresdoner Strasse 36, 7032 Sindelfingen, Germany
Filed Mar. 3, 1970, Ser. No. 16,062
Claims priority, application Germany, Mar. 4, 1969, P 19 10 818.0
Int. Cl. G04b *45/00, 19/30*
U.S. Cl. 58—2 **6 Claims**



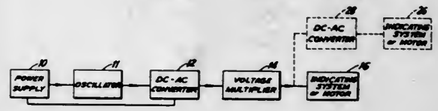
A clock in which planetary gear wheels provided with inner teeth engage on stationary elements with outer teeth to obtain uniform rotation for successive gear stages. The eccentric drive of one stage necessary for engagement is directly effected by the eccentric shape of the rotating element of the preceding stage. The rotating elements belonging to each stage act as moving elements and also as indicating elements due to their markings.

3,668,859
TIME SETTING DEVICE FOR AN ELECTRONIC CLOCK
Herbert S. Polin, and Gustavo Kuhn, both of Veyrier, Switzerland, assignors to Paul Vogel, Geneva, Switzerland
Filed June 5, 1970, Ser. No. 43,821
Claims priority, application Switzerland, Mar. 7, 1969, 10164/69
Int. Cl. G04c *3/00;* G04b *27/00*
U.S. Cl. 58—23 R **5 Claims**



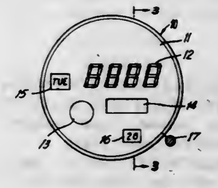
The invention relates to a time setting device for an electronic watch comprising an oscillator, a frequency divider and counting and display devices for the minutes and for the hours connected in series. This device comprises further at least one commutator to switch the input of the counter of the watch onto a capacitor, a resistor charging said capacitor, the forward or backward stepping of this counter of one unit being controlled by the discharge of said capacitor.

3,668,860
HIGH VOLTAGE WATCH POWER SUPPLY
Gunther Rudalph Diersbock, Waterbury, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Nov. 5, 1970, Ser. No. 87,215
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 BA **8 Claims**



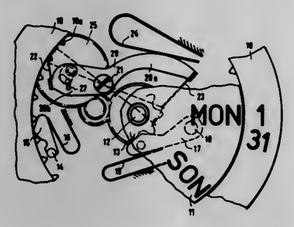
A power supply for a watch including voltage multiplying means or transforming means to increase the voltage of a power cell to a higher voltage capable of operating electrical and electronic devices used in watches requiring voltage higher than the conventional 1.5 volts. These include highly efficient quartz oscillators and dividing units, MOS integrated circuits, solid state indicating systems, crystals, piezoelectrical and electrostatic motors and piezoelectric alarm systems, and associated systems. A DC–AC converter or chopper is connected respectively to a voltage multiplier or transformer and the high voltage output therefrom is suitable for driving various types AC or DC systems used in watches. The use of a plurality of batteries or other undesirable structures is thereby avoided.

3,668,861
SOLID STATE ELECTRONIC WATCH
Hiromitsu Mitsui, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Nov. 10, 1971, Ser. No. 197,378
Claims priority, application Japan, Nov. 17, 1970, 45/100709
Int. Cl. G04b *19/30;* H03k *19/14*
U.S. Cl. 58—50 R **10 Claims**



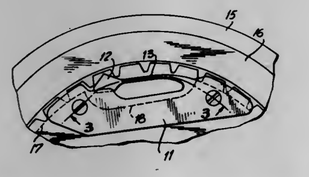
A watch is provided with a liquid crystal display system operable at high levels of ambient illumination and a solid state display system operable at low levels of ambient illumination. A photo-transistor selects the display system appropriate to the ambient light level.

3,668,862
TIMEPIECE SHOWING THE DATE AND DAY OF THE WEEK
Gunter Scholz, Schramberg, Germany, assignor to Gebruder Junghans G.m.b.H., Schramberg, Germany
Filed July 15, 1971, Ser. No. 162,780
Claims priority, application Germany, Aug. 3, 1970, P 20 38 552.8
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **5 Claims**



A timepiece including a worm device operable to abruptly shift a drum lever. The lever, when shifted, is operable to abruptly shift date and/or time indicating means.

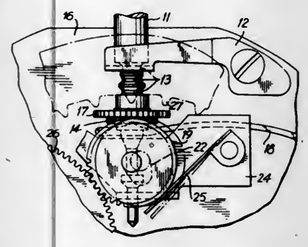
3,668,863
JUMPER MEMBER CONSTRUCTION IN A CALENDAR WATCH
Mamoru Miyasaka, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed July 27, 1971, Ser. No. 166,531
Claims priority, application Japan, July 30, 1970, 45/75484
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **3 Claims**



In a calendar watch, a jumper mechanism for operating with a toothed member such as a calendar wheel comprises a thin plate connected to a jumper by means of a flexible arm. The plate is mounted above a base plate in a construction such that the jumper lies out of the plane of the thin plate between the thin plate and the base plate.

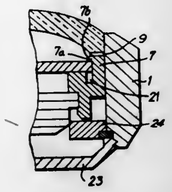
3,668,864
CALENDAR WATCH SETTING STEM WITH DISPLACEABLE SPRING BIASED GEAR
Mamoru Miyasaka, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed July 28, 1971, Ser. No. 166,753
Claims priority, application Japan, July 30, 1970, 45/66348
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **3 Claims**

In a calendar watch, the watch stem has three positions available for independently setting the time, setting the date and winding the watch. Independence of these functions is achieved by the use of gears mounted slidably on a spline which is part of the stem, and by a gear displaceable transversely of its axis, which makes it possible to move the spline into contact with the gears without causing damage even



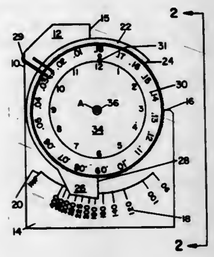
when the teeth of the spline and the corresponding teeth in the gears are not in register.

3,668,865
DIAL AND MOVEMENT FIXING STRUCTURE FOR A WATCHCASE
Masahide Hirabayashi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed June 8, 1971, Ser. No. 151,021
Claims priority, application Japan, June 9, 1970, 45/49118
Int. Cl. G04b *19/06*
U.S. Cl. 58—127 B **10 Claims**



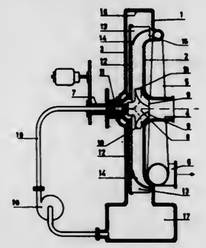
The upper portion of an annular structure has surfaces for engaging the inner face and the periphery of a dial. The structure is notched to receive a projection at the periphery of the dial and to prevent thereby rotation of the dial.

3,668,866
ALCOHOLIC CONCENTRATION INDICATOR
Herbert Z. Lund, 3610 Kirby Drive, Greensboro, N.C.
Continuation-in-part of application Ser. No. 35,416, May 5, 1970, now abandoned. This application July 30, 1970, Ser. No. 59,565
Int. Cl. G07c *1/00*
U.S. Cl. 58—152 **22 Claims**



A rotating dial-type indicator for illustrating the approximate theoretical alcoholic concentration in the blood of an average man as related to the volume of alcohol consumed, weight of the individual, and time elapsed. The indicator includes at least two circular scales, one being rotatable with respect to the other; one of the scales representing time, the other representing alcoholic concentration in the blood. A limit means is provided for discreetly rotating one of the scales throughout a prescribed arc, which may be selectively varied according to the weight of an individual.

3,668,867
COMPRESSOR GAS TURBINE INSTALLATION
Pieter van Staveren, Pijnacker, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurweten-Schappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel en Verkeer, The Hauge, Netherlands
Filed Feb. 26, 1970, Ser. No. 14,590
Claims priority, application Netherlands, Feb. 26, 1969, 6903027
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **2 Claims**

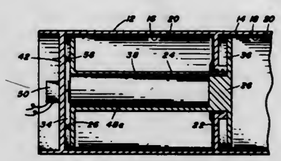


A compressor gas turbine installation provided with a heat-exchanger for transferring heat from the exhaust gases of the gas turbine on to the compressed energy-medium and a combustion chamber with an automatic control of the fuel supply for keeping the turbine-outlet temperature constant.

As a compressor at least one centrifugal fluid vanes compressor with a secondary rotor is applied, the primary rotor of it being coupled with the turbine.

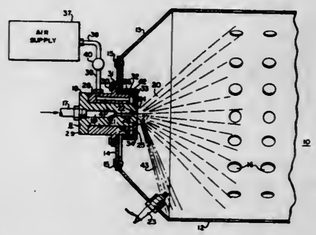
In the liquid duct to the compressor an adjusting device is incorporated for controlling the liquid supply, with which device the power delivered by the compressor gas turbine installation can be controlled.

3,668,868
PREPACKAGED LIQUID ROCKET POWERPLANT FEED SYSTEM
Leroy J. Krzycki, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 30, 1970, Ser. No. 64,918
Int. Cl. F02c *3/12*
U.S. Cl. 60—39.48 **7 Claims**



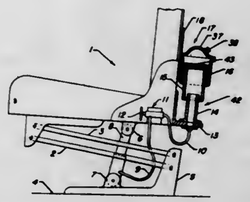
A propellant feed system for a rocket having mechanically linked pistons attached to longitudinally involuted rolling metal bladders. Each propellant tank contains a rolling metal bladder positive expulsion device in which the propellant is hermetically sealed and stored. In operation, propellant expulsion occurs when a high pressure gas forces the piston assembly to traverse the propellant tanks longitudinally while the metal bladders are forced to roll back on themselves and follow. As a result, the rolling metal bladders are plastically deformed as they roll around the initial involution, effectively turning themselves outside-in, and the liquid propellants contained therein are expelled through a flow control device into the thrust chamber assembly for combustion and thrust generation.

3,668,869
FUEL SPRAY IGNITION ATOMIZER NOZZLE
Serafino M. De Corso, Media, and Chester A. Jersey, Wallingford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 28, 1971, Ser. No. 110,424
Int. Cl. F02g *1/00*
U.S. Cl. 60—39.74 R **10 Claims**



A liquid fuel spray atomizer nozzle for use with a gas turbine during combustion chamber fuel ignition, comprising a member having a high pressure air blast passageway for directing a stream of air, angularly in relation to the direction of fuel spray from a nozzle into the combustion chamber, so as to atomize and forcibly blow at least a part of the fuel toward an ignition device into ignition proximity therewith. The air blast can be blown directly across the fuel spray pattern or may be directed toward a side of the spray pattern. In all cases, the air must be under sufficient pressure to deflect and atomize the fuel spray sufficiently to provide for its ignition by the spark gap or other igniter.

3,668,870
COMBINATION HYDRAULIC-PENUMATIC SUSPENSION SYSTEM FOR VEHICLE OCCUPANTS
Garth O. Hall, New Berlin, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Mar. 11, 1970, Ser. No. 18,487
Int. Cl. F15b *7/00*; F01b *31/00*
U.S. Cl. 60—54.5 R **2 Claims**



A vehicle occupant support suspension system involving a first hydraulic cylinder interposed between an occupant support and the vehicle frame. A connection line leads from the

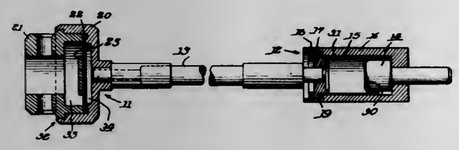
first hydraulic cylinder to a second hydraulic cylinder. The second hydraulic cylinder has a fixed member and a movable member. The movable portion of an air cylinder that has fixed and movable portions is attached to the movable member of the second hydraulic cylinder. The movable member of the second hydraulic cylinder and the movable portion of the air cylinder move together in response to pressure both in the second hydraulic cylinder and in the air cushion.

3,668,871

HYDRAULIC REMOTE CONTROL DEVICE

Hans Berndt, and Hubert Kreuzer, both of Donau, Germany, assignors to Neuweg Fertigungs GmbH, Munderkinger Wurttemberg, Germany

Filed July 13, 1970, Ser. No. 54,358
Claims priority, application Germany, July 16, 1969, G 69 28 117
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 R **6 Claims**



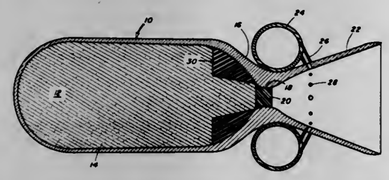
A hydraulic remote control apparatus is provided for use in operating short-stroke valves located in the piston of an adjustment cylinder for adjustable back rests. The apparatus includes a pair of remotely located hydraulic chambers interconnected by means of a fluid-carrying conduit. A first hydraulic chamber is provided with a diaphragm and disk arrangement which spans the chamber to form fluid-tight operating and control compartments therein. A second hydraulic chamber has a smaller cross-section than the first chamber and is provided with a rolling elastomeric diaphragm so that the volume of the second hydraulic chamber can be reduced by displacement of the plunger in a manner sufficient to deflect the rolling diaphragm.

3,668,872

SOLID PROPELLANT ROCKET

Albert T. Camp, Indian Head, and Alan McCone, Jr., Hyattsville, both of Md.

Filed Jan. 30, 1967, Ser. No. 614,525
Int. Cl. C06d 5/00; F23r 1/00
U.S. Cl. 60—207 **15 Claims**



A method and apparatus for utilizing the volatility of the combustion products of solid metallic propellants to accelerate metal combustion products to gaseous velocity by recondensing the gaseous products in the rocket envelope behind the throat of the nozzle. A further useful effect is accomplished by the reaction between the steam formed in the condensation reaction and an added fuel to form additional moles of working gas.

3,668,873

BIPROPELLANT ROCKET PROCESS USING NITRIDABLE FUEL

William C. Beaman, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 14, 1959, Ser. No. 846,509
Int. Cl. C06d 5/06, 5/08, 5/10
U.S. Cl. 60—211 **6 Claims**

1. The process which comprises burning in a self-sustaining manner and within a rocket combusion chamber having a directional outlet to provide thrust

a. a nitridable fuel with

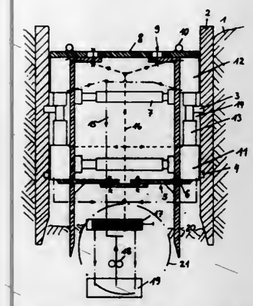
b. an oxidizing nitrogen source material which supplies reactive nitrogen to said fuel thereby evolving reaction products containing nitrides and free hydrogen, said nitrogen source material being selected from the group consisting of guanidine, 1,6-diamino-5-guanidine, 1,4-diamino-diguanidine triaminoguanidine, 5-amino-tetrazole and hydroxylamine.

3,668,874

SHORING APPARATUS

Josef Krings, Hans-Bockler-Str. 23, D-5139 Oberbruch, Germany

Filed June 15, 1971, Ser. No. 153,291
Claims priority, application Germany, June 30, 1970, P 20 32 155.5
Int. Cl. E21d 5/12
U.S. Cl. 61—41 A **4 Claims**



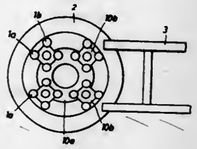
Apparatus for shoring the walls of trenches or ditches including fluid motors carried by a framework and being adapted to cooperate with sheet members for forcing the sheet members into place to support the trench walls and for removing the sheet members after work has been completed.

3,668,875

OFFSHORE TERMINAL

Otto Sander, and Alexander Ulpe, both of Duesseldorf, Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed July 15, 1970, Ser. No. 55,200
Claims priority, application Germany, July 23, 1969, P 19 38 018.8
Int. Cl. E02b 17/02
U.S. Cl. 61—46 **1 Claim**



An offshore terminal is constructed from tubing to establish a resiliently yielding tower. A floating platform as

docking and cargo handling berth is linked to the tower by means of a floating collar through which impact forces acting on the platform are reacted into the tower. Different embodiments include single pipe and plural pipe tower constructions as well as outrigger-like platforms and platforms traversed by the tower.

3,668,876

OFFSHORE TOWER APPARATUS AND METHOD

Albert M. Koehler, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Apr. 20, 1970, Ser. No. 30,098
Int. Cl. E02b 17/00; E02d 21/00; E04h 12/08
U.S. Cl. 61—46.5 **20 Claims**



A tower suitable for use in offshore well operations and the like including a plurality of sloping jacket legs extending from the bed of the body of water to a position above the surface of the body of water for supporting a platform thereupon. The jacket legs are reinforced by a surrounding shell of diamond patterned cross braces and a plurality of girder rings lying in a plurality of planes normally with the central axis of the tower. The girder rings are supported against deformity by a bicycle spoke reinforcing system at each girder ring level.

The method aspects of the invention include constructing the tower in a generally horizontal posture upon a plurality of generally upright columns. The construction steps include forming a plurality of girder rings and erecting the girder rings upon the columns. Jacket legs are connected between adjacent girder rings along the length of the offshore tower and the tower legs are enclosed within an outer shell of cross bracings. The offshore tower, following construction, is launched into a body of water for transportation to a selected marine site by constructing the tower longitudinally upon a rail having one end thereof lying adjacent a sheet pile wall which permits the lower end of the rail to be positioned below the adjacent water level. A floatation system connected to the tower and the wall is removed to permit the base of the tower to be buoyantly lifted from the construction support. The upper portion of the tower rests upon a rail bearing guide bracket which is initially positioned above the water level. The rail bearing guide bracket may be lifted off the rail by an incompressible fluid and the tower slides into the body of water. Alternatively, the tower may be jacked into the water by conventional jacking devices. Upon being erected at an offshore location, conductors may serve in a dual capacity as conductors and piles, or piles may be inserted into skirt pile casings surrounding the base of the tower and driven into the bed of the body of water by a stinger guided by a rotating truss.

3,668,877

PILE SECTION FOR FORMING A PILOT HOLE

Gabriel Fuentes, Jr., 1501 Ashford Avenue, Santurce, P.R.

Original application Nov. 20, 1967, Ser. No. 684,297, now Patent No. 3,522,707, which is a continuation-in-part of application Ser. No. 609,102, Jan. 13, 1967, now Patent No. 3,449,958. Divided and this application Feb. 2, 1970, Ser. No. 12,492
Int. Cl. E02d 5/22; E21b 11/00
U.S. Cl. 61—53 **3 Claims**



This invention relates to apparatus for driving a concrete piling formed of a number of concrete pile sections which are spliced together to form a piling of a predetermined length including a dummy pile for providing a pilot hole, special pile sections for hard or other special driving conditions, and a sleeve for splicing the pile sections together.

The same technique is applied to forming retaining walls, bulkheads and even to light poles, telephone poles and the like, in which case, the poles are easily repaired or replaced if damaged.

3,668,878

METHOD AND APPARATUS FOR LAYING PIPELINES

Jerry J. Jones; Delbert L. Keenon; William A. Morgan, and Joe C. Lochridge, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Apr. 9, 1969, Ser. No. 814,558
Int. Cl. F16l 1/00; B63h 25/42
U.S. Cl. 61—72.3 **21 Claims**



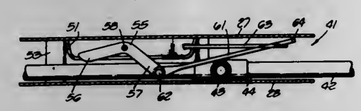
A method and apparatus for laying a pipeline on a submerged surface from a vessel which is provided with one or more vessel propulsion units. Tension and lateral force exerted on the pipeline from the floating vessel are detected. The deviation of the vessel from a desired pipelaying course is also detected.

The thrust effect of the vessel propulsion units is adjusted to insure that the desired tension is exerted on the pipeline. The vessel is also rotated to relieve lateral force interacting between the vessel and the pipeline. As a matter of subordinated priority, the thrust effect of the vessel propulsion units is adjusted in an effort to tend to restore the vessel to the desired or predetermined course and maintain the vessel on this course.

3,668,879
APPARATUS FOR BURYING RISER PIPE

Robert K. Ogle, Shafter, Calif., assignor to Shafter Concrete Pipe Co., Shafter, Calif.

Filed July 22, 1971, Ser. No. 165,026
Int. Cl. E02f 5/10; F16l 1/00; E03f 5/00
U.S. Cl. 61—72.6 6 Claims

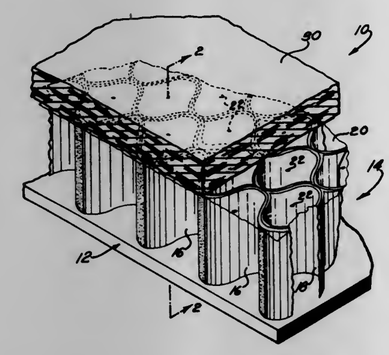


Apparatus for burying flexible pipe with attached risers employs a pair of parallel upright plates defining an open-top slot between them. Continuous flexible pipe with attached risers is guided into the slot while the plates move forward longitudinally behind a trench-forming machine, the lower portions of the plates traveling in the trench. Hold-down mechanism in the slot holds the pipe down for subsequent covering with earth as the trench is backfilled. The hold-down mechanism permits the attached risers to pass through the use of a pivoted member having a pair of arms, one of which always overlies a portion of the flexible pipe. An actuator bar connected to the pivoted member is engaged by the risers to swing the member about its pivot to permit passage of each riser between the arms. Also, the pair of plates are pivotally connected to the trench-forming member and power means are provided for swinging the pair of plates to change their angular position.

3,668,880
CAPILLARY INSULATION

John P. Gille, Littleton, Colo., assignor to Martin Marietta Corporation, Friendship Intl. Airport, Md.

Filed Oct. 16, 1970, Ser. No. 81,440
Int. Cl. F17c 13/00
U.S. Cl. 62—45 12 Claims

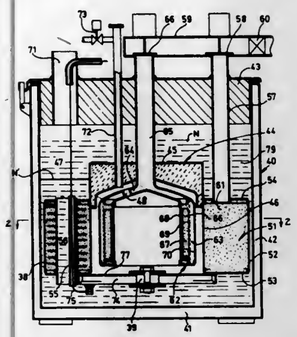


A capillary insulation assembly for insulating low temperature liquids consists of a cellular core defining discrete cells and a capillary cover having at least one or more openings per cell attached to the liquid side of the cellular core. A structurally stable liquid-gas interface forms at each of the openings preventing the entry of liquid into the cell and thereby positioning a layer of gas between the liquid and the container wall. A thermal barrier in the form of an insulative layer is interposed between the capillary cover and the contained liquid with the insulative layer being operative to insulate the gas-liquid interface from subcooled liquid in the container thereby to maintain the temperature at the interface at the saturation temperature.

3,668,881
ADSORPTIVE CRYOPUMPING METHOD AND APPARATUS

Jean-Jacques Thibault, Saint Martin D'Uriage, and Jacques Carle, Saint Martin D'Heres, both of France, assignors to L'Air Liquide Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed July 16, 1970, Ser. No. 55,482
Claims priority, application France, Dec. 1, 1969, 6941309
Int. Cl. B01d 5/00
U.S. Cl. 62—55.5 10 Claims

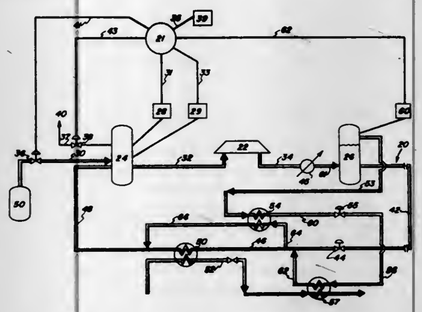


Cryopumping method and apparatus in which two cryopump chambers containing adsorbent are successively cooled and used to evacuate a third chamber by cryopumping. The first chamber to be cooled is used to evacuate the second chamber when both of the pump chambers are out of communication with the third chamber and before the second chamber is cooled. Then the first chamber is put into communication with the third chamber after the first and third chambers are sealed from each other.

3,668,882
REFRIGERATION INVENTORY CONTROL

Jan A. Sarsten, Millington, N.J.; Kenneth I. Zacks, Oxshott, England, and Michael C. Myers, Tripoli, Libya, assignors to Esso Research and Engineering Company

Filed Apr. 29, 1970, Ser. No. 32,896
Int. Cl. F25b 45/00
U.S. Cl. 62—77 16 Claims



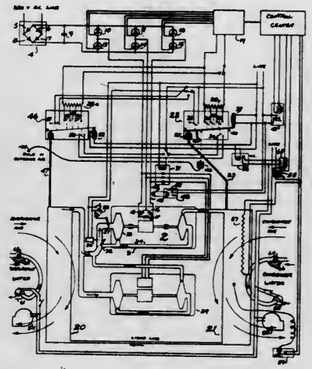
An apparatus and process for controlling refrigeration in a closed cycle. An inventory recorder and controller in communication with major holdup locations in the refrigeration

circuit determines the amount of the refrigerant in the system. The amount is measured, recorded and maintained by means responsive to the difference between a set value and the value measured by the inventory recorder and controller. The apparatus and method is applicable to a multicomponent refrigerant where individual control is maintained over each component.

3,668,883
CENTRIFUGAL HEAT PUMP WITH OVERLOAD PROTECTION

John D. Ruff, 206 Birch Street, and Phillip R. Wheeler, 209 Pine Street, both of Alexandria, Va.

Continuation-in-part of application Ser. No. 37,779, May 15, 1970. This application June 12, 1970, Ser. No. 45,603
Int. Cl. F25b 1/00
U.S. Cl. 62—158 7 Claims



A variable capacity air conditioning system for heat pump operation using small centrifugal compressors and including capacity reducing methods to prevent overloading when starting up the compressors, and including methods to remove the refrigerant liquid from the evaporator while the system is not in use, also to prevent overloading when restarting.

3,668,884
REFRIGERATION SYSTEM, HEAT RECOVERY SYSTEM, REFRIGERATED GAS COMPRESSION SYSTEM AND BRAYTON CYCLE SYSTEM

William H. Nebgen, 4824 43rd Street, Woodside, N.Y.

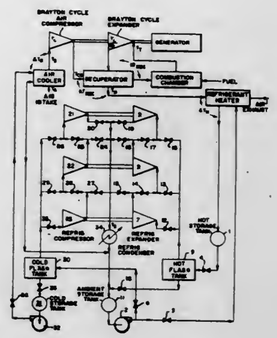
Filed May 5, 1970, Ser. No. 34,717
Int. Cl. F25b 1/10
U.S. Cl. 62—228 3 Claims

A refrigeration system in which cold refrigerant liquid is produced by permitting refrigerant vapor to flash from a batch of ambient temperature refrigerant liquid at progressively decreasing temperatures and pressures, which cools down the unvaporized liquid. Vapors are compressed by refrigerant compressors, cooled and condensed at ambient temperature, and used for succeeding refrigerant liquid batches.

The above refrigerating system is preferably driven by a hot refrigerant liquid at progressively decreasing temperatures and pressures, thus cooling the remaining liquid to about ambient temperature. The vapors flashed drive refrigerant turbines, each of which drives a refrigerant compressor, and after expansion the vapor is cooled and condensed at ambient temperature.

At the start of each cycle, as the batch of hot refrigerant liquid starts to flash the pressure available to the refrigerant expanders is at a maximum. At the same time, as the batch of ambient temperature refrigerant liquid starts to flash, the compression ratio required of the refrigerant compressors is at a minimum. Conversely, at the end of each cycle the pressure available to the expanders is at a minimum and the compression ratio required of the compressors is at a maximum. The refrigerant expanders and compressors therefore are valved sequentially so that at the start of the cycle the expanders are in series and the compressors are in parallel and at the end of the cycle the expanders are in parallel and the compressors are in series.

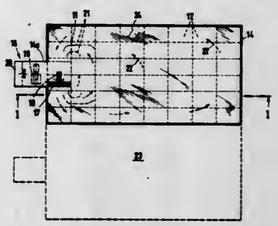
In another form of the invention, in an open recuperated Brayton cycle engine, air is compressed with refrigeration at compressor inlet at least 50° F. below ambient and to from 0.9 to 1.1 of a calculated optimum compression ratio raised to the 0.286 power.



3,668,885
AIR COOLED ARTIFICIAL ICE RINK

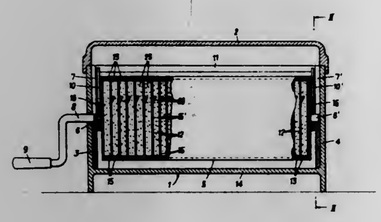
Siegfried Kuebler, Uberlingen, Germany, assignor to Firma Kuebler & Co., Singen/Hohentwiel, Germany

Filed Oct. 23, 1970, Ser. No. 83,503
Claims priority, application Germany, Oct. 24, 1969, P 19 53 591.2
Int. Cl. A63c 19/10
U.S. Cl. 62—235 7 Claims



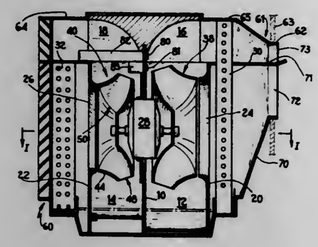
An air cooled artificial ice rink including a plurality of independent modular units, each provided with a similar and removable refrigerator.

3,668,886
FREEZING APPARATUS
Hans Hofer, Lidmanskygasse 33, 9010 Klagenfurt, Austria
Filed Aug. 24, 1970, Ser. No. 66,340
Claims priority, application Austria, Aug. 29, 1969, A 8308-69
Int. Cl. F25c 7/12
U.S. Cl. 62—346 8 Claims



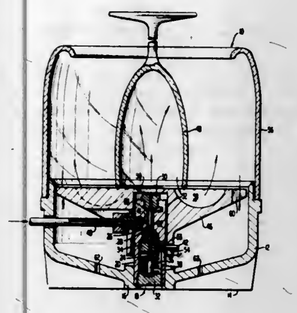
A freezing drum in an apparatus for making ice cream from a liquid mass in which the drum is immersed comprises a plurality of metallic heat exchange elements distributed throughout the interior of the drum. The heat exchange elements are in heat exchange contact with the interior wall of the drum and are surrounded by a refrigerant filling the interior of the drum.

3,668,887
AIR CONDITIONING APPARATUSES
Valerio Giordano Riello, Legnago, Italy, assignor to Riello Condizionatori S.A.S. di Giordano Riello & C., Bevilacqua, Verona, Italy
Filed Aug. 4, 1970, Ser. No. 60,902
Claims priority, application Italy, Aug. 7, 1969, 20671 A/69
Int. Cl. F25d 23/12
U.S. Cl. 62—262 11 Claims



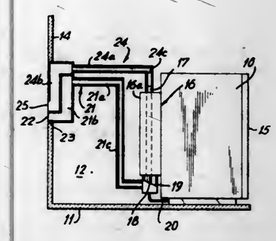
A reversible air conditioner having a casing divided in a warm and in a cold section by a partition wall, a motor supported in said wall, partly extending in one and partly in the other of said sections and having a shaft projecting from either its ends, a fan in each section for promoting air circulation in each section, said fans being of combined inlet axial and delivery tangential flow type, having recesses oppositely to their axial inlets, and being arranged back-to-back in said sections about the opposite ends of said motor shaft, and the said motor being substantially compenetrated in said recesses of fans.

3,668,888
DEVICE FOR FROSTING DRINKING GLASSES
Donald J. Rosionski, Pennsauken, N.J., assignor to Frost-A-Glass Corporation, Trenton, N.J.
Filed Mar. 10, 1970, Ser. No. 18,254
Int. Cl. F25d 17/02
U.S. Cl. 62—373 9 Claims



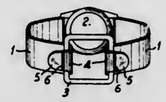
A device for frosting drinking glasses including a valve adapted to be connected to a supply of fluid refrigerant and an actuating means for opening the valve. The actuating means includes a movable platform on which a glass to be forsted is adapted to be placed. The platform is moved by pushing the glass thereagainst to thereby open the valve so that refrigerant flows into the glass.

3,668,889
GAS-OPERATED REFRIGERATOR HAVING SEALED COMBUSTION SYSTEM
Olov Tage Magnusson, Bromma, and Karl Gosta Lennart Kenneryd, Vallingby, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Aug. 19, 1970, Ser. No. 65,131
Claims priority, application Sweden, Sept. 12, 1969, 12566/69
Int. Cl. F23j 11/00; F25b 15/00
U.S. Cl. 62—476 11 Claims



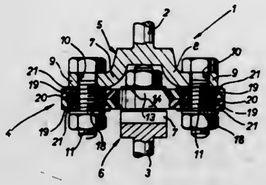
A heat-operated refrigerator heated by a gas burner and a heating flue associated therewith is disposed in a space having an apertured exterior side wall. The heating flue and burner form parts of a sealed combustion system which includes a first conduit for supplying all of the combustion supporting air to the burner to form a combustible gas mixture with gas supplied thereto and a second conduit for withdrawing all of the flue gases from the upper end of the flue. The ends of the first and second conduits removed from the burner and flue, respectively, are open and terminate in the apertured side wall, the open end of the first conduit serving as an inlet for ambient air and the open end of the second conduit serving as an outlet for flue gases. The flue gas outlet is disposed above the air inlet. The air inlet and flue gas outlet have the same cross-sectional areas and are flush with the outer surface of the exterior wall.

3,668,890
BRACELET WITH PLURALITY OF INTERCHANGEABLE COUPLING MEMBERS FOR VARYING THE LENGTH THEREOF
Jacques Broido, 18 Chemin Challendia, Geneva, Switzerland
Filed Sept. 29, 1970, Ser. No. 76,432
Claims priority, application Switzerland, Oct. 16, 1969, 15579/69
Int. Cl. A44c 5/00
U.S. Cl. 63—3 5 Claims



A watch bracelet comprises a pair of bands and a coupling member, for example loop-shaped, chosen from a set of coupling members of different dimensions. Two free ends of the band are provided with means for releasably and interchangeably fixing a chosen coupling member to the bands to form a bracelet of given length.

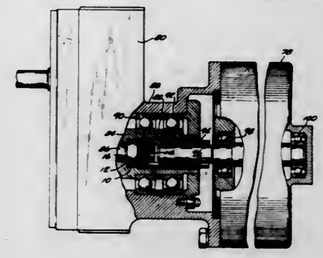
3,668,891
FLEXIBLE COUPLINGS
Gustavo Brizzolesi, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti "SAGA" S.p.A., Milan, Italy
Filed Sept. 30, 1970, Ser. No. 76,924
Claims priority, application Italy, Jan. 17, 1970, 19482 A/70
Int. Cl. F16d 3/62
U.S. Cl. 64—12 6 Claims



A flexible transmission coupling comprises an annular resilient member made up from a number of small resilient plates joined and to end to form a ring. The shafts to be coupled are each formed with a fork or tripod at their ends and these are bolted to the ring at the junctions of the plates so that their ends are circumferentially displaced from one another. The plates have a stepped configuration with parallel end portions displaced from one another in a direction normal to the plane of the plates and incorporate a loop of reinforcing wire in the shape of a figure of eight.

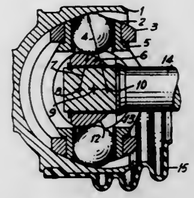
3,668,892
FLEXIBLE DRIVE COUPLING
Richard E. Alsch, Lannon, Wis., assignor to Graham Transmissions, Inc., Menomonee Falls, Wis.
Filed Oct. 29, 1969, Ser. No. 872,043
Int. Cl. F16d 3/64
U.S. Cl. 64—14 8 Claims

A drive coupling between two rotatable members in a drive system is provided wherein each of the members includes a pair of angularly spaced V-shaped axial projections. The V-shaped projections on one member are arranged between the V-shaped projections on the other member and together define a generally X-shaped opening therebetween. An X-shaped member of flexible material is arranged in the opening to provide a drive connection between the members.



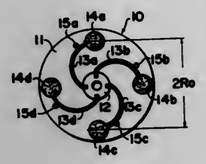
The coupling is used in the drive train of a belt or motorized drive to a gear reducer and in a variable transmission of the disc and ball galaxy type. A flexible coupling together with clearance provide for limited movement between an input member and its connection in the drive train to achieve desired bearing loading.

3,668,893
SYNCHRONOUS UNIVERSAL COUPLING
Leopold F. Schmid, Leharstrasse 8, D 7000 Stuttgart, 1, Germany
Filed Feb. 22, 1971, Ser. No. 117,367
Claims priority, application Germany, Aug. 12, 1970, P 20 39 965.9
Int. Cl. F16d 3/30
U.S. Cl. 64—21 5 Claims



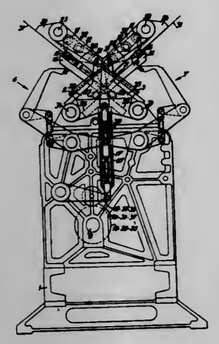
A synchronous universal coupling comprises inner and outer pivotal parts which are couples by a coupling member which transmits torque between the parts while enabling the parts to vary their relative angular positions with full synchronization. The coupling member is in the form of a cross with four arms at right angles to one another, two of the arms having a common bore receiving the inner pivotal part, the other arms having a common bore receiving the inner pivotal part, the other arms having aligned, spaced bores on opposite sides of the inner part receiving balls rollably engaged with respective surfaces of the inner and outer parts. The inner part may be cylindrical to fit the shape of the common bore, or alternatively the inner part may comprise a spherical portion received in the coupling member with cylindrical journals rotatable in the ends of the common bore.

3,668,894
SLIP-CLUTCH
Tetsuji Yoshii, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 14, 1970, Ser. No. 71,682
Claims priority, application Japan, Sept. 19, 1969, 44/76029; Oct 2, 1969, 44/78822
Int. Cl. F16d 7/02
U.S. Cl. 64—30 R 7 Claims



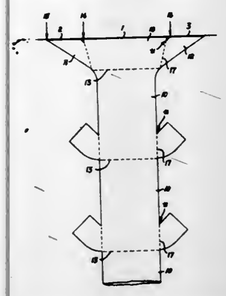
A slip-clutch having frictionally driving and driven rotable members. The driving members are supported by springs so that, when the coefficient of friction between the driving and driven members is varied, the driving members are radially shifted or displaced to have varied radius of the circle along which the driving members are moved whereby the variation in the radius compensates for the variation in the coefficient of friction to thereby transmit a regulated and constant torque.

3,668,895
DEVICE FOR ACTUATING THE NARROWING POINTS OF TWO NEEDLE BED KNITTING MACHINES
Karel Bernard Marie Bruckmans, Gentbrugge, Belgium, assignor to Fabrique National D'Armes De Guerre, Societe Anonyme, Herstallez-Leige, Belgium
Filed Jan. 28, 1970, Ser. No. 6,481
Claims priority, application Belgium, Feb. 7, 1969, 728048
Int. Cl. D04b 7/10
U.S. Cl. 66—70 1 Claim



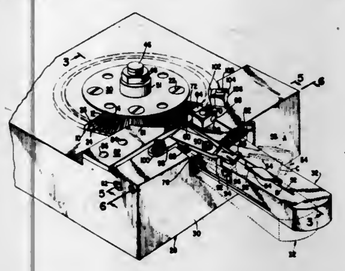
A device for actuating the narrowing points of two needle bed knitting machines, having first means for imparting, to the points, a movement in a direction parallel to the plane of the associated needle bed, second means for varying the distance of said points relative to the said plane and third means for imparting, to the said points an angular shifting about an axis passing through the tip of the latter.

3,668,896
KNITTING OF GARMENTS
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England
Filed Sept. 25, 1968, Ser. No. 762,416
Claims priority, application Great Britain, Sept. 27, 1967, 43,924/67
Int. Cl. D04b 7/10
U.S. Cl. 66—70 7 Claims



A method of knitting a garment comprising knitting a first portion of the garment in the form of a tube on needles of at least two pairs of opposed beds of a machine, which pairs of beds are laterally movable with respect to one another and can overlap, widening the tubular portion by introducing needles on at least one pair of beds at a point closer to those needles of another bed carrying stitches than the needles of the said one pair of beds already carrying stitches which are most remote from the said needles of the other pair of beds, and further widening the tubular portion by introducing needles in following courses of knitting at points closer to the said needles of the other pair of beds than the needles first introduced, effecting relative lateral movement between the pairs of beds to rearrange the stitches into separate groups, one group on each pair of beds, and knitting separately on to each group of stitches to produce a further tubular portion on each pair of beds.

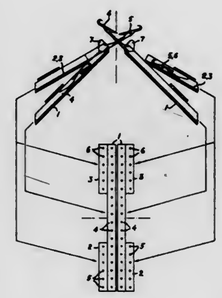
3,668,897
DEVICE FOR SETTING PIVOTALLY MOUNTED JACKS IN A PATTERN WHEEL
Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, both of Fla., assignors to The Singer Company, New York, N.Y.
Filed Aug. 10, 1970, Ser. No. 62,269
Int. Cl. D04b 37/04
U.S. Cl. 66—1 R 9 Claims



A device is provided for setting pivotally mounted jacks in a pattern wheel. Such device includes a means for rotatably

supporting the jack retaining ring of the wheel, mechanism for indexing such ring by rotating the ring to successively align jacks with a selectively operable jack raising lever, and camming means for flipping over raised jacks as the indexing mechanism rotates the jack-supporting ring.

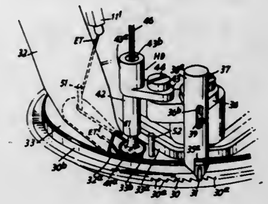
3,668,898
KNITTING METHODS
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England
Filed Sept. 23, 1968, Ser. No. 761,729
Int. Cl. D04b 7/10
U.S. Cl. 66—70 7 Claims



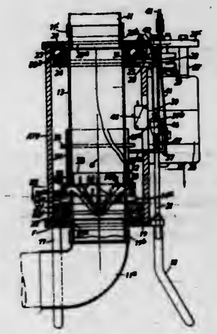
A method of knitting a jersey or similar garment comprises knitting a body portion of said garment in the form of a tube on needles of a first pair of beds of a knitting machine, knitting two separate sleeve portions in the form of tubes, one sleeve portion being knitted on each of two second pairs of beds of the knitting machine which second pair of beds are laterally movable relative to and capable of overlapping the first mentioned pair of beds, arranging the body and sleeve portions adjacent each other, traversing all the needles carrying stitches with a yarn carrier so as to join the body and sleeve portions and, during subsequent knitting, before at least some of the courses, reducing the number of wales in at least one of the portions by transferring stitches of wales of the portion to be reduced, adjacent the other portion to the needles carrying adjacent wales and decreasing the lateral spacing apart of the second beds by a number of needle pitches equal to the number of wales by which the portion has been reduced.

3,668,899
CIRCULAR KNITTING MACHINE
Sidney B. Grewcock; Alan Cooper, both of Burbage; Arthur Amos, Barwell, and Paul Sylvester, Hinckley, all of England, assignors to Barber & Nicholls Limited, Burbage, Near Hinckley, England
Filed July 6, 1970, Ser. No. 52,646
Claims priority, application Great Britain, Dec. 18, 1969, 61,795/69; Apr. 16, 1970, 18,151/70
Int. Cl. D04b 15/61
U.S. Cl. 66—140 S 2 Claims

A multi-feed circular knitting machine having a yarn changing mechanism at each feed. A guide at one of the feeds is threaded up with an elastomeric thread. Knife elements and a suction tube respectively cut and normally hold any yarn withdrawn from knitting. Adjacent the suction tube, between the latter and the cutting point, is a holder device and a trapper component co-operable to hold the elastomeric thread after it is withdrawn but prior to it being cut. In one form, the holder device consists of a spring-biassed stem slidable up and down a tubular support and having a thread-engaging foot for co-operation with the trapper component.

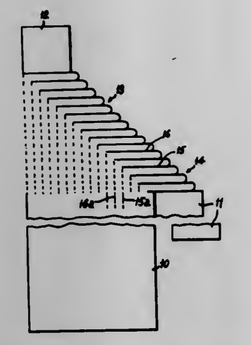


3,668,900
TAKE DOWN APPARATUS FOR CIRCULAR SEAMLESS HOSE KNITTING MACHINES
James Peet, Newark, England, assignor to West Bridgford Machine Co. Limited, West Bridgford, Nottingham, England, a part interest
Filed Aug. 6, 1970, Ser. No. 61,591
Int. Cl. D04b 15/92
U.S. Cl. 66—149 S 11 Claims



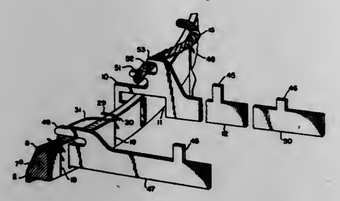
An anti-twist device for preventing twisting of hose as knitted on a circular seamless hose knitting machine of the kind including a stationary take-down tube along which a hose is pulled under suction. The device includes a rotary cylindrical dust shield arranged co-axially with respect to the take-down tube and driven at at least the same rotational speed as that of the needle cylinder of the machine. Fingers, pivotally mounted on the dust shield, are movable about fulcrum points to operative positions in which they interrupt the passage of a knitted hose downwardly through the shield and the take-down tube and to inoperative positions in which they release the pressed-off hose for free passage through the dust shield and the take-down tube. The dust shield is driven from an independent electric motor located exteriorly thereof.

3,668,901
KNITTING METHOD AND KNITTING GARMENT
Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England
Filed May 6, 1970, Ser. No. 35,173
Claims priority, application Great Britain, May 6, 1969, 23,023/69
Int. Cl. D04b 7/10; A41b 9/06
U.S. Cl. 66—176 10 Claims



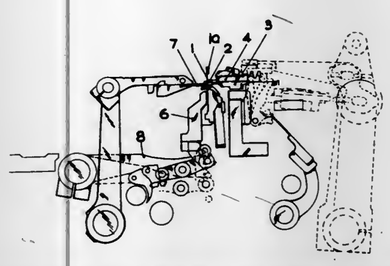
A knitted garment comprises a tubular knitted lower portion and two shoulder portions, each shoulder portion comprising a series of U-shaped courses, each end of each U-shaped course of each shoulder portion being joined to an end of a wale of the tubular lower portion. The tubular lower portion may comprise a single tube constituting the body of the garment, or it may comprise, three tubes, constituting the body and two sleeves of the garment, joined by a single tube constituting the part of the garment between the three tubes and the shoulder portions. A method of knitting the garment is also claimed.

3,668,902
CYLINDER, SINKERS, NEEDLE
Charles J. Sanders, 203 30th Street, Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 347,944, Feb. 27, 1964. This application Apr. 30, 1968, Ser. No. 725,274
Int. Cl. D04b 15/06, 15/24
U.S. Cl. 66—54 30 Claims



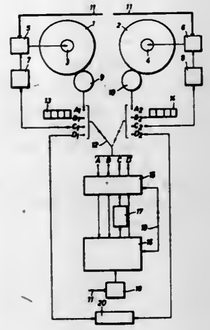
An element affixed to the top of a needle cylinder to cover at least the upper portions of some or all sinker slots and thereby provide the needle cylinder with a smooth upper edge for part or all of the circumference. Sinkers ride in the lower uncovered portions of sinker slots to which an element has been affixed. Sinker portions extend over the upper surface of the element and extend downwardly to engage the lower sinker slot portions from the needle cylinder interior. Alternatively sinkers may ride in the lower portions of covered slots by extending from exterior the needle cylinder directly to the slots. A needle or needles with a large head but narrow shank may be inserted in the needle cylinder at the portion where the element covers sinker slots.

3,668,903
STRAIGHT BAR KNITTING MACHINES
Eric Walter Marriott, Shepshed, England, assignor to William Cotton Limited
Filed Mar. 6, 1970, Ser. No. 17,063
Claims priority, application Great Britain, Mar. 8, 1969, 1,236/69
Int. Cl. D04b 1/00
U.S. Cl. 66—82 8 Claims



Production of rib to plain fabric on a straight bar knitting machine having quality control mechanism for the fabric to be made at different qualities, starting the rib fabric with first and second yarns by successive motions of the frame needles after pre-setting welt quality control mechanism to an abnormally tight quality and rendering the mechanism effective by pattern control means, and having catch bar cam controlled means operable for abnormally retracting the sinkers and cam shaft shogging means for rendering the cam controlled means effective at required times.

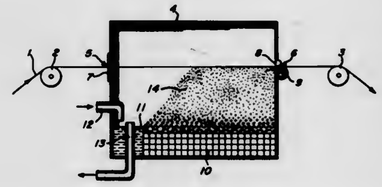
3,668,904
DEVICE FOR AUTOMATICALLY REGULATING THE THREAD CONSUMPTION OF WARPED KNITTING MACHINES
Karel Mureabeeld, 20-Chemin Soujet 1234, Vessy near Geneva, Switzerland
Filed Apr. 8, 1970, Ser. No. 26,496
Int. Cl. D04b 23/00
U.S. Cl. 66—86 A 5 Claims



A device for automatically regulating the thread consumption of warp knitting machines in which plural warp beams

are propelled from a mainshaft by respective variable drives is provided. This device consists of electrical contact means for determining the r.p.m. of the mainshaft, together with a setting device means for fixing the desired speed of thread consumption. A control mechanism is also provided for part of the device which includes electrical impulse generator means on the respective warp beams for indicating thread consumption together with a counter means including subtracting mechanism means for measuring the difference between desired and actual values of thread consumption and having output signal means for adjusting the r.p.m. of individual warp beams through said variable drive. The device further includes switching means for adapting the control mechanism means for successively regulating the r.p.m. of plural warp beams of one or more warp knitting machines through connection with the electrical impulse generator means and the variable drives of the respective warp beams, and means for causing switching of said control mechanism means from one warp beam to another in response to signal from the electrical impulse generator on the warp beam last regulated at the time of switching.

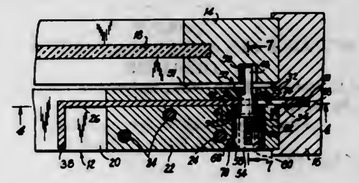
3,668,905
APPARATUS FOR CONTINUOUSLY HUMIDIFYING MOVING WEBS OF PAPER, FABRIC, OR OTHER MATERIALS
Jurgen Schlunke, Krefeld, assignor to Joh. Kleinewefers Sohne, Krefeld, Germany
Filed Sept. 14, 1970, Ser. No. 71,768
Claims priority, application Germany, Sept. 19, 1969, P 19 47 512.8
Int. Cl. D06c 1/08
U.S. Cl. 68—5 D 5 Claims



An apparatus for humidifying a moving web of material, especially of paper and fabric, in a continuous manner in which the web to be humidified is passed through housing means and above the humidifying liquid and ultrasonic oscillating means atomizing the liquid.

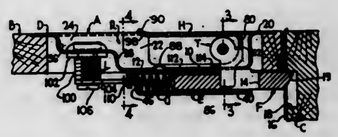
3,668,906
LOCK FOR WINDOWS AND DOORS
David Josephart, Philadelphia, Pa., assignor to Max Harris, Rego Park, N.Y., a part interest
Filed Jan. 25, 1971, Ser. No. 109,103
Int. Cl. E05b 63/14
U.S. Cl. 70—90 6 Claims

A device for securing a pair of slideable window or door sashes in a fixed frame having first and second locking plungers longitudinally displaceable in a housing mounted on a first of said sashes so that said plungers are respectively displaceable into and out of securing relation with said frame and the second of said sashes. The first locking plunger is provided with a keyhole-shaped slot therethrough, while the second locking plunger is positioned to extend through said slot and dimensioned for receipt within the wider portion of said slot but not in the narrow portion thereof at a first locked orientation at which the first locking plunger is retained in securing relation with the frame. Further, the second locking plunger is dimensioned for receipt within the narrower portion of the slot at an opened orientation of said



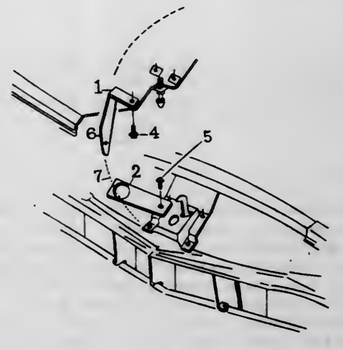
plunger. Lock means is provided for releaseably securing the second locking plunger in said locked orientation.

3,668,907
KEY-CONTROLLED DOOR LOCK
John V. Pastva, Jr., Parma Heights, Ohio, assignor to The Eastern Company, Cleveland, Ohio
Filed Feb. 19, 1971, Ser. No. 116,917
Int. Cl. E05b 5/00
U.S. Cl. 70—153 4 Claims



A swinging door, paddle-type, key-controlled flush bolt lock made primarily of metal stampings, having a handle in the deeper part of a two level recess and the key control in the shallower part of the recess at the non-pivoted end of the handle such that the key control is readily accessible to an operative but does not protrude from the front of the lock. The key control includes a cam selectively movable into and out of the path of a member which retracts the bolt upon movement of the handle in one direction.

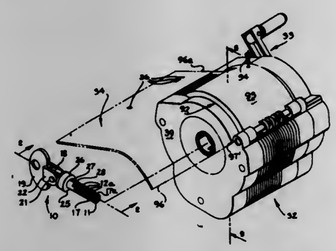
3,668,908
AUTOMOBILE HOOD LOCK DEVICE
Harold Levy, P.O. Box 205, Cliffside Park, N.J.
Filed Oct. 23, 1970, Ser. No. 83,546
Int. Cl. E05b 65/19
U.S. Cl. 70—240 2 Claims



An automobile hood lock device to keep the hood locked. This consists of an arm fastened to a bolt which is already on

the hood. This arm goes through a plate, with a circular hole, which is fastened to a bolt already on the body of the car. The arm is then secured by a padlock.

3,668,909
SETTABLE KEY AND CODING MECHANISM THEREFOR
Marvin E. Roberts, Reno, Nev., assignor to Locking Systems, Inc., Reno, Nev.
Filed May 28, 1970, Ser. No. 41,211
Int. Cl. E05b 19/18
U.S. Cl. 70—411 13 Claims



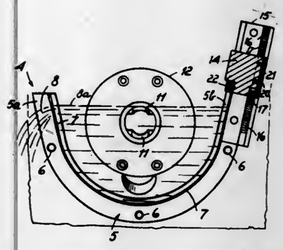
A system for selectively coding a key to correspond to the code for any one of a number of differently coded locks is provided whereby the key is set to operate any given one of the locks. The key includes settable bits carried upon a shank or stem each of the bits being variously settable to a number of coded arrangements thereof. The key setting means serves to set the bits of the key in response to a coding element having predetermined code portions defining the code for the lock which is to be operated. For example a punched hole accounting card can be utilized as a coding element. The setting means receives a key and also the coding element and includes sensing portions for sensing the coded portions of the coding element so as to set the key bits in response thereto.

3,668,910
EXTRUSION HANDLING APPARATUS
Charles B. Gentry; Robert M. Scanlon, both of Grand Rapids; Jerome Rumery, Jenison; Howard L. McDonald, Grand Rapids, and Larry G. Keeler, Hudsonville, all of Mich., assignors to Granco Equipment, Inc., Grand Rapids, Mich.
Filed Oct. 6, 1970, Ser. No. 78,362
Int. Cl. B21j 7/26; B21c 23/00
U.S. Cl. 72—24 15 Claims



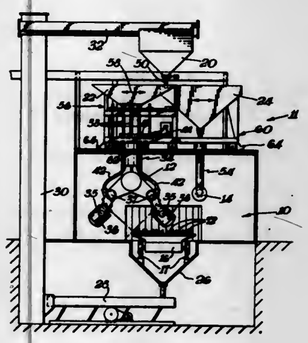
An extrusion handling apparatus which grips the end of extruded products and stretches them as they are extruded from a die of an extrusion machine. The apparatus includes a clamping means for gripping the extruded products, the clamping means being mounted on rails to move linearly away from the extrusion die. Supports for the extruded products are mounted independently of the clamping means and synchronized to move with the clamping means beneath the extruded products and are vertically adjustable with respect to the clamping means to adjust the supports for different size extrusions. The clamping means have opposite jaws which close on the center line of the extruded products. The jaws are moved by a pneumatic, or other, fluid pressure system which is carried by a cart which supports the clamping means. The pneumatic pressure system is recharged by docking with a pressure source at one end of the travel of the clamping jaw cart. A shear press is mounted on a track for movement independent of the clamping means and has power means operably connected thereto for movement of the shear press away from the clamping means after cutting of the extrusion to permit gripping of the cut end of the extrusion without interference from the shear press.

3,668,911
ROLLING MILL
Ilario Properzi, Via Vittor Pisani 8, Milan, Italy
Continuation-in-part of application Ser. No. 706,378, Feb. 19, 1968, now Patent No. 3,552,164. This application May 25, 1970, Ser. No. 56,992
Claims priority, application Italy, May 27, 1969, 17408 A/69
Int. Cl. B21b 45/02
U.S. Cl. 72—43 3 Claims



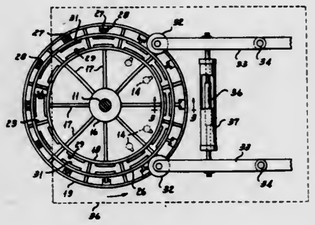
A device for controlling and adjusting the cooling and lubricating liquid flow in multi-stand rolling mills for metal bars and wire.

3,668,912
SHOT PEENING APPARATUS
Davis L. Baughman, and James H. Carpenter, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed July 8, 1970, Ser. No. 53,083
Int. Cl. C21d 7/06
U.S. Cl. 72—53 13 Claims



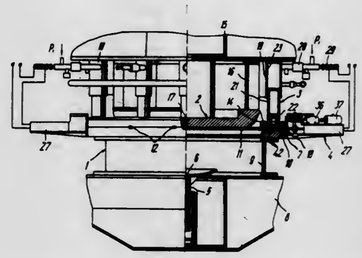
A shot peening apparatus includes a bank of a plurality of commonly mounted centrifugal shot throwing wheels and also includes a free moving centrifugal shot throwing wheel.

3,668,913
APPARATUS FOR SHOT-PEENING TURBINE BLADES
John W. Morris, Huntington Beach, Calif., assignor to Metal Improvement Company, Inc.
Filed Oct. 5, 1970, Ser. No. 77,845
Int. Cl. C21d 7/06
U.S. Cl. 72—53 7 Claims



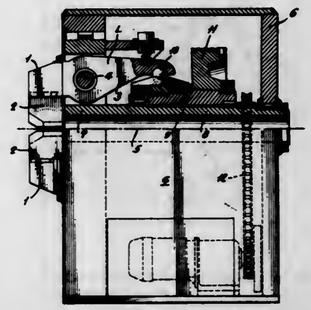
A turntable having a number of pairs of apposed resilient gripping members mounted on nested ring members, one of the rings having its axis eccentrically translatable relative to the other, the translatable ring being pressure-biased in one direction transversely to its axis so that the space between the rings is greater at one end of a diameter to allow loading of workpieces between gripping members, the space closing with rotation of the rings to provide a firm grip of the workpieces passing through a subsequent peening zone, a portion of each workpiece being exposed to peening action and a portion shielded therefrom.

3,668,914
METHOD OF STAMPING METAL CONVEX ARTICLES FROM SHEETS
Bogdan Vyacheslavovich Voltsekhovsky, ulitsa Akademicheskaya, 2; Viktor Alexandrovich Kuvshinov, ulitsa Tereshkovol, 2, kv. 37; Vladimir Nikolaevich Plaxin, ulitsa Ilicha, 14, kv. 65, and Vyacheslav Alexandrovich Nevsky, ulitsa Tereshkovoi, 4, kv. 60, all of Novosibirsk, U.S.S.R.
Filed Dec. 31, 1969, Ser. No. 889,624
Int. Cl. B21d 24/12, 26/02
U.S. Cl. 72—57 7 Claims



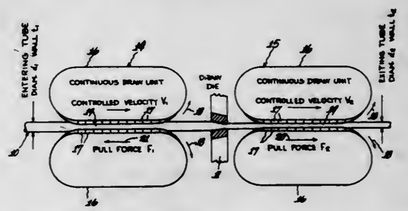
A method and die set for stamping metal blanks into convex articles including positioning a blank between a punch and a ring-shaped die while clamping the edge of the blank, partially deforming the blank with the punch, and then forcing pressurized fluid between the punch and the partially deformed blank to form a convex article, while concurrently effecting controlled inward movement of the edge of the blank so as to control the thickness and quality thereof.

3,668,915
MACHINE TOOL FOR PLASTIC SHAPING OR FASHIONING
Bernd Ribback, Rue de Merturt 48, Wasserbillig, Luxembourg
Filed Apr. 28, 1969, Ser. No. 819,912
Int. Cl. B21j 7/10
U.S. Cl. 72—76 3 Claims



A machine tool for plastic shaping or fashioning by hammering, forging, pressing, etc. in which the shaping is accomplished by means of rocking levers having arms of different lengths, with the tools for effecting the working strokes being carried by the shorter arms and being driven by the longer arms.

3,668,916
DRAWING OF METAL TUBING
Harry C. Ledebur, Cranfield, Ohio, assignor to Wean Industries, Inc.
Filed Jan. 19, 1970, Ser. No. 3,979
Int. Cl. B21c 1/00
U.S. Cl. 72—274 2 Claims

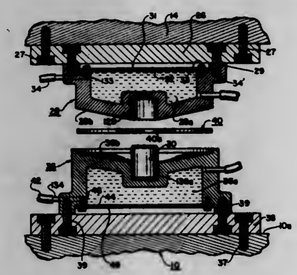


The method of controlling the wall thickness of a drawn metal tube by applying forces on the tube on opposite sides of the die whereby the tube leaves the die at a higher velocity than the velocity of the tube entering the die, and relating the velocities in a ratio to produce the desired wall thickness of the drawn tube.

3,668,917
PROCESS AND APPARATUS FOR PRESS-FORMING AND QUENCHING A STEEL STOCK
Noboru Komatsu; Takatoshi Suzuki; Takuo Ito, all of Nagoya-shi; Yoshiteru Hara, Chiryu-machi, Hekikai-gun, and Kouichi Asakura, Kariya-shi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo-Kenkyusho and Aisin Seiki Company Limited, Aichi-ken, Japan
Filed Jan. 26, 1970, Ser. No. 5,450
Claims priority, application Japan, Jan. 25, 1969, 44/6129
Int. Cl. B21d 11/10; B21k 29/00
U.S. Cl. 72—342 8 Claims

The invention relates to a process and apparatus for press-forming and quenching a steel stock such as diaphragm

spring for automotive clutch use. In the invention, the stock is preparatorily heated to its austenitizing temperature such as about 800° C., or so, placed on one of two cooperating die elements, and then squeezed therebetween under pressure, said die elements having working surfaces having corresponding dimensions and configurations so as to be



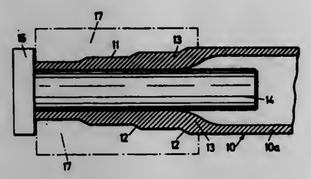
brought into a pressurized and heat-conducting contact with the to-be-quenched zone of said stock, thereby said stock being press-formed to its desired shape and wholly or locally quenched to a desired hardness such as H_RC 60° by conducting substantial amount of heat from the stock to the die elements.

3,668,918

METHOD FOR MANUFACTURING SHAFTS FOR VEHICLES

Helmut Benteler, Bielefeld; Franz-Josef Hartmann, Paderborn, and Heinz Hefendehl, Schloss Neuhaus, all of Germany, assignors to Benteler-Werke Aktiengesellschaft, Kreis Paderborn, Germany

Filed Oct. 2, 1969, Ser. No. 863,149
Claims priority, application Germany, Oct. 23, 1968, P 18 04 673.6
Int. Cl. B21k *1/10*
U.S. Cl. 72—364 9 Claims



A shaft for automotive vehicles or the like, formed as a tube tapered at both ends, wherein the tube wall is peripherally thickened at one or more points extending beyond the reinforcement obtained by the tapering.

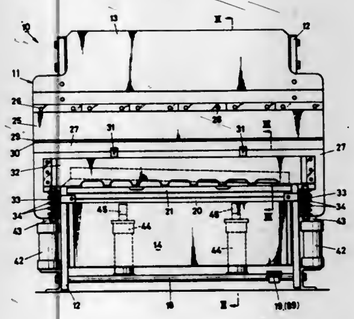
3,668,919

COMBINATION HYDRAULIC SHEARING AND PRESSBRAKE MACHINE

Toshio Hongo, 7-11, 5-chome Komodai, Ichikawa, Japan

Filed Sept. 11, 1970, Ser. No. 71,451
Claims priority, application Japan, Sept. 12, 1969, 44/72388
Int. Cl. B21j *9/02*
U.S. Cl. 72—453 5 Claims

A combination hydraulic shearing and pressbrake machine is disclosed which includes auxiliary hydraulic cylinders in addition to main cylinders to actuate the ram. The auxiliary cylinders are held at rest during the shearing mode of operation but actuated together with the main cylinders during the pressbrake operation, in which the auxiliary cylinders serve particularly to support and maintain maximum parallelism of the ram. A control device is also disclosed which switches the



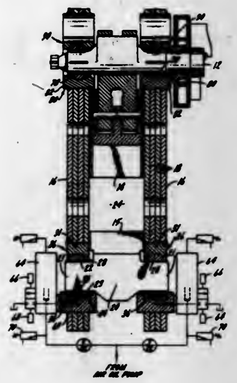
operation of the auxiliary cylinders relative to the main cylinders and which further regulates the upper and lower limit positions of the reciprocating ram.

3,668,920

HYDRAULIC CONTROL SYSTEM FOR A METAL FORMING PRESS

Eugene E. Grankowski, and Lambros A. Pappas, both of Chicago, Ill., assignors to Wyman-Gordon Company, Worchester, Mass.

Filed July 16, 1970, Ser. No. 55,467
Int. Cl. B21j *9/02*
U.S. Cl. 72—455 16 Claims



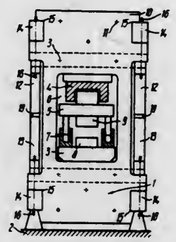
There is disclosed a hydraulic control system for use in combination with a metal forming press. The hydraulic control system is adapted to exert a pressure on the frame, the bed and the crankshaft of the metal forming press which is sufficient to carry the tonnage of the press during normal operation and which is sufficient to secure the bed and the crankshaft to the frame.

3,668,921

STIRRUP FRAME FOR HYDRAULIC PRESS

Moisei Izrailevich Budmaa, ulitsa Katernicha, 3, kv. 37; Frederik Isaakovich Kaganovsky, ulitsa Shkadinova, 59, kv. 76; Nikolai Ivanovich Kapitanov, ulitsa Shkadinova, 42, kv. 76; Jury Nikolaevich Karzov, ulitsa Shkadinova, 59, kv. 85; Andrei Fedorovich Nadtochenko, ulitsa Marata, 5, kv. 3; Eduard Seboutyanovich Slavetsky-Kovitsky, Oktyabrsky poselok, Shlakobetonny dom 7, kv. 2, and Leonid Pavlovich Shorokhov, ulitsa Sotsialisticheskaya, 69, kv. 65, all of Kramatorsk, U.S.S.R.

Filed Oct. 10, 1969, Ser. No. 865,309
Int. Cl. B21j *13/04*
U.S. Cl. 72—455 7 Claims



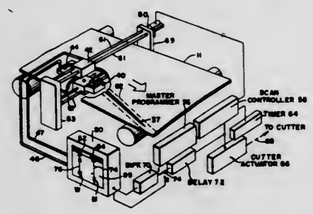
A hydraulic press comprises a stirrup frame with a fixed cross-head and a movable cross-head, the frame having bearing plates connected to one another. Two pairs of side plates fasten the bearing plates together at the sides thereof, with provision for linear displacement for the side plates in the direction of the press operating force and optionally for relative rotation in their own plane.

3,668,922

WEB SAMPLING METHOD AND APPARATUS

John W. Fleming, Jr., and James Michael McMullen, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation

Continuation of application Ser. No. 601,750, Dec. 14, 1966, now abandoned. This application Aug. 13, 1970, Ser. No. 63,597
Int. Cl. B26d *1/02*; G01c *25/00*
U.S. Cl. 73—1 37 Claims



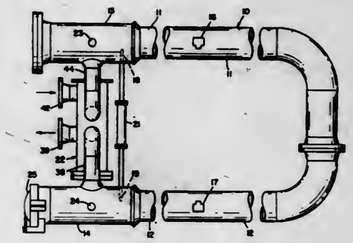
A cutter for removing samples from a moving web comprises a knife having a pair of cutting edges that are selectively urged into contact with the web being cut. In one embodiment, the blades are crossed relative to each other while in a second embodiment the tips of the two blades have a common apex. The blades may be positioned so that they slope with or against the web being cut. The sample has an area coincident with an area monitored by a gauge to enable the gauge calibration to be determined.

3,668,923

METER PROVING METHOD AND APPARATUS

Marvin H. Grove, and Lyle R. Van Arsdale, both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Filed June 19, 1970, Ser. No. 47,760
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 10 Claims



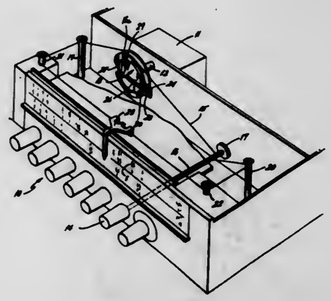
Meter proving method and apparatus of the bidirectional type for calibrating liquid flow devices. It employs a four-way diverter valve of the gate type which is connected to the ends of the metering loop and which directs the flow in one direction or the other through the loop. The diverter valve is power operated and capable of rapid movement between operating positions. A leak detecting means is incorporated with the diverter valve and is used to indicate leakage past the sealing assemblies which would interfere with the accuracy of a metering run. Means including an electronic system serves to provide an automated cycle of operation.

3,668,924

TUNER DRIVE APPARATUS

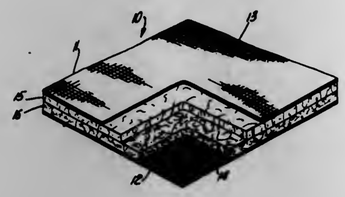
Alfred A. Cote, Langhorne, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed July 6, 1970, Ser. No. 52,581
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.7 4 Claims



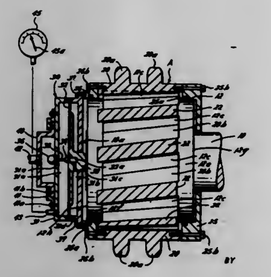
In a tuner cord drive, a tuner drive pulley of relatively small diameter includes a radially extending arm, the outer portion of which protrudes from the rim of the pulley and anchors one end of an extended coil spring. The drive cord is wrapped about the pulley and includes a portion that extends radially inwardly through a peripheral slot in the pulley. The other, or free, end of the extended spring is affixed to the mentioned cord portion, thereby introducing tension in the drive cord.

3,668,925
METHOD FOR DETECTION OF ABNORMAL MILK
Frederick K. Mesek, Downers Grove, Ill., assignor to Johnson & Johnson
Original application May 22, 1967, Ser. No. 640,021. Divided and this application Apr. 20, 1970, Ser. No. 38,622
Int. Cl. G01n 33/04
U.S. Cl. 73—61 R 1 Claim



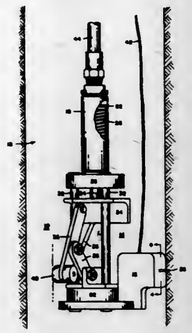
There is disclosed the method of filtering milk and detecting the existence of leukocytes in the milk, incidental to the filtration. This is accomplished by passing the milk through a filter element having a coarse, first fibrous filter zone which filters out gross impurities present in the milk and immediately thereafter passing the milk through a finer, following second fibrous filter zone of higher density than the first filter zone, and separating the filter element along an interface between the two zones and examining the inlet surface of the second filter zone to detect discoloration which is indicative of mastitis in the cows from which the milk is obtained.

3,668,926
APPARATUS FOR INDICATING TORQUE APPLIED TO PIPE ROTATED BY A ROTARY TABLE
Leo A. Bell, Villa Maud, Kappara Road, San Gwann, Malta
Filed Sept. 9, 1970, Ser. No. 70,660
Int. Cl. G01l 3/14
U.S. Cl. 73—136 R 9 Claims



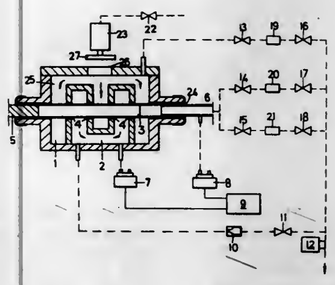
Apparatus for indicating the torque applied to a rotated member, particularly pipe rotated by a rotary table in the drilling of a well, wherein the apparatus is connected to the drive shaft of the rotary table, and power to the rotary table is supplied through the apparatus.

3,668,927
BOREHOLE THERMAL CONDUCTIVITY MEASUREMENTS
Eddie P. Howell, Plano; Carl A. Youngman, Dallas; Jack E. Hardison, Garland, all of Tex., and Robert E. Tribble, Princeton, N.J., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,224
Int. Cl. E21b 47/06
U.S. Cl. 73—154 4 Claims



A system for making thermal conductivity measurements in dry boreholes. A probe having a temperature sensor, a heater, and expander means is inserted into a borehole. The expander means is actuated so that the temperature sensor contacts the sidewall. The heater then heats the sensor and temperature measurements are made at predetermined intervals to obtain a heating curve. The slope of the plot for temperature versus logarithmic time is linear and proportional to the conductivity.

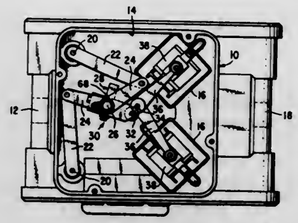
3,668,928
NON-DESTRUCTIVE HARDNESS, TESTING OF ARTICLES SUCH AS CIGARETTES
Mauritz Leon Strydom, Stellenbosch, South Africa, assignor to Tobacco Research and Development Institute Limited
Filed May 14, 1970, Ser. No. 37,272
Claims priority, application South Africa, Oct. 15, 1969, 60/7259; May 16, 1969, 69/3457
Int. Cl. G01n 3/10; G01b 13/08
U.S. Cl. 73—78 6 Claims



A cigarette is tested for hardness by inserting it into a rubber sleeve which is surrounded by rings. Air is passed

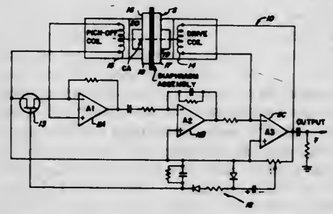
through the annuli formed between the cigarette and the rings. The pressure drop is measured firstly with the cigarette interior as is, secondly with the cigarette interior subjection to a first suction and thirdly with the interior subjected to a second suction. The pressure drops are measures of the diameters of the cigarette at the various interior loadings. From these diameters and the loadings the hardness of the cigarettes may be computed.

3,668,929
METER TANGENTS
Donald C. Ruddy, Willow Grove, Pa., assignor to The Singer Company, New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,280
Int. Cl. G01f 3/22
U.S. Cl. 73—281 4 Claims



A tangent for a meter having a plurality of tangent members locked in adjusted position by a releasable locking means so that during normal operation the adjustment components thereof are not subject to strain, wear, or the action of the operational working forces. Upon release of the locking means the tangent can be adjusted for stroke and timing in the respective longitudinal and transverse directions by rotation of separate adjusting screws. Each of the adjusting screws is held captive in one of the adjacent tangent members and engages a threaded portion in the other of the adjacent tangent members, whereby rotation of said screw causes relative motion between the tangent members to move the same toward or away from each other.

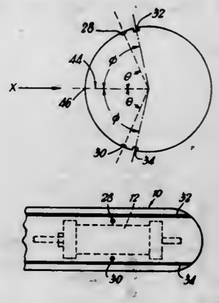
3,668,930
PARAMETER READ-OUT SYSTEMS FOR PRESSURE-FREQUENCY TRANSDUCERS
George M. Strauss, Elmhurst, N.Y., assignor to Kollsman Instrument Corporation, Syosset, N.Y.
Filed Mar. 24, 1971, Ser. No. 127,462
Int. Cl. G01l 7/12
U.S. Cl. 73—386 20 Claims



Read-out systems which respond to an input signal having a frequency value that is variable with pressure to provide read-out of parameters having a non-linear relationship to the frequency of the input signal employ digital circuits

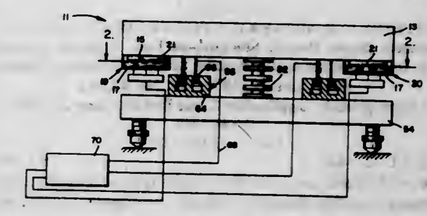
operable to generate pulse count proportional to the logarithm of the period of the transducer frequency. Depending upon the specific parameter to be read-out, appropriate modifying circuitry modifies the count, with or without memory units, to develop an output read-out signal.

3,668,931
MEASURING THE VELOCITY OF FLOW OF AN ELECTRICALLY CONDUCTIVE FLUID
Klaus Joachim Zanker, Streatley, and Derrick Norman Harrison, Gloucester, both of England, assignors to Kent Instruments Limited, Luton, Bedfordshire, England
Filed July 20, 1970, Ser. No. 56,605
Claims priority, application Great Britain, July 24, 1969, 37,358/69
Int. Cl. G01c 21/10
U.S. Cl. 73—181 13 Claims



An electromagnetic velocity meter is described, of the type in which an electric signal is generated in response to relative motion between the velocity meter and a conductive fluid in a magnetic field generated by means in the velocity meter, to provide a measure of the velocity of the relative motion. The velocity meter is particularly useful as a ship's log, and may be arranged to be retractably mounted in a ship's hull. A preferred form of the velocity meter is circular in cross section and has a pair of electrodes for sensing the electric signal, the electrodes being disposed on the flow meter in a manner tending to minimize misalignment error. It also has boundary layer trips to make the signal generated/velocity characteristic more nearly linear. Another preferred form mounts three or more electrodes for measuring components of the flow velocity in different directions, whereby the drift angle and velocity of the ship may be computed.

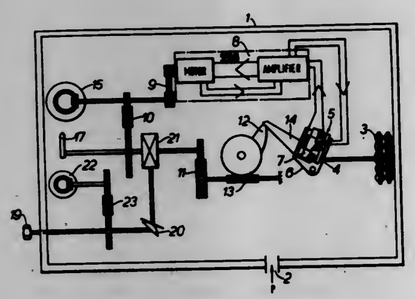
3,668,932
GRAVITY GRADIENT METER
Siegfried Hansen, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Dec. 4, 1970, Ser. No. 95,230
Int. Cl. G01v 7/00
U.S. Cl. 73—382 12 Claims



A resilient member is provided with first and second local gravity vector determining devices secured thereto and

spaced thereon. Force means is attached to the bar to bend it. The output of the local gravity vector determining devices is connected to the force means so that the resilient member is bent so that each of the gravity vector determining devices is oriented so that the local gravity vector is parallel to its reference axis. The local gravity vector determining device is a bubble level operating under a flat surface, with electrodes determining bubble position. Four force motors positioned around a stiff central spring deflect the member.

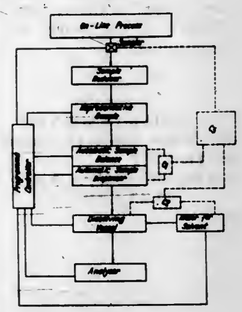
3,668,933
AIRCRAFT INSTRUMENTS
Blom-Bakke, Persallies vei 7, Oslo 7, Norway
Filed Mar. 30, 1970, Ser. No. 23,945
Claims priority, application Norway, Mar. 29, 1969, 1327/69
Int. Cl. G01l 7/12
U.S. Cl. 73—386 **9 Claims**



An aircraft height-indicator shows height in pressure-based units that correspond to intervals of vertical distance which increases in magnitude as height increases and which define economically separated flight levels. Height, and flight level, according to these units is indicated digitally, intermediate values being shown in analog by a pointer against an equally divided scale. The digital and analog indications are taken from the rotational position of a cam which is driven to counteract displacement of manometric capsules sensitive to static pressure P, and which is profiled to provide rotation dependent on P^n where n lies between 0.4 and 0.8.

3,668,934
METHOD AND APPARATUS FOR PRODUCT SAMPLING
Bernard James Hulley, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 11, 1970, Ser. No. 45,382
Claims priority, application Great Britain, June 23, 1969, 31,607/69
Int. Cl. G01n 1/28
U.S. Cl. 73—421 R **6 Claims**

A method and apparatus for preparing product samples for automatic on-line analysis, wherein a programed controller causes a series of steps to be carried out in sequence, each for a preselected time, said steps including withdrawing a sample from the process, accurately weighing a preselected quantity thereof, discharging the weighed sample to a mixer, accurately measuring and metering a preselected quantity of liquid to the mixer, mixing the weighed sample and measured



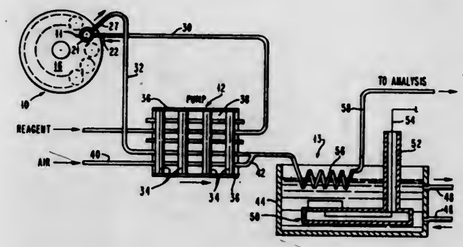
liquid, and withdrawing the resulting homogeneous liquid mixture to an analyzer.

3,668,935
GAS AND LIQUID INLET SYSTEM FOR CHROMATOGRAPHY
Norman C. Coelho, Diamond Bar, and Brian Thompson, Placentia, both of Calif., assignors to Beckman Instruments, Inc.
Filed Apr. 2, 1970, Ser. No. 25,020
Int. Cl. G01n 1/22
U.S. Cl. 73—422 GC **8 Claims**



A valve mechanism which is adapted to be connected directly to the inlet of a gas chromatographic column for selectively directing either a gas or a liquid sample into the column. The valve mechanism comprises a valve body having an elongated channel extending entirely therethrough, the channel being coaxial with the column when the valve is attached thereto whereby a syringe may be extended through the channel into the column for direct column injection of a liquid sample. The valve body receives the opposite ends of a sample loop, sample gas inlet and outlet tubes and a carrier gas inlet tube. The valve mechanism also includes a rotatable valve plug which is operative, in a first position, to connect the carrier gas inlet tube directly to the elongated channel for injection of the liquid sample; the valve plug being further operative, in the first position, to connect the sample gas inlet and outlet tubes to the ends of the sample loop so that the loop is filled with the sample gas. Upon rotation to a second position, the valve plug is operative to connect the carrier gas inlet tube to the elongated channel via the sample loop whereby the carrier gas flushes the sample gas trapped in the sample loop into the column.

3,668,936
METHOD AND APPARATUS FOR SAMPLING
Rand E. Herron, Stamford, Conn., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Dec. 15, 1970, Ser. No. 98,365
Int. Cl. G01b 1/14
U.S. Cl. 73—423 A **3 Claims**

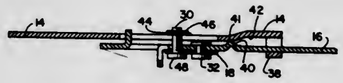


There is provided a method and apparatus for sampling a viscous liquid by aspiration of such liquid from a container in an off-take tube of a probe insertable in the container. A reagent having the characteristic of a solvent is added to the sample to dilute it within the probe after a relatively short distance of travel of the sample within the probe. The reagent is fed into the probe at a first predetermined flow rate and the admixture is aspirated at a second predetermined flow rate which is faster so that the sample is aspirated at a rate determined by the difference between the first and second flow rates.

ERRATUM

For Class 74—10 see:
Patent No. 3,668,924

3,668,937
KEY SLIDE LOCKING MECHANISM
Donald V. O'Neal, River Grove, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 31, 1971, Ser. No. 129,882
Int. Cl. F16h 35/18
U.S. Cl. 74—10.33 **5 Claims**



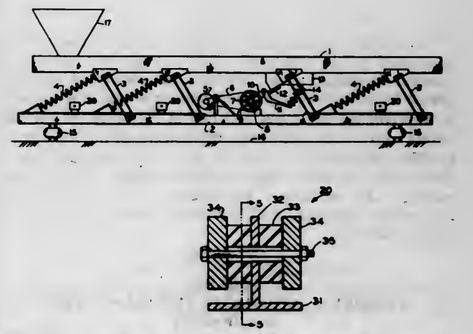
A key slide locking mechanism for a pushbutton tuner having a boss located on the plunger rod which engages an interface of the pushbutton slide in the locked condition, and is disengaged from the pushbutton slide in the unlocked condition. With the slide and rod in the unlocked condition the rotatable presettable tuner cam joined to the plunger rod can rotate through an arc limited by an indexing slot and pressure pin in the cam. In the locked or contracted position the boss on the plunger rod engages the interface of the pushbutton slide biasing the rod and slide apart and causing the pressure pin indexed through the cam, plunger rod and pushbutton slide and secured by a "C" washer to clamp the cam to the plunger rod.

3,668,938
HERMETICALLY SEALING BOOT WITH ACTUATOR FOR THUMB WHEEL TYPE SWITCHES
Edward A. Dimitry, Hillsdale, N.J., assignor to APM Corporation, Englewood, N.J.
Filed Mar. 1, 1971, Ser. No. 122,584
Int. Cl. F16j 15/50
U.S. Cl. 74—18.1 **3 Claims**



An hermetically sealing boot adapted to fit the face of a housing having one or more thumb wheel actuators arranged for rotation about an axis substantially parallel to the plane of said face. The device is formed of molded flexible synthetic resinous material, and includes one or more insert-molded rigid actuators, a first portion of which projects inwardly of a sealing wall to selectively engage an actuator, and a second portion of which projects outwardly of said wall to be manually engaged for transmitting motion to said actuator. Depending upon the shape of the boot, the actuator may be of a pivoting, translationally-moving or nutating type.

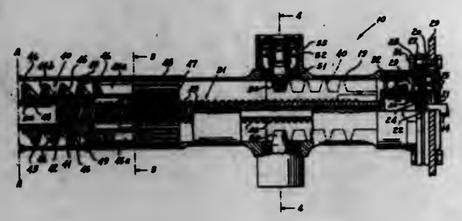
3,668,939
PLANE OMNIDIRECTIONAL ABSORBER
Preston H. Schrader, Middletown, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Nov. 13, 1969, Ser. No. 876,457
Int. Cl. F16h 33/00
U.S. Cl. 74—61 **10 Claims**

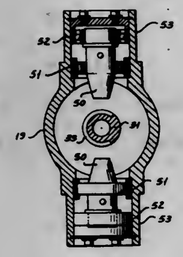


A vibratory counterforce system for counterbalancing vibratory forces of constant frequency acting in a plane comprises at least one planar omnidirectional dynamic absorber, i.e. an auxiliary mass vibratory system, the natural frequency of which is substantially independent of the direction of vibration in the plane. When used in sets of two or more, and

located at spaced apart points on a structure subject to vibratory forces of constant frequency, the absorbers act to minimize the vibration at their points of attachment and respond, both to translatory forces and to force couples. The absorbers or counterforce units are particularly useful when applied to the base of a vibratory conveyor because they can effectively counterbalance the vibratory forces applied to the base which vary both in amplitude and direction according to the load on the conveyor.

3,668,940
ROTATION TRANSMISSION MECHANISM
Salvatore Avena, Newark, and Harry L. Richardson, River Edge, both of N.J., assignors to Curtiss-Wright Corporation
Filed July 9, 1970, Ser. No. 53,436
Int. Cl. F16h 27/02
U.S. Cl. 74—89.15 12 Claims

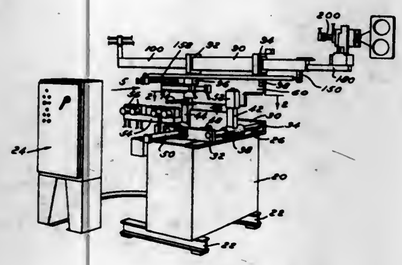


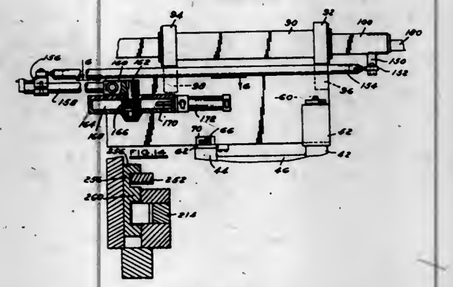


The rotation transmission mechanism has an input member connected to a source of rotary power and an output member connected to an element to be actuated. A cam supported for both rectilinear and angular movement is disposed to interconnect the input and output members, which cam coacts with a cam follower on the housing of the mechanism to effect transmission of torque from the input member to the output member and, at predetermined periods, permitting only rectilinear movement of the cam thereby preventing transmission of rotation between the input and output members.

3,668,941
RETRIEVAL APPARATUS FOR DIE CASTING EQUIPMENT
Herman M. Canner, Detroit, Mich., assignor to Sterling Detroit Company, Detroit, Mich.
Filed July 1, 1970, Ser. No. 51,528
Int. Cl. F16h 27/02
U.S. Cl. 74—89.17 5 Claims

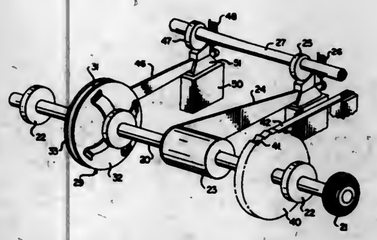
A retrieval apparatus for die casting equipment which includes an extension tube for reaching into a die casting machine carrying an extension bar for increasing the range of the reach, there being pick-up jaws on the extension bar for clamping an ejected casting and returning it to a drop position over a quench tank, the jaws being movable to change the position of the casting so that it will orient properly with the quench tank and thus reduce the spacing required for the assembly. A mechanism for actuating the jaws from a release position to a pick-up position and again back to a release





position together with a locking means for the jaws is incorporated to operate automatically during the extension and retraction motion of the slide tube and slide bar, and safety release mounting means are provided for the assembly to avoid damage due to possible malfunction.

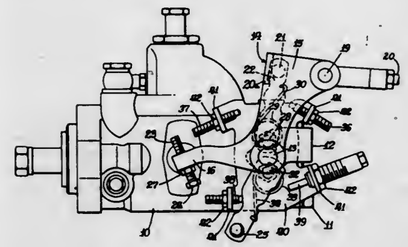
3,668,942
INDEXING MECHANISM
Donald E. Landis, and Mohanjit S. Sidhu, both of Cambridge, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed June 5, 1970, Ser. No. 43,815
Int. Cl. F16h 29/00; B65h 17/22
U.S. Cl. 74—125 14 Claims



A high-speed indexing mechanism, for moving a member to a printing position, which includes an indexing shaft on which are mounted an indexing drive wheel and a clutch member operated by a cam follower arm. A cam member

rotates the cam follower arm to drive the indexing shaft, which moves the member to a printing position by means of the indexing drive wheel. The clutch allows the indexing shaft to be rotated in one direction by the cam follower arm. A second clutch member is mounted on the indexing shaft to provide a drag on the indexing shaft. To provide a more accurate indexing mechanism, a ratchet wheel is mounted on the indexing shaft to control the length of rotation of the indexing shaft by the cam follower arm. An electromagnet operates to latch the cam follower arm, thus controlling the operation of the indexing mechanism.

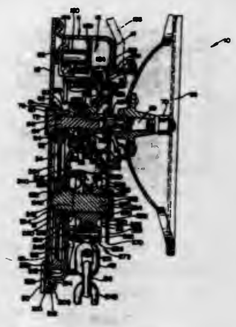
3,668,943
SINGLE LEVER CONTROL FOR TWO LEVER FUEL PUMP
Robert W. Johnson, Winfield, and Robert B. Porter, Melrose Park, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 10, 1970, Ser. No. 62,470
Int. Cl. G05g 9/02
U.S. Cl. 74—471 R 11 Claims



A bellcrank lever for moving a speed-control lever and an engine-start lever. The bellcrank lever with the help of springs moves in a first portion of angular movement, the speed-control lever from high idling speed to low idling speed, and in a second portion of angular movement angularly spaced from the first portion, the engine-start lever from the position for running speed successively through a position for operating at excess fuel to a final position for stopping the engine. The speed-control and engine-start levers extend generally in opposite directions from their pivots, which are adjacent the pivot for the bellcrank lever.

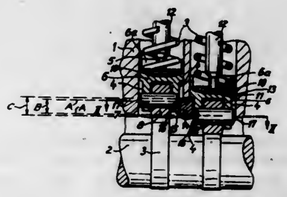
3,668,944
SEALED NON-SPIN HAND BRAKE ARRANGEMENT
Eldred H. Natschke, Bourbonnias, Ill., assignor to Universal Railway Devices Company
Filed July 29, 1970, Ser. No. 59,194
Int. Cl. G05g 1/08
U.S. Cl. 74—505 4 Claims

A hand brake of the non-spin type for railroad cars including a front casing and rear attachment plate that define a housing space for the brake operating shaft, ratchet wheel, ratchet wheel clutch, brake release mechanism, and drum gear, that is sealed from the elements by a seal applied between the two. The front casing is indented to define a mounting space for a single wind type brake drum, which is keyed to a mounting shaft that is journaled between the casing and a brake drum cover plate that may be secured to the casing in various positions relative thereto depending on the particular hand brake application desired. The drum extends into the housing space where it has fixed to same the drum gear and the drum carries a headed pin that anchors the



brake chain to the drum, with the pin head cooperating with a stop block fixed to the casing to form a chain stop.

3,668,945
ROLLER TAPPET GUARD
Eberhard Hofmann, Neuhof, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 13, 1970, Ser. No. 19,165
Claims priority, application Germany, Mar. 18, 1969, P 19 13 519.4
Int. Cl. F16h 53/06
U.S. Cl. 74—569 2 Claims

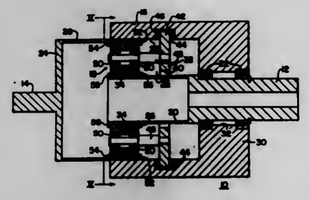


In a multicylinder device, such as a fuel injection pump, between two adjacent roller tappets there is fixedly held in the pump housing a securing pin which, by virtue of parts thereof cooperating with parts of said roller tappets, prevents the latter from turning and the roller pins from axially sliding.

3,668,946
HIGH-RATIO DRIVE MECHANISM
Thomas M. Fahey, Baltimore, and John C. Mentzell, Severna Park, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 5, 1970, Ser. No. 61,109
Int. Cl. F16h 13/06
U.S. Cl. 74—640 10 Claims

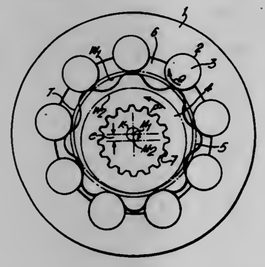
A rotary power transmission having a drive shaft and a driven shaft in parallel or coaxial alignment, a rigid annulus fixedly mounted around the drive shaft, the driven shaft having a flexible tubular end portion disposed between the drive shaft and the rigid annulus, and means including rollers between the drive shaft and flexible tubular end portion for

transferring torque from the drive shaft to the flexible tubular end portion by frictional circumferential engagement and



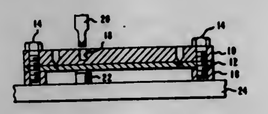
radial compression of the tubular end portion between the rollers and the rigid annulus.

3,668,947
GEARWHEEL MACHINE
Jørgen Frederik Waldorff, Rodovre, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Oct. 2, 1970, Ser. No. 77,542
Claims priority, application Germany, Oct. 10, 1969, P 19 51 100.3
Int. Cl. F16h *1/28*
U.S. Cl. 74—804 2 Claims



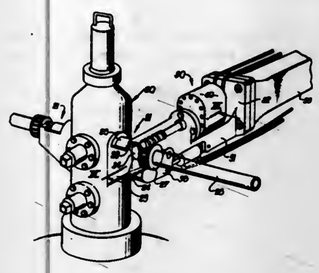
The invention relates to a gerotor mechanism of the type having an internally toothed ring member which surrounds an eccentrically displaced, externally toothed wheel member having one less teeth. The teeth of the ring member have the form of rollers which is old but the pitch circle of the ring member has a particular diameter relative to a circle which is tangent to the rollers so that in operation the rollers are caused to rotate continuously in one direction only.

3,668,948
METHOD
Taylor Franklin Lavinder, Bassett, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 16, 1971, Ser. No. 124,700
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 S 2 Claims
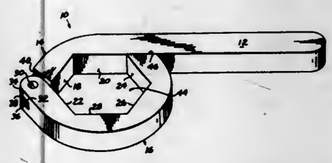


A spinneret fabrication process that includes the steps of forming a countersink in the bottom of previously formed counterbores of a spinneret plate then punching through the countersinks to form capillaries is improved by supporting the immediate area of each counterbore with a flat-head pin anvil during the forming and punching steps.

3,668,949
POWER WRENCH FOR MAKING UNDERWATER PIPE CONNECTIONS
Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.
Original application Nov. 26, 1968, Ser. No. 779,004, now Patent No. 3,593,408. Divided and this application Dec. 17, 1970, Ser. No. 99,031
Int. Cl. B25b *17/00*
U.S. Cl. 81—57.13 8 Claims



An apparatus for making an underwater pipe connection including one or more power wrench means adapted to be universally or multidirectionally positioned for connecting, exemplarily, a pipeline to a wellhead. The apparatus includes a pair of such wrench means for transporting and positioning a spacer pipe between a wellhead and the end of a pipe or fluid flow line spaced therefrom and cooperable with rotatable coupling means carried on opposite ends of such a spacer pipe and cooperable with a fixed connector fitting on such a wellhead and on the end of the pipe flow line. Specifically, a power wrench for use with a connector means including a rotatable externally gear toothed collar such as may be used in the oil drilling industry for connecting or coupling a pipe to a connector fitting wellhead. The power wrench has a movable pivotal jaw-like member cooperable with a rotatably mounted worm gear for holding and positioning the worm gear in driving engagement with the collar.

3,668,950
SLIP JOINT NUT WRENCH
Virgil E. Tyler, 7210 N.W. 45, Bethany, Okla.
Filed Mar. 4, 1971, Ser. No. 120,955
Int. Cl. B25b *13/28*
U.S. Cl. 81—98 2 Claims



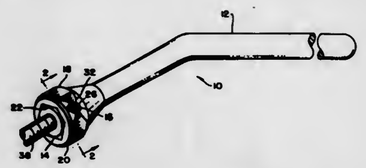
A slip joint wrench comprising a handle, having a fixed jaw formed on one end thereof, forming flat surfaces engaging flats of a nut to be turned. A movable jaw is pivotally connected to the fixed jaw. The movable jaw has a generally concave surface forming a nut surrounding socket with the fixed jaw when the movable jaw is pivoted toward the handle.

3,668,951
FORCE-APPLYING TOOLS
Charles Robert Talmage, New Canaan, Conn., assignor to New Britain Machinery Company, New Britain, Conn.
Original application May 10, 1967, Ser. No. 637,391, now Patent No. 3,506,500, dated Apr. 14, 1970. Divided and this application Oct. 27, 1969, Ser. No. 871,337
Int. Cl. B25b *13/06, 7/02;* B22f *5/00*
U.S. Cl. 81—121 R 10 Claims



Force-applying hand tools, such as wrench sockets, are disclosed produced by powder metallurgy. The working portion of the tool comprises a porous sintered body of heat treatable steel composition of high strength having an average density of at least 85 percent of true density and having an adherent plating of a protective metal coating on the surface thereof.

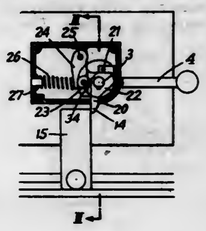
3,668,952
AUTOMOBILE WHEEL THEFT PREVENTION DEVICE
John H. Teutsch, 29590 Hoover Road, Warren, Mich.
Filed Jan. 26, 1970, Ser. No. 5,773
Int. Cl. B25b *13/02*
U.S. Cl. 81—125 12 Claims



An automobile wheel theft prevention device consisting of an automobile lug wrench having an arcuate spring therearound, a spring biased radially movable stud therethrough and a round lug with a radial opening therein. The round lug cannot be removed by means of the usual lug wrench. To remove a wheel having the round lug thereon, the radially movable stud on the lug wrench must be engaged in the opening in the round lug. With the wrench thus locked onto the round lug, the lug may be removed in the usual manner.

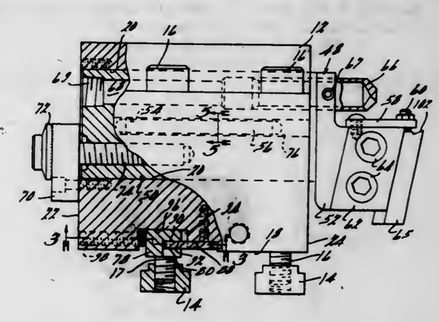
3,668,953
STOP MECHANISMS FOR LATHES AND OTHER MACHINE TOOLS
Jules Louis Jeanneret, 13-21, rue Henri Gelin, 79 Niort, France
Filed May 14, 1970, Ser. No. 37,273
Claims priority, application France, May 21, 1969, 6916590
Int. Cl. B23b *21/00*
U.S. Cl. 82—22 4 Claims

A stop mechanism for controlling the advance of a saddle of a screwcutting lathe comprises a cam mounted on a shaft operatively connected to a drive transmitting member. The cam has a ramped portion and is contacted by a pressure roller. When the saddle reaches a predetermined position along the lathe bed the cam is rotated causing the roller to contact the ramped portion and effect an abrupt further rota-



tion of the cam. Rotation of the shaft during the abrupt rotation of the cam causes disengagement of the drive transmitting member from the drive of the saddle.

3,668,954
FORM TOOL HOLDER
Robert S. Brown, II, Grass Lake, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed May 19, 1970, Ser. No. 38,759
Int. Cl. B23b *29/10*
U.S. Cl. 82—36 7 Claims

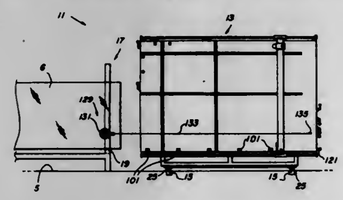


A form tool holder adapted to be mounted on the slide of an automatic screw machine. The tool holder has a base provided with a guide opening in which the shank of a tool carrier is slidably fitted. The base is slotted along one side of the guide opening to define a deflectable base wall which can be clamped against the carrier shank to lock the carrier in any desired position. The base has a key on its lower surface which is adjustable about a pivot axis to facilitate squaring of the base to a keyway on the slide. The carrier is reversible in the base guideway for either upcutting or downcutting and it can be set for either right hand, left hand or zero tool relief.

3,668,955
GLASS HANDLING AND CUTTING SYSTEM
Charles F. Rupprecht, and Frank Wiker, both of Memphis, Tenn., assignors to Binswanger Glass Co., Richmond, Va. and Piper Precision Dies, Inc., Collierville, Tenn., part interest to each
Filed Sept. 8, 1970, Ser. No. 70,121
Int. Cl. B26d *3/08*
U.S. Cl. 83—6 8 Claims

A system for handling plate glass and for cutting same. The system includes a self-propelled apparatus on tracks movable to positions adjacent selected bins, containing the substantially vertically disposed glass, located adjacent the tracks. The apparatus includes a tiltable top assembly for tilting to a

substantially vertical loading position for loading the glass from the selected bin, and includes power-actuated retrieving means for attachment to the glass to pull the glass from the bin to the top assembly. After loading, the top assembly is moved into a horizontal position. The apparatus includes



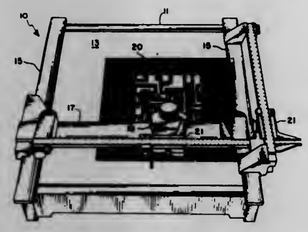
means for scoring the glass by a single operator shoving a carriage means across a bridge means to the other side of the apparatus where there is located bumper means for returning the carriage means to the operator's side of the top assembly and trip means for disengaging the cutter means from the glass.

3,668,956

MICROCIRCUIT NEGATIVE CUTTER

Douglas W. Whipple, Hampton, and Earl R. Blymiller, Williamsburg, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 4, 1970, Ser. No. 60,876
Int. Cl. B26d *3/08, 5/02*
U.S. Cl. 83—8 **2 Claims**



A manually operated X–Y coordinate cutter for making surface cuts with great accuracy in all three cutting dimensions. The cutting blade is rotated to cut in the X or Y direction and adjusted, in combination with a roller which contacts the work, to make cuts of uniform depth in the work. The roller and cutting blade are spring-mounted to ride smoothly over surface irregularities while maintaining a constant cutting depth. A pattern, placed between a translucent cutting surface and a translucent workpiece, is illuminated by a light box for use as a rough guide during cutting operations. X–Y dimensions of the cuts are laid out from a reference point on the pattern by positioning the cutting blade with verniers.

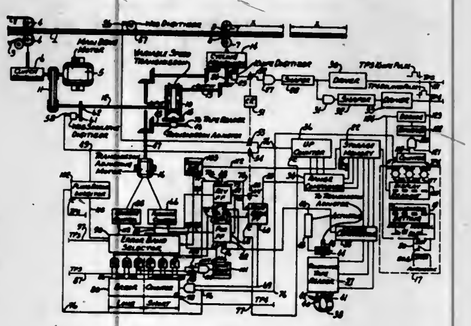
3,668,957

SHEET LENGTH CONTROL SYSTEM

Jay Nido, Catonsville, Md., assignor to Koppers Company, Inc.

Filed Aug. 8, 1969, Ser. No. 848,469
Int. Cl. B26d *5/00*
U.S. Cl. 83—37 **15 Claims**

A sheet length control system for use in connection with a material feeding and material processing apparatus to maintain uniform treatment of the material as processed by the processing apparatus within a predetermined and desired tolerance. Such material processing apparatus is exemplified in the use of a cutoff machine to cut into equal desired sheet lengths a continuously moving web of material. Digitizer means are used to produce signals the ratio of which is representative of the desired sheet length and the amount that the ratio of the signals varies from the desired sheet length ratio is used to produce an error signal indicative of whether the sheet length cut is shorter or longer than the



predetermined sheet length value. Error band selective means receives the error signal produced to produce a signal characteristic of the error magnitude. Means are provided to be responsive to the error band selective signal for correcting the sheet length to correspond to the predetermined sheet length value within an acceptable tolerance.

3,668,958

AUTOMATIC DISK CUTTER

Robert E. Kinsey, 16 Westwood Road, Augusta, Maine

Filed Nov. 5, 1970, Ser. No. 87,233
Int. Cl. B26d *7/06*
U.S. Cl. 83—88 **20 Claims**

A continuous rotary cutter which cuts disks from square sheets, such as paper, from a roll of stock. The square sheets are fed from one tape conveyor to another of a slower speed for overlapping and stacking a predetermined number of sheets, which stack is fed to and grabbed by a pair of retractable spears which pierce the stack of sheets near its corners and pull it onto the disk cutting table against a pair of continuously rotating cutting disks. A collection platform for the stack may also be used for supporting the stack to be grabbed by the spears, and it may be retracted for disks larger in diameter than the pulling distance of the spears to insure release of the stack onto the cutting table. The sheets on the cutting table are then clamped together axially at their centers by a downward reciprocable rotatable center clamping pivot means which presses the sheets against a rotatable central portion of the cutting table. Then one of the two spears releases while the other spear positively moves the

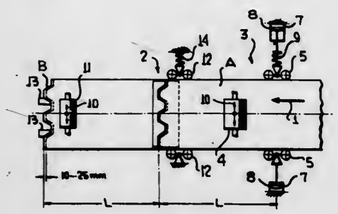
stack tangentially of the periphery of the disks to be cut to start the stack of sheets rotating through the continuous disk cutters, the friction of which cutters continue to rotate the sheets about the center clamping pivot means. As soon as the disks are cut, an edge clamping pivot means near the periphery of the cut disks engages the stack of cut disks so that the rotational inertia of the disks imparted by the cutters causes the disks to rotate about this edge clamping pivot means to move them from the cutting table and under the take-off rollers of the discharging conveyor, and thus provide room for the next stack of sheets to be cut. The overlapping stacks of cut disks may be fed by an up-from-the-bottom type stacker conveyor or elevator onto a pallet for removal from the machine. The feeding means, center clamping means, and take-off means for the cut disks may be adjustable simultaneously, towards and away from the disk cutters for cutting different diameter disks.

3,668,959

PROCESS AND DEVICE FOR ADVANCING AND SIMULTANEOUSLY CENTERING SHEET MATERIAL

Wolfgang Max Egon Richter; Edgar Lab, and Hans Werner Sieblist, all of Seesen, Germany, assignors to Schmalbach-Lubeca-Werke Aktiengesellschaft, Braunschweig, Germany

Filed Aug. 12, 1970, Ser. No. 63,117
Claims priority, application Germany, Aug. 12, 1969, P 19 40 912.2
Int. Cl. B26d *3/00, 5/20*
U.S. Cl. 83—48 **12 Claims**



This disclosure relates to a scroll cutting apparatus which is provided with a feed mechanism which automatically assures centering of the sheet material upon each advance thereof prior to the actuation of the scroll cutter. The feed mechanism includes a first feed disposed in advance of the scroll cutter and a second feed between the scroll cutter and a centering stop. Each feed has associated therewith guide means engaging the opposite edges of the sheet material with one half of each guide means being fixed and the other half being resiliently mounted. The feed mechanism includes rollers which rotate to advance the sheet material and which are hunted axially thereof so as to transversely hump the sheet material in cooperation with the guide means so as to perfect the centered feeding of the sheet material.

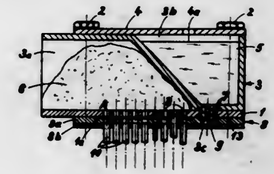
3,668,960

ARRANGEMENT FOR LUBRICATING THE PERFORATING PINS OF TAPE AND CARD PERFORATORS

Rudolf Weber, Olbrunn, and Emil Jahn, Pforzheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 84,016
Claims priority, application Germany, Oct. 28, 1969, P 19 54 239.3
Int. Cl. B26f *1/14, 1/24*
U.S. Cl. 83—169 **3 Claims**

A self-lubricating perforator arrangement wherein a horizontal guide plate for the perforating needles comprises parallel upper and lower partial guide plates which define a capillary gap between them. A unit situated above the partial plates contains an oil reservoir which communicates with the capillary gap to enable a regulated lubrication of the needles as they pass through the partial plates during operation. Also



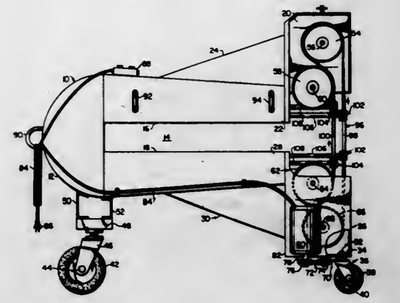
contained in the unit is a channel directly above the needles and the plates to receive the chads.

3,668,961

PORTABLE BAND SAW

Donald E. Blue, 1717 6th Street, N.W., Albuquerque, N. Mex.

Filed Dec. 30, 1969, Ser. No. 889,077
Int. Cl. B26d *1/46*
U.S. Cl. 83—201.04 **15 Claims**



There is disclosed a portable band saw having a travelling band cooperating with pulleys so located that the front and rear band portions are positioned in relatively close but spaced relationship. The pulleys rotate parallel axes. Longitudinally spaced guide means are incorporated which cooperate respectively with the front and rear portions of the band so that, with adjustment, the guide means cause the band to be disposed with the rear portion in desired alignment with the front portion, thus permitting the portable band saw to selectively make either straight or angular cuts.

3,668,962

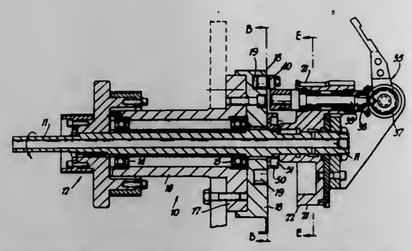
WEB-CUTTING APPARATUS

Eric George Arthur Chapman, Ilford, England, assignor to Ilford Limited, Ilford, England

Filed May 12, 1970, Ser. No. 36,595
Claims priority, application Great Britain, May 13, 1969, 24,298/69
Int. Cl. B26d *1/36, 1/56*
U.S. Cl. 83—323 **4 Claims**

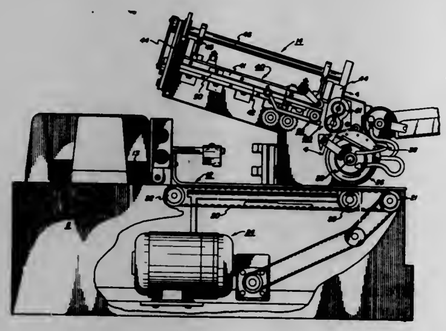
This application describes web cutting apparatus comprising a rotary drum having a substantially radially inwardly extending shaped slot in its periphery, drive means for driving said drum, a cutter arm, cam means which is adapted to control the movements of said cutter arm and which is connected to be driven by said drive means, the control of the cam means and the shape of the cutter arm being such that in

operation the cutter arm will cut through a web on said drum at said slot and will descend, together with the leading edge



of the trailing portion of the cut web, into said slot and remain in the said slot for a predetermined period.

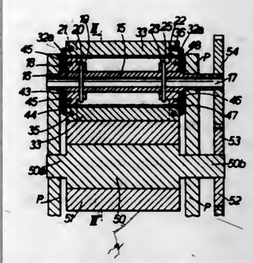
3,668,963
ADJUSTABLE LABEL KNIFE
Robert A. Davis, Mundelein, Ill., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 23, 1970, Ser. No. 91,775
Int. Cl. B26d *25/12*
U.S. Cl. 83—346 **8 Claims**



An adjustable roller type knife for use as a label cutter in article addressing machines. The knife comprises axially aligned relatively rotatable roller discs, each with a radially extended arcuate segment which cooperates, on rotation of the knife, with an adjoining anvil roller to form a nip for drawing uncut label material therethrough, the length of label material being a function of the composite arcuate length presented by the segments. A knife blade is carried by one disc to cut the label material, and releasable locating means are provided to enable the discs to be turned through controlled arcs relative to one another to adjust the knife for different length labels.

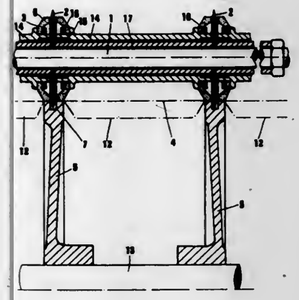
3,668,964
CHOPPER BODY
Eric Ellis Lomas, Wallasey, England, assignor to Fibreglass Limited, Ravenhead, St. Helens, Lancashire, England
Filed Aug. 22, 1968, Ser. No. 754,537
Claims priority, application Great Britain, Aug. 22, 1967, 38,653/67
Int. Cl. B23d *25/12, 35/00*
U.S. Cl. 83—347 **3 Claims**

Apparatus for chopping sized glass fiber filaments comprising two co-operating parallel rollers between which the filaments are passed one roller having a series of spaced blades projecting from its surface; gaps being provided in this roller



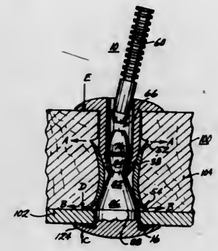
between successive blades to reduce the area of this roller in contact with the filaments at any given time.

3,668,965
DEVICE ON CUTTING FACILITIES FOR PACKING MACHINES
Rudolf Kreuschmer, Ludwigstrasse 35, 8963 Sankt Mang, Germany
Filed Mar. 10, 1970, Ser. No. 18,162
Claims priority, application Germany, Mar. 27, 1969, P 19 15 611.7
Int. Cl. B23d *19/06, 33/02*
U.S. Cl. 83—476 **5 Claims**



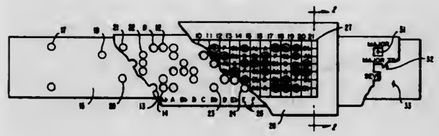
A gang-slitting machine, particularly for accurately slitting web-like sheets in which a plurality of rows of bags or packages have been preformed, to produce rolls of the bags or packages, comprising: disc knives securingly mounted on a driven shaft; backing means in the form of a guide disc for every disc knife; and two retaining discs for each knife, the retaining discs being of a smaller diameter than each disc knife and disposed one on either side thereof, whereby the slit strips each containing one row of bags or packages are pressed between each retaining disc and its associated guide disc and are guided so that the slitting is done only on the seams and not incorrectly beyond.

3,668,966
FASTENER FOR METAL-WOOD STRUCTURES
Charles A. Kincaid, Crestwood, Ill., assignor to Key Research and Development Company, Mercer Island, Wash.
Filed Sept. 21, 1970, Ser. No. 73,696
Int. Cl. F16b *13/06*
U.S. Cl. 85—67 **9 Claims**



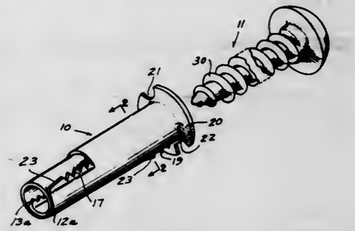
A fastener for securing a structure of metal and wood together wherein the metal forms at least one outside surface. The fastener comprises three parts: a pin, a locking sleeve and a swaging sleeve, which, when properly arranged within an aperture or straight hole in the structure, is installed by a conventional fastener installing tool. The three parts lock together during the fastening procedure and subsequently: (a) the wood and metal are clamped between the pin head and locking sleeve head, (b) both ends of the swaging sleeve are moved radially outwards, thereby penetrating the wood material that forms the wall of the aperture, and (c) the one end of the wood-penetrating swaging sleeve extends radially along the inside surface of the metal which is parallel to the pin head portion that overlaps the aperture diameter at the metal outside surface, so that the metal layer is separately clamped between that pin head portion and one end of the swaging sleeve. These four fastening actions then produce a permanent, self-sealing, untamperable joint for metal-wood or similarly composed structures.

3,668,967
CHORD INDICATOR
Albert Malis, 4954 Hazeltine Avenue, Sherman Oaks, Calif.
Filed July 27, 1970, Ser. No. 58,390
Int. Cl. G09b *15/02*; G10b *15/00*
U.S. Cl. 84—471 **6 Claims**



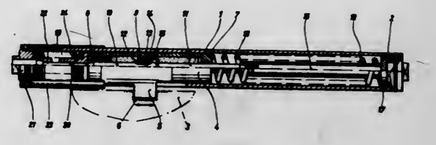
The invention involves an indicator which identifies the various musical chords and displays the location of the notes comprising the various musical chords upon a simulated finger board of a fretted stringed instrument. This is accomplished in the instant invention by providing a sliderule device having a transparent outer member with indicia imprinted thereon, including a replica of a fingerboard and a series of characters which designate the particular tone which is made when a finger is pressed down at that point on the fingerboard. The device further includes first and second slides which carry a plurality of spots along the length thereof. By manipulation of the slides, and thier associated indexing means, the spots are positioned behind pre-determined characters on the fingerboard to make such characters stand out and be easily read by the viewer. The characters correspond to the notes in the chord selected by the indexing means. In this manner, all the notes included in a preselected chord are identified and located at their respective positions on the simulated fingerboard.

3,668,968
EXPANSION FASTENER
Henry J. Modrey, Eagle Drive, Stamford, Conn.
Filed Apr. 14, 1970, Ser. No. 28,412
Int. Cl. F16b *13/06*
U.S. Cl. 85—83 **6 Claims**



The fastener has a spirally wound anchor sleeve which is circumferentially expanded within its mounting hole by inserting into the sleeve an anchor bolt or screw having a cross-section larger than the initial internal peripheral outline of the sleeve thereby locking the sleeve to the surrounding wall material. Initial grip of the sleeve in the mounting hole is provided and locking is further strengthened by providing on the outside of the sleeve teeth which bite into the wall material when the sleeve is inserted and expanded.

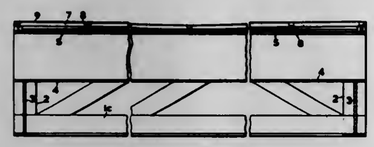
3,668,969
RECOIL MEHANISM FOR MACHINE GUNS WITH A HYDRAULIC COUNTER-RECOIL BRAKE
Karl Harbrecht, Eisental B. Bruhl, and Gerhard Munn, Duseldorf, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany
Filed Mar. 6, 1970, Ser. No. 17,231
Claims priority, application Germany, Mar. 20, 1969, P 19 14 188.9
Int. Cl. F41f *19/02*
U.S. Cl. 89—43 R **5 Claims**



A recoil-mechanism for machine guns with a hydraulic counter-recoil brake, wherein the recoil energy for effecting the weapon advance is stored and with a hydraulic braking piston equipped with throttle valves, which comprises a cylinder connected with reciprocating parts of the weapon and receiving a hydraulic braking piston. A housing has the cylinder disposed therein for longitudinal displacement and receiving the recoil-mechanism, and is connected with immovable parts of the weapon and supported on both sides by resilient abutments. Additional abutment means are effective upon the braking piston. The abutment means set the piston forwardly during the return stroke of the cylinder relatively to the latter, such, that the piston rod, formed as a ram and extending out from the end wall of the cylinder, is supporta-

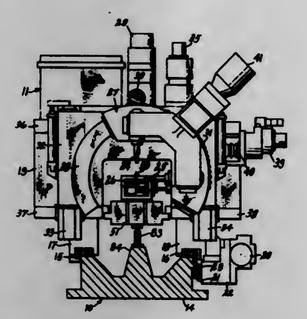
ble during the forward stroke of the forward resilient abutment, before the cylinder itself has reached its initial position.

3,668,970
ROCKET LAUNCHERS
Arthur Gwynfryn Walters, Bexley, England, assignor to Secretary of State for Defense in the Government of the United Kingdom
Filed July 22, 1958, Ser. No. 750,262
Int. Cl. F41f 3/04
U.S. Cl. 89—1.819 2 Claims



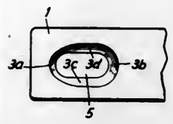
1. A launcher for a tubular rocket having a frame comprising four longitudinal angle beams, one at each corner of the frame, a lattice of struts connecting the beams, a series of transverse plates for stiffening the frame and having U-shaped recesses in their upper edges, and a U-section trough welded into the U-shaped recesses; a guide rail support fixed to the upper surface of each of the upper two angle beams; a plurality of spacers at intervals along the upper surfaces of the guide rail supports the spacers varying in thickness from zero at the center to a maximum at each end of each support the thicknesses being so graduated that the upper faces of the spaces lie on a smooth curve; and two guide rails bolted to the guide rail supports and in contact with the upper surfaces of the spacers whereby each said guide rail is constrained in an upwardly curved position, towards the opposite ends thereof.

3,668,971
METHOD AND APPARATUS FOR MACHINING AN ELONGATED WORKPIECE
Lewis A. Dever, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed June 2, 1970, Ser. No. 42,757
Int. Cl. B23c 3/00
U.S. Cl. 90—11 R 27 Claims



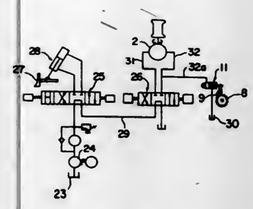
An elongated workpiece, which is maintained under tension, is machined along its surfaces by relative longitudinal movement between the workpiece and a support for a pair of perpendicularly disposed cutting tools. A fixture, which is connected to the support for the cutting tools so that the fixture is always the same longitudinal distance from the cutting tools, has the elongated workpiece pass therethrough. The fixture has two reference surfaces, which are perpendicular to each other, against which two perpendicular surfaces of the workpiece are urged by pressure rollers in the fixture acting against workpiece surfaces, which are parallel to the surfaces of the workpiece engaging the reference surfaces.

3,668,972
OSTEOSYNTHETIC PRESSURE PLATE CONSTRUCTION
Martin Allgower, Calunastrasse 2; Stefan Perren, Kirchgasse 11, both of Chur, and Max E. Russenberger, Tannenstrasse 26, Schaffhausen, all of Switzerland
Original application June 16, 1967, Ser. No. 646,542. Divided and this application Apr. 30, 1969, Ser. No. 828,069
Claims priority, application Switzerland, June 22, 1966, 9068/66
Int. Cl. B23c 1/00
U.S. Cl. 90—11 C 1 Claim



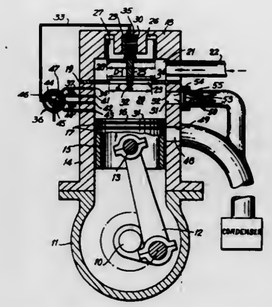
An osteosynthetic pressure plate includes a slot formation for receiving a bone fixing screw which is adapted to be secured to a bone part which is to be mended. The slot is formed with an edge which includes an oblique portion or ramp having an inclination such that when it is engaged by the underside of a head portion of a bone fixing screw there will be a displacement of the pressure plate in a direction to move the ramp portion away from the fixing screw and to cause the plate to apply a pressure to hold the bone parts in tight engagement. The plate is advantageously useable with screws having heads of spherical form or conical form, for example. The inclination of the ramp and the configuration of the walls bounding the slot of the pressure plate are such that there will be a uniform and even shifting of the plate having the slot when the ramp portion of the walls bounding the slot is engaged by the screw head to cause the desired displacement of the pressure plate in order to displace the bone fragment toward tighter engagement with the adjacent bone fragment and into pressure engagement therewith.

3,668,973
HYDRAULIC OIL WINCH
Matayuki Kado, and Masazo Mita, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed June 29, 1970, Ser. No. 50,754
Claims priority, application Japan, June 30, 1969, 44/51348
Int. Cl. F15b 15/26
U.S. Cl. 91—41 3 Claims



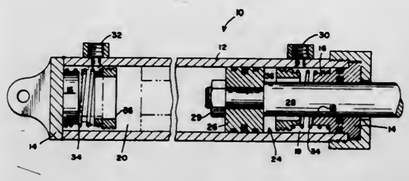
A hydraulic oil winch wherein the driving shaft of the hydraulic oil motor is provided with a ratchet wheel, and a lock pawl is pivotally mounted on a shaft so as to detachably engage with the said ratchet wheel, the said lock pawl being interlocked with a hydraulic oil cylinder mechanism so that it may be engaged with the said ratchet wheel when the hydraulic oil motor is running forwardly and stopped, and also may be disengaged from the ratchet wheel when the oil motor is running reversely by change-over operation of the change-over valves.

3,668,974
RECIPROCATING ENGINE
Manfred Otto Hagdorn, Stockholm, and Kjell T-Son Sandberg, Taby, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Jan. 28, 1970, Ser. No. 6,503
Claims priority, application Sweden, Jan 29, 1969, 1174/69; Dec. 16, 1969, 17298/69
Int. Cl. E01l 25/06, 21/02
U.S. Cl. 91—242 10 Claims



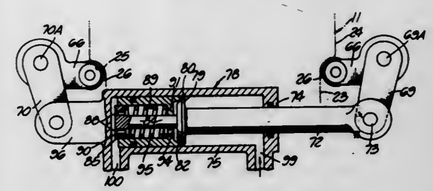
This invention relates to a reciprocating engine which operates with a compressible working medium like steam and has a cylinder and a cooperating cylinder head. A piston moves forward and backward in the cylinder space. Steam is supplied under pressure to an outer space in the cylinder head and the flow of such steam to the cylinder space is controlled by a valve responsive to the pressure of the steam. In order to regulate the flow of steam into the cylinder space in the first part of each forward stroke of the piston, the valve is acted upon and closed by steam under pressure which becomes available to perform this function when the piston reaches a particular position in each forward stroke.

3,668,975
DECELERATOR MEANS FOR EXPANSIBLE CHAMBER DEVICE
Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Oct. 13, 1970, Ser. No. 80,367
Int. Cl. F15b 15/22
U.S. Cl. 91—409 17 Claims



A decelerator means for a hydraulic motor having a housing, a piston movable therein defining an expansible fluid chamber within said housing, fluid ports permitting the admission or exhaust of fluid from said chamber, the decelerator means comprising a movable member within the chamber having an exposed surface capable of substantially closing off said port upon the exhaust of fluid from the chamber, said surface having interruptions therein so as to provide metering orifices to meter the exhaust of fluid from said chamber and retaining means interconnecting said housing and said movable member for maintaining said member in close proximity to the port but permitting sufficient limited movement whereby the admission of fluid energy into said chamber will be unimpeded by said member.

3,668,976
FLIGHT REFUELING RECEPTACLE HAVING PRESSURE-INERTIA RELEASE VALVE
Ellsworth E. Hieber, 1417 Liden Avenue, Glendale, Calif.; Thomas P. Taquino, 310 Tonyon Road, Sierra Madre, Calif., and Frank Edward Hillery, 30 West Las Flores Avenue, Arcadia, Calif.
Original application Apr. 1, 1968, Ser. No. 717,680. Divided and this application Mar. 23, 1970, Ser. No. 24,930
Int. Cl. F15b 11/08, 13/04
U.S. Cl. 91—422 7 Claims



A hydraulic actuator, which is particularly adapted for use with and to automatically release the locking means of an in-flight refueling nozzle, and contains a cylinder and piston structure connected with a piston rod, the piston having a piston head with an axial flow passage controlled by a valve normally spring-urged to a closed position, when the piston structure is in a holding position at one end of the cylinder, but adapted to open under a suddenly applied highly accelerating force and permit movement of the piston to the other end of the cylinder.

3,668,977
ACTUATOR LOCK
Glenn S. Beidler, Elkhart, Ind., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed Nov. 13, 1970, Ser. No. 89,319
Int. Cl. F15b 15/26
U.S. Cl. 92—17 13 Claims



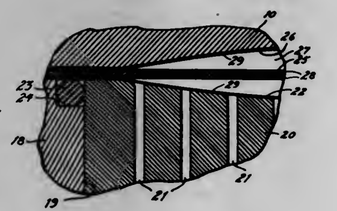
An actuator lock for selectively limiting the movements of a linear actuator comprising an axially fixed lock shaft having a splined portion rotatable into and out of alignment with a correspondingly splined portion on the axially movable part of the actuator. When the splined portions on the lock shaft and axially movable part are in proper alignment with each other, the axially movable part is free to move axially relative to the lock shaft, but when the lock shaft is rotated so that

the splined portions are out of alignment with each other, axial movement is limited to the axial clearance between the ends of the splined portions. The relative locations and lengths of the splined portions on the lock shaft and movable part of the actuator determine the lock positions and extent of permissible axial movement when the lock shaft is rotated to a locking position.

3,668,978
DIAPHRAGMS FOR HIGH PRESSURE COMPRESSORS AND PUMPS

John C. Bowen, Huntingdon Valley, Pa., assignor to The Duriron Company, Inc., Dayton, Ohio

Filed June 3, 1970, Ser. No. 42,957
Int. Cl. F01b *19/00*
U.S. Cl. 92—98 5 Claims

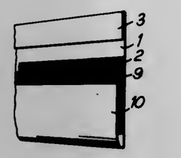


A diaphragm is provided for high pressure pumps and compressors operating at pressures of the order of 30,000 psi and higher, the diaphragm having a greatly extended life and comprising a metal diaphragm with a friction reducing and dirt absorbent film in contact with the diaphragm to prevent fretting corrosion. The film can be on the diaphragm, or the clamping portions of the casing in engagement with the periphery of the diaphragm, or on both.

3,668,979
MANUFACTURING PROCESS FOR A FILE FOLDER

Andre Raymond Daniel Cariven, 5, rue Saint Pantaleon, Toulouse, France

Filed Oct. 7, 1969, Ser. No. 864,970
Claims priority, application France, Oct. 7, 1968, 5403; Nov. 29, 1968, 175902
Int. Cl. B31d
U.S. Cl. 93—1 R 4 Claims

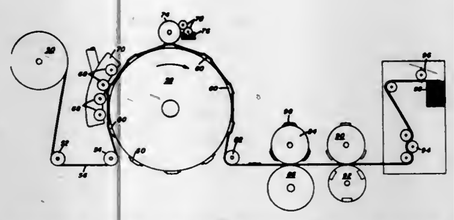


Process for manufacturing file folders for records and documents, said file folders comprising a certain number of flaps, with one face of each flap being provided with three tiered pockets for holding the documents, said process consisting of using two sheets of flexible material, whereby the narrowest of the sheets is connected to the widest by a stitching or by a line of glue, then of folding over the two sheets so as to form evenly tiered pockets, all objects resulting from said process and arrangements being within the scope of the invention.

3,668,980
METHOD AND APPARATUS FOR MANUFACTURING APERTURE CARDS

Frederick F. Tone, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,490
Int. Cl. B31d
U.S. Cl. 93—1 R 28 Claims

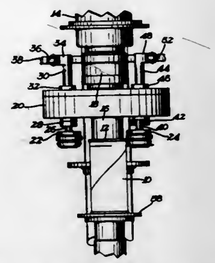


Apparatus for producing an aperture record card from a substantially continuous web of cardstock of predetermined thickness, each of the record cards having a shouldered aperture arranged to receive a film chip over the aperture. The apparatus comprises the combination of means for supplying a substantially continuous web of the cardstock and for conveying the web along a predetermined path. Means is arranged to emboss the web as it is moved along the path, for example about a rotating embossing drum, to raise a portion thereof above the surface of the surrounding web. The embossing means is arranged to raise the center portion higher than the peripheral portion of the web being embossed. A grinding means is spaced from one surface of the web along the path, i.e. peripherally about the drum, downstream from the embossing means and is spaced from the drum a distance greater than the thickness of the web but less than the height of both portions of the embossed surface of the web above the drum surface. The grinding means is arranged to form a rectangular ground area on the raised surface of the web. Means is arranged downstream from the grinding means to apply a layer of a fluid-impermeable material, such as molten thermoplastic, to the ground area of the web to seal and protect the surface of the web. Means is arranged to deemboss the ground area, and means is arranged to form an aperture through the web in the ground area.

3,668,981
APPARATUS FOR SCORING FIBER CANS

Charles Henry Turpin, Louisville, Ky., and John A. Ryan, Jeffersonville, Ind., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed May 18, 1970, Ser. No. 38,464
Int. Cl. B31b *1/16, 1/34, 43/00*
U.S. Cl. 93—36.5 R 4 Claims



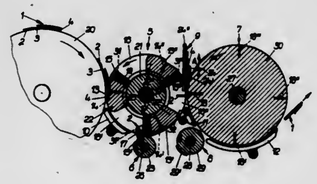
The outer surface of the body of a fiber can is scored by cutting through a portion of its thickness from the outside thereof with a cutting blade affixed to the lower end of a

seaming roll which simultaneously crimps the lid to the body wall of the can. The cutting blade is circular in configuration and is positioned to rotate on a center which is offset laterally with relation to the center shaft of the seaming roll. The distance that the rotation axis of the cutting blade is offset can be selectively changed to precisely control the cutting depth.

3,668,982
APPARATUS FOR FOLDING THE CLOSING FLAP OF ENVELOPES

Kurt Stemmler, Neuwied, Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei, Neuwied Rhine, Germany

Filed Mar. 19, 1971, Ser. No. 126,125
Claims priority, application Germany, Mar. 26, 1970, P 20 14 702.8
Int. Cl. B31b *21/00*
U.S. Cl. 93—62 3 Claims

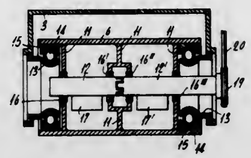


A machine for making envelopes has an apparatus for folding the closing flap of envelopes which includes a rotary prefolding cylinder provided with fixed abutment edges and suction holes, a mating cylinder having a rotary folding strip, a stop abutment for the prefolded envelope, a finish folding cylinder having suction holes and moving in the opposite direction to the prefolding cylinder and a pressing segment cylinder associated with the finish folding cylinder.

3,668,983
VIBRATIONS GENERATOR WITH MULTIPLE SHAFTS IN SERIES, ESPECIALLY FOR VIBRATING TAMPING MEANS

Domenico Domenighetti, Via Nosetto 6, Bellinzona, Switzerland

Filed May 18, 1970, Ser. No. 38,075
Int. Cl. E01c *19/28*
U.S. Cl. 94—50 V 1 Claim

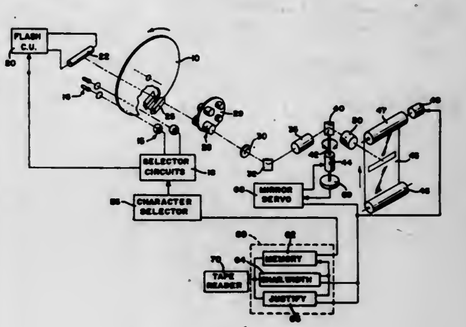


Vibrations generator especially for vibrating tamping means, characterized in that it comprises a plurality of rotating shafts, each provided with its own eccentric masses and connected to each other in series by means of coupling elements ensuring the rotational synchronism and transmitting the required torque; each shaft being supported by a single pair of rolling bearings; said shafts series being actuated by a device which applies a torque to at least one of the two ends of said shafts series.

3,668,984
OPTICAL CHARACTER SPACING SYSTEM FOR PHOTOTYPESETTING

Seymour Rosin, Massapequa, N.Y., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 4, 1970, Ser. No. 34,300
Int. Cl. B41b *21/22*
U.S. Cl. 95—4.5 6 Claims

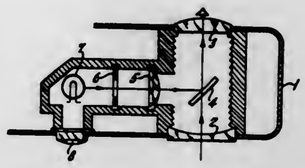


A character image projection system successively projects image bearing light beams along a common optical axis toward a photosensitive surface. The images of the individual characters are spaced on the photosensitive surface to form lines of composition. The spacing is accomplished by collimating the image bearing light beams, then diverting the collimated beam by means of a movable reflecting surface into a refocusing and scan lens assembly from which the light beams emit onto the photosensitive surface. The position of the reflector may be controlled by a servo mechanism which responds to character image space information from a computer. The refocusing and scan lens assembly incorporates compensation for the angular position of the reflecting member whereby the character images remain in focus and are properly spaced even though the photosensitive surface is maintained flat at the image plane of the system.

3,668,985
CAMERA FLASH INDICATING SYSTEM

Seiichi Wazumi, Toyokawa, Japan, assignor to Minolta Camera Company Limited, Osaka, Japan

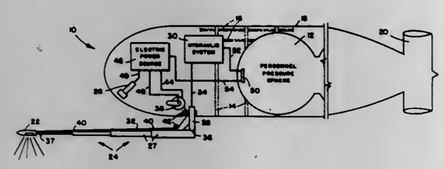
Filed Dec. 12, 1968, Ser. No. 783,241
Int. Cl. G03b *17/20*; G01j *1/52*
U.S. Cl. 95—10 C 7 Claims



A camera flash indicating signal system includes a camera view finder and a mirror located in the finder for reflecting light from a transverse path to the finder eyepiece. A convex lens, indicator element and electric lamp are spaced along the transverse path. The indicator element is located at the conjugate position of the eyepiece through the lens and the lamp is visible through a camera front window. The lamp is connected to a battery through a series connected first switch

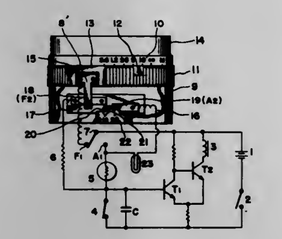
and a normally open second switch coupled to the camera shutter button for closing the second switch before shutter release. The first switch is either actuated selectively, or by a photocell controlled mechanism.

3,668,986
UNDERWATER IMAGING SYSTEM FOR DEEP SUBMERGENCE VEHICLES
Irov P. Lemaire, San Gabriel, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 25, 1970, Ser. No. 40,067
Int. Cl. G03b *15/03*
U.S. Cl. 95—11 4 Claims



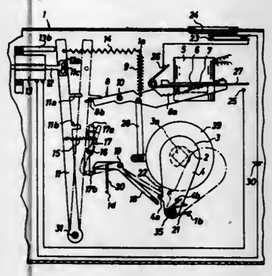
An imaging system for a deep submergence vehicle comprising a light source; positioning means mounted on the vehicle for selectively extending and retracting the light source with respect to the vehicle; and a camera receiver mounted on the vehicle for viewing the area lighted by said light source.

3,668,987
ELECTRIC SHUTTER CONTROL CIRCUITRY
Toshio Hayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan
Filed Aug. 25, 1970, Ser. No. 66,766
Claims priority, application Japan, Aug. 29, 1969, 44/68755
Int. Cl. G03b *7/16*
U.S. Cl. 95—11 R 4 Claims



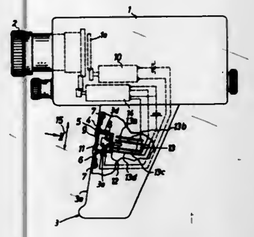
First and second switches each having respective first and second switch positions establish shutter control by either a fixed timing circuit or a brightness measuring circuit in accordance with the setting of a distance adjustment ring. The contacts of the switches are mounted on a rotatable change over ring and the distance adjustment ring. The change over ring includes means for setting the flash guide number.

3,668,988
EXPOSURE CONTROLLING STRUCTURE FOR PHOTOGRAPHIC APPARATUS
Dieter Engelsmann, Unterhaching, and Rolf Schroder, Munich, both of Germany, assignors to AGFA-Gevaret Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 5, 1970, Ser. No. 87,175
Claims priority, application Germany, Nov. 6, 1969, P 19 55 831.7
Int. Cl. G03b *19/02, 9/02, 9/08*
U.S. Cl. 95—11 R 14 Claims



A photographic camera wherein the diaphragm is adjusted by a scanning member which scans the position of the needle in a moving-coil instrument. The scanning member is free to scan the needle in response to energization of an electromagnet which is energizable by the camera release. The scanning member then opens a switch which deenergizes the electromagnet whereby the latter permits an impeller to propel the blade of the shutter to an open position subsequent to appropriate adjustment of the diaphragm.

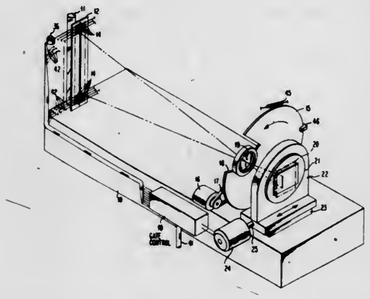
3,668,989
CAMERA OPERATING DEVICE
Alfred Winkler; Anton Theer, both of Munich; Johann Zanner, Unterhaching, and Fridolin Hennig, Munich, all of Germany
Filed Aug. 6, 1970, Ser. No. 61,598
Claims priority, application Germany, Aug. 16, 1969, P 19 41 752.8
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R 18 Claims



A still camera or motion picture camera wherein a wall of the housing has an opening for a frame which is movable in the plane of such wall and surrounds a diaphragm which is deformable to actuate the shutter. Movements of the frame with reference to the wall are used to actuate one or more additional switches which control the motor for a zoom lens, to open or complete the circuit of an exposure meter, to initiate or terminate a fading operation, to effect rewinding of film and/or to initiate or terminate other operations in the

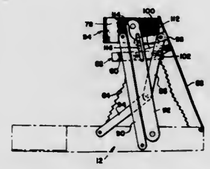
camera. The frame can perform rotary, pendulum, reciprocatory and/or other movements with reference to the housing.

3,668,990
PRINTED CIRCUIT GENERATOR
Lawrence P. Hayes, Johnson City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 10, 1969, Ser. No. 883,715
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 7 Claims



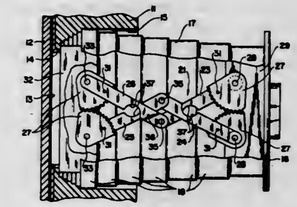
Apparatus for exposing incrementally variable length lines on a photosensitive surface primarily adapted to form printed circuits. An elongated slit for passing light is covered by a plurality of independently operable gates, each controlling light emission from a unique portion of the slit. Emitted light is then controlled by a shutter-lens complex to impinge on the sensitized surface of a workpiece which can be indexed and rotated for exposure of both orthogonal and non-orthogonal lines.

3,668,991
FOLDING CAMERA
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 13, 1969, Ser. No. 832,945
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 31 Claims



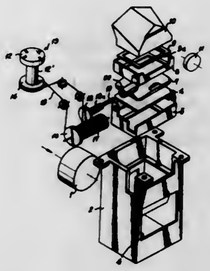
A compact folding camera of the self-developing type comprising a housing including two sections coupled by a bellows and movable relative to one another between folded and extended positions. One section includes means for locating a photosensitive element in position for exposure and means for processing the exposed element. The second section includes an objective lens and a mirror for reflecting light from the lens to the photosensitive element. The mirror is movable to permit viewing through the lens. The second section comprises two relatively movable portions, one including the lens, a shutter, components of a viewing and/or ranging system, and a motor for driving the shutter and the processing means, the mirror being included in the other portion and the bellows being attached thereto. The two portions are adapted to couple with one another in the extended position and be separated for more compactness in the folded position, while the mirror functions to prevent admission of light into the camera when the two portions are separated.

3,668,992
LENS HOUSING SUPPORT LINKAGE FOR BELLOWS TYPE CAMERAS
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 1, 1970, Ser. No. 33,679
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 4 Claims



A linkage for supporting an extendable lens housing of a bellows type camera includes two identical link assemblies comprising link bars maintained in symmetrical relation to each other by meshed spur gear segments. The compactness afforded by the subject linkage construction allows the linkage to be concealed within the camera bellows without sacrificing the accuracy with which the lens housing is maintained in parallelism with the camera body member.

3,668,993
DEVICE FOR VIEWING INDICIA
Hiroshi Kurie, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Aug. 11, 1970, Ser. No. 62,896
Claims priority, application Japan, Aug. 27, 1969, 44/80767
Int. Cl. G02b *27/32*; G03b *19/12*
U.S. Cl. 95—42 10 Claims



A device for viewing one of a plurality of indicia. At least one pair of indicia are provided, and an elongated light-permeable shaft forms a carrier which carries the pair of indicia. The indicia are angularly displaced by 180° about the axis of the shaft and are axially displaced therealong by a distance at least equal to the axial space occupied along the shaft by each of the indicia. A transmission is available to the operator for rotating the shaft about its axis, and in one angular position of the shaft one of the indicia is in alignment with a frame to be viewed therethrough. By operating the trans-

mission it is possible to rotate the shaft through 180° while at the same time axially displacing the shaft by a distance equal to the axial distance between the pair of indicia in a direction which will enable the other of the indicia to occupy the position formerly occupied by the first of the indicia when the shaft is in the particular angular position where the first of the indicia is in alignment with the frame, so that in this way one or the other of the indicia can be positioned in alignment with the frame to be viewed therethrough.

3,668,994

AUTOMATIC DIAPHRAGM APERTURE ADJUSTING DEVICE FOR FLASH PHOTOGRAPHY IN CAMERA WITH INTERCHANGEABLE LENS

Yoshifusa Fujii, Kaizuka City, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed Nov. 24, 1969, Ser. No. 879,014
Claims priority, application Japan, Nov. 25, 1968, 43/86242
Int. Cl. G03b 7/16, 9/02, 17/14
U.S. Cl. 95—64 A 5 Claims



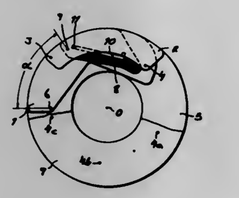
A diaphragm aperture adjusting device automatically detects the displacement of the inner cylinder of an interchangeable lens which is set to a distance value for focusing. The diaphragm aperture of the lens is automatically controlled to the value in accordance with the displacement of the inner lens cylinder by adjusting members for flash photography provided in the camera body. When various interchangeable lenses with different axial displacements are employed, the adjustment to compensate for the difference is made to provide proper aperture values.

3,668,995

IRIS DIAPHRAGM WITH EXTRA LEAF FOR COMPLETE CLOSURE

Klaus Bardutzky, Bad Kreuznach, Germany, assignor to Jos Schneider & Co., Bad Kreuznach, Germany

Filed Dec. 18, 1969, Ser. No. 886,425
Claims priority, application Germany, Dec. 18, 1968, P 18 15 349.6
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R 7 Claims



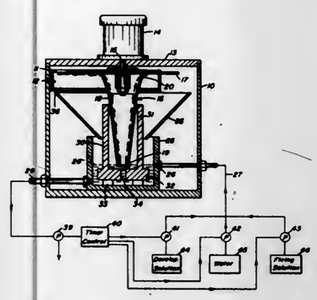
An iris diaphragm with a set of iris leaves, pivoted to a fixed mounting ring, and a set of control leaves, articulated to respective iris leaves and pivoted to a rotatable setting ring, further includes an extra leaf pivoted to the mounting ring and coupled with one of the control leaves through a pin engaging in an L-shaped groove whereby, in a limited inwardly swung position of the iris leaves, further rotation of the setting ring cams the extra leaf into a stop position obstructing the residual aperture.

3,668,996

FLUID DISPENSING APPARATUS

Harold E. Peiffer, and Ralph A. Kohl, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,856
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R 12 Claims



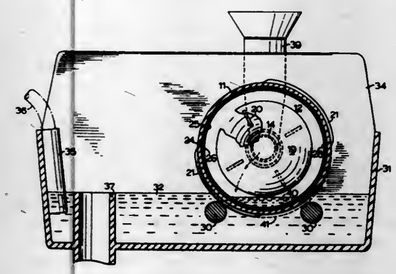
A device in which a disc member rotating at high speed expels a fluid or processing solution which is directed into a vortex generated by the disc member. The vortex causes the solution to be spread uniformly over a relatively wide area. With this manner of operation, the device is capable of operating with very small quantities of processing solutions. In another embodiment of the invention, a plurality of such dispensing devices can be arranged in a serial relationship so as to process or treat a moving strip of material in a continuous manner by subjecting the material successively to different types of processing solutions.

3,668,997

PROCESSING OF PHOTOGRAPHIC MATERIAL

Simon Ratowsky, Toronto, Ontario, Canada, assignor to William C. Jephcott, Toronto, Ontario; Jean M. Richard, Willowdale, Ontario and Ontario Development Corporation, Ontario, Canada

Filed Aug. 6, 1969, Ser. No. 848,042
Claims priority, application Great Britain, Aug. 10, 1968, 38,333/68
Int. Cl. G03d 3/04
U.S. Cl. 95—93 28 Claims



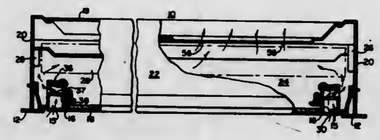
A method and apparatus for the processing of photographic material in which the material is mounted arcuately in a carrier which is horizontally disposed with respect to the axis of arcuation, charged in its lower portion with processing liquid, and moved about the axis of arcuation while at the same time the liquid is oscillated in a non-horizontal plane about a fulcrum to produce a wave form travelling back and forth in the liquid parallel to the axis of arcuation. A web mount may carry the photographic material in the carrier, preferably a web formed of polytetrafluoroethylene.

3,668,998

AIR RETURN SCOOP FOR AIR HANDLING LUMINAIRES

James C. Johnson, Arlington, Tex., and Winfried Neider-Westermann, Vicksburg, Miss., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1970, Ser. No. 9,563
Int. Cl. F21v 29/00
U.S. Cl. 98—40 DL 2 Claims



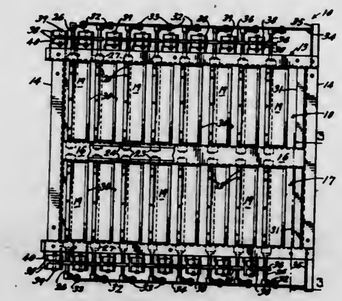
An air handling luminaire including a troffer and a light transmissive air handling door assembly which includes air return passages in opposite ends of the door assembly constructed and arranged to direct air returning through the passages away from the lamp cavity toward the side walls of the troffer housing to thereby completely exclude light from exiting from the fixture through the air return passages. The air return passages further having included therein a variably positioned dampening mechanism to control the volume of air returning through the air return passages.

3,668,999

FLUID BACK PRESSURE DAMPER

Raymond L. Alley, Toledo; George F. Hartman, Jr., Maumee, and John D. Ewald, Toledo, all of Ohio, assignors to The American Warming & Ventilating, Inc., Toledo, Ohio

Filed Sept. 21, 1970, Ser. No. 73,727
Int. Cl. F24f 13/14
U.S. Cl. 98—110 12 Claims



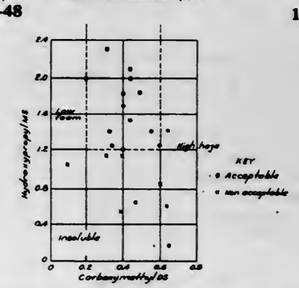
A fluid back pressure damper having at least one counterbalanced pivoted blade which is swung open by the flow of a gaseous fluid against the blade and, under normal conditions, which is swung closed by the mass of a counterweight when the gaseous flow ceases. The blade is mounted on a transverse shaft along a line spaced from its median line and is fabricated from flexible sheet material. The counterweight is connected to the blade shaft by means providing for relative angular movement between the blade and the counterweight. In normal closed position the blade closes against a stop or, when there is a plurality of blades in the damper, each blade closes against the adjacent blade and/or its shaft which thus functions as a stop. If and when a sudden back pressure occurs, the abrupt gaseous flow impinges on the blade. Because of the relative angular movement between the blade and the counterweight, the blade starts to move toward the closed position almost unhampered by the inertia of the counterweight. The blade swings closed, sharply striking its stop and flexes upon impact. Because the blade and the counterweight can move angularly relative to each other, the counterweight moves beyond its normal closed position in order to absorb at least a part of the kinetic energy of the counterweight. A shock absorbing means may be positioned in line to be impacted by the counterweight after passing its normal closed position in order to absorb any remaining kinetic energy of the counterweight.

3,669,000

CELLULOSE ETHER FOAM STABILIZERS FOR MALT BEVERAGES

Edward Segel, Chevy Chase, Md., and Kenneth G. Scheffel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich. and Miles Laboratories, Inc., Elkhart, Ind., part interest to each

Filed Sept. 4, 1969, Ser. No. 855,275
Int. Cl. C12h 1/14
U.S. Cl. 99—48 14 Claims



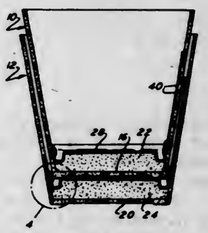
C_2–C_4 Hydroxyalkyl carboxymethyl cellulose ethers having a C_2–C_4 hydroxyalkyl MS of at least about 1.2 and a carboxymethyl DS of about 0.2–0.6 are superior cellulose ether foam stabilizers for carbonated malt beverages. They are compatible with chemical pasteurizing agents and can be used to improve the foam properties of beverages so treated.

3,669,001

CUP ASSEMBLY

Donald B. Asen, Bala Cynwyd, Pa., assignor to Bev Maid, Inc., Valley Forge, Pa.

Filed Apr. 22, 1970, Ser. No. 30,736
Int. Cl. A23l 1/00; B65d 83/06, 79/00
U.S. Cl. 99—78 3 Claims



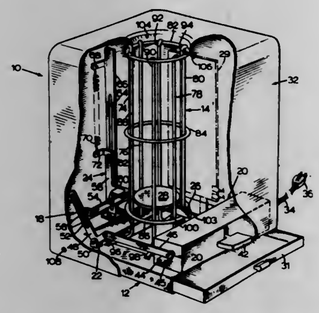
Tapered cups of foam polymeric material containing a comestible food product are provided with a cover cooperat-

ing with the interior surface of the cup. The cover has a rounded peripheral flange force-fit with the interior surface of the cup and a curved peripheral tip forming a secondary seal with the cup interior surface.

3,669,002
DEVICE FOR HEATING FRANKFURTERS AND THE LIKE

Brian Y. Davidson, 34 Pineway Boulevard, Willowdale, Ontario, Canada

Filed May 22, 1970, Ser. No. 39,734
Int. Cl. A47j 27/62
U.S. Cl. 99—327 2 Claims

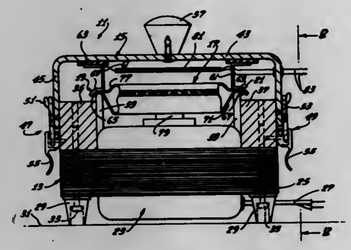


A device for heating a frankfurter and ejecting the frankfurter when it is ready to be served. The frankfurter is located in a desired orientation and heated by at least one electric heating element. An ejector mechanism is coupled to a control lever so that once the frankfurter has been heated, the control lever may be moved to eject the frankfurter. A timer can be incorporated in the device to activate the ejector automatically when a predetermined time interval has elapsed. The timer also switches off the electrical heating element when the frankfurter has been heated.

3,669,003
FOOD HEATING DEVICE

Leonard Tony King, 4109 Cedar Avenue, Long Beach, Calif.

Continuation-in-part of application Ser. No. 629,315, Apr. 7, 1967, now abandoned. This application June 22, 1970, Ser. No. 48,209
Int. Cl. A47j 27/62
U.S. Cl. 99—331 11 Claims

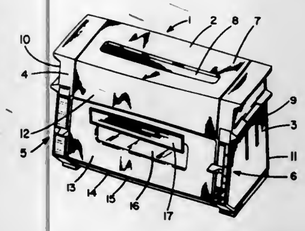


This disclosure describes a food heating device for heating and cooking food items such as TV-dinners which are prepackaged in standard electrically conductive containers. The device includes a rigid enclosure having a base and a cover for providing access to the interior of the enclosure to allow insertion or removal of the food package. The food package is supported on the base and, a step-down transformer supplies low voltage electrical power to the conductive food package. First and second clamps are supported by the enclosure means and clampingly engage first and second edge portions of the conductive food package, respectively, so that the electrical current passes directly through the food package and at least some of the food contained therein to rapidly and effectively heat the food.

3,669,004
TOASTER-OVEN

John L. Eaton, Jr., Delanco, N.J.; Kenneth L. Richard, Newton Square, and Walter M. Schwartz, Jr., Philadelphia, both of Pa., assignors to Proctor-Silex Incorporated, Philadelphia, Pa.

Filed Aug. 3, 1970, Ser. No. 60,468
Int. Cl. A47j 27/62
U.S. Cl. 99—331 10 Claims

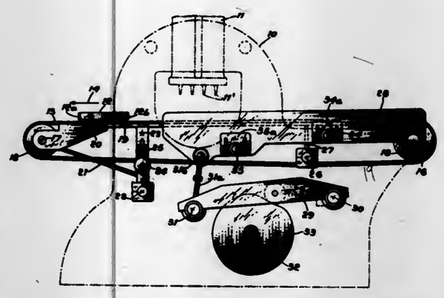


A toaster-oven comprising a plurality of readily releasable components including a chassis component, an end panel component and four heating element components. The chassis component comprises a common heating chamber which, having unique venting of the toasting thermostat, receives a vertically positioned, food supporting carriage movable therein in a toast mode from food receiving position to food toasting position and which receives a grill component in horizontal position movable therein in an oven mode from food receiving position to food cooking position. The heating element components are related to the reflecting surfaces of the common heating chamber so that, in conjunction with modulation of the power input to certain of the element components, effective cooking in both the toast and oven modes of operation is obtained. Thus, a readily serviceable and effective multipurpose appliance is disclosed.

3,669,005
CREAM FILLER APPARATUS

James Fullerton, Leonia, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 2, 1970, Ser. No. 42,639
Int. Cl. A21c 9/00; A23g 1/20
U.S. Cl. 99—450.1 10 Claims

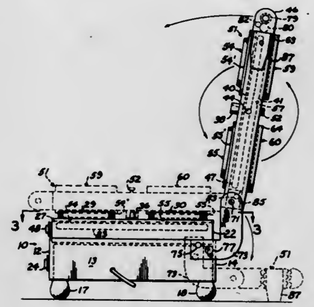


A cream filler apparatus is provided for handling pans containing cake products which are to be filled with cream from a common hopper by a cream injecting nozzles. The apparatus includes parallel conveying belts which move the pans to two waiting stops which are selectively activated, and the pan, when positioned, is raised by a lifting frame. The lifting frame is pivotally mounted at one end and intermittently moved by a lifter assembly under the control of a driven cam.

3,669,006
APPLIANCE FOR AND METHOD OF PASTRY MAKING

Maurice Wm. Lee, Sr., P.O. Box 25, Boley, Okla.

Filed Oct. 23, 1970, Ser. No. 83,549
Int. Cl. A21c 11/00
U.S. Cl. 99—450.3 4 Claims

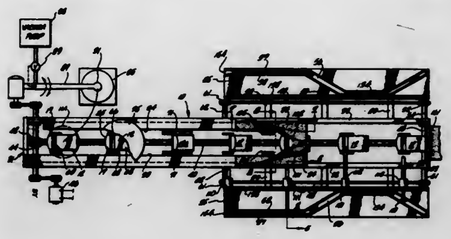


A hot plate type base, having a hingedly connected lid-like top frame or cover, is provided with pie dough and pie filling receptacles on the upper surface of the base. Heated plates, pivotally mounted by the top, are respectively provided with pie dough edge trimming and crimping dies and pie dough shaping dies in registering relation with respect to the receptacles on the base. The device forms a grill when the receptacles and dies are removed from the base and cover.

3,669,007
METHOD AND APPARATUS FOR ROLLING AND TUCKING FILLED FOODSTUFFS

Louis Pulici, 1202 Point View Street, Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 47,951
Int. Cl. A23g 3/00
U.S. Cl. 99—450.6 20 Claims



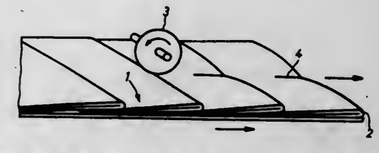
The method and apparatus take an outer food wrap or envelope and place it upon one of a plurality of continuously moving platens, each with a hinged section, upon a conveyor and processes each platen with its wrap beneath an automatic filler tank. The hinged portion of the platen is then folded to make a first transverse fold in the wrap about the filler, and then the wrap is engaged with opposed reciprocating transverse forks which roll the filled wrap upon itself about a line transverse to the conveyor travel. The rolled foodstuff is then sprayed with a binder liquid and passed between compression belts which compress the outer wrap edge to the first outer roll layer.

Foodstuffs which are tucked as well as rolled may, after the first partial fold is made, be passed between converging guides which plow the longitudinal edges of the wrap upwardly and inwardly to form side tucks which then are also rolled with the body of the wrap and filler by the method and apparatus described above. Preferably the engaging forks are caused to rotate by a gear and rack arrangement which supports the forks on opposite sides of the conveyor such that they may be cammed toward and away from the conveyor platens.

3,669,008
METHOD FOR PREVENTING THE DEFORMATION OF FOLDED NEWSPAPERS, MAGAZINES ETC. DURING THE TRANSPORT THEREOF IN FLAKELIKE SUPERPOSED STACKS

Walter Reist, Hinwil, Zurich, Switzerland, assignor to Ferag, Fehr & Reist A.G., Hinwil, Zurich, Switzerland

Filed June 11, 1970, Ser. No. 45,397
Claims priority, application Austria, June 11, 1969, A 5529/69
Int. Cl. B30b 13/00
U.S. Cl. 100—35 4 Claims

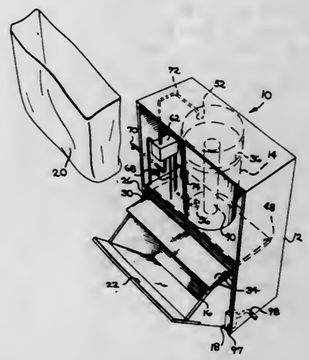


A method for preventing the deformation of folded newspapers, magazines etc. during the transport thereof in flakelike superposed stacks comprises forming one or several stiffening scores on the folding line, said scores being preferably arranged perpendicular to the folding line.

3,669,009
REFUSE COMPACTOR

Thomas H. Pratt, RFD No. 1, Concord, N.H., and Michael L. Rieger, Box 337, Palmer, Alaska

Filed Nov. 30, 1970, Ser. No. 93,563
Int. Cl. B30b 15/16
U.S. Cl. 100—52 1 Claim



This invention provides a refuse compactor which compresses household trash and garbage into odor and moisture-

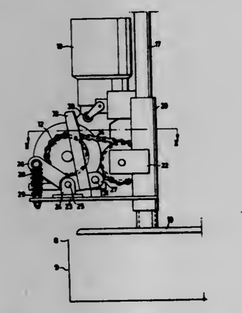
proof bags and seals the bags to prevent re-expansion or leakage. This device utilizes hydraulic pressure from a home water pressure system to actuate a double-action piston which is controlled by means of a four-way valve. The double-action piston is connected to actuate a compression plate to compact the trash and garbage into the bag within a compaction chamber and to retract the compression plate to thereby allow the user to remove the compacted load. The compaction chamber is hinged to tilt outwardly to allow removal of the bag filled with the compressed trash and garbage.

3,669,010

IMPROVEMENTS IN GARBAGE COMPACTORS

Gunnar Arne Leonard Lundgren, Lindesholm, Brottby, Sweden, assignor to Komprimator AB, Vallentuna, Sweden

Filed Apr. 8, 1969, Ser. No. 814,329
Claims priority, application Sweden, Apr. 11, 1968, 4953/68
Int. Cl. B30b 15/18
U.S. Cl. 100—52 6 Claims



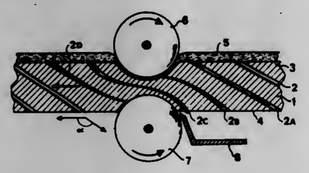
In a garbage compactor for compressing refuse and other waste material in open containers by a vertically operating device comprising a piston and a piston rod driven by an electric motor by a transmission means, a means activated by compression forces exerted against the downward movement of the piston to automatically return the piston to an inactive position above the upper edge portion of the container by a change in the direction of rotation of the electric motor.

3,669,011

METHOD OF AND APPARATUS FOR CONTINUOUS EXTRACTION OF LIQUID FROM A PASTY SUSPENSION

Guy Jacquelin, Grenoble, France, assignor to Centre Technique de L'Industrie des Papiers, Cartons et Celluloses, Grenoble-Gare, Isere, France

Filed June 17, 1970, Ser. No. 47,037
Claims priority, application France, June 20, 1969, 6920821
Int. Cl. B30b 9/24
U.S. Cl. 100—118 4 Claims



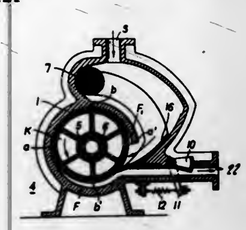
A device for the continuous extraction of a liquid from a pasty suspension arranged in a layer on a support strip comprising elastically deformable permeable zones separated by impermeable zones, the permeable zones putting into communication with each other the two faces of the strip are each subjected to a progressive contraction moving from the face in contact with the suspension towards the free face of the support. The compression pressure is obtained by passing the suspension-strip combination between press cylinders.

3,669,012

APPARATUS FOR REMOVING MOISTURE

Franz P. Nebel, Muhlberg 11, A 5132 Geretsberg, Austria

Filed May 19, 1970, Ser. No. 38,846
Claims priority, application Austria, Apr. 8, 1970, 3189/70
Int. Cl. B30b 9/20
U.S. Cl. 100—121 9 Claims



Apparatus for removing moisture from flowable material by the actions of pressure and vacuum comprises a housing provided with an inlet suction opening and a discharge conduit, a hollow piston rotatably mounted in said housing and having a liquid-permeable shell, said piston is oval in cross-section and defines within said piston a cavity and with said housing a handling chamber having a suction end and a discharge end, a backed gate mounted in said housing, a mechanism positively maintaining said gate in sealing contact with said shell between said discharge and suction ends, a vacuum pump and a liquid pump connected to said cavity, and an adjustable throttle valve controlling the cross-section of said discharge conduit.

3,669,013

CITRUS FRUIT SQUEEZER

Jacob Stein, 210 East Broadway, New York, N.Y.

Filed June 19, 1970, Ser. No. 47,737
Int. Cl. B30b 5/02
U.S. Cl. 100—211 2 Claims



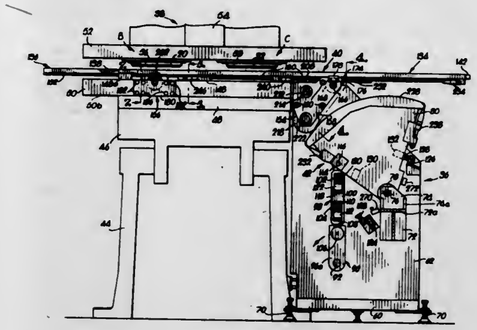
A disposable one piece plastic container for a cut piece of citrus fruit which comprises a hinge member integrally connecting two semi-circular parts, each having a semi-circular rim around the outer semi-circular portion thereof, one of said parts having a semi-circular raised portion with walls parallel to one of said semi-circular rims to enter the cut piece of fruit inside the rind, the semi-circular rim on the other semi-circular part, entering the channel formed between said parallel parts to prevent backflow of the fruit juice, and an opening in said plastic hinge member.

3,669,014

MEANS INCLUDING TWO DIE SETS FOR EMBOSSING AND APPLYING FOIL TO A SHEET

Eugene S. Spaw, Leawood; Paul F. McGrath, Prairie Village, both of Kans., and Stanley W. Otto, Platte City, Mo., assignors to Hallmark Cards, Incorporated, Kansas City, Mo.

Filed Aug. 29, 1969, Ser. No. 854,105
Int. Cl. B41k 3/14; B44b 5/00; B41c 1/08
U.S. Cl. 101—3 R 11 Claims



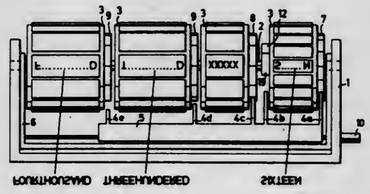
A method and apparatus for dry engraving sheets of material wherein the method includes holding a sheet fixed in a first position while die stamping a layer of decorative foil thereon to present a specific design, shifting the sheet to a second position in alignment with an embossing die while retaining control over the sheet during shifting thereof, and holding the sheet fixed in the second position while embossing the sheet to form raised areas thereon underlying the foil design impression in exact registration therewith to simulate an engraved design. The apparatus includes a pair of side-by-side, oppositely reciprocable shuttle bars each having a series of vacuum ports therein which communicate with a vacuum source in timed relationship to the reciprocation of the respective bars. The shuttle bars thereby alternately shift new sheets into position for processing and cooperate to simultaneously hold fixed one sheet for foil design stamping thereof and another sheet for strategic area embossing thereof.

3,669,015

NUMBERING MECHANISM FOR AUTOMATIC PRINTING OF ORDER NUMBERS OR THE LIKE IN LETTERS

Richard Klingspor, Bandhagen, and John Alebrant, Johanneshov, both of Sweden, assignors to Esselte AB, Stockholm, Sweden

Filed June 27, 1969, Ser. No. 837,192
Claims priority, application Sweden, June 27, 1968, 8811/68
Int. Cl. B41j 1/22, 1/60
U.S. Cl. 101—76 9 Claims



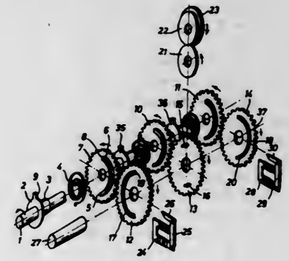
A numbering mechanism for automatic printing of counterfeit-protecting statements of order numbers and the like in letter-written form on value prints, distinguished by comprising number wheels carrying on their periphery the respective numbers in letters, the first or units number wheel over the numerals in the series "one" to "nine" also carrying the numerals in the series "10" to "9" i.e. in total 19 numerals, while the 10s number wheel is provided with the eight numerals in the series "20" to "90" and a ninth numeral-free position at its periphery, said position preferably being filled by a counterfeit-protecting block or screen, all number wheels furthermore carrying a 10th numeral-free position at their periphery, said position also preferably being filled by a counterfeit-protecting block or screen.

3,669,016

SELECTIVE PRINTER INCLUDING SETTABLE, RESILIENTLY DRIVEN TYPE WHEELS

Hermann Kittel, Stockheimer Str. 16, 6 Frankfurt am Main, Germany

Filed Apr. 15, 1970, Ser. No. 28,621
Claims priority, application Germany, Apr. 17, 1969, P 19 19 404.8
Int. Cl. B41j 7/48, 5/44
U.S. Cl. 101—93 C 6 Claims



Apparatus is provided for printing available coded data having type wheels individually arrestable in a printing position and resiliently connected to a drive shaft through springs. Idler means are provided for each type wheel and each idler means if firmly coupled with its respective type wheel and resiliently driven by a shaft. Means including at least two locking wheels are positioned independently of each idler means and of each other, with the means including the locking wheels being resiliently driven by the shaft. In addition, means are provided for arresting each locking wheel, with each said locking wheel being provided with stop means for avoiding advancement of the idler means as compared to each of the locking wheels, with the arresting means controlled by the data to be printed consecutively, being engaged alternatingly, one each for one printing operation.

3,669,017

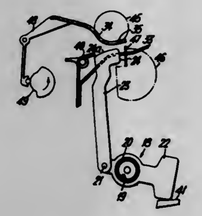
SHEET SENSING MECHANISM

Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England

Filed Feb. 25, 1970, Ser. No. 13,962
Claims priority, application Great Britain, Feb. 26, 1969, 10,419/69
Int. Cl. B41f 13/40
U.S. Cl. 101—235 8 Claims

Printing apparatus including a movable sheet sensing member cooperable with a driven slotted sheet deflector member so that a passing sheet in contact with said deflector member will cover the slot and cause the sensing member to

be urged into a sheet present position to disenable the pressure roller raising mechanism. Absence of a sheet permits the



sensing member to enter the slot and thereby remain in a sheet absent position.

3,669,018

LONG-WEARING SILVER-HALIDE GELATIN OFFSET PRINTING PLATE

Charles E. Wheelock, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,523
Int. Cl. B41n *1/00, 3/00;* **G03f** *7/02*
U.S. Cl. 101—456 **7 Claims**

A long-wearing silver-halide gelatin offset printing plate having a photosensitive emulsion layer of about 3 mils on a metal base, preferably aluminum, which is subjected to long development, after light exposure, with a tanning developer and which is thereafter baked for from 520 to 30 seconds at a temperature of from 275° C to 375° C to thereby achieve a hardened film of uniform thickness. The thickness of the hardened, baked film at the point of first wear on the printing plate varies from about 3 to 7 microns. In comparison with the number of good quality prints obtainable from heretofore known plates, e.g., 500 to 1,000 prints, the present plate gives from 20,000 to 500,000 good quality prints.

3,669,019

DUAL PURPOSE HECTOGRAPHIC MASTER UNIT

Victor Barouh, Westbury, L. I.; Robert Glenn, Forest Hills, both of N.Y., and Louis Rose, Livingston, N.J., assignors to Eaton Allen Corp., Brooklyn, N.Y., by said Rose

Filed Nov. 3, 1969, Ser. No. 873,576
Int. Cl. B41m *5/16, 5/18*
U.S. Cl. 101—470 **1 Claim**



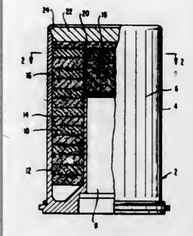
A master unit for hectographic duplication comprising a folder including a top sheet joined to a bottom sheet forming a file. A transfer sheet is reversibly disposed between the top sheet and the bottom sheet and has a coating on one side thereof of a pressure and heat sensitive pigmented transfer material. The top sheet is of a relatively light weight heat transferable paper for receiving a thermographically reproduced hectographic mirror image thereon. The bottom sheet is a relatively heavy weight paper for receiving a pressure reproduced hectographic mirror image of pressure formed markings on the bottom sheet.

3,669,020

FIREBOMB IGNITER DEVICES AND COMPONENTS THEREFOR

Hal R. Waite, Fort Walton Beach, and Carl F. Lucy, Niceville, both of Fla., assignors to Ordnance Research Incorporated, Fort Walton Beach, Fla.

Filed May 6, 1970, Ser. No. 35,019
Int. Cl. F42b *25/14*
U.S. Cl. 102—6 **5 Claims**



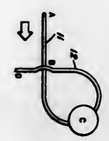
Firebomb igniter devices designed to spread hundreds of burning particles over wide areas are constructed from a stack of ring-shaped wafers encased in a canister surrounding an explosive fuse unit. The wafers are compression molded powder mixtures of combustible metal and fluoroalkylene polymer, e.g., magnesium metal and polytetrafluoroethylene compacted to about 70 to 95 percent of ultimate density. Upon detonation of the igniter device, the wafers break into hundreds of small particles that disseminate to distances of 100 feet or more and burn for several seconds providing ignition points for areas of fuel concentration within a firebomb pattern.

3,669,021

MILD DETONATING FUSE LOGIC COMPONENTS

John H. Spencer, Fredericksburg; Richard T. Ramsey, Dahlgren, and Warren L. Gilbertson, Fredericksburg, all of Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 27, 1969, Ser. No. 854,812
Int. Cl. F42c *15/00;* **F42d** *1/04*
U.S. Cl. 102—22 **15 Claims**



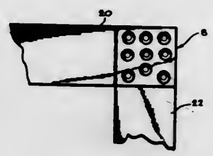
Mild detonating fuse is used to construct explosive circuit elements. Specifically, a non-destructive explosive crossover, two explosive diodes, an explosive gate, an explosive switch, and two explosive Y junctions are disclosed.

3,669,022

THIN FILM DEVICE

Carl James Dahn, Evanston, and Anthony P. Van Den Heuvel, Homewood, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 5, 1970, Ser. No. 61,266
Int. Cl. F42b *3/12*
U.S. Cl. 102—28 EB **5 Claims**



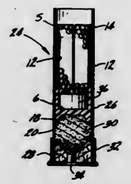
A thin film device which may be used as a fuze or fuse. The device comprises a pair of conductive layers separated and joined to opposite faces of a thin insulating layer to thereby form a three layer sandwich. One of the conductive layers and the insulating layer have a plurality of pin holes therein, the sides of each being coated by a bridge element of low density, low specific heat metal so as to short circuit or bridge the conductive layers. Terminal means are connected respectively to the conductive layers to supply electrical energy which passes from one conductive layer to the other conductive layer via the metal bridge elements. When the electrical energy exceeds a predetermined amount, the bridge elements vaporize. The vaporization of the bridge elements can be employed to initiate detonation of an explosive train thereby serving as a fuze. Alternatively, the device may be employed as an electrical fuse wherein the vaporization of the bridge elements caused by electrical energy interrupts the flow of electrical energy in an electrical circuit.

3,669,023

SHOT PROTECTOR

Vernon C. Moehlman, and Robert J. Klein, both of Florissant, Mo., assignors to Olin Mathieson Chemical Corporation

Filed July 1, 1969, Ser. No. 838,069
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C **8 Claims**



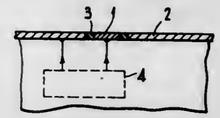
A one piece plastic shot protector for use with a shot shell, the shot protector having a lower or rearward gas obturating portion, and an upper or forward shot-receiving pocket. The shot pocket has a side wall including a plurality of adjacent petals of predetermined thickness, each of the petals being joined to the pedal next adjacent thereto by a thin web of plastic, and the terminal forward portion of each petal being outwardly flared. Wad retaining means may be included in the shot pocket.

3,669,024

SIGNAL GENERATING APPARATUS

Robin John Davies, Lenham, near Maidstone, and William Kenneth Capewell, Maidstone, both of England, assignors to Elliott Brothers (London) Limited, London, England

Filed Mar. 11, 1970, Ser. No. 18,518
Int. Cl. F42b *5/08*
U.S. Cl. 102—70.2 R **4 Claims**



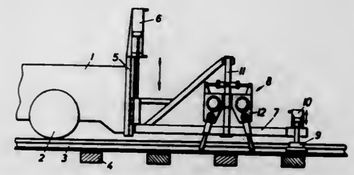
A missile fuze arrangement in which a change in capacitive coupling between two mutually insulated conductive areas on the missile skin, arising from contact of one of those areas with a target body, results in a change in alternating current flow through that coupling from a generator to a load, the change in current flow providing an output signal to detonate the warhead of the missile.

3,669,025

TAMPER UNIT FOR MOBILE TRACK TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3 A-1010, Vienna, Austria

Filed July 17, 1970, Ser. No. 55,786
Claims priority, application Austria, Aug. 8, 1969, A 7689/69
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **12 Claims**



A structural tamper unit is vertically movably mounted on a mobile track tamping machine. The tamping tool carrier is pivotal in a plane parallel to the track, and a hydraulically operated drive means for vibrating the tamping tool carrier is mounted directly on the carrier.

3,669,026

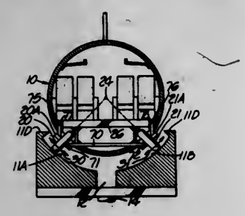
TRANSPORTATION SYSTEM

Gunnar Mouritzen, San Diego, Calif., assignor to Geoscience Limited

Continuation-in-part of application Ser. No. 717,610, Apr. 1, 1968, now abandoned. This application May 18, 1970, Ser. No. 37,978
Int. Cl. B61b *13/04*
U.S. Cl. 104—118 **7 Claims**

A transportation system uses a curved trackway in the nature of a trough and a special vehicle having wheels engaging the trough such that in making turns the wheels may move such that the center of gravity may be displaced to compensate for centrifugal forces. Aerodynamic wings may be on the

vehicle to develop lift forces and take weight off the wheels and the vehicle may be contoured to the shape of the trough



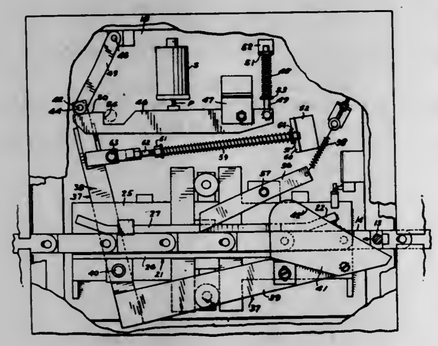
to provide an air cushion between the vehicle and track at high speeds. The wheels may be extended so that the vehicle may also travel over level terrain.

3,669,027

TOW TRUCK CONVEYOR SYSTEM

Robert Haase, Troy, and Karl R. M. Karlstrom, Roseville, both of Mich., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed Jan. 23, 1970, Ser. No. 5,234
Int. Cl. B65g 17/42
U.S. Cl. 104—172 BT 18 Claims



A low truck conveyor system comprising a plurality of tow trucks movable along a floor having a slot therein. A conveyor is driven within the floor beneath the slot and has driving means thereon for engaging a tow pin on the tow truck to move the tow truck along. A track is provided for the conveyor and a portion of the track is adapted to be moved laterally to cause the tow pin to engage a cam portion for camming the tow pin upwardly and out of engagement with the driving means on the conveyor.

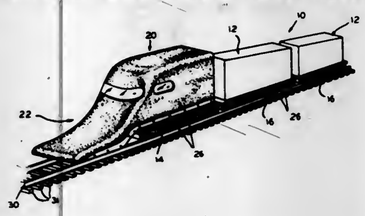
3,669,028

RAILWAY TRAIN FLUID SUSPENSION

Ivan L. Joy, 1616 West 29th Street, Topeka, Kans.

Original application Feb. 19, 1969, Ser. No. 800,498, now Patent No. 3,557,707. Divided and this application June 3, 1970, Ser. No. 54,032
Int. Cl. B61f 1/02, 3/16, 5/10
U.S. Cl. 105—157 R 4 Claims

The disclosure relates to a high speed one car railroad vehicle that can be 500 to 2,000 feet long and is in the form of a millepede like running gear with multiple sets of closely spaced wheels and carrying load support platforms or decks for freight or the like, in which the running gear extends the length of the train and comprises a continuous center sill structure that is sufficiently flexible horizontally to accommodate curves and includes closely spaced wheel modules, each of which is provided with a pair of small diameter wheels that ride on the respective track rails, with the wheel modules being spaced so that the wheels are disposed every four feet on either side of the train. The center sill structure is suspended from the wheels by individual knee action suspensions connecting the wheels to the center sill structure, and where the vehicle is self-propelled, each wheel is individually driven by its own motor, with 100 per cent dynamic braking being employed. The wheel modules also each include a cross bearer or beam plate member that overlies the wheels thereof, on which members rest the train load support



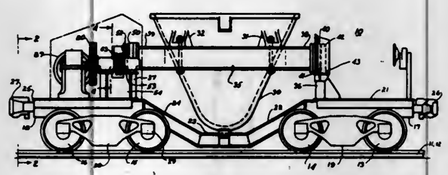
decks that are in the form of freight container receiving deck plates. The deck plates are sprung on the wheels underlying the same by employing an elongate fluid tube spring on either side of the center sill for each deck plate. The respective fluid tube springs extend the length of the respective deck plates, and each deck plate is supported only by its underlying fluid tube springs, which are interposed between the respective wheel suspensions and the cross bearers. The individual decks are pivotally connected to the center sill adjacent either end of same and rest of rollers mounted on the respective cross bearers that are oriented so that the center sill may readily shift laterally of the respective decks as required to smoothly round curves in the track.

3,669,029

ROTATABLE HOT METAL DISCHARGING CAR

Norman Lesk, Mamaroneck, and Mitchel Kleinman, Brooklyn, both of N.Y., assignors to Treadwell Corporation, New York, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,894
Int. Cl. B61d 3/16, 5/04, 9/02
U.S. Cl. 105—265 4 Claims



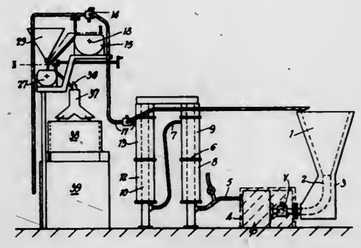
A novel form of dumping mechanism for dumping vessel cars used to convey molten metals, which comprises a ladle, a bale, and a frame for supporting said ladle and bale in position for pouring the metal, the frame constituting a body of a railroad car mounted on standard trucks, and means for dumping the contents of the ladle comprising a rack, wheel, and pinion structure engaging the bale at either end thereof, and a drive mechanism for the bale consisting of a continuous pull chain connected to a collar at one end of the bale, said pull chain being engaged by sprockets driven by a motor so that by electrically driving the same, the bale can be moved in engagement with the rack and tilted.

3,669,030

MANUFACTURE OF TOFFEE AND SIMILAR PRODUCTS

Peter Donald Waters, Hayes, England, assignor to Callard & Bowser Limited, London, England

Filed Mar. 17, 1970, Ser. No. 20,333
Claims priority, application Great Britain, Mar. 20, 1969, 14,695/69
Int. Cl. A21d 8/00; A23p 1/00
U.S. Cl. 99—138 17 Claims



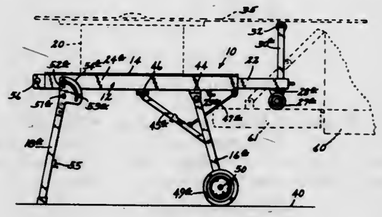
A continuous process for manufacturing toffee is provided in which all the various stages of the traditional batch process of toffee-making are reproduced. An effective agitation of the sugar mixture in the second or cooking stage of the process is achieved by stirring the mixture and scraping it from the inner surfaces of the container using a stirrer-scraper which has no central axial shaft. Preferably the stirrer-scraper effects a major agitation of the sugar mixture in the cooking stage of the process by the provision of adjacent sections of helical blades, there being in each section an inner and an outer helical blade which are arranged to impart movement to the sugar mixture in opposite directions within each section.

3,669,031

PORTABLE COLLAPSIBLE WORK TABLE

Willie E. Cole, Ryder, N. Dak.

Filed Aug. 12, 1970, Ser. No. 63,103
Int. Cl. A47b 31/04
U.S. Cl. 108—50 7 Claims



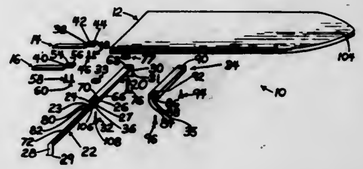
A work table for carrying tools thereon (e.g. a power saw) which is rollably transportable between different locations and collapsible in a manner which facilitates loading of the work table onto the the bed of a truck. The legs of the work table are pivotally attached thereto and moveable between an upright position and a collapsed horizontal position generally beneath the horizontal top surface of the work table. A first pair of casters are attached to the front legs of the table and a second pair of casters are attached to a frame extension member which is movable between a coplanar position substantially beneath the top surface and a position extending horizontally outward from an end thereof; the first and second pairs of casters being generally coplanar when the work table is in its collapsed position so as to allow rollable movement of the carrier on the first and second pairs of casters.

3,669,032

LEGLESS IRONING BOARD

Leoda J. Gooderum, 627 Charles Street, La Crosse, Wis.

Filed Feb. 24, 1970, Ser. No. 13,426
Int. Cl. A47b 57/00
U.S. Cl. 108—97 5 Claims



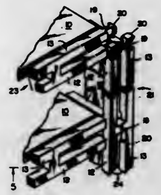
An ironing board for pressing garments. A legless device with fastening elements to provide mounting of the ironing board atop a drawer or atop a bread board of a cabinet.

3,669,033

MODULAR SHELVING AND FURNITURE

Alfonso Murcia, 160-12 Highland Avenue, New York, N.Y.

Filed May 7, 1970, Ser. No. 35,332
Int. Cl. A47b 3/00
U.S. Cl. 108—111 5 Claims



The invention is directed to a modular type of construction for expansible tables and shelving, the construction being formed solely from a plurality of identical units wherein each of said units may be easily, quickly and individually engaged and removed for attaining and altering the surface capacity of said tables and shelving.

3,669,034

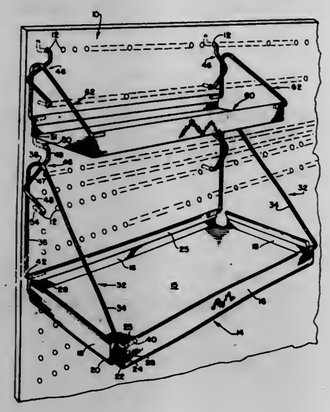
SHELF DETACHABLY SECURED TO AN APERTURED BOARD TO FORM A DISPLAY UNIT

Howard J. Marschak, 865 W. North Avenue, Evanston, Ill.

Filed Apr. 23, 1970, Ser. No. 31,146
Int. Cl. A47b 5/00
U.S. Cl. 108—152 3 Claims

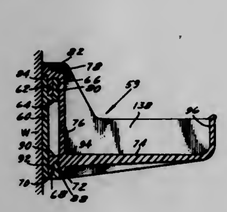
A shelf or tray detachably secured to a conventional apertured board, such as a pegboard, to form a display unit. The shelf or tray is secured by means of a pair of wire brackets having hooking segments or hooking members, which

brackets are detachably secured to the shelf or tray and the hooking segments are detachably peg-hooked into the



openings in the apertured board so as to engage the apertured board to prevent lateral movement and sway of the brackets and also prevent inadvertent disassembly.

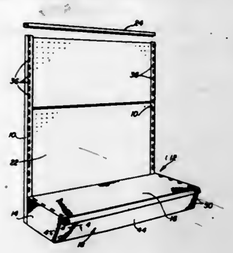
3,669,035
EXTRUDED SHELVING AND EXTRUDED SUPPORT MEANS THEREFOR
Milton J. Grossman, 10296 South Mina Avenue, Whittier, Calif.
Filed Dec. 15, 1969, Ser. No. 887,265
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **5 Claims**



Integral, extruded shelf structures, and integral, extruded supporting means or rails therefor, the shelf structure having a horizontal article supporting shelf or shelf part, a longitudinally extending brace or brace means, and at least one depending, longitudinally extending flange at the rear thereof. The rail is adapted to be attached to a wall or other support, and said rail has an upwardly opening longitudinally extending groove for removable reception of the flange of the shelf structure.

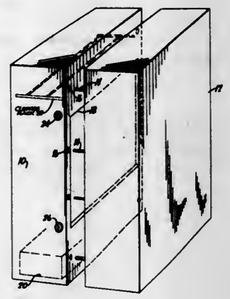
3,669,036
BASE FOR A DISPLAY RACK
Howard J. Marschak, 865 W. North Avenue, Evanston, Ill.
Filed Sept. 9, 1970, Ser. No. 70,799
Int. Cl. A47b *3/06*
U.S. Cl. 108—153 **6 Claims**

A base for a display rack which may be shipped disassembled and may be readily assembled and interlocked without the use of any tools, bolts, nuts or extraneous fastening elements. Said base comprises spaced side members and a front kick-plate having means for self-interlocking with said side members, and a base shelf for self-interlocking with said side



members. The rear of each side member is interlocked with spaced upright members, which uprights have means for supporting the rear of the base shelf.

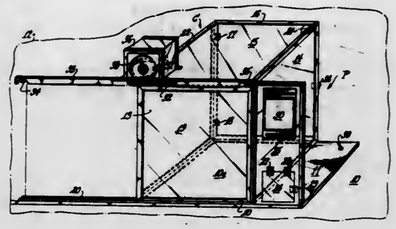
3,669,037
PROPERTY SAFE
Joseph Rossel, 253 - 10th Avenue, New York, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,274
Int. Cl. E05g *1/00*; A47b *45/00*
U.S. Cl. 109—49 **2 Claims**



A safe disassembled into two sections is moved into desired location and the sections are bolted together, forming a composite structure which is larger than any door and cannot be carried out without being disassembled first.

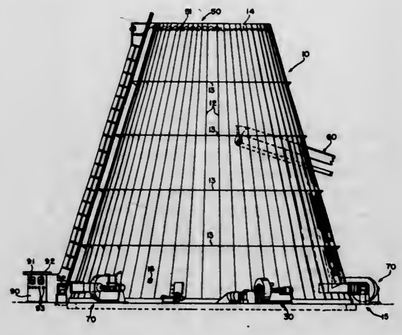
3,669,038
ORDER TRANSFER ASSEMBLY FOR PREVENTING HOLDUPS
Frank G. Watson, 1708 North Grandee Avenue, Compton, Calif.
Filed Aug. 11, 1969, Ser. No. 849,091
Int. Cl. E06b *7/00*
U.S. Cl. 109—12 **1 Claim**

A transparent, order delivery chamber disposed at counter height, between customer and attendant, with a door adjacent each of them. The customer's door is opened by the attendant, by remote operation of a reversible electric motor, only after he has placed the requested order in the chamber from his side and secured his door. An adjacent passage allows prior payment and change making. Thus a pane of bul-



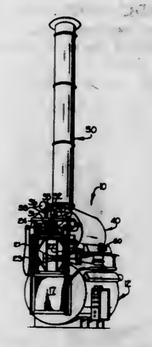
letproof glass is always interposed between the attendant and a "customer" who might threaten him with a gun or other weapon.

3,669,039
REFUSE BURNER FOR WOOD WASTE, BARK RESIDUES, AND OTHER COMBUSTIBLE SOLIDS
Marvin J. Leman, Shelton, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Aug. 27, 1970, Ser. No. 67,522
Int. Cl. F23g *7/02*
U.S. Cl. 110—7 A **9 Claims**



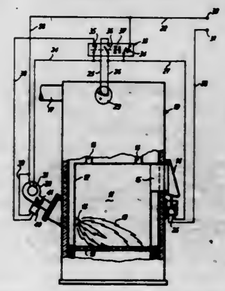
A conical or cylindrical burner for burning wood wastes, bark residues and other combustible solid wastes is disclosed which includes an insulating lining such as a refractory material applied over the inner surface of the shell of the burner to retard heat loss. The insulating liner may be applied in situ after erection of the burner shell. Rows of concentrically arranged grates provide means for delivering primary combustion air to the burning zone. The overfire and recirculation air system includes means to supply ambient and/or hot recirculating gases in a predetermined ratio to keep the burner temperature within a predetermined range. A temperature sensing means located near the exhaust opening at the top of the burner is operatively connected to a controller which automatically adjusts interconnected dampers in the ambient air and hot recirculating gas inlets of the overfire and recirculation air system to a ratio of ambient air to recirculated hot gases to maintain the burner temperature essentially constant even with variable fuel feed to the burner. The refuse burner is capable of combusting wood and bark residues efficiently with significantly reduced visible smoke and particulate matter.

3,669,040
ACCESS DOOR CONTROL APPARATUS FOR CONTROLLED EMISSION INCINERATOR
Richard F. Clements, Charlotte, N.C., assignor to Environmental Control Products, Inc., Charlotte, N.C.
Filed Jan. 25, 1971, Ser. No. 109,387
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **7 Claims**



The improvement, in a controlled emission incinerator apparatus having a main combustion chamber including an access door mounted for movement between an open position for loading of material and a closed position for burning of the material loaded and an independent secondary combustion chamber for burning the products of incomplete combustion from the main combustion chamber, of apparatus for preventing undesirable emissions from the incinerator resulting if material for burning is loaded into the incinerator when the temperatures in both the combustion chambers are not in the desired range. The apparatus comprises devices independently responsive to temperatures within both combustion chambers for selectively allowing movement of the access door from the closed position to the open position only when desired temperature ranges are present in both the main and secondary combustion chambers.

3,669,041
DOUBLE COMBUSTION FIRING
Emil Schworer, Vilters, Switzerland, assignor to Apparatebau Aktiengesellschaft, Trubbach, St. G. in Trubbach, Switzerland
Filed June 1, 1970, Ser. No. 42,066
Claims priority, application Switzerland, May 29, 1969, 8114/69
Int. Cl. F23g *5/12*
U.S. Cl. 110—18 **5 Claims**



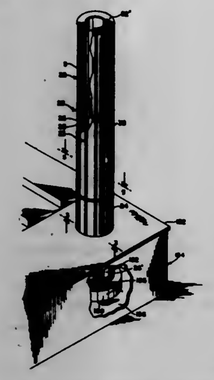
A double combustion firing for solid and gaseous liquid fuels having a single fire chamber with a burner nozzle

directed downwards toward a grate for the support of the solid fuels and having a feed opening for the solid fuels and means connected to the burner for switching on and off from a control circuit operable by the door in the chamber with a control circuit for the burner connected so that when the door of the fire chamber is open the burner will be shut off.

3,669,042
SECTIONALIZED STACK WITH CIRCUMFERENTIAL AND RADIAL EXPANSION MEANS

Richard E. Lawrence, deceased, late of 22 Glenwood Road, Roslyn, N.Y. (Eileen Lawrence, executrix) 22 Glenwood Road, Roslyn, N.Y. 11576

Filed Apr. 10, 1970, Ser. No. 27,355
Int. Cl. F23j *11/00*
U.S. Cl. 110—184 **8 Claims**

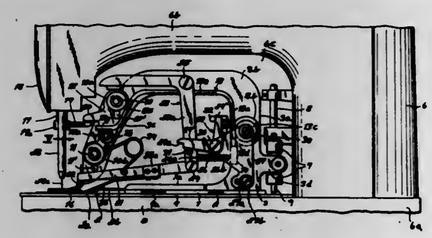


A smokestack has axially aligned tubular sections. Each section has concentric inner and outer walls. Accordion-like circumferential flanges on the inner wall of each section permit relative axial expansion and contraction of the walls. Other accordion-like circumferential flanges between the inner and outer walls permit relative radial and circumferential expansion and contraction of the walls. Dynamic vibration absorbers are provided at the base of the smokestack. The sections are reinforced by flexible internal braces located in the air space between the inner and outer walls, and secured to the circumferential flanges.

3,669,043
SEWING MACHINE FOR THE FORMATION OF A RECTANGULAR STITCH PATTERN

Karl Nicolay, Bielefeld, Germany

Filed Nov. 4, 1970, Ser. No. 86,836
Claims priority, application Germany, Nov. 6, 1969, P 19 55 796.1
Int. Cl. D05b *3/12*
U.S. Cl. 112—76 **10 Claims**

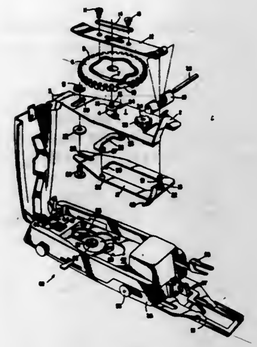


A sewing machine for the formation of an endless stitch pattern has a two-part clamping frame including an outer main frame and an inner clamp member along the closing side of the pattern. Means are provided for horizontally displacing the auxiliary clamp member to clear the stitching line upon closure of the pattern.

3,669,044
MONOGRAMMING INSERT FOR BUTTONHOLE ATTACHMENT

Kenneth D. Adams, Madison, and Charles R. Odermann, Montville, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,801
Int. Cl. D05b *3/24*
U.S. Cl. 112—77 **6 Claims**



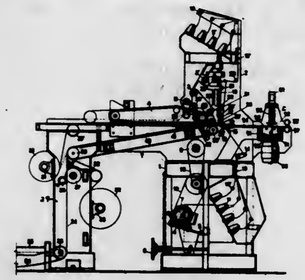
A device adapted for insertion into an existing buttonhole attachment unit, having a feed blade and utilizing a gear driven template for making the buttonhole, which will permit the making of monograms and other designs on shirts, handkerchiefs and the like when the unit is mounted in a sewing machine with the insert installed in place of the gear driven template. The monogramming insert includes a platform mounting the monogrammer cam containing the X and Y tracks, and a drive train coupling the cam to the actuating pinion of the buttonhole attachment. An integrator plate to which the monogrammer cam follower motions are transferred couples to integrated motions to the feed blade of the buttonhole attachment, thereby causing motion of the work engaging foot of the attachment as required for the making of the monogram or the design.

3,669,045
MULTINEEDLE QUILTING MACHINE FOR THE MANUFACTURE OF PADDED UPHOLSTERY

Giannino Landoni, 133 Via Verdi, 21012 Cassano Magnago, Italy

Filed July 16, 1970, Ser. No. 55,381
Claims priority, application Italy, July 19, 1969, 19857 A/69
Int. Cl. D05b *11/00, 35/00*
U.S. Cl. 112—118 **7 Claims**

A multineedle quilting machine for manufacturing continuously and automatically a quilted article consisting of an outer cover material, parallel and spaced apart strips of an elastic intermediate padding, and a foundation material. In this machine the padding material, continuously supplied by a feeding roll is cut by means of circular blades into longitudinal strips which are caused subsequently to meet with the foundation material. Then said strips, which are spaced apart a predetermined distance, are covered by the cover material

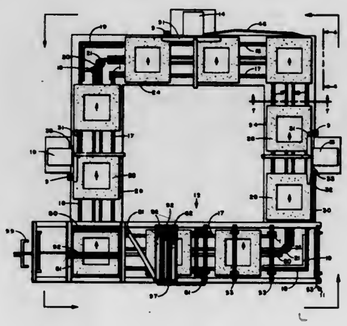


which adapts to the form of the padding, and the assembly is quilted by the needles of the machine in the spaces between one padding strip and the next.

3,669,046
OVEREDGING APPARATUS

Donald W. Fowler, Decatur, Ga., assignor to Textiles, Inc., Newark, N.J.

Filed July 17, 1970, Ser. No. 66,158
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **2 Claims**



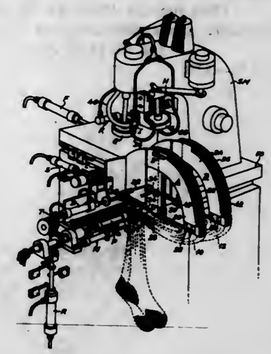
An overedging apparatus in which a fabric article having a plurality of sides is transported on a carrier over a course having a plurality of sides; the carrier successively presents each side of the article to a different sewing machine on each course, which sewing machine applies a finished, unravelable edge to each ravelable edge of the article; the carrier changes courses without reorientation.

3,669,047
APPARATUS FOR MANUFACTURING PANTS AND TIGHTS

Arne Marius Hedegaard, Hvidoyre, Denmark, assignor to Rothenborg Specialmaskinær for Sy-Industrien A/S

Filed Nov. 12, 1969, Ser. No. 875,628
Claims priority, application Great Britain, Nov. 12, 1968, 53,717/68
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **23 Claims**

The present invention relates to a method and apparatus for making pantie hoses or tights, which comprises taking two stocking - like articles, drawing the open ends of these articles onto two substantially parallel template devices each support device comprising two leaves, slitting each article lengthwise along an edge of its support device, moving the

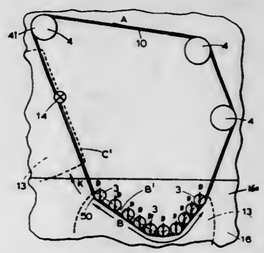


outer leaf of each support device into substantial alignment with its other leaf and thereby bringing together the edges of the two leaves of each device, and joining the cut edges of the two articles by a joint extending along the aligned edges of the leaves.

3,669,048
DEVICE FOR, AND METHOD OF, FEEDING LIMP WORKPIECES TO AN APPARATUS

Geoffrey Bernard Dunn, Tatsfield, near Westerham, and Leonard Ernest York, Hurst Green, Oxted, both of England, assignors to Sira Institute, Chislehurst, Kent, England

Filed Aug. 17, 1970, Ser. No. 64,346
Claims priority, application Great Britain, Aug. 18, 1969, 41,148/69
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.26 **20 Claims**



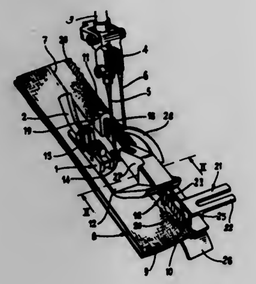
A device for feeding limp workpieces, especially textile piece parts to a processing apparatus and utilizing a flexible belt member entrained around rollers and disposed over a table. The belt member has a working surface facing the table which can adhere to a portion of a workpiece near an outer edge thereof to convey the latter to the operating zone of the apparatus when the belt member is driven around the rollers. Some of the rollers are bodily movable to cause the belt member to conform to the shape of the outer edge of the workpiece which can be straightened as the belt member circulates over the rollers. Puckers can be removed from the workpiece, or gathers produced in the workpiece, by controlling the tension in a part of the belt member.

3,669,049

PRESSER FOOT DEFLECTER OF A FABRIC EDGE IN A SEWING MACHINE

Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed June 22, 1970, Ser. No. 48,308
Claims priority, application Italy, July 29, 1969, 20219 A/69
Int. Cl. D05b *29/06*
U.S. Cl. 112—150 5 Claims



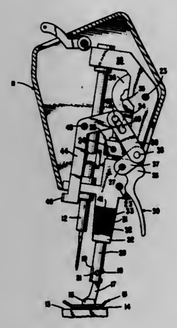
A presser foot deflector is provided for use with a two needle sewing machine to permit simultaneous assembly and serge stitching at the edges of a pair of fabrics to be seamed. The deflector includes a longitudinal guide channel located between a needle hole through which a first needle is moved to perform the assembly stitching and an opening through which a second needle is moved to perform the serge stitching. The guide channel receives the edge of the upper fabric and deflects the fabric edge upward to guide the edge between the needles to permit the second needle to apply serge stitching to the edge of the lower fabric and the first needle to simultaneously apply assembly stitching to the upper and lower fabrics to form a seam.

3,669,050

PUSH BUTTON PRESSER BAR RELEASE

Kenneth D. Adams, Madison, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 25, 1971, Ser. No. 147,100
Int. Cl. D05b *29/00*
U.S. Cl. 112—237 6 Claims



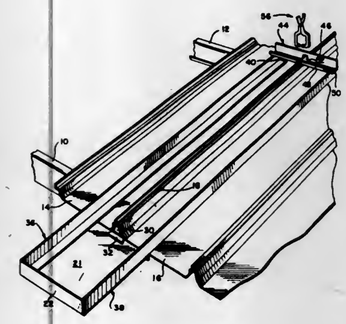
A linkage arrangement operating on the presser bar assembly to facilitate the release and controlled descent of the presser foot, or the limited ascent of the presser foot upon the operator's depressing a lever readily accessible from the front of the sewing machine and immediately adjacent to the sewing area.

3,669,051

STARTING PLATFORM FOR A ROOF SEAMING MACHINE

Maurice A. Conway, Grandview, Mo.; Carl C. Perkins, Jr., Prairie Village, Kans., and Norman A. Bellem, Kansas City, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed May 12, 1970, Ser. No. 36,588
Int. Cl. B21d *39/00*
U.S. Cl. 113—54 17 Claims



The platform includes a machine support portion connected with a pair of spaced parallel side portions having a clamping end portion secured to the opposite ends thereof and in spanning relationship thereto. Means is provided for clamping the clamping end portion to an associated roof. The clamp means may take the form of a separate pair of locking pliers. The clamp means may also take the form of a cam operated clamp means for clamping the roof panels between a movable clamp member and a portion of a saddle block which supports the movable clamp portion. Operating means is provided for operating the clamp means in this latter arrangement.

ERRATUM

For Class 113—119 see:
Patent No. 3,669,054

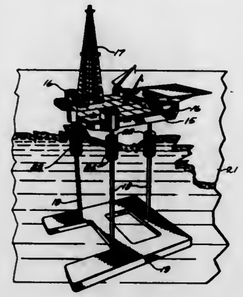
3,669,052

METHOD AND APPARATUS FOR PREVENTING ICE DAMAGE TO MARINE STRUCTURES

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corp., Pasadena, Calif.

Filed June 15, 1970, Ser. No. 46,273
Int. Cl. B63b *35/08*
U.S. Cl. 114—0.5 R 13 Claims

A marine well drilling platform or the like having legs extending to the sea floor is protected from ice floes by comminuting devices at the water line for breaking the ice and thereby preventing crushing or overturning of the platform. The comminuting devices employ high velocity impacts against the ice to cause its fracture into chips as distinguished from cutting action. Rapidly rotating or reciprocating mechanisms with large "teeth" for making impact engagement with the ice are employed in separate embodiments. Comminuting devices mounted for sweeping adjacent a



mooring buoy in one embodiment open a path through an ice floe for protecting the buoy and a ship moored at the buoy.

3,669,053

STEERING SYSTEMS ESPECIALLY FOR WATER CRAFTS

Hugh E. Sorenson, 3818-A North 37th Street, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 58,300, July 27, 1970. This application Dec. 28, 1970, Ser. No. 101,616
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H 5 Claims

A water vehicle has a hull which normally rests in the water. When the vehicle comes up to high speed, it is supported at each of its four corners by any suitable means, such as hydrofoils, pontoons, or the like. A tongue is individually associated with each of the rigid interconnections and the tongues are pivotally interconnected to simultaneously turn both the front and back supports. The hydrofoils or pontoons are tipped to act as underwater ailerons to assist in banking and turning.

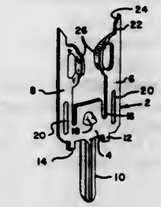
3,669,054

METHOD OF MANUFACTURING ELECTRICAL TERMINALS

Thomas Dean Desso, Middletown, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of application Ser. No. 716,491, Mar. 27, 1968, now Patent No. 3,503,036. This application Mar. 23, 1970, Ser. No. 21,566
Int. Cl. H02g *15/00*
U.S. Cl. 113—119 2 Claims

Electrical terminals are manufactured by stamping, from sheet metal stock, a blank for the terminal, forming a hole in the blank which is spaced from an edge of the blank, and driving a punch through the hole in a manner such that the surface portions of the blank which separate the hole from the edge are reoriented so that they extend transversely of



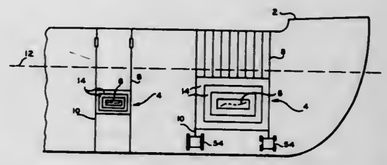
the plane of the blank. These surface portions are utilized as the contact surfaces of the terminal and are substantially greater than the surface area available for contact purposes on the edge of the blank.

3,669,055

APPARATUS AND METHOD FOR SEALING A VESSEL OPENING

Walter F. Buce, 1206 May Lane, Bartlesville, Okla.

Filed Nov. 15, 1971, Ser. No. 198,703
Int. Cl. B63b *43/16*
U.S. Cl. 114—229 12 Claims



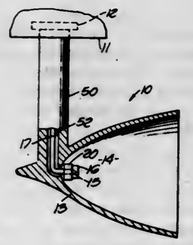
A sealing element having a plurality of concentrically positioned inflatable conduits spaced from one another by intervening passageways formed by an outer cover has means for passing fluids into the conduits and passageways and for positioning and maintaining the element in sealing engagement over an opening in a vessel.

3,669,056

ARC PLASMA PROPULSION SYSTEM

Mihai Wurmbrand, 1431 South Adams, Glendale, Calif., and John L. Doane, 60 Wadsworth Street, Apt. 17D, Cambridge, Mass.

Filed Sept. 18, 1969, Ser. No. 859,036
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R 7 Claims



An arc plasma propulsion system for propelling a buoyant structure through liquid utilizing a directed liquid stream

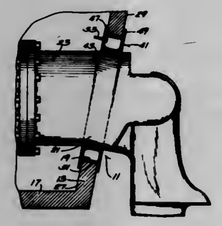
created by a continuing or a pulsing electric arc in a semi-confined body of liquid. The resulting accelerated liquid stream is directed rearwardly through a divergent passage and is effective to propel the structure forwardly as well as in a changing course by pivoting the propulsion device in an appropriate direction.

3,669,057

INFLATABLE TRANSOM SEALING ARRANGEMENT

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 17, 1970, Ser. No. 55,665
Int. Cl. B63h *5/06*
U.S. Cl. 115—34 R 2 Claims



Disclosed herein is a boat hull with a transom having therein an aperture, together with a stern drive unit mounted on the boat hull and having a part extending through the transom aperture, and a seal extending between the transom and the part and comprising a member which is inflated so as to sealingly circumferentially engage both the part and the transom to prevent passage of water through the aperture and around the part into the hull.

Also disclosed herein is a method of sealing the transom of a boat having a stern drive unit extending through an opening in the transom and including the steps of placing an inflatable member around the circumference of the opening, inserting the stern drive unit part through an opening in the inflatable member, and inflating the member to sealingly engage the member with both the stern drive unit part and the boat transom. Alternatively, the inflatable member can be placed on the stern drive unit part and then the assembly of the stern drive unit and the inflatable member can be properly located in the transom opening prior to inflation.

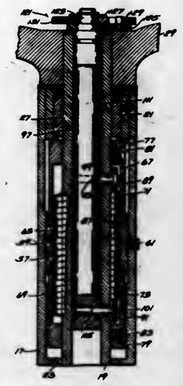
3,669,058

NO BACK STEERING FOR AN OUTBOARD MOTOR

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 17, 1970, Ser. No. 55,780
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 R 3 Claims

Disclosed herein is an outboard motor having releasable means in the form of a wrap spring engaged between a king pin and a swivel bracket for preventing relative pivotal movement between the king pin and the swivel bracket. Also disclosed herein are means for releasing the wrap spring including a shaft which is pivotally carried by the king pin co-axially therewith and has means for disengaging locking engagement of the wrap spring between the king pin and the swivel bracket. Also disclosed herein are means connecting and releasing means to the king pin to effect steering movement of the outboard motor after release of the releasable means



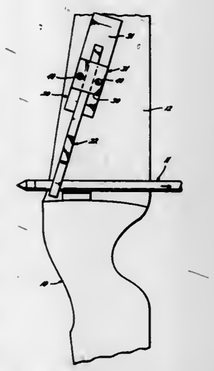
in response to the application of a steering force to said releasing means.

3,669,059

CLACKER FOR ATTACHMENT TO ARCHERY BOW

Frank T. Stuart, 2021 Lynnhaven Road, Fort Worth, Tex.

Filed Jan. 2, 1971, Ser. No. 108,111
Int. Cl. F41b *5/00*
U.S. Cl. 116—67 R 2 Claims



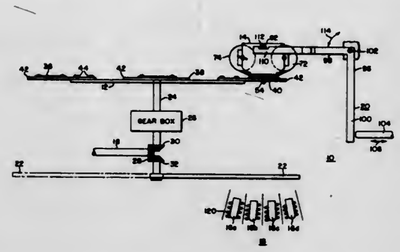
A clacker adapted for attachment to an archery bow. The clacker includes two metal strips of anodized aluminum, a spring element that is sandwiched between the metal strips, and an adhesive member that is used to attach the above members to an archery bow. The spring element is biased outwardly from a bow by an arrow during the drawing of a bow string. When the spring element moves out of engagement with an arrow, the spring element will slap the bow and the noise produced indicates to the user that the arrow has been drawn the proper distance.

3,669,060

MASK CHANGING MECHANISM FOR USE IN THE EVAPORATION OF THIN FILM DEVICES

Derrick J. Page, Export, and Paul O. Raygor, Irwin, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1970, Ser. No. 75,217
Int. Cl. C23c *13/12*
U.S. Cl. 118—7 15 Claims



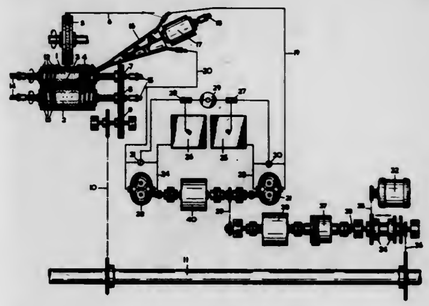
Apparatus for changing a mask used in the evaporation of thin film electronic components formed on flexible substrates by vapor deposition techniques, whereby a number of masks are successively brought into registration with a substrate for sequentially depositing a series of thin films of selected materials including semiconducting, insulating, or conducting materials through the mask onto the substrate. The apparatus is particularly concerned with alignment pins for enabling registration of successive patterns to be vacuum evaporated successively onto one area of a flexible substrate tape with an accuracy of $\pm 1\mu$. The area of the substrate tape may be changed and the process repeated time after time without opening the vacuum system.

3,669,061

APPARATUS FOR APPLYING REACTIVE ADHESIVE

Reindert Zuideveld, Farnham, England, assignor to Van Leer (U.K.) Limited, London, England

Filed Apr. 2, 1969, Ser. No. 812,594
Claims priority, application Great Britain, Apr. 2, 1968, 15,824/68
Int. Cl. B05c *1/08, 11/10*
U.S. Cl. 118—7 6 Claims



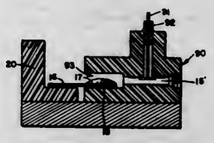
An apparatus is provided for applying a reactive-curing multiple-component adhesive to a rapidly moving web of non-porous material. The components are fed in a predetermined proportion to an application roller and an additional roller rotating at different circumferential velocities. The components are thereby intimately admixed under shear and kneading action, fresh adhesive is constantly mixed with older increments of adhesive, and cobwebbing of older increments of adhesive is thus reduced or eliminated. A stereotype, or rotogravure, roller transfers the adhesive from the application roller to the surface to be coated.

3,669,062

SLOT APPLICATOR MEANS

Milton Kallianides, 52 Gifford Street, Brockton, Mass., and Gerhart P. Klein, 49 Raymond Street, Manchester, Mass.

Continuation of application Ser. No. 701,488, Jan. 29, 1968, now abandoned. This application Nov. 30, 1970, Ser. No. 93,869
Int. Cl. B05c *3/10*; G01r *27/02*
U.S. Cl. 118—9 7 Claims



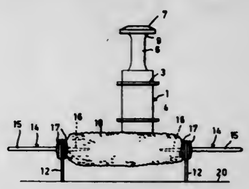
The combination of a reservoir containing a fluid and applicator means for applying the fluid to means carrying a plurality of pellets to be used as capacitors. The applicator means includes upper and lower walls connected by a rear wall so as to form a slot having a determined length and width. A channel is formed in one of the walls so as to couple the slot to the fluid containing reservoir allowing fluid to flow to the slot in a controlled manner. The applicator means applies determined amounts of the fluid to the means carrying said pellets and the pellets passing therethrough. An additional slot means, including electrolyte feed means thereto and an electrical sensing probe therein, receives the carrier and treated article for testing.

3,669,063

BUTTER SPREADER AND SUPPORT FOR EARS OF COOKED CORN

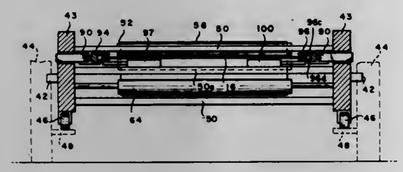
Manuel Daniluke, 434 Vienna Street, San Francisco, Calif.

Filed Apr. 5, 1971, Ser. No. 131,348
Int. Cl. B05c *11/00*
U.S. Cl. 118—13 6 Claims



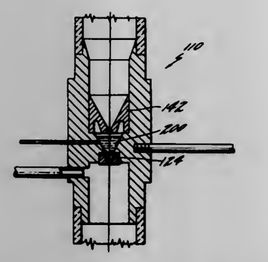
A tube open at one end for receiving compacted butter and a manually actuatable plunger reciprocable within the tube for dispensing butter from said one end directly onto an ear of cooked corn upon moving the plunger toward said one end when said open end is adjacent to the ear and is moved longitudinally of the latter, said tube including finger-engageable means for holding the tube and for actuating the plunger, and for supporting the tube on its side when not in use, the plunger being a unit readily separable from a unitary tube leaving a through, substantially uniform, diameter open-ended bore to facilitate cleaning. A holder is provided for supporting the ear to be buttered on, but spaced above, a horizontal surface and for rotating the ear when so supported, and for manually holding the ear after buttering, for eating the corn.

3,669,064
APPARATUS FOR IMPREGNATING CORRUGATED CARDBOARD
Walther J. Hoelzinger; Johann Wenninger; Walter Mayer; Karl Zoegernitz; Hermann Schroetter, and Werner Braun, all of Vienna, Austria, assignors to Boise Cascade Corporation, Boise, Idaho
Filed Feb. 9, 1970, Ser. No. 9,581
Int. Cl. B05b 15/04; B31f 1/20
U.S. Cl. 118—39 21 Claims



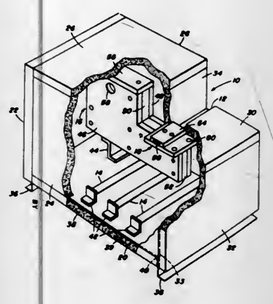
Apparatus for impregnating longitudinally travelling corrugated board having transversely extending flutes, including suction means arranged adjacent one longitudinal edge of the board for establishing a vacuum in the flutes to draw a material, such as an impregnant, therethrough. The invention is characterized by the provision of retaining means for preventing undesirable lateral displacement of the board in the direction of the suction means. In the preferred embodiment, the retaining means comprise longitudinally extending endless belt means responsive to the vacuum established in the flutes for clamping the moving board against lateral displacement without crushing the flutes or causing damage to the board. Preferably the endless belt means are provided with longitudinal ribs that extend within corresponding grooves in the rollers upon which the belts are mounted, thereby preventing lateral movement of the belt means—and the board—relative to the rollers. In accordance with an important feature of the invention, flow control means are provided for accurately controlling the speed and/or extent of longitudinal penetration of the material through the flutes.

3,669,065
REACTOR SEAL
Raymond C. Smart, Hazardville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 15, 1971, Ser. No. 124,390
Int. Cl. C23c 13/10
U.S. Cl. 118—48 3 Claims



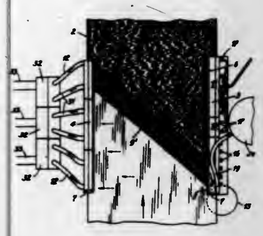
In apparatus wherein a moving wire is drawn through a reaction tube and a material is deposited thereon, a reactor seal is provided to isolate the reactant gases within the tube from the surrounding atmosphere. The reactor seal comprises a fitting having a generally vertically disposed passageway therethrough within which is disposed a pair of aligned orificed inserts through which the wire is drawn. A pool of liquid metal is supported on the lower insert at the orifice thereof by surface tension forces. Both inserts have downwardly converging inner walls leading to their orifice to facilitate threading.

3,669,066
ADHESIVE APPLICATOR
Carl E. Smith, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 2, 1971, Ser. No. 120,179
Int. Cl. B05c 3/12
U.S. Cl. 118—50.1 6 Claims



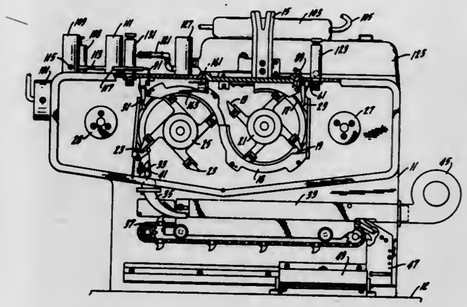
A gas-tight oven containing an adhesive well in external contact with tape to be coated and in internal communication with the oven atmosphere. Heating the oven reduces adhesive viscosity and increases pressure, forcing adhesive into contact with moving tape. Parts requiring frequent cleaning such as doctor blades, adhesive rollers or the like are eliminated. An alternative embodiment utilizes an external source of pressure.

3,669,067
APPARATUS FOR IMPREGNATING CORRUGATED CARDBOARD
Werner Achermann, and Franz Achermann, both of Zurich, Switzerland, assignors to Boise Cascade Corporation, Boise, Idaho
Filed Sept. 27, 1968, Ser. No. 763,268
Claims priority, application Switzerland, Sept. 29, 1967, 13688/67; Aug. 14, 1968, 12478/68; 12479/68
Int. Cl. B05c 7/02, 11/06
U.S. Cl. 118—50 13 Claims



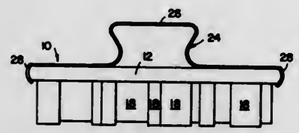
Apparatus for impregnating corrugated cardboard during the manufacturing process forming the said corrugated cardboard. A vacuum is formed within the corrugations of the cardboard and impregnating material is introduced into the corrugations under the influence of the said vacuum. The impregnating material is introduced under conditions which may be varied with respect to composition, temperature, viscosity and other variable process parameters. The apparatus of this invention includes a means for producing a suction on one edge of a corrugated cardboard while introducing impregnating material at the other edge of the corrugated cardboard as it passes through the impregnating apparatus.

3,669,068
MATRIX COATING APPARATUS
Norman C. Geltz, 2178 Pratt Avenue, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 866,598, Oct. 15, 1969, now abandoned. This application May 25, 1970, Ser. No. 40,945
Int. Cl. B05c 1/02, 1/16
U.S. Cl. 118—64 8 Claims



A matrix coating machine in which the matrices are moved by first and second conveyor wheels consecutively through a first and second portion of an arcuate track. In the preferred embodiment of the invention, applicators apply coating solution to defined areas on the sides of the matrices. The coating solution is supplied to the applicators on a demand basis as determined by movement of the matrices along the arcuate path. In another embodiment of the invention, the entire matrix is coated by movement through a tank located along one portion of the arcuate path.

3,669,069
SURFACE TEXTURIZER
Cedric D. Bourboulis, 1425 Tichenor Court, Lafayette, Calif.
Filed Aug. 31, 1970, Ser. No. 68,291
Int. Cl. B44d 3/34
U.S. Cl. 118—102 4 Claims



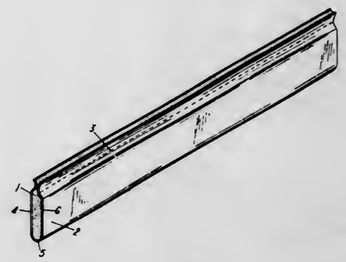
A device for texturizing painted surfaces in which a plurality of tapered S-shaped resilient petals or flaps depend from a formable backing member. The petals or flaps are of nonuniform length. The device has a removable handle for ease in applying it to wall and ceiling surfaces.

3,669,070
DISPENSING DEVICE FOR DRY WALL TAPE AND JOINT CEMENT
Forrest E. Wallace, P.O. Box 24, Vacaville, Calif.
Filed Sept. 28, 1970, Ser. No. 75,818
Int. Cl. B05c 11/04
U.S. Cl. 118—102 8 Claims



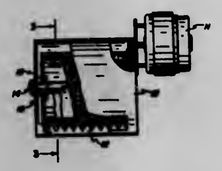
A portable tape dispenser for dispensing dry wall tape comprises a hopper for containing a supply of dry wall joint cement in fluid form and means serving to support the hopper from the waist of a workman in a manner freeing both of his hands. A roll of dry wall joint tape is carried and supported for rotation from the hopper whereby guide means lead the tape from its roll into and out of the supply of joint cement. A dispensing slot is formed between a stationary knife edge member and a movable knife edge member spaced therefrom to receive the tape therebetween. The two knife edge members serve to remove cement from opposite sides of the tape. However, the spacing between the edges serves to permit one of the two edges to leave a coating of cement of predetermined thickness when the tape is withdrawn across the other knife edge member. A comb element is disposed in conjunction with one of the knife edge members so that the coating of cement applied to the tape will extend in spaced longitudinal lines. A trowel cleaning chute extends along the outer edge of the hopper.

3,669,071
LIQUID APPLYING MEMBER
Albert George Ronald Gates, London, England, assignor to Gestetner Limited, London, England
Filed May 22, 1970, Ser. No. 39,879
Claims priority, application Great Britain, May 22, 1969, 26,136/69
Int. Cl. B05c 11/00
U.S. Cl. 118—264 6 Claims



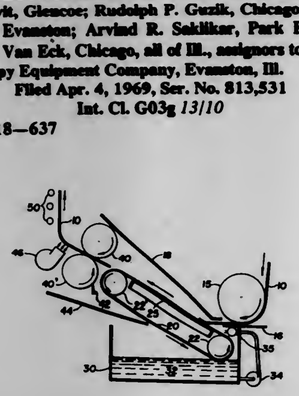
The specification discloses a priming wick for use in printing apparatus and comprising an outer fine short pile material, prferably velvet, surrounding an inner absorbent reservoir structure, preferably synthetic sponge material. Such a priming wick may conveniently be used for applying priming solution to the blanket of an offset lithographic machine.

3,669,072
DEVELOPER APPARATUS
Robert W. Reynolds, Los Angeles; James K. Bibeau, Monterey Park, and Francis J. Jansen, Northridge, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,539
Int. Cl. B05b 5/02
U.S. Cl. 118—637 8 Claims



An apparatus for developing electrostatic images wherein a drum or belt encircling a magnetic member has developer particles magnetically attracted to its surface in a serrated surface pattern by means of a brush shaper. A motor rotates the drum or belt carrying the shaped developer particles and deposits them on the charged surface for development. The motor in a reverse rotation phase mixes the developer particles in its container, preventing particle agglomeration.

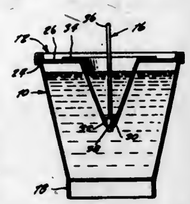
3,669,073
ELECTROSTATIC DEVELOPING SYSTEM
Joseph Savit, Glencoe; Rudolph P. Guzik, Chicago; Harry A. Wayne, Evanston; Arvind R. Sakhlkar, Park Forest, and Jack M. Van Eck, Chicago, all of Ill., assignors to American Photocopy Equipment Company, Evanston, Ill.
Filed Apr. 4, 1969, Ser. No. 813,531
Int. Cl. G03g 13/10
U.S. Cl. 118—637 9 Claims



Liquid developer system for electrostatic printing. Latent images carried on a sheet or web are developed by distributing a liquid carrier containing toner particles over a foraminous flexible belt unit. The latent image surface is contacted with the liquid developer carried on the foraminous flexible belt, and excess liquid is removed from the contact area through small openings in the belt surface.

3,669,074
BRINE SHRIMP HATCHERY
Robert Stasio, Brooklyn, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed July 7, 1970, Ser. No. 52,804
Int. Cl. A01k 61/00
U.S. Cl. 119—2 5 Claims

A device for hatching brine shrimp eggs having a main receptacle provided with a removable cover for containing a salt-water solution in which the brine shrimp eggs are to be hatched. The cover is formed with a central opening in which is seated a funnel shaped receptacle having an opening at its bottom end. A plug at the end of a rod serves to close the opening of the funnel shaped receptacle which contains fresh water. Brine shrimp eggs are placed in the salt-water solution and when hatched, the plug in the funnel shaped receptacle



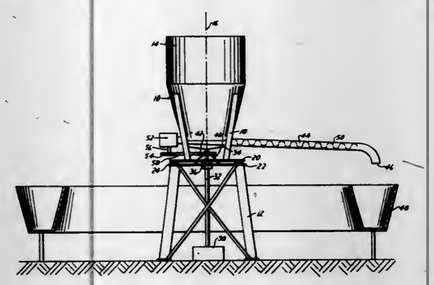
is withdrawn allowing the hatched brine shrimp to enter the receptacle through its bottom opening, and are captured therein when the plug is reinserted in the opening.

3,669,075
AUTOMATIC EGG TURNER FOR INCUBATOR
Albert F. Marsh, 14232 Brookhurst, Garden Grove, Calif.
Filed Dec. 17, 1970, Ser. No. 99,161
Int. Cl. A01k 41/06
U.S. Cl. 119—44 10 Claims



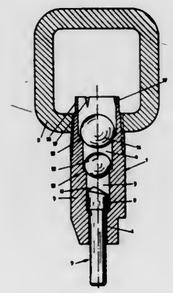
An incubator egg turner having a drive motor which drives an output shaft having a cam thereon which moves a first single pole double throw switch between a first position when the cam is in one 180° portion of its rotation and a second position when the cam is in the other 180° of rotation, a timer motor which drives a cam which moves a second switch to alternately connect said drive motor to electrical power through said first switch to rotate said output shaft 180° at a time, and there being provided on said output shaft a crank arm which is connected to the egg grid of an incubator to move said grid from one positior to another each time the output shaft is rotated 180°, and including a test circuit which can selectively connect electrical power to the drive motor no matter what is the position of said first mentioned cam, and anchor rods rigidly connected to the turner by which the turner can be removably anchored to the incubator.

3,669,076
ROTATABLE HOPPER LIVESTOCK FEED DISPENSER
Jacob B. Ellis, Route 2, P.O. Box 2116, Okmulgee, Okla.
Filed June 24, 1970, Ser. No. 49,216
Int. Cl. A01k 5/02
U.S. Cl. 119—52 B 4 Claims



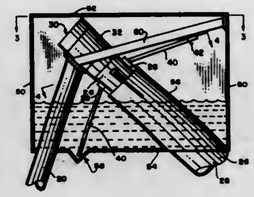
A feed dispenser apparatus comprising a storage hopper mounted on a support tower, said hopper being rotatable about its own longitudinal axis. A feed dispensing conduit is carried by the hopper and is in open communication therewith for receiving the feed therefrom and dispensing the feed to a circular or annular feed trough. The dispensing conduit moves simultaneously with the rotatable hopper for distributing the feed substantially uniformly into the feed trough. A feed screw or auger mechanism is rotatably mounted within the feed dispensing conduit for facilitating movement of the feed therethrough and discharging of the feed therefrom.

3,669,077
DRINKING NIPPLE FOR POULTRY
Gozen Spierenburg, Hilversum, Netherlands, assignor to N.V. Gereedschappenfabriek Spierenburg, Loosdrecht, Netherlands
Filed June 30, 1970, Ser. No. 51,044
Claims priority, application Netherlands, July 1, 1969, 6910036
Int. Cl. A01k 7/02; F16k 1/06, 1/44
U.S. Cl. 119—72.5 5 Claims



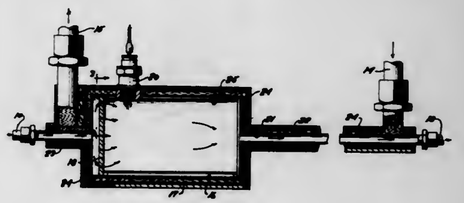
A drinking nipple for poultry comprising a housing having two ball valves of different diameter arranged one above the other on their seats, a tappet being located in the lower end of said housing, said tappet having a head co-operating with the lowermost ball valve and a stem projecting from said housing, the distance between the two balls being such that the tappet when being raised first lifts the first ball from its seat and upon further movement of said tappet the first ball lifts the second ball from its seat.

3,669,078
LIVESTOCK TREATER
Wayne H. Smith, Leoti, Kans.
Filed Aug. 31, 1970, Ser. No. 68,149
Int. Cl. A01k 13/00, 29/00
U.S. Cl. 119—157 5 Claims



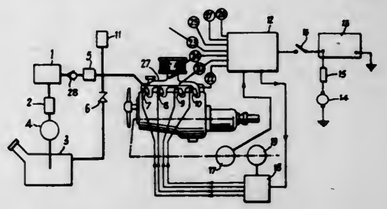
The invention is a livestock treater. It has a frame with a reservoir mounted thereon. A dipper within the reservoir is turnably connected to a rubbing device, preferably a portion of the frame connected to the dipper. More particularly, the invention is a cattle treater having a rotatable rubbing device integral with the supporting frame for a reservoir and integral with a dipper operable to remove liquid from the reservoir and transfer the same to the rubbing device.

3,669,079
WATER HEATER
Robert B. Black, 2925 Denver Street, Corpus Christi, Tex.
Filed Aug. 6, 1970, Ser. No. 61,775
Int. Cl. F22b 7/00
U.S. Cl. 122—136 R 12 Claims



Water heaters having a combustion chamber with a water jacket and having flue tubes extended from the combustion chamber with surrounding water tubes, the water tubes being connected with the water jacket and the circulation being arranged to provide for passage of the water through the water tubes surrounding the flue tubes and through the water jacket in counterflow relation to the flow of products of combustion through the combustion chamber and through the flue tubes.

3,669,080
ELECTRONIC CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE INJECTORS
Louis A. Monpetit, L'Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France
Filed Feb. 6, 1970, Ser. No. 9,329
Claims priority, application France, Feb. 12, 1969, 6903274
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 4 Claims

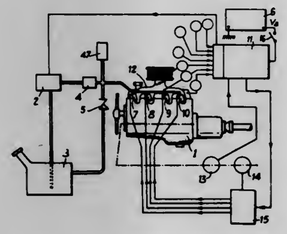


An arrangement defining the duration of the electronically controlled injection periods in an internal combustion engine, by returning the flip-flop controlling the actuation of an injector into its prior condition putting an end to the operation of the injector. To this end, a uni-junction transistor is grounded through one base while the other base is subjected to a voltage varying in accordance with the operation of the engine and defining the actually desired duration of injection. This duration is thereby brought to an end by the discharge of a condenser fed by the flip-flop and connected with the emitter of the uni-junction transistor while an auxiliary transistor transmits the voltage of the discharged condenser to the flip-flop to return the latter to its prior condition.

3,669,081
ELECTRONICALLY CONTROLLED INJECTING ARRANGEMENTS FEEDING FUEL UNDER CONSTANT PRESSURE INTO INTERNAL COMBUSTION ENGINES

Louis A. Monpetit, Chemin de la Butte, France, assignor to Societe des procedes Modernes d'Injection Modernes SOPROMI, Les Mureaux, France

Filed May 18, 1970, Ser. No. 38,192
Claims priority, application France, May 23, 1969, 6916896
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 5 Claims

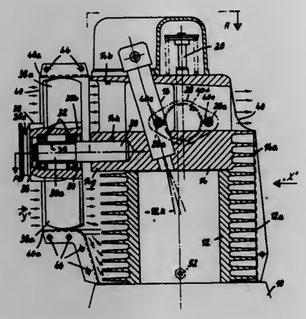


A control of the output of the pump feeding fuel under constant pressure into the manifold of an internal combustion engine, said pump operating under control of an electronic system defining the frequency and duration of the injections. Said control ensures an adjustment of the output of the pump in accordance with the actual requirements of the engine. For instance an electric motor driving the pump is fed by pulses transmitted electronically in synchronism with the injection-producing signals so that the average current feeding the motor which is measured by the integral of said pulses may match such requirements with a delay at the beginning or end of the pulse if required.

3,669,082
INTERNAL COMBUSTION ENGINE HAVING A COOLING-AIR BLOWER

Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hatz KG, Ruhstorf, Germany

Filed May 7, 1970, Ser. No. 35,476
Claims priority, application Germany, May 7, 1969, P 19 23 300.2
Int. Cl. F01p 1/02, 5/02, 1/10
U.S. Cl. 123—41.65 5 Claims

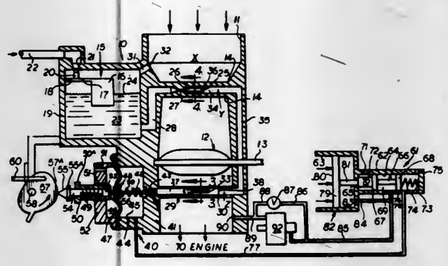


An internal combustion engine having a cooling-air blower such as an axial flow fan having a mounting bolt mounted directly on the cylinder head of the engine and a housing, preferably formed in two shell-halves connected together and mounted on the engine by screws or the like which already exist on the engine. The shell-halves form cooling-air passageways by the engine for air from the blower.

3,669,083
CARBURETOR WITH FUEL SHUT-OFF MEANS HAVING A FUEL-AIR RATIO ADJUSTMENT MECHANISM

Edward F. Fort, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 17, 1970, Ser. No. 55,804
Int. Cl. F02d 9/00; F02n 7/12
U.S. Cl. 123—97 B 12 Claims

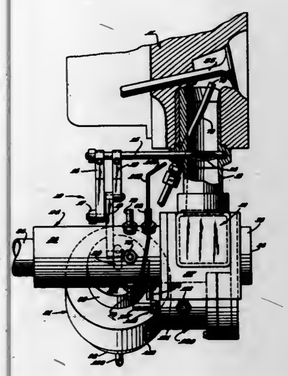


In a carburetor construction for metering liquid fuel for delivery downstream of the throttle valve to a spark-ignition engine, means are provided for remotely controlling the fuel-to-air ratio including a rapidly operative mechanism for shutting off the fuel source during periods when the engine or vehicle is decelerating toward a predetermined minimum speed value.

3,669,084
CARBURETION SYSTEM

Harvey A. Cook, Cleveland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 800,689, Feb. 19, 1969, now abandoned, Continuation-in-part of application Ser. No. 608,887, Jan. 12, 1967, now Patent No. 3,475,011.
This application Oct. 15, 1970, Ser. No. 81,165
Int. Cl. F02n 69/00
U.S. Cl. 123—139 AW 14 Claims

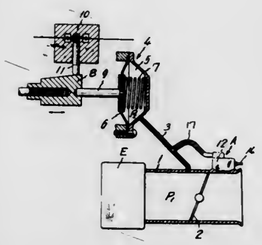


Individual supply pipes connect each of the intake ports of the engine to an air-fuel distributor system which includes an intake air manifold. A source of liquid fuel maintained at substantially constant pressure is connected to the air-fuel distributor system. A plurality of individual adjustable throttle valves are disposed respectively within the supply pipes and are interconnected with one another for joint movement. The speed (and power) of the engine is varied by manually varying the limit of adjustability of the air-fuel distributor system. The throttle valves are automatically (as contrasted with manually) adjusted by means of a vacuum controller and throttle valve actuator which utilizes after-throttle vacuum as an operating or power source to adjust the throttle valves to maintain a substantially constant manifold vacuum.

3,669,085
FUEL INJECTION APPARATUS TO COMPENSATE FOR TEMPERATURE AND PRESSURE VARIATIONS IN THE AMBIENT ATMOSPHERE

Kiyoshi Miyaki, Asaka, and Hiroshi Kogure, Tokorozawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 10, 1970, Ser. No. 62,328
Claims priority, application Japan, Aug. 8, 1969, 44/62302
Int. Cl. F02d 1/04
U.S. Cl. 123—140 MC 5 Claims



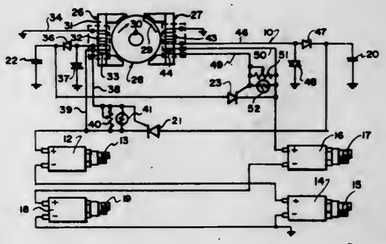
A fuel injection apparatus has a negative pressure chamber connected to a suction pipe behind a throttle valve for regulating the amount of fuel injected into the engine. In order to compensate for temperature and pressure variations of the ambient atmosphere and maintain the fuel-air ratio at an optimum value, a selected amount of ambient air is mixed with the suction air to control the magnitude of the negative pressure in the chamber. The amount of air is regulated by a valve controlled by a temperature sensitive member or a pressure sensitive member or both.

3,669,086
SOLID STATE IGNITION SYSTEM

Ljubomir Beuk; Peter Dogadko, both of Chicago, and Larry Sansbury, Elmhurst, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 30, 1970, Ser. No. 76,807
Int. Cl. F02p 3/06
U.S. Cl. 123—148 E 9 Claims

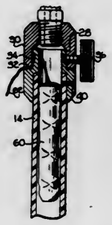
A solid state ignition system is constructed for use with the flywheel magneto of either single or multiple cylinder engines and the ignition system utilizes a capacitor discharge ignition circuit arrangement. High energy pulses are produced by a permanent magnet on a flywheel rotating past a charge-trigger coil assembly which induces magnetic flux therein to generate and store energy in the capacitor of the ignition circuit. The charge-trigger coil assembly is a single constructed unit having both a capacitor charging coil and a trigger coil formed on a single paramagnetic core. Ignition timing advance is accomplished simultaneously with and as a result of increased engine speed. This automatic timing advance is accomplished by utilizing the uniform change in rise time of the first peak of a trinary peaked pulse waveform that is generated by the trigger winding. This first peak trigger pulse is used to discharge the capacitor after it has been charged by a previous trinary peaked waveform. The peak following the charge peak is blanked so that the first peak of the next waveform is used as the trigger pulse.



3,669,087
LINE THROWING GUN

James C. Hamrick, and Howard G. Ruddick, both of Charlotte, N.C., assignors to Jet Line Products, Inc., Matthews, N.C.

Filed Aug. 17, 1970, Ser. No. 64,246
Int. Cl. F41f 7/00
U.S. Cl. 124—11 11 Claims



A gas operated line throwing gun for casting a line package across a relatively non-accessible area such that the trailing line end may be used to pull a heavier electrical line through the area. The gun includes a lightweight barrel defining a continuous tubular passageway, and one or more escapement ports are provided which extend radially through the barrel wall for releasing the gas pressure in the event the barrel is obstructed when fired, to thereby preclude bursting of the same.

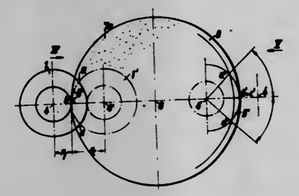
3,669,088
METHOD OF AND APPARATUS FOR SHAPING THE PROFILED SURFACE OF A ROTATING TOOL FOR PRODUCING CYCLOID THREAD FLANKS ON SCREWS

Gerhard Stade, Berlin, Germany, assignor to Firma Herbert Lindner GmbH, Berlin, Germany

Filed June 11, 1970, Ser. No. 45,442
Claims priority, application Germany, Aug. 1, 1969, P 19 39 919.0
Int. Cl. B24b 53/06
U.S. Cl. 125—11 12 Claims

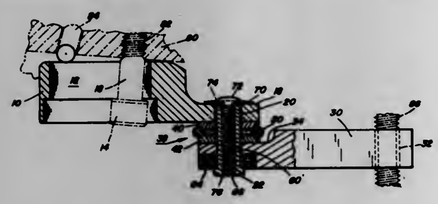
A profiled surface of a rotating tool, such as a grinding disk, for producing cycloid thread flanks in screws, is shaped by a dressing device positionable in engagement with the surface of the disk which forms the threads. The dressing device is movable along a generated screw line determined as a helical line of contact between the screw being produced and an

imaginary counter-screw in engagement with the screw. The dressing device includes a traverse bar on which diamond dressing points are positioned and the traverse bar is



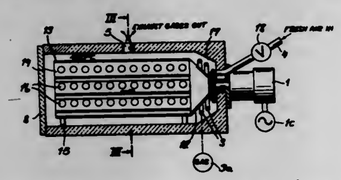
mounted for selectively moving the dressing point along the generated screw line in contact with the profiled surface of the disk so that the proper profile for forming cycloid thread flanks is obtained.

3,669,089
SWING ARM FOR HOLDING A DRESSING DEVICE
Henry F. Swenson, 22 Holmehill Lane, Roseland, N.J.
Filed Dec. 16, 1970, Ser. No. 98,654
Int. Cl. B24b *53/12*
U.S. Cl. 125—11 R **6 Claims**



A swing arm for holding a dressing device is adapted for mounting on a column or base portion of a machine tool. The swinging end of the arm is disposed to hold a threaded dressing member while the arm is swung in an arc around a pivot shaft. The pivot shaft retains a pivot joint which includes a roller thrust bearing disposed between the fixed and the movable member with a spring-type washer urging the fixed and the rotatable member together in a determined frictional relationship. An O-ring is seated in a groove formed at the roller raceway so as to seal the thrust bearing as well as provide a dust seal and vibration dampener.

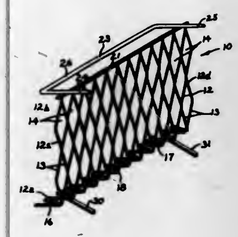
3,669,090
METHOD OF CLEANING AN OVEN WITH INTERNAL AIR CIRCULATION
Anton Ladislaus Jung, Am Gerichtskoppel 6, 6348 Herborn, and Erhard Ledwon, Schlinkenweg 10, 6349 Guntersdorf, both of Germany
Filed May 25, 1970, Ser. No. 40,128
Claims priority, application Germany, Aug. 18, 1969, P 19 41 935.3
Int. Cl. F24c *15/32*
U.S. Cl. 126—21 A **9 Claims**



A self-cleaning oven is provided with a rack which is substantially closed at its sides, fully open at one end, and formed as a hood at the other end. A centrifugal fan is provided in the oven at the hood used to circulate air around and through the rack. An air inlet is provided in the oven wall that opens adjacent the fan intake. The oven is further provided with an outlet fitted with a catalytic afterburner. During heating of the oven to 400°–500° C. for cleaning, fresh air is drawn in through the inlet, circulated throughout the oven interior, and exhaust gases pass out through the afterburner.

3,669,091
WITHDRAWN

3,669,092
FIREPLACE GRATE FOR BURNING PAPERS
Keith G. Bolster, 2213 South McCable, Spokane, Wash.
Filed July 10, 1970, Ser. No. 53,782
Int. Cl. F23h *13/02*
U.S. Cl. 126—165 **5 Claims**

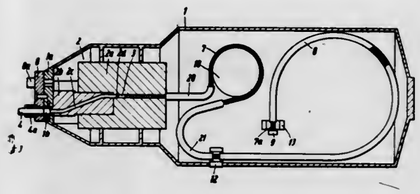


A fireplace grate with a framework of expanded metal which is provided with supports enabling the grate to be alternatively positioned in a horizontal orientation for burning logs in the conventional manner or to be positioned upright for burning newspapers, magazines and the like.

3,669,093
APPARATUS FOR GIVING MEDICAL TREATMENT BY IRRADIATION FROM RADIOACTIVE SUBSTANCES
Kurt Sauerwein, Dillenburger Weg 3, Dusseldorf, and Hans Goedecke, Weimarer Strasse 59, Mettmann Rhineland, both of Germany
Filed Dec. 30, 1969, Ser. No. 889,128
Claims priority, application Germany, Sept. 5, 1969, P 19 45 015.8
Int. Cl. A61j *1/00*; **A61n** *5/10*; **G21f** *5/00*
U.S. Cl. 128—1.1 **10 Claims**

Apparatus for treating human or animal patients by local irradiation from a radioactive substance comprises a hollow probe closed at one end for introduction into a natural or surgically produced opening in the body of the patient and a capsule which contains a quantity of the radioactive substance and is fixed to the end of a flexible but longitudinal thrust-transmitting cable which propels the capsule between the interior of a shielding block and the interior of the probe which is fixed to the block by a delivery tube through which the cable extends. The cable passes through a passage in the block and when the capsule is situated in the interior of the

block the cable extends from the block through an opening in the end of the block remote from the delivery tube, around the greater part of the periphery of a driving wheel which is situated in the housing containing the shielding block, through a storage tube to a terminal stop. The cable is pressed against the driving wheel by spring-loaded rollers so that it is moved when the driving wheel rotates and the storage tube extends between the housings of two photo-electric assemblies which detect the movement of the end of the



cable remote from the capsule and respond by controlling the movements of the driving wheel. The effective length of the storage tube, measured between the two photo-electric cell assemblies is equal to the distance traveled by the radiation capsule between the interior of the block and the end of the probe so that the two photo-electric cell assemblies stop the driving wheel when the capsule is either in its position at the closed end of the probe or in its position within the block.

3,669,094
DEVICE AND METHOD FOR MEASURING INTRACRANIAL PRESSURE
William T. Heyer, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.
Filed July 6, 1970, Ser. No. 52,654
Int. Cl. A61b *5/00*; **A61m** *27/00*
U.S. Cl. 128—2 **8 Claims**



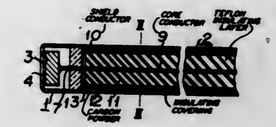
sure without substantially affecting the existing pressure by introduction of the measuring and drainage means.

A physiological drainage catheter and a method of using the same to provide a means for measuring intracranial pres-

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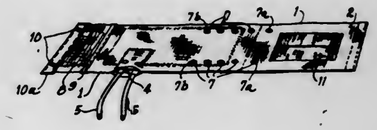
3,669,095
CATHETER-TYPE SEMI-CONDUCTOR RADIATION DETECTOR FOR INSERTION INTO A HUMAN BODY
Tetsuji Kobayashi, Yokohama-shi; Seiichi Takayanagi, Tokyo, and Tohru Sugita, Yokohama-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 22, 1967, Ser. No. 662,463
Claims priority, application Japan, Aug. 25, 1966, 41/79743; Nov. 14, 1966, 41/74423; Mar. 16, 1967, 42/16082
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 R **10 Claims**

A catheter type semiconductor radiation detector is comprised by a semiconductor detector adapted to be inserted in a human body to detect radiations to convert them into electric signals, and a coaxial cable adapted to transmit said converted electric signals to an external measuring device for de-



tected outputs. The coaxial cable includes a layer of carbon powders interposed between an insulating layer adjacent a core conductor and a shield conductor.

3,669,096
SELF-DONNING SPHYGMOMANOMETER CUFF
Mathew Hurwitz, 63 Oakland Avenue, Auburndale, Mass.
Filed Apr. 7, 1970, Ser. No. 26,283
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 C **2 Claims**

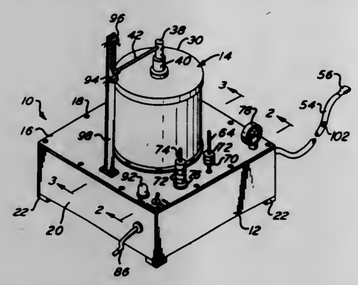


A self-donning sphygmomanometer cuff with adjustable, self-donning features which simplify the attachment of the cuff to an arm or leg by the person utilizing said cuff. The cuff has an elasticized strip portion secured at one end to a non-stretchable portion of the cuff body which, in combination with cooperating connector means provides adjustable initial cuff tension around the appendage before it is secured to the appendage by conventional means.

3,669,097
LUNG EXERCISING APPARATUS AND METHOD
Edward Fitz, 27 Llanfair Road, Ardmore, Pa.
Continuation-in-part of application Ser. No. 680,657, Nov. 6, 1967, now abandoned. This application June 19, 1969, Ser. No. 843,894
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **11 Claims**

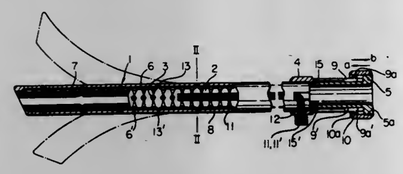
A device and method for increasing the capacity and strength of lungs having an expansible bellows chamber, an inlet to the chamber connected to a conduit, a mouthpiece at the end of the conduit for breathing into it, and a selectively adjustable valve in the conduit for constricting the passage from the mouthpiece to the inlet, whereby a force in excess

of the normal pressure developed by the lungs is required to expand the bellows, and an outlet for said chamber with a



valve and variable control therefor adapted to open the outlet when the bellows has been expanded a preselected amount.

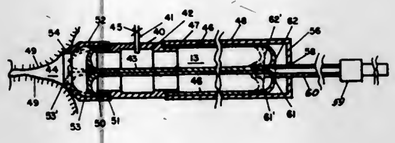
3,669,098
ENDOTRACHEAL TUBE
Nagashige Takahashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sept. 23, 1969, Ser. No. 860,272
Claims priority, application Japan, Oct. 5, 1968, 43/86558
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 4 Claims



An endotracheal tube comprising a flexible tube adapted to be bent in a plane and connected at its rearward end to a control body in the form of a cylindrical guide member. A pair of string means extend lengthwise in the wall of the flexible tube at diametrically opposite positions in the cross-section thereof in a plane perpendicular to the neutral plane of the flexure of the flexible tube with their forward ends secured to the forward end of the flexible tube while their rearward ends are connected to control means in the control body so as to be actuated thereby so that the flexible tube is rendered to be stiffened without allowing the flexure thereof by tightening the string means by operating the control means thereby facilitating the insertion of the endotracheal tube into the trachea while the flexible tube is rendered to be flexible by slackening the string means by the operation of the control means so that the operation of the bronchoscope inserted into the endotracheal tube is facilitated.

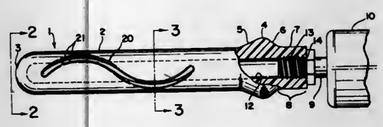
At least one light conducting optical system such as a fiber optical system is provided which extends lengthwise in the wall of the flexible tube with the forward end thereof terminating at the forward end of the flexible tube while the rearward end thereof is adapted to receive the illuminating light from an external light source at a position adjacent to the control body so as to illuminate the trachea into which the flexible tube is inserted by the light transmitted through the light conducting optical system to be forward end thereof for facilitating the insertion of the flexible tube which is now stiffened so as to maintain its rigid straight form into a desired position in the trachea by observing the trachea through the endotracheal tube.

3,669,099
METHOD AND APPARATUS FOR EVERTING A FLEXIBLE PROBE INTO A CAVITY
Daniel Silverman, 5969 South Birmingham, Tulsa, Okla.
Continuation-in-part of application Ser. No. 498,653, Oct. 20, 1965, now Patent No. 3,502,069. This application Dec. 1, 1969, Ser. No. 881,065
Int. Cl. A61b *05/00*
U.S. Cl. 128—2 M 27 Claims



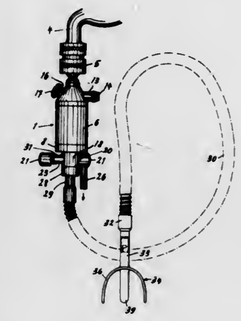
In this invention a flexible thin-walled tubing probe is everted into a body cavity carrying with it a medical instrument which can be a long slender cylindrical means. The length of tubing is everted and folded over itself to provide a double-walled tubing having an outer wall, an inner wall, with an annular space between, and with a central longitudinal passage inside the inner wall. The two ends are sealed to close this volume and means are provided to fill the closed annular volume with a gas or liquid. The sealed tubing ends are attached, sealed to, or held in contact with a short cylindrical, tube which is used as a handle or nozzle, through which the tubing is everted into a body cavity. The long cylindrical element presses on the other folded (back) end of the tubing. This causes fluid to be moved from the back end to the front end, causing the tubing to be everted through the nozzle. The cylindrical element meanwhile moves forward with the tubing, through the nozzle, into the cavity. Various methods of sealing and attaching the tubing to the nozzle are illustrated.

3,669,100
VIBRATING APPARATUS FOR TREATMENT OF FEMALE DISORDERS
George A. Csanad, 14625 Detroit Avenue, Parma, Ohio
Filed June 15, 1970, Ser. No. 46,027
Int. Cl. A61h *1/00*
U.S. Cl. 128—32 3 Claims



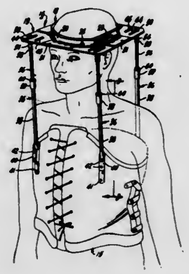
Female disorders in animals are treated by electrically vibrating in the vagina of the animal a generally penis-shaped instrument having means for gradually releasing and distributing medications, such as hormone gels, antibiotics and the like during the vibration process. The instrument is provided with an elongated slot, preferably sinusoidal in character, containing or adapted to contain the medication desired. The vibrational energy penetrates well beyond the contacting surfaces of the vagina and thus assists in the development or redevelopment of certain lazy or degenerated muscles that appear to be responsible for such disorders as female frigidity, certain menstrual or menopausal disorders and the like.

3,669,101
DEVICE FOR THE RINSING OF BODY CAVITIES
Willy Kleiner, Fischmarktplatz 9, 8640 Rapperswil, Switzerland
Filed Mar. 9, 1970, Ser. No. 17,458
Claims priority, application Switzerland, Mar. 11, 1969, 3831/69; Mar. 2, 1970, 2983/70
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 7 Claims



A device for rinsing the bucal cavity which comprises a mouthpiece adapted to be fitted into the mouth and provided with discharge ports trained upon the teeth and gums of the user, a connection fitting adapted to be placed upon a faucet spigot, a line connecting the mouthpiece with this fitting, and a control valve along the line for selectively connecting the mouthpiece via a venturi to a dispenser for a mouth-treating liquid, to a discharge port opening into the wash basin, and to the mouthpiece.

3,669,102
ORTHOPEDIC TRACTION APPARATUS
Norman M. Harris, 411 30th Street, Oakland, Calif.
Filed June 9, 1969, Ser. No. 831,427
Int. Cl. A61f *5/04*
U.S. Cl. 128—84 R 5 Claims



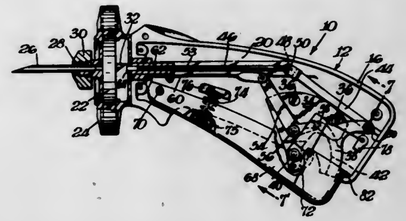
Traction apparatus for externally splinting the cervical spine to effect fixation thereof. The apparatus is characterized by providing adjustment of the height, tilt, rotation and anterior and posterior position of the patient's head while affording no or only minor inconvenience during anterior or posterior surgical procedures while the traction apparatus is in position on a patient. The traction apparatus includes a skull-gripping mechanism adapted to grip a patient's skull and thereby be fixedly related thereto, a platform or device supporting the skull-gripping mechanism and being inter-connected therewith so as to positively locate one with respect to the other and prevent relative translational and rotational displacements thereof, a plurality of struts interconnecting the platform and a body jacket positioned about a patient, and means for adjusting the lengths of the struts so as to select the magnitude of the tensile stress imparted through the platform and skull-gripping mechanism to the cervical spine of a patient equipped with such body jacket and having such mechanism secured to his skull.

3,669,103
ABSORBENT PRODUCT CONTAINING A HYDROCELLOIDAL COMPOSITION
Billy Gene Harper; Robert Niles Bashaw, and Bobby Leroy Atkins, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 31, 1966, Ser. No. 553,684
Int. Cl. A61l *15/00*
U.S. Cl. 128—156 8 Claims

Articles having improved absorbency for aqueous body fluids consist of body-conforming supports containing dry, solid water-swellable, water-insoluble polymeric sorbents which are lightly cross-linked polymers, such as polyvinylpyrrolidones, sulfonated polystyrenes, sulfonated polyvinyltoluenes, poly-sulfoethyl acrylates, poly-2-hydroxyethyl acrylates, polyacrylates, hydrolyzed polyacrylamides and copolymers of acrylamide with acrylic acid.

Illustrative of the im55

3,669,104
IMPLANT GUN
James B. Wyatt, Stamford; Peter D. George, Easton, and Kenneth Van Dyck, Weston, all of Conn., assignors to Pfizer Inc., New York, N.Y.
Filed June 15, 1970, Ser. No. 46,159
Int. Cl. A61m *5/00*
U.S. Cl. 128—217 6 Claims

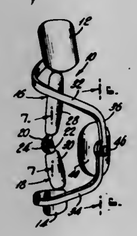


Subcutaneous implant gun for dispensing pellets comprises case with hollow needle attached thereto. Plunger in alignment with hollow needle reciprocates to expell pellets through needle as pellets are positioned in path of plunger travel. Reciprocable bushing in alignment with hollow needle supportingly surrounds plunger. Trigger pivoted to case is connected to reciprocable bushing and plunger, and linkage system between trigger and bushing and plunger causes bushing and plunger to move in direction of hollow needle when trigger is depressed. Bushing and plunger move away from hollow needle when trigger is released.

3,669,105
BRACE FOR ARTICULATED LIMBS
Ignatius F. Castiglia, 500 East 77th Street, New York, N.Y.
Filed Oct. 28, 1969, Ser. No. 870,024
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C 12 Claims

A brace for limiting a pair of limbs articulated to each other at a joint therebetween to swinging movement with

respect to each other only about a single axis. Thus, the brace may be a knee brace for limiting upper and lower leg limbs for swinging movement relative to each other only about a single horizontal axis passing through the knee joint. A pair of limb-engaging components are shaped respectively to engage the limbs on one side thereof at locations spaced from the joint, and a pair of arms, which are fixed to these components, extend into overlapping relation at end regions of the arms which are pivoted to each other for limiting them to swinging movement about an axis which will coincide with the single axis about which the limbs will be free to turn. A

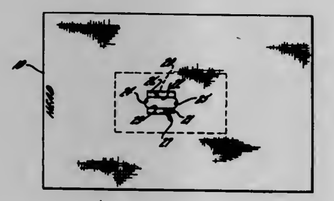


joint-engaging components is adapted to engage the joint at the side of the limbs opposite from the limb-engaging components, and a pair of relatively stiff members extend from the pair of limb-engaging components around to the region of the joint-engaging components where the latter together with these relatively stiff members are pivoted to each other for free swinging movement with respect to each other about an axis which also will coincide with the above single axis. In this way, while the limbs will be free to swing with respect to each other about this single axis which passes through the joint, they are prevented from turning with respect to each other about any other axis.

3,669,106
SURGICAL DRAPE WITH ADHESIVE ATTACHMENT MEANS

Mark S. Schrading, Menosha, and Terry L. Winters, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 27, 1970, Ser. No. 58,336
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D 6 Claims



A disposable surgical drape sheet, of the type having a nonwoven sheet for placing over a surgical patient and having a reinforced fenestration area with a fenestration to expose an operative area, is provided with a pair of elongated strips of normally tacky and pressure-sensitive adhesive along one pair of opposed edges of the fenestration. A pair of removable peel strips covering the adhesive strips are removed before using the sheet, thereby exposing the adhesive and permitting the sheet to be secured to the patient.

3,669,107
LAP COVER AND RESTRAINER

John T. Posey, 1739 Meadowbrook Road, Altadena, Calif.

Filed Feb. 25, 1970, Ser. No. 14,043
Int. Cl. A61f 13/00
U.S. Cl. 128—134 10 Claims

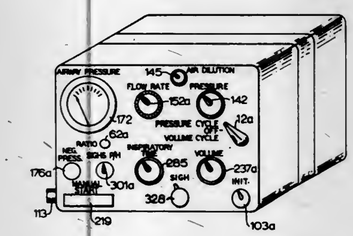


A patient is restrained in a chair by a lap cover preferably made of a terrycloth sheet and extending from the waist of the patient downwardly over his knees. A waist strap secured to the top of the lap cover is fastened behind the back of the chair, and a knee strap secured to a portion of the lap cover below the knees of the patient is fastened to a portion of the chair's lower supporting structure. One form of the lap cover includes an enclosure below the knee strap disposed around the patient's lower legs and feet. A harness can be fastened to the top of the lap cover and extended over the shoulders of the patient and secured behind the back of the chair to hold the patient's upper torso against the back of the chair.

3,669,108
VENTILATOR

Leif J. Sundblom, Castro Valley, and Louis A. Ollivier, Menlo Park, both of Calif., assignors to Veriflo Corporation, Richmond, Calif.

Filed Oct. 20, 1969, Ser. No. 867,804
Int. Cl. A62b 7/02
U.S. Cl. 128—145.8 45 Claims

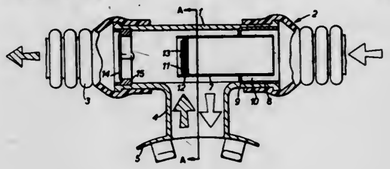


A ventilator capable of both pressure-cycled and volume-cycled operation. A main valve connects a gas supply conduit to a downstream conduit when the pressure in a command signal conduit reaches a first predetermined pressure level and closes off the downstream conduit from the gas supply conduit when the pressure in the command signal conduit drops below a second predetermined pressure level. In the expiratory cycle, the command signal conduit and the downstream conduit are bled to atmospheric. The inspiratory cycle may be initiated (1) by the patient breathing in and thereby lowering airway pressure, or (2) after a time lapse following the commencement of said expiratory phase, the duration of said time lapse being determined as a set multiple of the time of the preceding inspiratory phase. The expiratory phase may be initiated (1) by the achievement of a predetermined airway pressure or (2) upon the delivery of a predetermined volume of gas.

3,669,109
BREATHING APPARATUS

Stanley John Cheffers, Seaford, and Michael Harvey Glynn, Hook, both of England, assignors to Siebe Gorman & Company Limited, Chessington, Surrey, England

Filed July 31, 1969, Ser. No. 846,393
Claims priority, application Great Britain, Aug. 8, 1968, 37,903/68
Int. Cl. A61m 16/00
U.S. Cl. 128—147 1 Claim

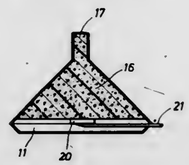


In breathing apparatus, inhalation valve means, which allows gas to be inhaled from an inhalation conduit, is situated directly within the path of flow of the exhaled gas so that, in operation, heat is transferred from the exhaled gas to the inhalation valve means. The flow of warm, exhaled gas over the inhalation valve means raises the temperature of the valve means and reduces the likelihood of ice formation.

3,669,110
COMPRESSIBLE BIOMEDICAL ELECTRODE

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and James D. Frost, Jr., 6404 Mobud, Houston, Tex.

Filed Nov. 5, 1970, Ser. No. 87,222
Int. Cl. A61n 1/04
U.S. Cl. 128—2.1 E 2 Claims

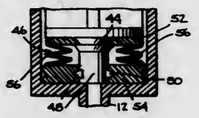


A preferred embodiment of an electrode which incorporates a silicone rubber sponge which is immediately adjacent to a chlorided silver disk carried in a silicone rubber base, the electrode being covered with a thin leak-proof vinyl coating for storing electrolyte solution from the point of manufacture. The sponge rubber holds the electrolyte until it is required at the time of usage. A force on the exterior causes the electrolyte to moisten the skin to provide good ohmic contact with the subject.

3,669,111
AUTOMATIC RETRACTING HYPODERMIC SYRINGE

Ben B. Dubner, 84 Marcus Avenue, New Hyde Park, N.Y.

Filed May 20, 1970, Ser. No. 39,084
Int. Cl. A61m 5/00
U.S. Cl. 128—218 P 3 Claims



In a hypodermic syringe, automatic retraction, achieved by interposing resilient means between the barrel and the plunger.

3,669,112
ONE-PIECE NIPPLE, PACIFIER AND THE LIKE

Elisabeth Mager, Cologne-Lindenthal; Helga Schulz, and Peter Schulz, both of Heidelberg, all of Germany, assignors to Firma Carl Plast, Koln, Germany

Filed Jan. 2, 1970, Ser. No. 11
Claims priority, application Germany, Jan. 21, 1969, P 19 02 772.6
Int. Cl. A61j 11/00; A61f 5/01; A61j 17/00
U.S. Cl. 128—252 2 Claims

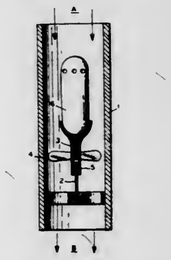


A one-piece nipple, pacifier and the like has a bag-shaped sucking portion, a disc-shaped part engaging the lips, a part located between the two and forming a base of the bag-shaped portion, and an outer part located upon the other side of the disc. The device is particularly characterized in that the base part has a lesser wall thickness than the other parts.

3,669,113
INHALATION DEVICE

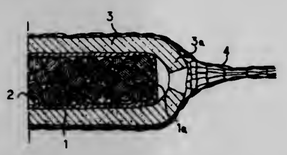
Roger Edward Collingwood Altounyan, Wilmslow, England, and Harry Howell, deceased, late of Castle Donnington, England (Eunice Cockburn Howell, executrix), assignors to Fisons, Limited, London, England

Continuation-in-part of application Ser. No. 745,774, July 18, 1968, which is a continuation-in-part of application Ser. No. 532,271, Mar. 7, 1966. This application June 18, 1969, Ser. No. 871,468
Claims priority, application Great Britain, May 16, 1969, 25,067/69; Jan. 8, 1969, 1,206/69; May 16, 1969, 25,069/69; June 7, 1968, 27,210/68
Int. Cl. A61m 15/00
U.S. Cl. 128—266 25 Claims



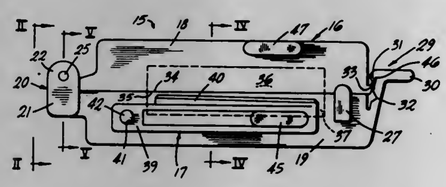
A method and device for dispensing a particulate medicament material from a container. The container provided with at least one powder outlet is rotated by pneumatic means about an axis of the container. The axis of rotation is caused to precess so as to describe a path of precession which is contained within a generally conical surface of precession, and the axis of rotation of the container is at an angle to the axis of the generally conical surfaces of precession. This causes the walls of the container to undergo repeated changes in radial acceleration with respect to the axis of the generally conical surface of precession, which changes of acceleration are of sufficient magnitude to overcome the centrifugal and cohesive forces which hold the particles of powder in place upon the wall of the container.

3,669,114
SANITARY NAPKIN
Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France
Filed June 19, 1970, Ser. No. 47,260
Claims priority, application France, June 24, 1969, 6921148
Int. Cl. A61f 13/16
U.S. Cl. 128—290 **8 Claims**



Sanitary napkin comprising a plurality of balls of absorbent material which are movable with respect to each other so that the shape of the napkin may conform to the configuration of the body of the user.

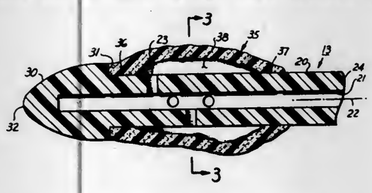
3,669,115
SURGICAL INSTRUMENT WITH TRUNNIONED HINGE MEANS
Frederick J. Melges, Battle Creek, Mich., assignor to Rymel Corporation, Sierra Madre, Calif.
Continuation-in-part of application Ser. No. 19,329, Mar. 13, 1970, which is a continuation-in-part of application Ser. No. 780,463, Dec. 2, 1968, now Patent No. 3,566,873, dated Mar. 2, 1971. This application Mar. 13, 1970, Ser. No. 19,328
Int. Cl. A61b 17/326, 19/08; A44b 21/00
U.S. Cl. 128—305 **2 Claims**



A surgical instrument is provided particularly suited for use in circumcision operations comprising a clamping and holding member adapted to be readily formed of molded plastic material and especially constructed for use in circumcision operations involving the use of conventional hospital instruments such as a probe, scalpel, hemostat, and the clamping and holding member comprising side members pivotally connected at their ends by a novel trunnioned hinge joint. In a preferred form the instrument includes in combination with the clamping and holding member a cutting member pivotally mounted on the clamping and holding member and guided in cooperative operating position, and which instrument is sufficiently inexpensive so that it can be discarded after the end of the operation thereby obviating the need of sterilization for reuse.

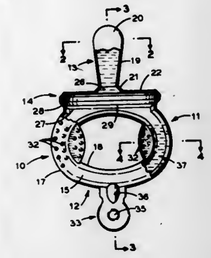
3,669,116
DRAINAGE CATHETER WITH ANTI-CLOGGING MEANS
William T. Heyer, Santa Barbara, Calif., assignor to Heyer-Schulte Corporation, Santa Barbara, Calif.
Filed July 6, 1970, Ser. No. 52,655
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R **4 Claims**

A physiological drainage catheter comprising an elongated tube with a central axis and a peripheral wall surrounding it. A port passes through the wall to the passage for the purpose of draining fluid from the region surrounding the tube. A peripheral cuff surrounds the wall and is fastened thereto on each side of the port, the cuff ballooning away from the wall to leave a cavity therebetween. The cuff is made of a flexible openpore silicone rubber sponge which provides a large



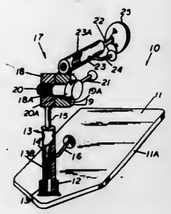
number of restricted, but continuous, passages from outside of the cuff to the cavity, and an increased surface area thereby to screen or filter fluid which reaches the port from regions to be drained outside the cuff to minimize clogging, and by its increased surface area to decrease the possibility of being closed by abutment with surrounding tissue.

3,669,117
COMBINATION TEETHER AND PACIFIER
Murry Herbst, 43 West 23rd Street, N. Floral Park, N.Y.
Filed Apr. 22, 1970, Ser. No. 30,645
Int. Cl. A61j 17/00
U.S. Cl. 128—360 **8 Claims**



A combination teether and pacifier in the form of a thin walled, flexible body having nipple, guard and teething portions which are hollow and in communicating relation to each other.

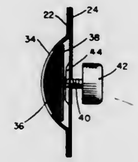
3,669,118
UTERINE DISPLACEMENT DEVICE
Miguel Angel Colon-Morales, G.P.O. Box 4547, San Juan, P.R.
Filed Nov. 16, 1970, Ser. No. 89,688
Int. Cl. A61b 17/42
U.S. Cl. 128—361 **4 Claims**



This disclosure is directed to a mechanical device to effect left uterine displacement to prevent or treat supine hypotensive syndrome in a patient, e.g., during Cesarean Section operations. The device includes an adjustable stanchion

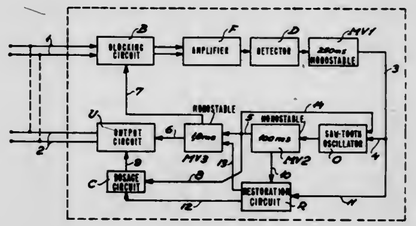
adapted to be suitably supported adjacent a patient to which there is connected an adjustable arm and associated compression means for effecting left displacement of the uterus. The device is constructed for universal adjustment in any of the three axial planes so as to be readily adjusted to any particular patient.

3,669,119
ADJUSTABLE ELECTRODE MEANS FOR A SLEEP INDUCING MACHINE
Paul S. Symmes, Cornwall Heights, Pa., assignor to American Clinic, Inc., Seattle, Wash.
Filed Mar. 4, 1970, Ser. No. 16,441
Int. Cl. A61n 1/04
U.S. Cl. 128—410 **4 Claims**



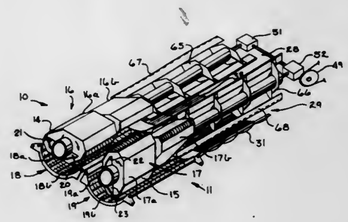
A mask adapted to be worn on the head of a person includes more than two electrodes adapted to couple electrical pulse signals to provide parallel current paths from a pulse source to the head of the person to induce sleep or relaxation. Flexible members couple the signals to different surfaces of the person's head. Adjustment means are associated with at least one of the flexible elements to vary the state of compression thereof and thereby balance the current paths between the two current paths provided by the two electrodes.

3,669,120
DEVICE FOR STARTING OR STIMULATING HEART CONTRACTIONS
Lars Stig Nielsen, Copenhagen, Denmark, assignor to Christian Rovsing A/S, Copenhagen, Denmark
Filed July 9, 1970, Ser. No. 53,557
Claims priority, application Denmark, July 11, 1969, 3765
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P **7 Claims**



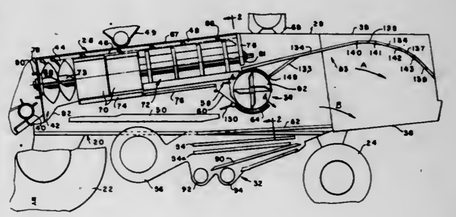
A Pacemaker of the demand type having an output control circuit arranged to control the produced pace impulses in such a manner that the amplitude of each impulse is slightly less than that of the preceding impulse. When the amplitude has decreased below the threshold value so that a heart impulse fails to occur within a predetermined period, a reset circuit will cause another pace impulse to be produced having a given initial amplitude.

3,669,121
AXIAL FLOW THRESHING AND SEPARATING MEANS WITH A LOAD DISTRIBUTING THRESHING ROTOR
Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed June 30, 1970, Ser. No. 51,082
Int. Cl. A01f 7/06
U.S. Cl. 130—27 T **6 Claims**



An axial flow threshing and separating rotor of an agricultural combine has a plurality of axially extending threshing means circumferentially arranged to enter the threshing zone at different times for distribution of the threshing load.

3,669,122
AXIAL FLOW COMBINE WITH A ROTARY DISCHARGE
Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Continuation-in-part of application Ser. No. 51,082, June 30, 1971. This application June 10, 1971, Ser. No. 151,682
Int. Cl. A01f 12/44
U.S. Cl. 130—27 T **16 Claims**

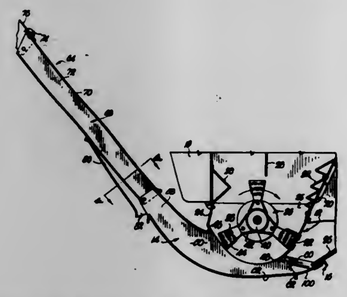


The axial flow combine has two threshing and separating units in side-by-side relation that receive cut crops in the front and discharge threshed material in the rear through downwardly facing openings to a rotary discharge assembly. A grain pan and a grain cleaning mechanism are positioned underneath the axial flow unit to receive and clean separated grain. The grain cleaning mechanism extends rearwardly substantially further than the axial flow units. The rotary discharge assembly comprises a deflector shield pivotally mounted to the discharge of the axial units, a curved transverse grate and a four-bladed beater. The beater is rotatably mounted above the grate to sweep the discharged crop material across the grate and impel it rearwardly in an upwardly curved arc over and rearwardly of the rear end of the grain cleaning mechanism.

3,669,123
STOVER SAVER FOR COMBINES

Melvin V. Gaeddert, Newton, Kans., and Verlin Wiggers, Bancroft, S. Dak., assignors to Hesston Corporation, Hesston, Kans.

Filed Jan. 19, 1971, Ser. No. 107,731
Int. Cl. A01f 12/40
U.S. Cl. 130—27 R 9 Claims

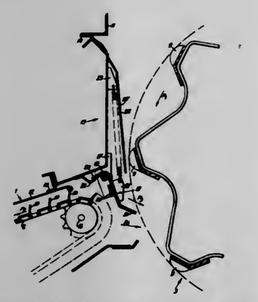


A chopper unit secured to a combine centrifugally chops and blows residue received from the strawwalkers of the combine downwardly and rearwardly through the open bottom of the chopper housing into an arcuate receptacle having a rearwardly extending, volute eduction tube at one end thereof, and thence through an upwardly and rearwardly extending spout leading from the tube. The lowermost edge of the front wall of the chopper housing is disposed forwardly of the axis of rotation of the chopper and cooperates with the opposite end of the receptacle to define an inlet through which secondary air currents are drawn. Three species of the invention embody alternative forms of agitated feeder slides which deliver stover from the reciprocating shaker shoe of the combine to the inlet where it is drawn into the receptacle and admixed with the chopped residue for subsequent air conveyance through the tube and the spout. The spout is open along the bottom stretch thereof to permit the induction of outside air thereinto as the admixture travels therethrough.

3,669,124
ANTI-DUST DEVICE FOR A COMBINE

Frans J. De Coene, and Gilbert J. Strubbe, both of Zedelgem, Belgium, assignors to Clayson N.V., Zedelgem, Belgium

Filed Nov. 6, 1970, Ser. No. 87,507
Claims priority, application Belgium, Nov. 14, 1969, 741666; Oct. 15, 1970, 50525
Int. Cl. A01f 12/18
U.S. Cl. 130—27 R 23 Claims



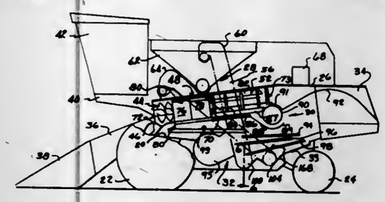
An anti-dust device for a combine having a feeder housing with a discharge end disposed adjacent to a threshing cylinder, the feeder housing including a conveyor for delivering crop material into the threshing cylinder. The anti-dust device includes a plate pivotally mounted transversely between the upper portion of the feeder housing and the threshing cylinder, thereby obstructing the movement of dust from the threshing cylinder back through the feeder housing. The plate is spring biased to normally assume a position in close proximity to the circumference of the threshing cylinder but is moveable outwardly therefrom by the engagement therewith of crop material rotating with the cylinder.

This invention relates to combines and more particular to anti-dust devices for controlling the internal flow of air having dust particles suspended therein.

3,669,125
TAILINGS RETURN DISCHARGE FOR AXIAL FLOW COMBINES

Edward William Rowland-Hill, and Horace G. McCarty, both of Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed June 23, 1971, Ser. No. 155,921
Int. Cl. A01f 7/06
U.S. Cl. 130—27 T 12 Claims



The tailings return discharge for an axial flow combine feeds tailings to the oppositely and adjacently downwardly rotating feed augers of the respective feed sections of two axial flow units of a combine and has a horizontal conduit, a tailings return auger within the conduit and intermediate and end ducts connecting the conduit to the axial unit feed sections, respectively, for passing tailings into the crop feed. The tailings return auger has a member over the end duct to prevent the accumulation of crop material thrown by the feed auger that is rotating at the duct exit opposite to the direction of feed of the tailings return auger.

3,669,126
FILTERS FOR TOBACCO SMOKE

Elie Michel Soussa, and Jabbour Habayeb, both of Amman, Jordan, assignors to Lemo Limited, Grand Cayman, British W. Indies

Continuation of application Ser. No. 768,210, Oct. 8, 1968, now abandoned. This application Feb. 24, 1971, Ser. No. 100,736
Int. Cl. A24b 15/02; A24d 01/06; A24f 13/06
U.S. Cl. 131—10.9 3 Claims

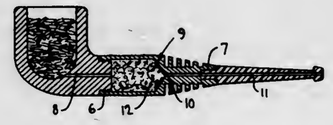
The specification discloses a filter for tobacco smoke which includes a basic substance, such as calcium hydroxide, which is capable of reacting with acid gases present in the tobacco smoke to remove certain of the undesirable impurities in the tobacco smoke, and to provide in the filter water through which the tobacco smoke is drawn to cool it and to remove particulate matters which otherwise would be carried by the tobacco smoke into the body of the smoker.

3,669,127
FILTERED TOBACCO PIPE

Kermeth L. Owens, P.O. Box 121, Payson, Ariz.

Filed June 4, 1970, Ser. No. 43,424
Int. Cl. A24f 01/22
U.S. Cl. 131—194 3 Claims

A filtered tobacco pipe is provided with a bowl, a stem and a filter chamber and heat exchanger connecting the bowl and the stem. The filter chamber and heat exchanger is made of aluminum and provided with fins to efficiently cool the hot smoke and condense the moisture therein. The filter chamber itself is provided with a tapered bore and adapted to

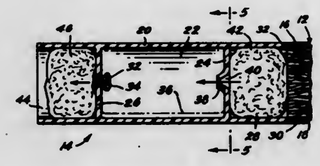


be easily filled with tobacco which absorbs the smoke condensates. An irregular spheroid is placed over the opening to the stem in the tapered end of the filter chamber to prevent the filter material from plugging the opening.

3,669,128
DEVICE FOR FILTERING TOBACCO SMOKE

Joseph H. Cohen, 1110 Venetian Way, Miami, Fla.

Filed Nov. 9, 1970, Ser. No. 87,969
Int. Cl. A24f 01/30, 01/04
U.S. Cl. 131—261 B 4 Claims

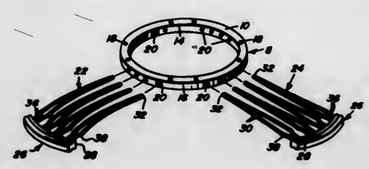


A device for filtering tobacco smoke, comprising a filter assembly that includes a chamber in which a measured quantity of liquid is contained, the front and the rear wall of the chamber each having an opening formed therein through which smoke is drawn and a plug of filter material located in and extending through the opening in the rear wall, the body of the article on which the device is secured being manipulated prior to the smoking thereof to saturate the material in the opening with the liquid as contained in the chamber, wherein smoke as drawn through the chamber and saturated material is filtered and cooled prior to being inhaled by the smoker. The compartments forward and rearwardly of the chamber may house filters, such as cotton pads, which function to remove additional impurities.

3,669,129
WIGLET ATTACHING DEVICE

David Serebrin, Mobile, Ala., assignor to Venture Enterprises, Inc., Mobile, Ala.

Filed Oct. 1, 1970, Ser. No. 77,295
Int. Cl. A45d 8/00
U.S. Cl. 132—46 R 6 Claims



A wiglet positioning and attaching device characterized by a plastic or an equivalent ring or collar having means for anchoring a base-equipped wiglet in a given ready-to-use position. The ring or collar is adapted to encompass a backcombed matted mass of hair and is removably located and held in place with requisite nicety and certainty by the teeth of attachable companion combs. The fabric base of the wiglet is preferably but not necessarily sewn atop the ring by way of threads which are threaded through holes provided therefor in the ring.

3,669,130
HAIR COMBS

Frank G. Petroczky, 416 N. Maple Avenue, Oak Park, Ill.

Filed June 16, 1971, Ser. No. 153,693
Int. Cl. A45d 24/04
U.S. Cl. 132—138 8 Claims

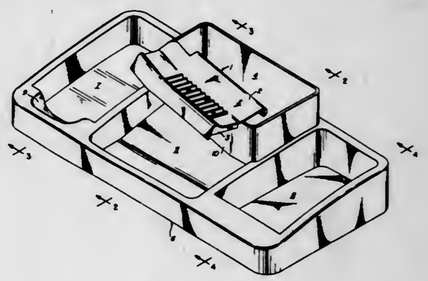


The hair combs have two sets of curved teeth, the two sets being aligned in alternating sequence. The curvature of the teeth of the respective sets of teeth is in opposite directions and the teeth of one set cross the teeth of the other set. At the outer or free end of the teeth, prongs are provided.

3,669,131
COIN COUNTING AND ROLLING APPARATUS

James W. Parker, 3344 East Weldon, Phoenix, Ariz.

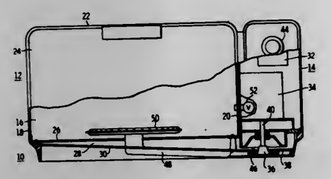
Filed Sept. 30, 1970, Ser. No. 76,715
Int. Cl. G07d 9/00
U.S. Cl. 133—8 A 3 Claims



In order to facilitate and expedite manual counting and rolling of bulk coins of a given denomination, apparatus is provided for semiautomatically grouping bulk coins into small equal groups, each group constituting a predetermined fraction, such as one-tenth of a roll. The apparatus consists generally of two counter-members hinged together with the upper member having a predetermined number of compartment openings dimensioned to accept the number of coins corresponding to the above-mentioned fraction of a roll and the lower member having a channel disposed beneath the compartment openings of the upper member. In operation, bulk coins of the appropriate denomination are manually worked into the compartment openings until all have accepted the maximum number of coins. The upper member is then swung away leaving the number of coins constituting a roll laying in the channel of the lower member from which they may be manually slid into a coin wrapper. To change coin denomination, the unit comprising the upper and lower

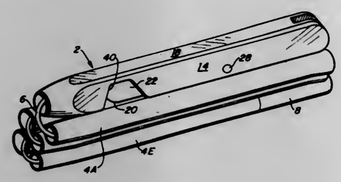
counter members is removed from a base and replaced with a similar unit with appropriately dimensioned compartment openings for receiving the new denomination to be counted. The base has three compartments including a first, central compartment for storing uncounted coins and including the support for the counter apparatus, a second compartment for storing coin wrappers where they are easily accessible, and a third compartment for storing rolled coins.

3,669,132
DISHWASHING APPARATUS
Wesley Mamrose, Magnus Lane R.D. #5, Irwin, Pa.
Filed Sept. 29, 1970, Ser. No. 76,560
Int. Cl. B08b *3/02, 15/00*
U.S. Cl. 134—58 D 3 Claims



A dishwasher arrangement in which food particles separated from the articles being washed are separated from the water being circulated to effect the washing by momentarily stopping the circulation of the water in the washing chamber to permit the level of water in the sump to rise sufficiently to sweep the food particles out of an opening provided in a washing chamber wall.

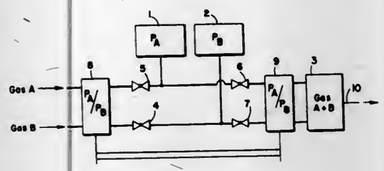
3,669,133
COLLAPSIBLE ROD
Joseph Hyman, Newton Center, Mass., assignor to Hycor, Inc., Woburn, Mass.
Filed June 8, 1971, Ser. No. 44,239
Int. Cl. A45b *9/00*
U.S. Cl. 135—45 16 Claims



A collapsible rod structure adopted to be used as a cane, the structure comprises a plurality of tubular sections tethered together by a cord and separable to form a compact bundle.

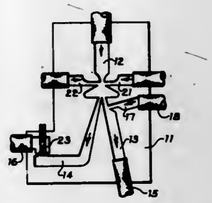
3,669,134
METHOD FOR MIXING PRESSURE GASES PARTICULARLY FOR RESPIRATORS AND MEDICAL DEVICES
Gunter Dobritz, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany
Filed June 11, 1970, Ser. No. 45,372
Claims priority, application Germany, June 20, 1969, P 19 31 354.3
Int. Cl. G05d *11/00*
U.S. Cl. 137—7 2 Claims

In a method for mixing two gases in a predetermined ratio, the two gases are supplied to respective chambers, having fixed or adjustable preselected volumes, through respective first pressure regulators while maintaining the discharge pressures of the two first pressure regulators in such predetermined ratio. The flow of the two gases to the chambers is then interrupted, and the two gases are thereafter discharged from the respective chambers to a common discharge line through respective second pressure regulators while maintaining the discharge pressures of the two second pressure regulators in such predetermined ratio. The apparatus includes adjustable means for conjointly adjusting both the first



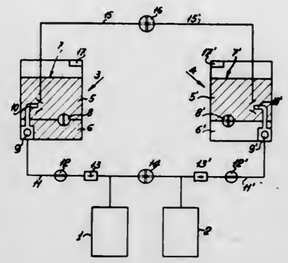
and second pressure regulators so that the discharge ratios thereof are equal and equal to the predetermined ratio. A reversing shut-off valve may be used to connect the chambers to the first pressure regulators or to discharge the chambers through the second pressure regulators. A magnetically biased torsion resistant lever may be used to commonly bias the pressures of the first and second pressure regulators and also to adjust the respective pressure ratios. The respective first and second pressure regulators for each gas may be combined into a single unit.

3,669,135
FLUIDIC DEVICE FOR MODULATING THE TEMPERATURE OF COOLING LIQUID IN A GARMENT
James B. Starr, St. Paul, Mich., assignor to The United States of America as represented by the Secretary of the Navy
Filed Nov. 24, 1970, Ser. No. 92,366
Int. Cl. F15c *1/14*
U.S. Cl. 137—81.5 3 Claims



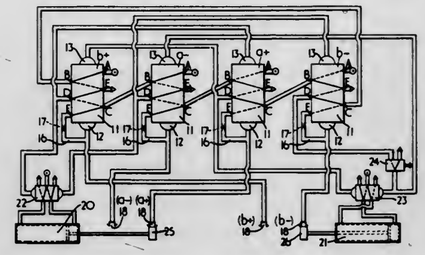
A fluidic device for controlling the temperature of cooling liquid in a garment, such as a space suit. A power port is provided through which cold fluid enters the device and first and second output ports are provided. The first output port is connected to tubes in the garment and the second output port is vented to a return system. A warm water port is connected to the first output port and first and second control ports are provided for controlling the amount of cold fluid entering the first output port. An adjustable valve is provided in the second output port for varying the resistance to flow of liquid through the second output port.

3,669,136
FUEL DELIVERY SYSTEM FOR A PLURALITY OF AIRCRAFT ENGINES
Giorgio Parenti, Parma, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy
Filed Mar. 26, 1970, Ser. No. 23,066
Claims priority, application Italy, Mar. 25, 1969, 14516 A/69
Int. Cl. G05d *7/06*
U.S. Cl. 137—113 3 Claims



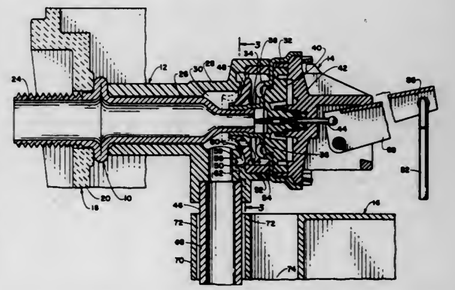
In an aircraft, a fuel tank is provided for each engine and a fuel feed pump in each tank feeds fuel from the tank to the associated engine. A fuel ejector in each tank returns fuel to the tank and a fuel conduit connects the fuel pump and fuel ejector to the associated engine. A fuel transfer circuit interconnects the tanks and a normally closed valve therein prevents fuel transfer from one tank to the other. A switch in each tank is responsive to the fuel level therein and opens the valve to transfer fuel when the fuel level in the tank reaches the switch.

3,669,137
FLUID ACTUATED PISTON VALVE
Colin John Kirk, "Whispers," 125 Dukes Ride, Crowthorne, England
Filed Aug. 14, 1970, Ser. No. 63,861
Claims priority, application Great Britain, Aug. 26, 1969, 42,403/69
Int. Cl. F15b *21/02*
U.S. Cl. 137—119 4 Claims



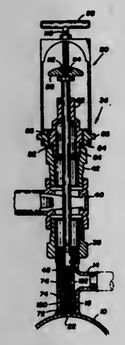
A piston valve of the kind in which a piston is movable longitudinally of a housing having ports for fluid to be controlled by the piston between two operative positions in each of which at least some of said ports are interconnected in different pairs through passages in the piston, by actuating fluid pressure applied to the end of the piston appropriate to the movement required, the actuating fluid pressure for effecting the movement in one direction being applied from a source externally of the valve and the actuating fluid pressure for effecting movement in the other direction being derived from one of said ports when the piston has been moved in said one direction. Said one port is connected to an end portion of the housing adjacent the relevant end face of the piston through a restricted passage and a closable control orifice leads from the passage between the restriction therein and said end portion of the housing, the control orifice being openable to prevent the actuating fluid pressure from rising sufficiently to effect movement of the piston in said other direction and closable to permit the actuating fluid pressure to reach a value sufficient to effect movement of the piston in said other direction when said movement is to be effected.

3,669,138
BALL COCK CONSTRUCTION INCLUDING HORIZONTAL INLET MOUNTING AND ANTI-SYPHON DEVICE
Adolf Schoepe, 1620 North Raymond Avenue, Fullerton, Calif., and Fredric E. Schmuck, 535 Century Drive, Anaheim, Calif.
Filed July 2, 1970, Ser. No. 51,897
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 5 Claims



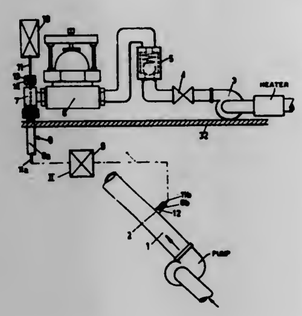
A horizontally extending water inlet body is mounted through a sidewall of a toilet flush tank above the tank upper water level and an inner end portion thereof is telescoped by a water outlet body with a water valve positioned between inner ends of said bodies. An annular water outlet chamber formed between inner end portions of the inlet and outlet bodies is downwardly connected communicating with a generally vertical water outlet tube projecting downwardly, preferably to below a flush tank lower water level. A float telescopes the water outlet tube guided thereby in upward and downward movement with the flush tank water level, the float controlling the valve through a generally horizontally extending pivotal acuating arm on the valve connected to the float through a vertical connecting link. A water chamber of the float is compacted in the float portion telescoping the water outlet tube to give float balanced movement despite float horizontal projection therefrom and connection to the valve actuating arm horizontally spaced from the water outlet tube guiding. A frusto-conical, resilient material, anti-syphon member is positioned within the annular water outlet chamber of the water outlet body normally sealing inwardly against the water inlet body, but annularly expanding away from the water inlet body upon water under pressure being admitted through the valve into the water outlet chamber and downwardly through the water outlet tube. During such annular expansion of the frusto-conical member, the walls thereof seal air relief openings through the water outlet body communicating with the air in the flush tank above the upper water level thereof, but in non-expanded condition of the frusto-conical member, attempted syphoning air forces against the upstream side of the frusto-conical member may draw air through an air vent opening of said frusto-conical member and from the tank air through the outlet body air relief openings to relieve any syphoning forces upwardly through the water outlet tube.

3,669,139
SERVICE TOOL FOR GAS MAINS
George Gajdos, 200 Lexington Avenue, Oyster Bay, N.Y.
Filed Oct. 26, 1970, Ser. No. 83,873
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—317 12 Claims



In the servicing of gas mains or the like, in the preparatory procedures for which a seal is achieved by substituting a thrust plug for a rotary, threaded plug to permit repair or other maintenance service to the main without leakage, the use of an improved service tool or apparatus having a body which is readily assembled on the main outlet pipe to define a sealable passage thereon, and having a shaft or rod capable of being manipulated in axial and rotative movements within said passage. As a consequence of the rotative movement, the threaded plug is removed clearing a path along which access is gained to the main outlet opening, following which the thrust plug is installed by an axial stroke of said rod.

3,669,140
SUCTION DREDGING INSTALLATION
Ronke van der Veen, Jutphaas, Netherlands, assignor to N.V. Ingenieursbureau Voor Systemen En Octrooien Spanstaal, Rotterdam, Netherlands
Continuation of application Ser. No. 817,719, Apr. 21, 1969, now abandoned. This application Feb. 16, 1971, Ser. No. 115,816
Int. Cl. F16k *49/00*
U.S. Cl. 137—334 8 Claims



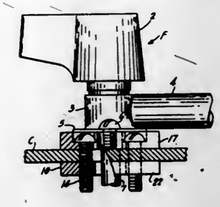
Suction dredging installation is provided comprising a convey pipe for conveying a suspension of dredging spoil and water, said convey pipe being provided with at least one pump;

a purgative source connected by means of a purgative conduit to at least one measuring point;

at least one pressure sensitive element connected by means of a tactile conduit with said purgative conduit.

The suction dredging installation is characterized in that the tactile conduit is mounted for a considerable part of its length in the purgative conduit of said measuring point, resulting in a simplification of assembling the conduits, and a protection against damage and an insulation against excessive cooling of the tactile conduit.

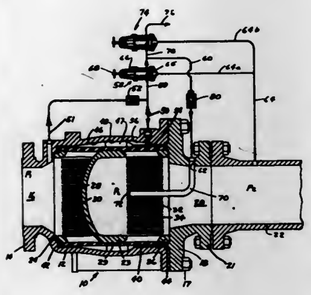
3,669,141
FAUCET MOUNTING MEANS
William C. Schmitt, Brown Deer, Wis., assignor to Milwaukee Faucets, Inc., Milwaukee, Wis.
Filed Nov. 27, 1970, Ser. No. 93,006
Int. Cl. F16l *5/00*
U.S. Cl. 137—359 1 Claim



Means for mounting a faucet on a counter top, vertical wall or other surface, and without the necessity of having any access space on the other side of the surface. The means includes a threaded back-up plate which can be inserted in an opening in the counter top or other surface for positioning on the other side of the surface, and which can be securely attached to a mounting plate located on top of the counter or other surface.

A method of mounting a faucet on and from one side of a surface.

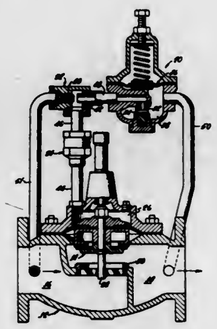
3,669,142
EXPANSIBLE TUBE VALVE WITH LOW PRESSURE BLEED
Charles C. Gerbic, San Anselmo, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.
Filed Oct. 16, 1970, Ser. No. 81,311
Int. Cl. G05d *16/16*
U.S. Cl. 137—489 15 Claims



A pressure regulating system including a main valve with an expansible tube stretched over a cylindrical barrier so that flow occurs around the barrier only when a pressure fluid in a control chamber around the tube is overcome by upstream

pressure. A pilot valve senses downstream pressure and opens when it drops to a predetermined level to exhaust the control chamber to a low pressure zone. Flow around the barrier is increased by evacuating the control chamber to a zone within the valve housing at a pressure lower than downstream. This occurs in a zone wherein the static pressure of the downstream fluid line is converted by the flowing stream to a high velocity, low static pressure. In areas where an atmospheric bleed is not objectionable, a second pilot valve may be provided to exhaust the control chamber to atmosphere if downstream pressure drops to a set lower level.

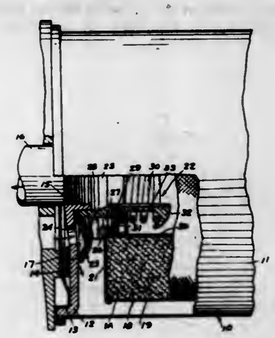
3,669,143
FLOW STABILIZER FOR PILOT-OPERATED MODULATING VALVE SYSTEM
James R. Reese, Santa Ana, Calif., assignor to Cal-Val Co., Costa Mesa, Calif.
Original application Nov. 6, 1969, Ser. No. 874,449, now Patent No. 3,592,223. Divided and this application Feb. 10, 1971, Ser. No. 114,216
Int. Cl. G05d *16/00*
U.S. Cl. 137—512.3 9 Claims



The valve system comprises a main valve including a diaphragm-operated poppet separating an inlet side from an outlet side, a pilot valve for opening and closing the main valve in response to a predetermined pressure or flow condition, and a restrictor (for example, the inlet nozzle of an ejector) coupled to pass fluid from the inlet side to a flow stabilizer and to the pilot valve. The flow stabilizer is connected between the ejector and a diaphragm chamber in the main valve. The stabilizer passes fluid from the ejector to the diaphragm chamber, and at other times from the diaphragm chamber to the ejector, at a restricted rate for slowly opening and closing the main valve in response to slow or small changes in the demand, and at much faster rates for rapidly opening and closing the main valve in response to sudden and substantial changes in the demand.

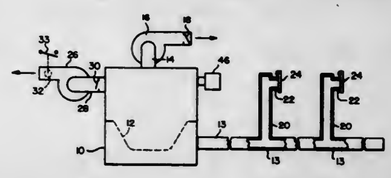
3,669,144
OIL FILTER
Robert Palmai, Preston, Ontario, Canada, assignor to Sheller-Globe Corporation, Detroit, Mich.
Original application Dec. 4, 1968, Ser. No. 781,135. Divided and this application June 8, 1970, Ser. No. 56,995
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 2 Claims

An oil filter including a casing having a filter element therein. The casing has a bottom wall with a centrally located egress opening and a plurality of circumferentially spaced entrance openings surrounding the egress opening. A pressure relief valve is interposed between the lower end of the filter element and the egress opening and a resilient anti drain back valve is interposed between the back pressure valve and



the bottom wall in overlying relationship to the spaced entrance openings.

3,669,145
CENTRAL VACUUM CLEANER CONTROL SYSTEM
Allan Holstrom, Rochester, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.
Filed June 22, 1970, Ser. No. 47,994
Int. Cl. A47l *5/38*
U.S. Cl. 137—567 6 Claims

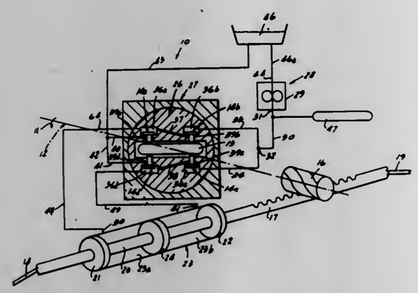


A secondary, smaller vacuum pump is connected to the system's dust collecting tank to maintain a predetermined, minimum vacuum in the tank when the primary vacuum pump is not in use. When one of the covers sealing the system's several outlets is removed to insert a cleaning attachment, the sudden rush of atmospheric pressure into the tank momentarily closes a first pressure switch, which actuates the primary pump. The primary pump motor is kept energized through a holding circuit including a normally-closed pressure switch, which finally opens and deenergizes the motor for the primary pump, when the system pressure has been lowered to a predetermined minimum value. The secondary pump, nevertheless, continues to run.

3,669,146
POWER ASSISTED STEERING SYSTEM
Frederick J. Adams, Campton, near Shefford, England, assignor to Cam Gears Limited, Hitchin Hertfordshire, England
Filed Jan. 23, 1970, Ser. No. 5,295
Int. Cl. F16k *11/14*
U.S. Cl. 137—596.2 3 Claims

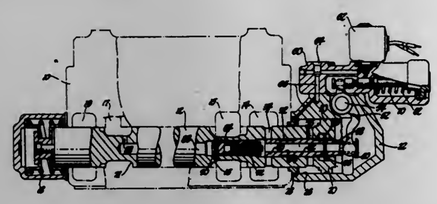
A power assisted rack and pinion vehicular steering system in which a double acting hydraulic power cylinder is connected to the rack. A power fluid pump is connected to the hydraulic cylinder through a manually operated torque-transmitting and torque-responsive control mechanism including a housing, a rotatable work input shaft adapted to receive a

steering wheel, a rotatable work output shaft on which the pinion is formed, a torsion rod connected fast at opposite ends to the work input and output shafts, a valve sleeve connected for joint rotation to the work output shaft and a plurality of poppet valves mounted on the valve sleeve. The



work input shaft is so constructed and arranged to actuate the poppet valves in response to relative rotation between the work input and output shafts and to control the flow of fluid between the pump and the hydraulic cylinder to move the rack in a direction corresponding to the direction of rotation of the work input shaft.

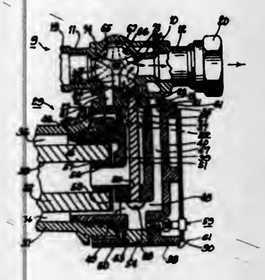
3,669,147
POWER TRANSMISSION
Robert G. Farrell, Royal Oak, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Feb. 18, 1971, Ser. No. 116,375
Int. Cl. F15b *15/17*
U.S. Cl. 137—625.6 **3 Claims**



A power assisted directional control valve for hydraulic power systems has a sliding spool actuated by a differential piston. A follow-up valve is telescoped within the spool and controls the admission and release of pilot pressure fluid to and from the large side of the actuating piston. To enable the main spool to be shifted in the event of failure of the pilot pressure supply, an auxiliary pilot valve is opened upon overtravel of the normal pilot valve and admits pressure fluid trapped by the main spool to both sides of the actuating piston.

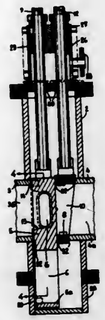
3,669,148
BYPASS VALVE FOR FLUID TREATING ASSEMBLY
Robert Burkhalter, Jr., Fort Atkinson, Wis.; Don Edward Heskett, Villa Park, and Frank Kryder Hoover, Evanston, both of Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.
Filed Nov. 24, 1969, Ser. No. 879,378
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.29 **11 Claims**

In a bypass valve adapted to selectively bypass a fluid treating assembly while a fluid treating element is removed and replaced, a single operating member controls the bypass function, simultaneously isolating the fluid treating assembly. The bypass valve housing has concentric inlet and outlet ports, and is connected to the fluid treating assembly with a



single bolt, coaxial with the ports. The operating member permits mounting of a control knob on either of two opposite sides of the valve housing. The valve mechanism incorporates a single gasket for sealing between the edges of three spaced valve vanes and an interior surface of the valve.

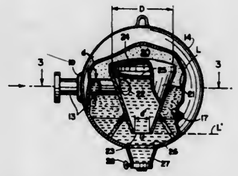
3,669,149
DIRECT SLUICE VALVE FOR PIPES CONVEYING PRODUCTS AT HIGH TEMPERATURE
Robert Julien Joseph Guichon, Aix-les-Bains, Savoie, France
Filed July 28, 1970, Ser. No. 58,961
Claims priority, application France, July 30, 1969, 6925638
Int. Cl. F16k *11/06*
U.S. Cl. 137—625.48 **2 Claims**



A valve of the direct sluice type for high temperature applications including a cooperating closing member and an associated wedge for protecting the valve seating in its open position from injury caused by the conveyed fluids tending to adversely affect the seating. The valve is also adapted to facilitate the evacuation of products reverting from a decoking of a distillation column without opening the valve during the processing or cracking gas of petroleums under high temperature.

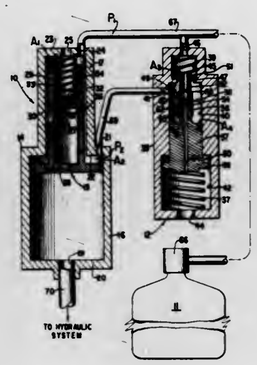
3,669,150
HYDRODYNAMIC SURGE ABSORBING APPARATUS
Wilhelm Sydow Everett, Santa Paula, Calif., assignor to American Air Filter Company, Inc.
Filed Mar. 19, 1970, Ser. No. 20,910
Int. Cl. F16l *55/04*
U.S. Cl. 138—26 **7 Claims**

A hydrodynamic surge absorbing apparatus for connection to a header pipe in a sewage piping system comprises a closed spherical vessel incorporating a swirl chamber in the form of an inverted truncated cone. This cone has an upper tangential inlet connected to the header pipe and a lower central outlet at the truncated apex portion communicating with the interior of the vessel at a level below liquid normally filling a portion of the vessel. Surges in the header pipeline of



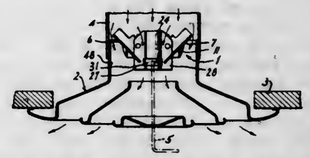
the system result in liquid flow through the swirl chamber into the vessel to compress air or gas above the liquid in the vessel and liquid flow out of the vessel back up through the surge chamber to the line the resistance to such flow being controlled by the geometry of the swirl chamber and gas pressure in the vessel so as to effectively absorb the surges in the piping sewage system.

3,669,151
HYDRAULIC SYSTEM ACCUMULATOR ARRANGEMENT
William T. Fleming, Boonton, N.J., assignor to Kiddle, Walter & Company, Inc., Belleville, N.J.
Filed Nov. 25, 1969, Ser. No. 879,851
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 **9 Claims**



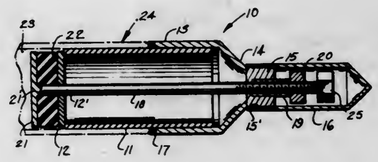
An accumulator arrangement for providing constant pressure high flow rates in hydraulic systems. The accumulator piston has a piston area directly connected to a container of pressurized gas and an annular piston area of larger diameter which is connected to the container through a pressure regulator. The regulator senses the container pressure and the pressure acting on the annular piston area and increases the pressure on the annular piston area as the container pressure decreases during expansion. Between high flow periods, when the accumulator is refilled by hydraulic fluid under pressure, the gas acting on the small diameter piston is recompressed and forced back into the container and the gas acting on the annular piston area is vented to the atmosphere through the regulator.

3,669,152
BUTTERFLY DAMPER
Lawrence M. Peterson, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Aug. 10, 1970, Ser. No. 62,407
Int. Cl. F15d *1/02*
U.S. Cl. 138—46 **9 Claims**



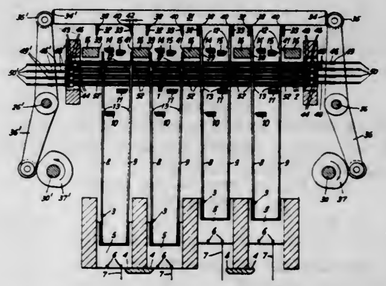
A butterfly damper is operated by a worm gear mounted on the blades of the damper, the blade assembly being separably mountable on the neck of a discharge unit.

3,669,153
PIPE CAP
Cletus Weaver, 1215 Spring Street, Michigan City, Ind.
Filed Sept. 29, 1969, Ser. No. 861,857
Int. Cl. F16l *57/00*
U.S. Cl. 138—89 **2 Claims**



A device for capping a pipe, particularly for an underground pipe. This device serves to keep dirt, mud, water and the like from entering an underground pipe.

3,669,154
OPEN SHED DOUBLE LIFT-JACQUARD MACHINE
Heinz Horak, Huttwil, Switzerland, assignor to Apparatefabrik AG Huttwil, Huttwil, Bern, Switzerland
Filed Feb. 16, 1971, Ser. No. 115,465
Claims priority, application Switzerland, Feb. 19, 1970, 2358/70
Int. Cl. D03c *3/08*
U.S. Cl. 139—63 **4 Claims**



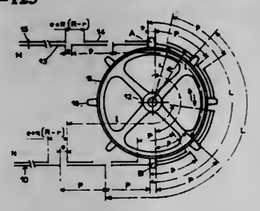
There is disclosed an open shed double lift-Jacquard loom, comprising lifting blades and open shed blades, a plurality of rod means each possessing two resilient leg members positioned to cooperate with said blades. Each leg member is equipped with two tongues respectively cooperating with an associated lifting blade and open shed blade, and a drive

mechanism and guide means provided for the open shed blades serves to move said open shed blades alternately at an inclination up and down with respect to said rod means, so that the rod means remaining in the open shed position always come into engagement with an associated open shed blade. Punching needles are arranged transverse to the leg members of the rod means for selectively acting upon the individual leg members, and guide rails are associated with the leg members of the rod means. The guide rails are movable transverse to said leg members and act alternately upon the free ends of said leg members, said guide rails retaining the leg members of said rod means remaining in the upper shed position in an engaged position with the associated lifting blades thereof at the side of the associated lifting blade which is ascending into the upper position. There is also provided guide rail-drive means for moving said guide rails prior to reaching the upper position of the upwardly moving lifting blades towards such associated upwardly moving lifting blades and away from the lifting blades moving downwardly.

3,669,155
WEAVING MACHINES WITH CONTINUOUS WEFT FEED

Raymond Dewas, 120 Boulevard de Saint-Quentin, Amiens, France

Filed Apr. 27, 1970, Ser. No. 32,131
Claims priority, application Luxembourg, Apr. 30, 1969, 58543
Int. Cl. D03d *47/18*
U.S. Cl. 139—123 5 Claims



The arrangement according to the invention consists in the provision, over at least one part of the length of one of the strips of which the tape consists, of perforations corresponding to the dimensions and to the pitch of the teeth of the wheel on the engaging radius of the said strip, while the corresponding perforations of the other band or bands are given an additional length of a magnitude and direction corresponding to the difference in length between the engaging arc, based on the middle fiber, by which engagement is made with the strip or strips having enlarged perforations, on the one hand, and that by which engagement is made with those having normal perforations, on the other hand, this arrangement being applicable in the converse manner to the respective strips in other parts of the tape.

3,669,156
GRIPPER SHUTTLES FOR LOOMS FOR WEAVING

Ian S. Porter, Barnsley, England, assignor to Wilson & Longbottom Limited, Barnsley, England

Filed Feb. 16, 1970, Ser. No. 11,796
Int. Cl. D03d *47/24*
U.S. Cl. 139—125 3 Claims

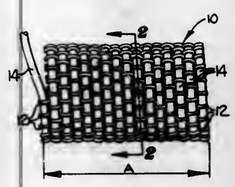


A weaving loom gripper shuttle with an elongated body having a recess in the top containing two pairs of weft gripper jaws. Two pivotable cam levers project outwardly from a side of the body and are moved inwardly to open the jaws when the cams contact a side of a shuttle box.

3,669,157
SHRINKABLE TUBULAR FABRIC

Hubert C. Woodall, Jr., Winston Salem; Horace L. Freeman, Burlington, and Noah C. Goodman, Winston Salem, all of N.C., assignors to Carolina Narrow Fabric Company, Winston Salem, N.C.

Continuation-in-part of application Ser. No. 502,028, Oct. 22, 1965, now abandoned. This application June 1, 1970, Ser. No. 41,997
Int. Cl. D03d *3/02*
U.S. Cl. 139—387 1 Claim

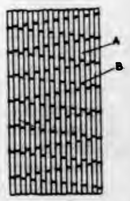


A woven tubular fabric which is formed of a set of warp yarns extending longitudinally thereof and a filling yarn interwoven with the warp yarns and extending circularly around the tubular fabric. The filling yarn is heat shrinkable while the set of warp yarns is non-shrinkable so that the woven tubular fabric will shrink in a radial direction upon the application of heat, while the longitudinal dimension remains unchanged.

3,669,158
CONTINUOUS CARBON FIBER TAPES

Leslie Nathan Phillips, Farnborough, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 6, 1970, Ser. No. 17,265
Claims priority, application Great Britain, Mar. 10, 1969, 12,448/69; Nov. 6, 1969, 54,452/69
Int. Cl. D03d *15/00*
U.S. Cl. 139—420 R 10 Claims

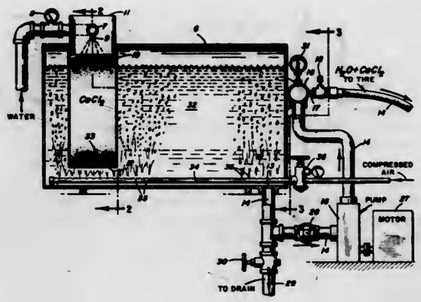


Tape containing continuous high strength high modulus carbon fibers and optionally also glass fibers suitable for use as prerimpregnated tape in mechanical winding processes is disclosed wherein there is a light cross-weave of 1–10 filaments of fine glass fiber at a frequency of about 10–2 threads per inch.

3,669,159
METHOD AND APPARATUS FOR INTRODUCING LIQUID INTO VEHICLE TIRES

Roy L. Owens, Jr., 602-606 18th Street, Corbin, Ky.

Filed Aug. 5, 1970, Ser. No. 61,151
Int. Cl. F17c *13/02*
U.S. Cl. 141—1 6 Claims

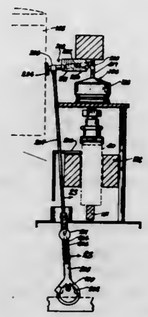


A device for filling tires with a solution of calcium chloride in water comprising a vessel having inlet means adapted to continuously introduce liquid into the vessel, outlet means adapted to continuously remove liquid from the vessel, and means for transmitting the liquid from the vessel to a tire. A mesh hopper is disposed within the vessel beneath the liquid inlet means. The mesh hopper is adapted to retain particulate material but is readily pervious to liquid.

3,669,160
MACHINE FOR AUTOMATICALLY FORMING, FILLING, CLOSING AND SEALING CARTONS

Robert J. Mistarz, Northbrook, Ill., assignor to Cherry-Burell Corporation, Chicago, Ill.

Original application Nov. 9, 1964, Ser. No. 409,911, now Patent No. 3,405,505. Divided and this application July 26, 1968, Ser. No. 754,136
Int. Cl. B65b *43/42*; B67c *3/00*
U.S. Cl. 141—160 5 Claims

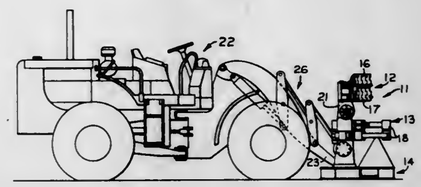


This invention relates to a filler unit for a machine for automatically forming, filling, closing and sealing cartons.

3,669,161
DRIVE MECHANISM FOR TREE HARVESTERS

Nathan Gutman, Washington; Raymond L. Moser, Tremont; Dorrance Oldenburg, Peoria, and Donald E. Sunderlin, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed July 27, 1970, Ser. No. 58,465
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 15 Claims

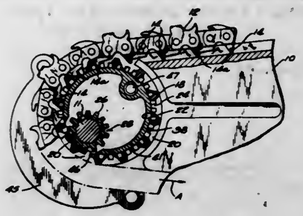


A drive mechanism for a tree harvester including a frame movably mounted on a vehicle, the drive mechanism being secured to the frame along with delimbing and shear assemblies arranged on opposite sides of the drive mechanism, the drive mechanism comprising an endless track trained about a drive sprocket and rollers, the rollers supporting a portion of the track in alignment with the delimbing assembly, grapples being operable to secure a tree in driven engagement with the supported track portion while permitting the tree to be axially moved relative to the delimbing assembly and shear assembly for processing.

3,669,162
CHAIN SAW WITH GEAR DRIVE

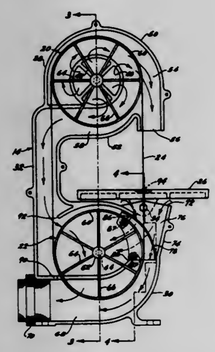
Finn T. Irgens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Wis.

Filed Apr. 3, 1970, Ser. No. 25,526
Int. Cl. B27b *17/08*
U.S. Cl. 143—32 R 4 Claims



Disclosed herein is a compact, lightweight gear drive for a chain saw which includes a combination cutting chain sprocket and internal gear. The sprocket is in the form of a ring with a plurality of internal teeth which mesh with the teeth of a pinion gear located within the sprocket and driven by the engine. The sprocket has through recesses in its periphery to receive the drive tangs of the cutting chain. In one embodiment, the chain sprocket is supported in eccentric relation to the output shaft of the engine by a hub located interiorly of the internal teeth on the sprocket.

3,669,163
BAND SAW WITH SAWDUST EJECTION MEANS
Herbert R. Crane, 6803 Kingsbury Boulevard, Saint Louis, Mo.
Filed Apr. 15, 1970, Ser. No. 28,842
Int. Cl. B27b *13/02*
U.S. Cl. 143—157 A 7 Claims

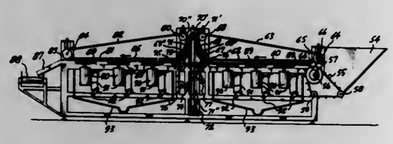


A band saw in which vertically spaced wheels driving the band serve as centrifugal impellers and the housing portions enclosing the wheels have volute form, the upper housing portion having a central inlet and an outlet directing air downward to the work area, the lower housing portion including inlet passage means leading from the work area to the central portion thereof, and an outlet remote from the work area directing air and sawdust exteriorly of the housing.

ERRATUM

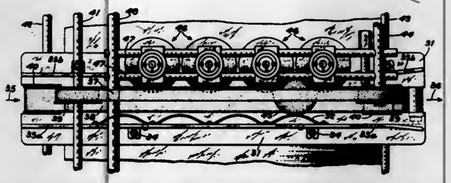
For Class 144—3 D see:
Patent No. 3,669,161

3,669,164
DUAL BELT MACHINE FOR TRIMMING PROJECTIONS FROM GLOBULAR ARTICLES
James P. Cox, Burnaby, British Columbia, Canada, assignor to John Inglis Frozen Foods Company, Modesto, Calif.
Original application Feb. 21, 1968, Ser. No. 707,152, now Patent No. 3,538,969. Divided and this application July 6, 1970, Ser. No. 52,563
Int. Cl. A23n *15/02*
U.S. Cl. 146—81 5 Claims



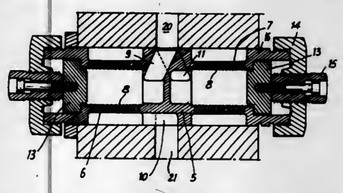
By engagement of pad means with the upper side of a globular article, it is rolled along guideways in a compound rotation, which periodically moves a projection of the article through the slot of the guideways. Such compound rotation is effected by moving pad means above guideways in a direction generally lengthwise of the guideways. Such pad means are spaced parallel belts one of which travels faster than the other. Knife blades are rotated closely beneath the guideways to sever projections of articles extending through the slot of the guideways.

3,669,165
PRE-SLICED MUFFIN AND PRE-SLICING APPARATUS
Hubert E. Tobey, Maywood; Alphonse M. Masiuk, Cresskill; John W. Hood, Rivervale, and Doe L. Irvin, Moonachie, all of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Apr. 24, 1970, Ser. No. 31,469
Int. Cl. B26d *3/08*
U.S. Cl. 146—98 5 Claims



The invention describes a pre-sliced English muffin having a knife edge peripheral cut made from the edge of the muffin radially inward a predetermined amount. The cut is positioned so that the top and bottom portions are approximately equal. The cutting facilitates the forking and subsequent separation of the top portion from the bottom portion of the muffin. The pre-sliced muffin is produced by slicing apparatus comprising an undulating guide and a plurality of series arranged rotating cutter disks spaced so that the muffin can be fed by suitable conveyor means into the apparatus. A first blade of the series makes a partial peripheral cut with the rotating blade and stationary guide cooperating to impart rotation to the muffin. Each successive rotating blade makes a partial peripheral cut to produce a finished muffin having a complete peripheral cut to a predetermined amount.

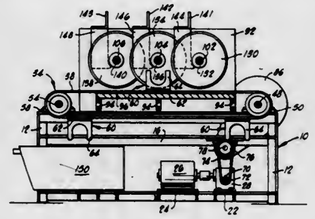
3,669,166
FILTER CHANGING DEVICE
Roger Colin, Orthez, France, assignor to Societe Anonyme dite: Aquitaine-Organico, Courbevoie, France
Filed Dec. 4, 1970, Ser. No. 95,091
Claims priority, application France, Mar. 10, 1970, 7008543
Int. Cl. B29f *3/00*
U.S. Cl. 146—174 8 Claims



The device includes two coaxial filters in a cylindrical body positioned in the flow line perpendicular to the direction of discharge of a plastic extruder. By merely rotating the cylindrical body on its axis, one of the filters is connected with the extruder discharge while the other filter is disconnected from the extruder discharge and may be opened for cleaning by removing an end plug.

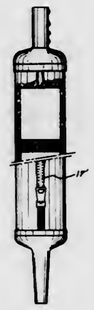
3,669,167
SAUSAGE SLICING APPARATUS
Floyd S. Gabel, 5008 N.W. Steanson, Oklahoma City, Okla.
Filed Aug. 5, 1970, Ser. No. 61,202
Int. Cl. B26d *1/28*
U.S. Cl. 146—98 4 Claims

A sausage slicing apparatus which includes a conveyor for horizontally moving an elongated package of sausage in a horizontal direction while supporting the sausage in a cradle. A plurality of banks of rotary driven, disk-shaped cutter blades which are horizontally offset or staggered to sequentially engage the sausage package are provided in a position to cut through portions of the sausage package in sequence, with minimum power required to effect complete cutting of the entire sausage package into patties or sausage disks.



Stripper fingers are provided and extend between adjacent disk-shaped cutter blades of the apparatus for preventing the adherence to the blades of fatty materials from the sausage, and consequent plugging of the blades and an increase in power requirements of the apparatus.

3,669,168
CONTAINER
Dale A. Beaudin, 1503 Hackett Street, Beloit, Wis.
Filed July 2, 1970, Ser. No. 52,010
Int. Cl. B65d *100*
U.S. Cl. 150—0.5 3 Claims



A container for canned or bottled beverages in the form of a golf umbrella comprising a semi-circular elongate support member having a handle portion and a bottom portion attached thereto; a flexible circular elongate outer mantle is provided to form a circular cylindrical portion between the handle and bottom portion. An upper mechanism runs the full axial length of the outer mantle and provides access to the interior of the cylinder.

3,669,169
LADIES HANDBAG
Milton Lubliner, Jericho, N.Y., assignor to Morris White Fashions, Inc., New York, N.Y.
Filed Sept. 16, 1970, Ser. No. 72,591
Int. Cl. A45c *13/26*
U.S. Cl. 150—33 8 Claims

A ladies handbag having a side wall to which a pair of connector members is secured in longitudinally spaced alignment, each connector member having a pair of spaced parallel connector means extending parallel to the longitudinal axis of the handbag and defining an upper and lower pivot seat. A handle having a connector element at each end, is pivotally connected to the upper pivot seat and an ornamental member having a connector element at its upper end is pivotally connected to the lower pivot seat.

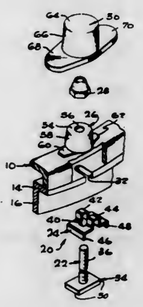


3,669,170
U-SHAPED CLIP NUT
Donald R. Schuster, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 22, 1970, Ser. No. 48,058
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.75 9 Claims



A U-shaped clip nut in which the base leg and nut leg are joined by a bight portion extending only across an intermediate part of the total width of the clip nut with clamping fingers being formed of the remaining width and being cantilevered at the free end of the nut leg and directed toward the base leg.

3,669,171
FASTENER ASSEMBLY
Morris Yavitch, 1008 Benedict Canyon Drive, Beverly Hills, Calif.
Filed June 8, 1970, Ser. No. 44,137
Int. Cl. A47g *3/00*; F16b *39/02*
U.S. Cl. 151—44 5 Claims



Apparatus for use with a bolt and nut to hold down a water closet to a flanged member with a slot therein, which is

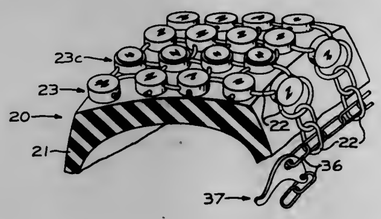
economical to produce and install. The fastener assembly includes a sheet metal member with a center portion bent into a U-shape for reception in said slot to resist turning, a hole in the center for receiving the shank of the bolt so it can project through the slot and through the water closet, and turned-over ends for engaging the bolt head to prevent it from turning. The assembly also includes a cap with an upper washer-like portion through which the bolt shank can project and flared side walls whose lower end can rest on the water closet, and a cover with tapered inner walls for snugly engaging the side walls of the cap.

3,669,172

PROTECTIVE CHAIN ASSEMBLY FOR TIRES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 24, 1970, Ser. No. 58,063
Int. Cl. B60c *27/20*
U.S. Cl. 152—171 **24 Claims**



A pneumatic tire or the like has a protective chain assembly wrapped therearound. The chain assembly comprises a plurality of rings coupled together by notched and coplanar cylindrical coupling means which also serve as tread sections on the periphery of the tire. Each coupling member attaches two of the rings together to form a tire chain assembly exhibiting multi-directional flexibility. In addition, the integrated chain assembly is reversible and the dimensions thereof may be selectively varied to provide various earthworking functions, such as compacting. In the preferred embodiment, one group of such coupling members forms master coupling members or joints for assembly and disassembly purposes.

3,669,173

PNEUMATIC TIRES

Maurice A. Young, Whittington, Lichfield, England, assignor to Dunlop Holdings Limited, London, England

Filed Sept. 15, 1969, Ser. No. 858,159
Claims priority, application Great Britain, Sept. 26, 1968, 45,650/68
Int. Cl. B60c *9/20*
U.S. Cl. 152—361 **7 Claims**

A breaker layer for a pneumatic tire comprising rubber-impregnated glass cords or yarns of filaments each having a diameter between 0.0005 and 0.0008 inches.

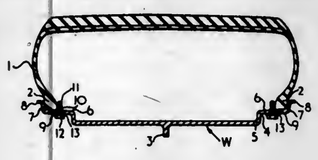
3,669,174

WHEELS

Iain C. Mills, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England

Filed June 17, 1970, Ser. No. 47,083
Claims priority, application Great Britain, June 27, 1969, 32,551/69
Int. Cl. B60b *25/20*
U.S. Cl. 152—375 **8 Claims**

A wheel for a pneumatic tire, particularly for use on racing cars, provided with at least one localized projection axially inwards of the wheel rim for preventing axially inwards displacement of the tire bead from the wheel rim flange and into the wheel well. In one form of wheel, the projections are



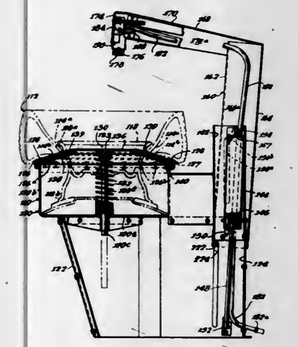
studs screwed or rivetted into the wheel. The projections are preferably provided on wheels having very wide bead seating portions.

3,669,175

BEAD EXPANDER

Billy L. Sorenson, and Ray A. Scott, both of Fort Dodge, Iowa, assignors to The Coats Company, Inc.

Continuation-in-part of application Ser. No. 753,555, Aug. 19, 1968, now abandoned. This application Sept. 29, 1969, Ser. No. 861,564
Int. Cl. A60c *25/00*
U.S. Cl. 157—1.1 **6 Claims**



An apparatus for expanding tire beads into seating relationship with a vehicle rim characterized by a rim sealing surface on the member and a generally cylindrical tire side wall sealing surface around the rim supporting surface and fixed to the base.

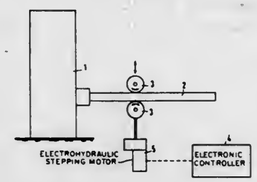
3,669,176

DRIVE SYSTEM FOR CONTINUOUS CASTING PLANTS

Heribert Krall, Wurzburg; Helmut Maag, Hochberg; Otto Herrmann, Wurzburg, and Rudolf Posl, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 18, 1969, Ser. No. 858,982
Claims priority, application Germany, Sept. 21, 1968, P 17 83 032.9
Int. Cl. B22d *11/00, 27/08*
U.S. Cl. 164—4 **6 Claims**

A drive system for drawing a strand-shaped casting out of the mold of a continuous casting plant comprises drive rollers engageable with the strand and mechanically driven by an electrohydraulic stepping motor which is controlled by electrical pulses from a programmable monitor so that the casting is drawn in accordance with a predetermined operating sequence, preferably such that after a given drawing travel the drive rollers remain at rest or are reversely driven in accordance with the cooling and contraction of the previously



drawn strand of material, whereafter the drawing and contraction cycle is repeated.

3,669,177

SHELL MANUFACTURING METHOD FOR PRECISION CASTING

John E. Ingalls, Pentwater, Mich., and Charles Yaker, Summit, N.J., assignors to Howmet Corporation, New York, N.Y.

Filed Sept. 8, 1969, Ser. No. 855,941
Int. Cl. B22c *9/00*
U.S. Cl. 164—26 **16 Claims**



The preparation of a composite shell mold for precision casting wherein portions of the shell mold of large dimension and complicated shapes are formed by the lost wax process while other portions are formed by conventional molding or permanent molding techniques for joinder into a composite mold.

3,669,178

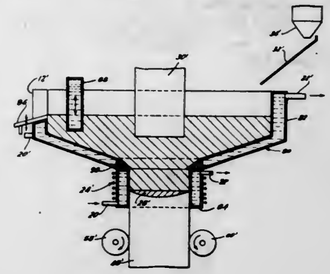
DIRECT REDUCTION PROCESS AND SIMULTANEOUS CONTINUOUS CASTING OF METALLIC MATERIALS IN A CRUCIBLE TO FORM RODS

Roger Pierre Theisen, Luxembourg City, Luxembourg, assignor to Continental Ore Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 736,113, June 11, 1968, now abandoned. This application June 9, 1969, Ser. No. 840,894
Int. Cl. B22d *22/02, 11/10*
U.S. Cl. 164—50 **1 Claim**

A continuous casting technique of ferro-alloys is provided wherein a water-cooled copper crucible having a relatively enlarged upper portion and a reduced lower portion defining a relatively small reaction zone. One or more electrodes are introduced either of a consumable or non-consumable variety. In either of these approaches, metal oxide, reducing agent, flux and addition materials are dispensed in the crucible and the desired reaction is initiated between the lower end of the electrode and a conveniently located negative pole. Relatively high temperatures are attained and upon melting of the slag, the alloying reaction takes place in continuous fashion. This reaction is enhanced by induction stirring which ensures the uniform dispersion of the several ingredients introduced into the reaction zone. As the molten alloy is formed, it is separated and gradually lowered at a controlled rate. Provisions are made for cooling the alloy as

it is produced and lowered from the crucible. The discharged alloy is in rod shape and is thereafter cut into predetermined



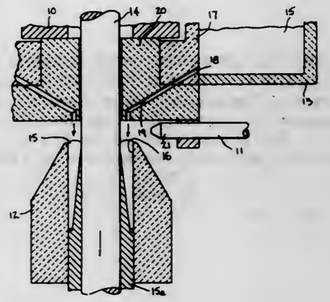
lengths or placed in any other form for the selected application.

3,669,179

PROCESS OF BONDING MOLTEN METAL TO PREFORM WITHOUT INTERFACIAL ALLOY FORMATION

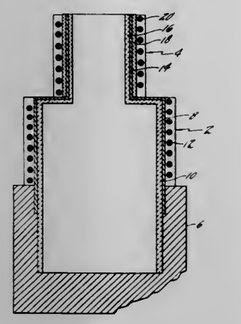
Alfred P. Federman, 9744 Sherman Road, Chesterland, Ohio

Filed Mar. 5, 1969, Ser. No. 804,641
Int. Cl. B22d *11/04, 19/00, 25/06*
U.S. Cl. 164—66 **4 Claims**



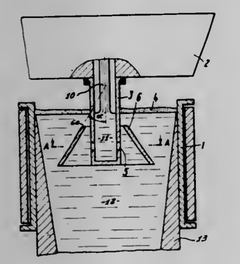
A unitary composite metal article formed of two dissimilar metals and the process for making the same by heating a substrate metal to a bonding temperature which is below the melting point of both the substrate and the casting metal; bringing the heated substrate and the molten casting metal into contact in an article-forming mold in the absence of an oxidizing atmosphere until wetting and molecular adhesion at the interface has been attained; and establishing a rate of heat transfer between the molten casting metal and the solid substrate which will cause chilling and solidification of the casting metal at the interface before formation of an interfacial alloy can occur. The resulting composite article represents a molecular bond of the casting metal to the substrate at the interface and is free from any visible interfacial alloy stratum.

3,669,180
PRODUCTION OF FINE GRAINED INGOTS FOR THE ADVANCED SUPERALLOYS
Joseph B. Moore, Jupiter Tequesta, and Roy L. Athey, North Palm Beach, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 20, 1971, Ser. No. 107,908
Int. Cl. B22d 27/06, 25/06
U.S. Cl. 164—122 1 Claim



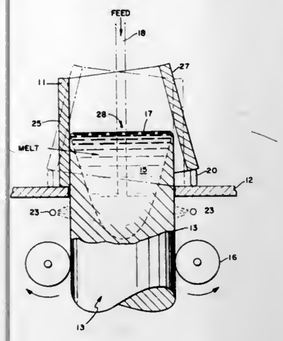
The highly alloyed superalloys are cast as a well stirred two-phase liquid/solid mixture into a heated mold and solidified with the maintenance of a well stirred two-phase layer preceding the axially advancing solidification front to provide a homogeneous ultra-fine-grain ingot.

3,669,181
POURING APPARATUS WITH SUBMERGED DEFLECTOR PLATES FOR CONTINUOUS CASTING
Hans Schrewe, Duisburg-Ungelsheim, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Oct. 23, 1970, Ser. No. 83,426
Claims priority, application Germany, Nov. 20, 1969, P 19 59 097.7
Int. Cl. B22d 11/10
U.S. Cl. 164—281 3 Claims



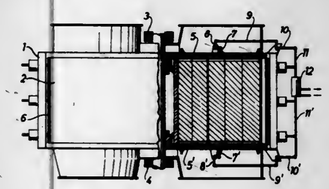
Particularly oriented deflector plates are disposed in front of submerged ports for charging a mold during continuous casting of steel.

3,669,182
METHOD AND APPARATUS FOR CONTINUOUS CASTING WITH GYRATING MOLD
Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.
Filed Dec. 17, 1970, Ser. No. 99,076
Int. Cl. B22d 11/02, 27/08
U.S. Cl. 164—83 9 Claims



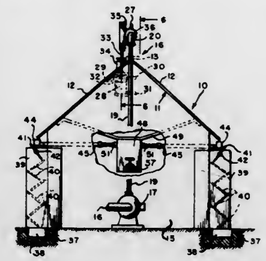
A method and apparatus for continuous casting of an ingot from a molten metal employing a mold having a conical opening passing vertically through it and a mechanism for gyrating the mold about a point without rotating the mold about a vertical axis. The rate of gyration of the mold is related to the rate of continuous withdrawal of the ingot from the mold.

3,669,183
ROTARY REGENERATIVE HEAT EXCHANGERS
Karl Heinz Mock, Neckargemuend, Germany, assignor to Svenska Rotor Maskiner Aktiebolag, Nacka, Sweden
Filed Aug. 26, 1970, Ser. No. 66,954
Claims priority, application Germany, Sept. 9, 1969, P 19 45 485.4
Int. Cl. F28d 19/00
U.S. Cl. 165—9 11 Claims



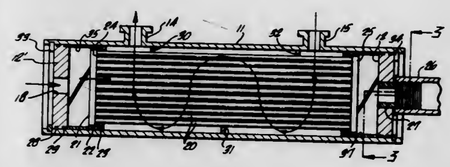
A rotary regenerative air preheater is provided a linkage for adjusting the positions of movable and spring-biased sealing plates or strips relatively to the matrix. In this linkage is included a hydraulic servo motor governed by impulses from means sensing changes of the length of the linkage caused by a foreign body or the like passing between a sealing element and the matrix and forcing the sealing element away from the matrix. At such occasions the servo motor is actuated to move the sealing element further away from the matrix to allow the passage of the foreign body whereby damage is avoided.

3,669,184
APPARATUS FOR HEATING AND COOLING A BUILDING
John K. Franzreb, Route 2, P. O. Box 252, Kingston, Tenn.
Filed July 22, 1970, Ser. No. 57,083
Int. Cl. F24f 3/00
U.S. Cl. 165—50 10 Claims



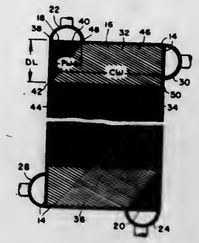
An apparatus for productively utilizing the heat from waste liquids discarded by industrial plants, such as power plants, for heating and cooling buildings, such as, greenhouses, and to prevent thermal pollution of bodies of water, such as rivers and lakes, into which the waste liquid is ultimately discharged at a low temperature. For heating a building, the heated liquid is discharged directly onto the building roof at the ridge thereof to flow down the sloping roof sides and is then deflected against the side walls of the building for heating the roof and said walls. The liquid is then collected in troughs for recycling through the industrial plant and back to the apparatus, or may be discharged to waste. For cooling the building the heated liquid is discharged by the apparatus upwardly from above the roof to effect evaporative cooling of the droplets. The cool liquid falling on the roof flows down its sloping sides for cooling the building, and is thereafter cascaded over louvers for recooling the liquid, heated by contact with the roof, before the liquid is discharged into the trough from which it can be recycled or carried off to waste.

3,669,185
MODULAR HEAT EXCHANGER CONSTRUCTION
Howard J. Bare, 1721 South Bluff Road, Los Angeles, Calif.
Filed Aug. 10, 1970, Ser. No. 62,247
Int. Cl. F28f 9/14
U.S. Cl. 165—158 4 Claims



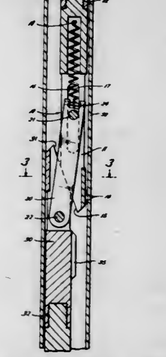
A heat exchanger construction is disclosed herein that is assembled from selected prefabricated components which include an outer shell for housing a tube assembly having a plurality of tubes carried as a unit by tube sheets and having snap-lock retainers releasably secured to the shell for holding the tube unit circulating fixed position within the shell. Means are provided for circuhating one fluid through the tube and for circulating another fluid around the tube within the shell for effecting an exchange of heat therebetween.

3,669,186
DISTRIBUTOR FOR PLATE TYPE HEAT EXCHANGERS HAVING END HEADERS
James J. Schauls, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.
Filed Dec. 10, 1969, Ser. No. 883,840
Int. Cl. F28f 3/00
U.S. Cl. 165—166 4 Claims



A plate type heat exchanger having a corrugated fin fluid distributor particularly adapted for use with end headers is shown. The distributor length is a function of the passage width, port width, and characteristics of the distributor fin material by which substantially uniform heat exchange fluid distribution across the width of a plate type heat exchanger passage is obtained.

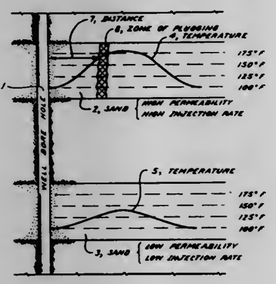
3,669,187
BLOW-UP PREVENTER
Granison T. Alexander, Jr., Houma, La., assignor to Gem Oil Tool Company, Houma, La.
Continuation-in-part of application Ser. No. 31,965, Apr. 27, 1970, now Patent No. 3,602,306. This application Nov. 25, 1970, Ser. No. 92,595
Int. Cl. E21b 23/00
U.S. Cl. 166—217 2 Claims



An apparatus for arresting upward motion of a wireline tool blown up a production pipe by sudden excessive down hole pressure or fluid flow. The apparatus of the invention includes a wedging member having an oblique lower face, a connector member having a generally mating oblique upper face, and means for suspending a wireline tool therefrom. It also includes means for supporting the wedging member within the annulus of the well pipe and means for slidably coupling the wedging member and the connector member, whereby relative convergent motion between the two members moves the members into a braking or wedging attitude. The apparatus also includes means for imparting relative convergent motion to the wedging and connector members when the apparatus is in an unloaded state.

3,669,188
HEAT-GUIDED HYDROXIDE PLUGGING
Roy D. Coles, and Edwin A. Richardson, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed July 29, 1970, Ser. No. 59,235
Int. Cl. E21b *33/138, 43/24*
U.S. Cl. 166—270 9 Claims

Selected portions of a near well region of permeable earth formations are plugged by adjusting the temperature so that the selected portions are the hottest portions within the region, permeating the region with heat-responsive plug-forming liquid and, after plugging has occurred in the hotter portions, displacing unreacted plug-forming liquid from the cooler portions.

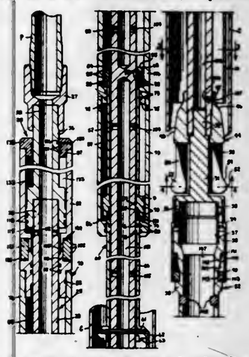


3,669,189
METHOD FOR INHIBITING THE DEPOSITION OF WAX FROM A WAX-CONTAINING OIL
Paul W. Fischer, Whittier, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Oct. 28, 1970, Ser. No. 84,916
Int. Cl. C23f *11/12, 15/00*; E21b *43/25*
U.S. Cl. 166—279 18 Claims

A method for inhibiting the deposition of wax from wax-containing petroleum and other wax-containing oils in which a small amount of a wax deposition inhibitor comprised of a copolymer of ethylene and a monoethylenically unsaturated ester is added to the petroleum.

3,669,190
METHODS OF COMPLETING A WELL
Phillip S. Sizer, Dallas, and Harry E. Schwegman, Carrollton, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Continuation-in-part of application Ser. No. 803,507, Dec. 24, 1968, now abandoned, which is a division of application Ser. No. 605,870, Dec. 29, 1966, now Patent No. 3,498,376. This application Dec. 21, 1970, Ser. No. 99,889
Int. Cl. E21b *43/00, 43/10*
U.S. Cl. 166—315 27 Claims

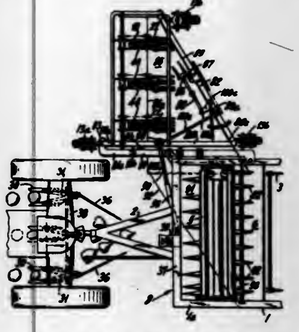
A method of completing a well by installing in the well a flow conductor, performing various operations such as cementing the flow conductor in the well bore, drilling out excess cement from the flow conductor, perforating the casing at desired locations, and the like, installing a liner in the flow conductor of smaller internal diameter than the internal diameter of the flow conductor to provide an internal seal surface and oppositely facing stop shoulders in the flow conductor, setting a packer in the liner, and then installing an inner production flow conductor in the well and securing it to the packer. A setting tool for simultaneously locating a liner and a packer in a flow conductor, expanding the liner into sealing and anchored engagement in the flow conductor and then setting the packer in the liner.



3,669,191
METHOD OF FIGHTING A FIRE
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed Feb. 12, 1971, Ser. No. 115,041
Int. Cl. A62c *3/00*
U.S. Cl. 169—1 A 17 Claims

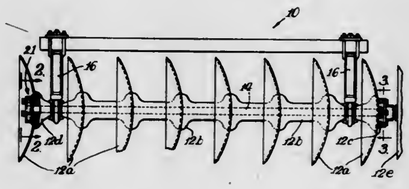
A method of fighting a fire comprising the steps of discharging an ablative fluid towards the fire from an elevated position relative to the floor of the structure to be protected, and manually applying an ablative fluid to the fire.

3,669,192
APPARATUS FOR HARVESTING CEREAL GRAINS, LEAFY VEGETABLES OR HOED VEGETABLES
Ernst Weichel, Bohnhofstrasse 1, Heiningen, Kreis Goppingen, Germany
Original application June 23, 1966, Ser. No. 560,972, now Patent No. 3,521,439, dated July 21, 1970. Divided and this application Feb. 16, 1970, Ser. No. 11,378
Int. Cl. A01d *27/00*
U.S. Cl. 171—40 19 Claims



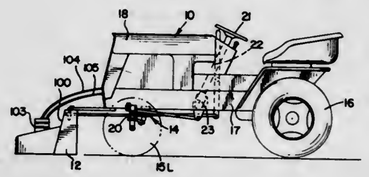
A unit for harvesting hoed, leafy and stalk crops includes a frame and a draw bar extending from the frame for towing of the unit along a path laterally adjacent and parallel to the travel of a tractor, with the harvesting unit extending rearwardly and laterally of the tractor. A crop carrier may be drawn by the tractor and the harvesting unit may be drawn by the crop carrier. The harvesting unit includes a guide scoop and associated power driven means for moving harvested material along the guide scoop and into the crop carrier. Various known harvesting devices may be interchangeably mounted to extend along the forward edge of the scoop and substantially perpendicular to the path of travel.

3,669,193
GANG BOLT LOCKING ARRANGEMENT
Hugh Cooper, Rochelle; Dale S. Whitehouse, and George E. Womble, both of Kewanee, all of Ill., assignors to Kewanee Machinery & Conveyor Co., Kewanee, Ill.
Filed Dec. 9, 1970, Ser. No. 96,549
Int. Cl. A01b *21/08, 23/06*
U.S. Cl. 172—570 8 Claims



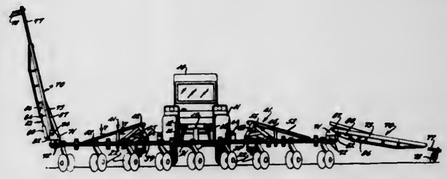
Clamping means for a piece of farm machinery, more specifically a disc harrow. The clamping means assures the proper tightening and positioning of one or more discs which are concavo-convex in shape upon a shaft. The clamping means includes a reaction member such as an anchor nut for the threaded end of the gang bolt or tie-rod which reaction member or anchor nut has a series of threaded holes through it and carries tightening screws or bolts and a clamping plate which has a central opening embracing the shaft but not connected to the shaft said plate being spring-like in character and engageable by the tightening screws whereby the plate is adapted to be forced by its outer surface, or at least the margin thereof against the surface of the disc which is adjacent to it whereby the gang bolt is placed under proper tension and the disc, or discs, and spacers between discs are adequately pressed together under spring tension.

3,669,194
SIDE SHIFTING IMPLEMENT APPARATUS
James W. Zurek, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 22, 1970, Ser. No. 5,067
Int. Cl. A01b *69/08*
U.S. Cl. 172—280 8 Claims



A mechanism for mounting and selectively positioning a front mounted implement, such as a mower, on a vehicle, the mechanism having means for manually selecting a lateral disposition of the implement relative to the longitudinal axis of the carrier and also operative for automatically producing lateral displacements of the implement from the selected position in response to corresponding actuations of the carrier's steering apparatus wherein such actuations are determinative of the turning radius of the vehicle.

3,669,195
FOLDING IMPLEMENT CARRIER
Edgar E. Green, and Phillip H. Nuckels, both of Blytheville, Ark., assignors to Paul Abbott Company, Inc., Blytheville, Ark.
Filed Apr. 3, 1970, Ser. No. 25,484
Int. Cl. A01b *65/02*
U.S. Cl. 172—311 3 Claims



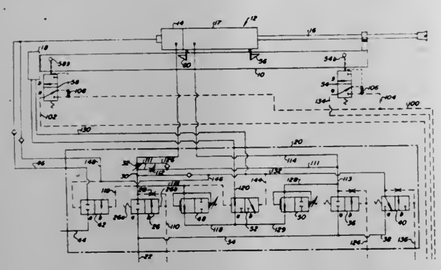
Apparatus having fixed and movable portions for supporting a plurality of earth-working implements with such apparatus extending substantially beyond the sides of a propelling vehicle when in use and folded to inoperative position when not in use as well as while travelling and maneuvering. The movable portions of the apparatus are pivotally supported a substantial distance from the ends of the fixed portion and the fixed and movable portions are generally co-extensive in operative position.

3,669,196
UNIVERSAL DRILLING RIG
Lyle W. Hokanson, Kirkland Lake, Ontario; James R. Savage, Swastika, Ontario; E. Peter Smith, Kirkland Lake, Ontario; Gilbert Levangie, and William Klaas, both of Swastika, Ontario, all of Canada, assignors to Heath & Sherwood Drilling Limited, Kirkland Lake, Ontario, Canada
Filed Jan. 6, 1971, Ser. No. 104,384
Int. Cl. E21b *15/00*
U.S. Cl. 173—44 10 Claims



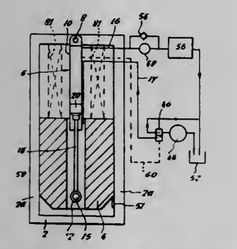
A drilling apparatus for exploratory oil and gas drilling is provided, such apparatus having a derrick comprising a plurality of component parts for assembly on site. Components of the derrick are hingedly connected for ease and convenience of erection. Hydraulic means are provided for the various operative functions of the apparatus. The primary motive power is supplied from an internal combustion engine source which may be augmented as desired to enable the apparatus to be employed throughout a wide range of drilling operations.

3,669,197
CONTROL SYSTEM FOR ROCK DRILLS
Laurence B. Hanson, Pine, and Wallace W. Arthur, Denver, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.
Original application Mar. 20, 1969, Ser. No. 808,925, now Patent No. 3,561,542. Divided and this application Sept. 11, 1970, Ser. No. 71,404
Int. Cl. E21c 5/16, 7/10
U.S. Cl. 173—19 5 Claims



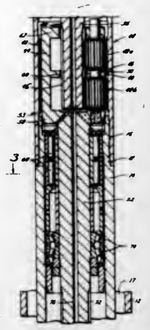
An automatic control system for a guide shell mounted rock drill including a control circuit having pneumatically operated valves for providing pressure fluid to the drill hammer, rotation motor and feed motor and for controlling drill hole flushing medium. Sensors mounted on the drill guide shell provide for reversal of the feed motor and reduced drill power upon reaching the forward end of the guide shell, and shutdown of the drill upon reaching the rearward end of the guide shell. The control circuit includes a series of control valves for selection, at will, by the drill operator of a particular operating sequence or condition of the drill. A control valve is included for providing an operating sequence which includes operation of the drill at reduced power for a predetermined period of time for collaring a drill hole. The control system also includes pressure proportioning valves for automatically regulating the feed motor pressure to be proportional to the drill percussion motor supply pressure.

3,669,198
FLUID OPERATED DROP HAMMER WITH VALVED PISTON
Roger M. Elliott, Somersham, near Ipswich, England, assignor to The British Steel Piling Company Limited, Claydon, Ipswich, Suffolk, England
Filed Mar. 10, 1970, Ser. No. 18,239
Claims priority, application Great Britain, Mar. 11, 1969, 12,814/69
Int. Cl. E02d 7/10; F01l 21/04
U.S. Cl. 173—127 10 Claims



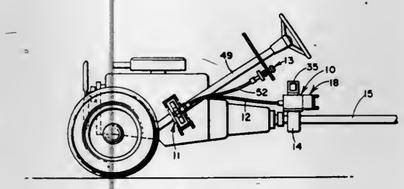
A drop hammer has an operating ram in which valve-controlled conduit means interconnect opposite ends of a cylinder of the ram to allow fluid to transfer between the ends of the cylinder.

3,669,199
DRILLING APPARATUS
Roy H. Cullen; Jimmie R. Aker, and William E. Burke, all of Houston, Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
Filed Mar. 19, 1970, Ser. No. 21,120
Int. Cl. E21b 3/08
U.S. Cl. 175—106 3 Claims



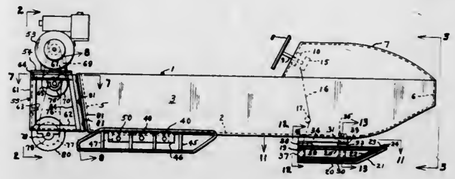
This invention relates to drilling apparatus having a flexible drill string, a motor supported by the drill string, two-stage planetary gear-reduction means driven by the motor, and a drill bit driven by the gear-reduction means. In the gear-reduction means the second stage sun, planet and ring gears have increased longitudinal dimension for carrying the increased torque loading, and the second stage planet gears are split into sections and supported at each end of each section to prevent excessive outward deflection of their bearing shafts.

3,669,200
AUTOMATIC PARKING DEVICE
Paul J. Odell, 116 Starkdale Road, Steubenville, Ohio
Filed Oct. 23, 1969, Ser. No. 868,751
Int. Cl. B62d 5/00
U.S. Cl. 180—1 AS 9 Claims



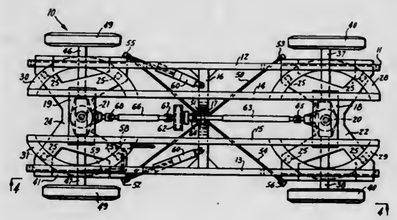
An apparatus for automatically parking automobiles having a steering means including a steering post and a transmission with a reverse gear. The device includes first gear means on the steering post, second axially and transversely displaceable gear means and third gear means operatively connected to be driven by the transmission drive shaft in reverse gear. The second gear means is selectively operatively positioned between the first and second gear means to transmit the rotation of the drive shaft to the steering post to effect turning of the steering wheels. Timing means control the direction of rotation of the third gear means so that the steering wheels of the vehicle are rotated in a first direction and, after a predetermined period of time, rotated in the reverse direction in order to accomplish the desired parallel parking.

3,669,201
MOTOR DRIVEN ICE VEHICLE
Frederick A. Taylor, 32548 Riverpoint, New Baltimore, Mich.
Filed May 19, 1970, Ser. No. 38,791
Int. Cl. B62m 27/02
U.S. Cl. 180—6 R 2 Claims



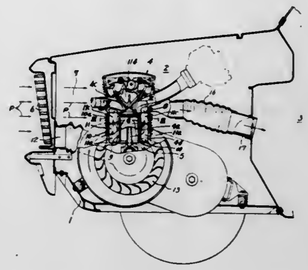
A vehicle body, such as that of a boat, with laterally spaced rearwardly mounted runners, and first pivot means mounting said runners for limited travel about the axis of said pivot, and substantially transverse to the direction of travel, a forward mounted ski or runner with second pivot means mounting said ski or runner, for arcuate travel about the axis of said second pivot means to steer the vehicle: a bracket assembly secured to the rear of the vehicle by and including laterally spaced parallel, opposed channels, a propulsion unit, having a motor and drive wheel mounted upon a frame, said frame carrying spaced, parallel slide members to be received in said channel members to resist lateral or forward and rearward movement of the mounting assembly, but to afford up and down sliding travel in said channels to accomodate the propulsion unit to irregularities in the surface over which the vehicle is driven, with means attached to said frame engageable with further means secured to the rear portion of the boat to establish a limit for the downward travel of said unit.

3,669,202
FOUR WHEEL DRIVE VEHICLE
Adolph Leslie Andersen, Monroe, Wash.
Filed Oct. 7, 1970, Ser. No. 78,851
Int. Cl. B62d 5/06; B60k 17/34
U.S. Cl. 180—50 1 Claim



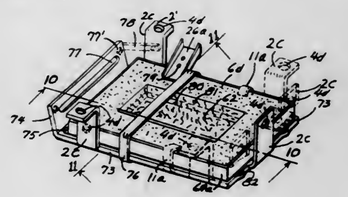
A four wheel drive vehicle in which both the front and rear wheels are driven and steered. The front and rear axle housings extend rigidly from a differential and the axles are pivoted about a central vertical pivot in an equal but opposite direction so that the rear wheels completely track the front wheels.

3,669,203
AIR-COOLING APPARATUS FOR AUTOMOTIVE ENGINE
Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki, Kaisha, Tokyo, Japan
Filed July 31, 1969, Ser. No. 846,476
Claims priority, application Japan, Aug. 8, 1968, 43/55808; Aug. 30, 1968, 43/61735
Int. Cl. B60h 1/16
U.S. Cl. 180—54 A 8 Claims



A vehicle is provided which has an engine space having an opening arrangement for the admission of air when the vehicle is in motion. Air moves into the engine space along a determinable passage. An engine is arranged in the engine space in intercepting relationship with the passage to be cooled by air flowing therethrough. The engine includes a double wall exterior forming an air jacket into which air is forced under pressure by a blower in order to provide a second source of cooling for the engine. The double wall exterior includes inner and outer walls connected by heat transmitting plates and provided with cooling fins. The air jacket is connected to a passenger space into which heated air is admitted by a shut-off valve. The engine may have cylinders arranged either longitudinally or laterally of the vehicle and the forced air cooling may be provided in such a manner as to be in opposite direction to the natural cooling through the aforesaid space.

3,669,204
SURFACE, MATERIAL AND HEALTH PROTECTIVE COMBINATION DEVICE
Peter Andrews, 190 Gebhardt Road, Penfield, N.Y.
Original application June 17, 1963, Ser. No. 288,159, now abandoned. Divided and this application Feb. 21, 1966, Ser. No. 532,831
Int. Cl. B67d 25/20
U.S. Cl. 180—69.1 12 Claims



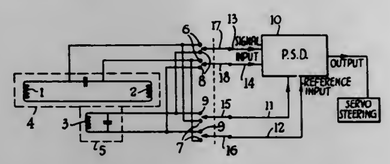
A fluid retaining receptacle device having at least one separate material retained therein for retaining fluid which drips therein generally from the motor or a fluid retaining housing portion of the motor vehicle which may be a car, truck, bus and a boat. The receptacle device may be disposed

under at least one portion of the motor vehicle, may be removably secured and supported in at least one portion of a structure which is removably secured and suspendingly disposed beneath at least one portion of the motor vehicle. Absorbent, porous, catalyst material and/or oil eating bacteria and the like is retained in the device for increasing the rate of oxidation and thickening of the retained fluid, whereby at least lives are saved and accidents are prevented on the highways; fluid pollution inside of a boat is prevented; further pollution of the air we breathe is prevented; millions of dollars are saved for the cities, State and Fed. Gov. combined and at least $35.00 is saved for motor vehicle owners.

3,669,205
VEHICLE GUIDANCE SYSTEMS

David W. I. Brooke, Wallingford, England, assignor to International Harvester Company of Great Britain Limited, London, England

Continuation of application Ser. No. 865,932, Oct. 13, 1969, now abandoned. This application May 19, 1971, Ser. No. 145,006
Claims priority, application Great Britain, Oct. 16, 1968, 49,141/68
Int. Cl. B60k 27/00
U.S. Cl. 180—98 **10 Claims**

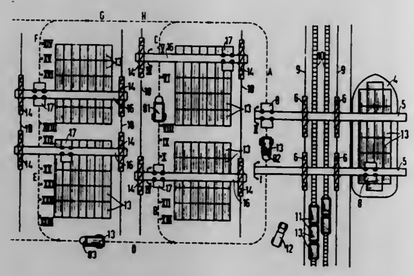


A magnetic sensing head arrangement for guiding a vehicle incorporates a pair of detectors so connected as to give a difference output as a result of a received electromagnetic signal, and a single detector positioned between them. By applying the difference signal from the two detectors and the output from the single detector alternately as the signal input and the reference input to a phase sensitive detector the vehicle may be guided to follow a path either directly over a guide wire or midway between two guide wires which carry the same current in opposite directions.

3,669,206
CONTAINER TRANSPORTING SYSTEM

Hans Tax, and Rudiger Franke, both of Munich, Germany, assignors to said Tax, by said Franke

Filed Aug. 19, 1969, Ser. No. 851,248
Claims priority, application Germany, Aug. 21, 1968, P 17 98 090.4
Int. Cl. B62d 1/24
U.S. Cl. 180—98 **28 Claims**

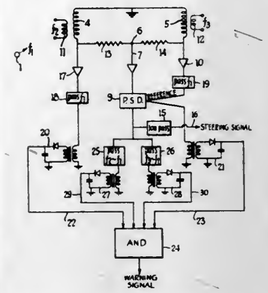


Containers transported on containerships and the like are transferred between storage and shipping areas by means of automatic vehicles which travel along guiding cables buried in the roadways connecting the several areas. The vehicles are steered and their drive systems controlled by means of steering and drive control signals generated at a central control station and transmitted by the guiding cables to sensing elements on the vehicles. A signal generator on each vehicle transmits continuous back signals to the control station through the cables and intermittent position signals through sensing elements at stopping stations along the roadways.

3,669,207
VEHICLE GUIDANCE SYSTEMS

Peter Berners Fellgett, and George Robert Whitfield, both of Reading, England, assignors to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,930
Claims priority, application Great Britain, Oct. 16, 1968, 49,136/68
Int. Cl. B60k 27/06
U.S. Cl. 180—98 **8 Claims**

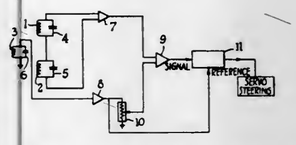


A system for guiding a vehicle under control of a guide member enables the vehicle to be guided in a path which may be immediately above or offset from the guide member. The position of the vehicle in relation to the guide member is uniquely determined by receiving signals in two different ways having strengths of interaction which vary differently with distance from the guide member. The nature of the system enables a warning to be given immediately upon any malfunction in a part of the system.

3,669,208
VEHICLE GUIDANCE SYSTEMS

David William Ingham Brooke, Brightwell, England, assignor to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,931
Claims priority, application Great Britain, Oct. 16, 1968, 49,140/68; Dec. 4, 1968, 57,498/68
Int. Cl. B60k 27/06
U.S. Cl. 180—98 **6 Claims**



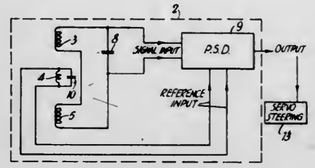
A vehicle guidance system in which a vehicle may be guided to follow accurately any one of a number of paths laterally offset different predetermined distances from a single guide wire using a magnetic sensing head arrangement which does not have to operate from a null position above the guide wire. Preferably the vehicle is guided along a path

determined by a selected value of the ratio between the effective gradient and the vertical component of the electromagnetic field and the strength of the vertical component of the electromagnetic field at the vehicle, the selection of the desired path offset a predetermined distance from the guide member being made by the use of a variable electrical device such as a potentiometer.

3,669,209
VEHICLE GUIDANCE SYSTEMS

David William Ingham Brooke, Brightwell, England, assignor to International Harvester Company of Great Britain Limited, London, England

Filed Oct. 13, 1969, Ser. No. 865,933
Claims priority, application Great Britain, Oct. 16, 1968, 49,142/68; Dec. 4, 1968, 57,499/68
Int. Cl. B60k 27/06
U.S. Cl. 180—98 **18 Claims**



A vehicle is guided at a desired angle in relation to, preferably parallel to, the lines of constant magnetic field strength resulting from a guide wire carrying an electric current by using two magnetic detectors which are positioned on the vehicle in a line having a substantial component in the direction of advance of the vehicle.

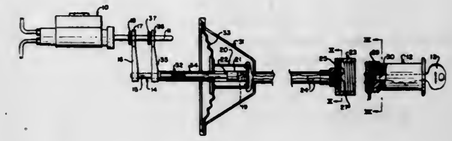
This method of guiding a vehicle has particular application in turning a vehicle at the end of a traverse along a line of constant gradient of magnetic field strength under the control of the guide wire.

3,669,210
AUTOMOTIVE SAFETY DEVICE

Fred F. Haefner, R.D. #2, Evans City, Pa.

Filed Nov. 18, 1970, Ser. No. 90,718
Int. Cl. B60r 25/08
U.S. Cl. 180—103 **8 Claims**

In an automotive vehicle having a brake mechanism and a key actuated switching-ignition mechanism to start a power plant, an automotive safety device having a first engaging means for engaging said brake mechanism when said switching-ignition mechanism is deactivated and maintaining said brake mechanism engaged while said switching-ignition mechanism is off, a releasing means for releasing said first engaging means and for maintaining said first engaging means disengaged while said switching-ignition mechanism is on, an actuating means for actuating said releasing means when said key actuates said switching-ignition mechanism and connected to said releasing means by electrical lead means, a vacuum chamber enclosing said electrical lead means and extending from adjacent said actuating means to adjacent said releasing means, and a second engaging means for engaging said brake mechanism when a given vacuum in said vacuum chamber is released and for maintaining said

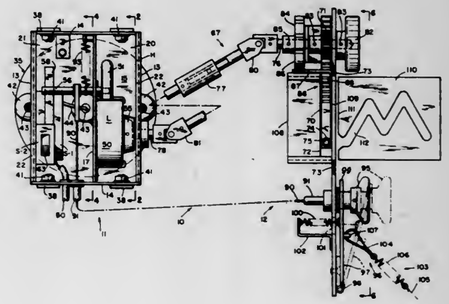


brake mechanism engaged until said given vacuum is restored within said vacuum chamber.

3,669,211
REMOTE CONTROL AUTOMOBILE THEFT PREVENTION MECHANISM

Herman Gilgoff, 241 Beach 137th Street, Rockaway Park, N.Y.

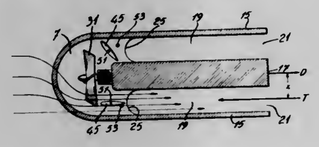
Filed Apr. 17, 1970, Ser. No. 29,530
Int. Cl. B60r 25/04
U.S. Cl. 180—112 **5 Claims**



A mechanism including a tamper-proof housing which is mounted on the distributor of an automobile. The housing contains a normally open electrical switch, which is series-connected to a portion of the electrical conductor which connects the automobile spark coil to the distributor and which extends through the interior of the housing, and a combination lock which is operable to actuate the switch to closed position. The lock is operated remotely from the passenger side of the automobile instrument panel through the medium of cooperating devices including a rotatable linkage, a rack and pinion assembly and a manual actuator that is conveniently accessible to the seated operator. Alternatively, a "key" may be used in place of the manual actuator. The mechanism is automatically returned to "protective condi-

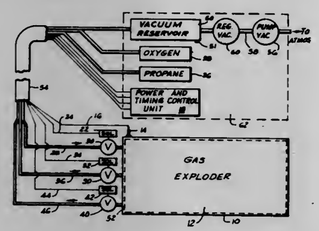
tion," i.e., with the switch in open position, by a pull cable which is operated manually or by the opening of a door of the automobile, as desired.

3,669,212
AIR-PROPELLED VEHICLE AND METHOD FOR DRIVING AND STEERING SAID VEHICLE
William Edouard Desbarats, 1289 La Salle Street, Baie Comeau, Quebec, Canada
Filed Apr. 30, 1970, Ser. No. 33,230
Int. Cl. B60v *1/14*
U.S. Cl. 180—120 **2 Claims**



An air-propelled vehicle having an air tunnel on either side of the central longitudinal vertical plane of the vehicle and an air thrust source forwardly of the tunnels blowing a jet of air of predetermined magnitude into each of the tunnels. A baffle assembly diverts, for steering, a portion at least of one jet into the other jet whereby to modify the relative magnitudes of the jets.

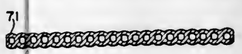
3,669,213
SEISMIC GAS EXPLODER APPARATUS
John C. Mollere, San Marino, Calif., assignor to Western Geophysical Company of America
Filed Nov. 29, 1968, Ser. No. 780,082
Int. Cl. G01v *1/38*
U.S. Cl. 181—0.5 NC **1 Claim**



A gas exploder seismic wave source which includes a closed chamber for receiving a mixture of combustible gases. Means are provided to detonate the combustible mixture thereby producing gaseous detonation products. Vacuum-operated exhaust means are coupled to the chamber to exhaust the detonation products from the chamber.

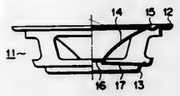
3,669,214
VIBRATING PLATE FOR SOUND INSTRUMENT
Hideo Matsuura; Katsuhiko Imagawa, and Murare Yoshiheko, all of Hamakita-shi, Shizuoka-ken, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Feb. 8, 1971, Ser. No. 113,344
Claims priority, application Japan, Feb. 13, 1970, 45/11987
Int. Cl. G10k *13/00*; H04r *7/00*; G10c *3/06*
U.S. Cl. 181—32 R **6 Claims**

A vibrating plate for a sound instrument, such as a diaphragm of a loudspeaker, a sounding board of a piano or guitar, which comprises a plate of light material, such as paper, plastics, foamed plastics, metal or the like, said plate having pipes or cells formed therein or fixed thereto, said



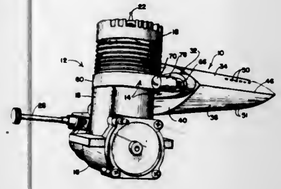
pipes or cells being filled with fluid under high pressure, thereby increasing flexural rigidity of said vibrating plate without appreciable increasing its weight.

3,669,215
PASSIVE RADIATOR FOR USE IN A BASS REFLEX LOUDSPEAKER SYSTEM
Takeo Kikuchi, and Hisaaki Hashino, both of Tokyo, Japan, assignors to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Feb. 8, 1972, Ser. No. 113,492
Claims priority, application Japan, Feb. 12, 1970, 45/13507
Int. Cl. G10k *13/00*; H04r *7/00*
U.S. Cl. 181—32 R **7 Claims**



A passive radiator formed of a drone cone for use in a bass reflex loudspeaker system wherein a centering device for suspending the central part of the drone cone within a basket frame is made of elastic wire members.

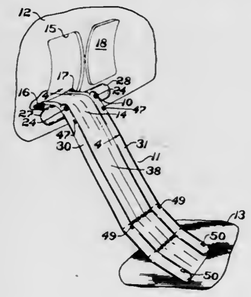
3,669,216
MODEL AIRPLANE MUFFLER CONSTRUCTIONS
Donald H. Spies, 919 Amherst Lane, Wilmette, Ill.
Filed July 6, 1971, Ser. No. 159,979
Int. Cl. F01n *1/08, 1/14*; F01n *7/10*
U.S. Cl. 181—40 **14 Claims**



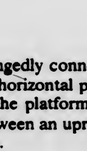
A lightweight sheet metal model airplane muffler in the form of a hollow shell having symmetrical airfoil characteristics and defining an internal expansion chamber for exhaust gases. Outlet ports are provided in the camber regions of the shell where they communicate with the vacuum pockets which are established by the slipstream during flight and the low pressure air in such pockets assists in evacuating the chamber.

3,669,217
ESCAPE SLIDE POSITIONING TUBE
John M. Fisher, 622 Sackett Avenue, Cuyahoga Falls, Ohio
Filed Nov. 16, 1970, Ser. No. 89,828
Int. Cl. A62b *1/20*
U.S. Cl. 182—48 **8 Claims**

A positioning tube for an escape slide of the type used for aircraft having a long inflatable ramp which is inflated from the folded condition to the extended position in which the location and attitude of the ramp is controlled by an inflatable tube attached to the underside of the ramp for engagement with the aircraft fuselage to which the ramp is attached for biasing the ramp outward from the fuselage. Manifolding is provided for rapid inflation of the positioning tube simultaneously with inflation of the ramp and before the ramp is completely unfolded and extended. Releasable fasteners of three-dimensional fabric having resilient hook fibers hold the ramp in the folded condition until it is inflated to prevent engagement with the ground prior to inflation and positioning.



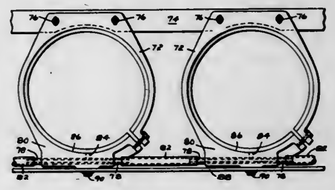
3,669,218
PORTABLE STEPS FOR A VEHICLE OR THE LIKE
Joshua D. Hall, Mlesau Army Depot, Aezmmi-Su, APO New York, N.Y.
Filed May 19, 1971, Ser. No. 144,929
Int. Cl. E06c *5/02*
U.S. Cl. 182—97 **5 Claims**



A step assembly is hingedly connected at its upper end in depending relation to a horizontal platform by a support rod pivotally connected to the platform for swinging movement of the step assembly between an upright utility position and a retracted stored position.

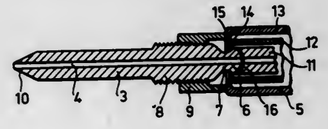
3,669,219
MEANS FOR SUPPLYING A PLURALITY OF SPINNING RINGS WITH FLUID LUBRICANT
Andrew J. Wayson, Needham, and Richard T. De Stefano, Everett, both of Mass., assignors to Merriman, Inc., Hingham, Mass.
Filed Oct. 19, 1970, Ser. No. 81,822
Int. Cl. D01h *7/62*
U.S. Cl. 184—7 A **11 Claims**

Fluid lubricant supply means for a plurality of sintered metal spinning rings on a spinning frame in which each ring holder has a small pipe cast in position in the body of the holder with the ends of the pipe extending beyond the holder. The pipe ends of adjacent holders are connected by flexible tubular elements applied after the holders are in position on the ring rail. Some of the lubricant fed through the continuous conduit formed by the pipes and connecting tubular elements is diverted at each holder through a hole in



the wall of the pipe and a related passage through the holder to the spinning ring of that holder.

3,669,220
EXCHANGEABLE GREASE GUN TIP
Karl Ivan Andersson, Noltarpsvagen 3D, Mariestad, Sweden
Filed Feb. 2, 1970, Ser. No. 7,702
Claims priority, application Germany, Mar. 12, 1969, G 69 09 955
Int. Cl. F16n *5/02, 21/02*
U.S. Cl. 184—105 C **6 Claims**

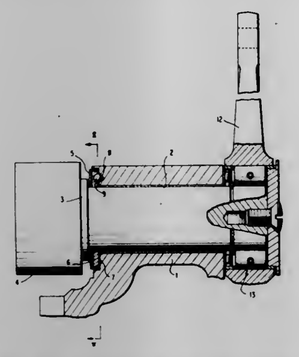


An interchangeable grease gun tip swingably engaged to a clamping jaw socket and provided with a nut on its rear end for engagement with the front end of a grease gun mouthpiece and aligning the tip.

3,669,221
BRAKE INSTALLATION ESPECIALLY FOR COMMERCIAL-TYPE VEHICLES
Helmut Hase, Sulzbach (Murgtal), Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany
Filed June 18, 1970, Ser. No. 47,364
Claims priority, application Germany, June 25, 1969, P 19 32 084.4
Int. Cl. F16d *65/60, 51/50*
U.S. Cl. 188—79.5 K **21 Claims**

A brake installation especially for commercial-type vehicles, in which the brake shoes are actuated by a brake cam shaft, possibly with the assistance of compressed air, and in which an automatic readjusting mechanism is provided that includes a friction member arranged between the brake cam of the brake cam shaft and a control disk; the friction

member is effective in the axial direction of the brake cam shaft and is movable with respect to a relatively fixed part of



the brake in the circumferential direction within predetermined limits.

3,669,222

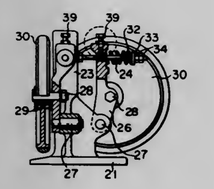
GUIDING AND DAMPENING DEVICE

Akira Takamura; Kazushi Kunii; Saburo Seharada, and Hiroshi Nakatani, all of c/o Inazawa Works of Mitsubishi Denki Kabushiki Kaisha, No. 1100, Inokuchi-cho, Inazawa, Aichi Prefecture, Japan

Original application Jan. 12, 1968, Ser. No. 697,525, now Patent No. 3,554,321. Divided and this application Aug. 31, 1970, Ser. No. 68,385

Int. Cl. B66b 7/02

U.S. Cl. 187—95 **5 Claims**



A device for guiding an elevator car along a guide rail comprises a plurality of rotatable rollers positioned in symmetrical relationship around a peripheral transverse portion of the guide rail. Each roller is biased into pressure contact with the guide rail by a dampening spring whereby impulsive or vibrational forces applied by the guide rail during movement of the elevator car are effectively absorbed by the dampening spring rather than being transmitted to the elevator car. Means are also employed for rapidly attenuating any vibrational or rocking movement of the elevator car caused by either operation of an elevator door opening-and-closing mechanism or translational movement of the elevator car along the guide rails.

ERRATUM

For Class 188—79.5 K see:
Patent No. 3,669,221

3,669,223

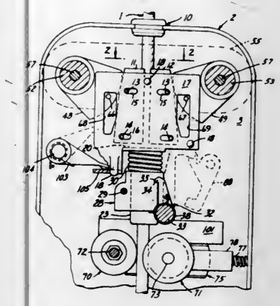
ROPE GRIPPING DEVICE

Carter H. Arnold, 317 Rocky Point Road, Palos Verdes Estates, Calif.

Filed Sept. 4, 1970, Ser. No. 69,711

Int. Cl. F16d 59/02; B66d 5/16

U.S. Cl. 188—188 **9 Claims**



A device for gripping a wire rope or the like wherein a pair of opposed jaws are urged longitudinally of the rope and camming means is provided for urging the jaws toward each other into gripping relation with the rope in response to such longitudinal movement. The particular combination of gripping jaws and camming surfaces achieves an optimum gripping effect. In the illustrative form of the invention the device on which the gripping means is used moves along the length of a fixed rope. Means is provided for actuating the gripping jaws when the relative speed between rope and device exceeds a predetermined amount regardless of whether the rope or the device is stationary.

3,669,224

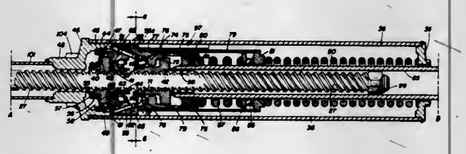
AUTOMATIC DOUBLE ACTING SLACK ADJUSTERS

Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 100,204

Int. Cl. F16d 65/66

U.S. Cl. 188—202 **19 Claims**



A slack adjuster of the double acting type for railway cars has three spin nuts arranged on a threaded rod. The spin nuts are variably operated to take up or let out slack in the brake rigging and have clutch surfaces cooperating with clutch surfaces adjacent the spin nuts to stop their rotation. The spin nuts are normally clutched to prevent unintended relative movements under operating conditions of vibration and shock. Economical standard tubular parts, and simple spin nuts are employed and arranged for ease of assembly and reliable operation.

3,669,225

VEHICLE SUSPENSION UNIT

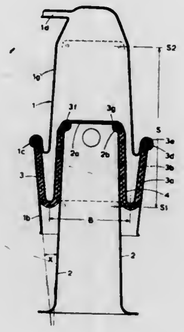
Alexander Eric Moulton, and Harold Harman, both of Bradford-on-Avon, England, assignors to Moulton Developments Limited, Bradford-on-Avon, Wiltshire, England

Filed Jan. 22, 1971, Ser. No. 108,760

Claims priority, application Great Britain, Jan. 30, 1970, 4,624/70

Int. Cl. F16f 9/08

U.S. Cl. 188—298 **4 Claims**



The invention provides a diaphragm-type hydraulic displacer unit of the kind which includes a piston-like member arranged to move inwardly and outwardly of a cylinder-like member, the annular gap between the piston and cylinder being bridged by a flexible diaphragm and in which during operation the ration between the maximum stroke of which the unit is capable and the maximum effective bore of the diaphragm, occurring in operation, is at least 1.2 : 1, and may be 2 : 1 or more, and in which during all operative conditions the pressure across the unsupported diaphragm loops exceeds 100 pounds per square inch.

The invention is concerned with ensuring longevity of the diaphragm in such a unit and provides that the unit shall have the following features in combination:

a. the flared flanks of the piston and the inner wall of the cylinder skirt are tapered in opposite directions such that over the maximum stroke permitted in operation, the effective bore of the diaphragm increases as the piston moves inwardly of the cylinder and such that the dimension of the effective bore of the diaphragm, when the piston is in its innermost position is between 15 percent and 25 percent greater than the dimension of the effective bore of the diaphragm when the piston is in the outermost position of its permitted stroke;

b. the piston flanks and the inner wall of the skirt are so constructed that the ratio between the effective bore of the diaphragm and the loop radius of the diaphragm will always be greater than 11:1 throughout the permitted stroke, with the loop radius being maintained substantially constant within 10 percent throughout the permitted stroke;

c. that the diaphragm is initially moulded in the shape which it would be forced to adopt when the piston is advanced to a position further into the cylinder than would be occasioned during its normal operation in the permitted stroke;

d. the cord reinforcement of the diaphragm consists of at least two plies having a bias angle of between 30° and 50° inclusive;

e. the thickness of the diaphragm is such that the ratio between the loop radius of the diaphragm and the thickness of the diaphragm is always greater than 2:1 throughout the permitted stroke.

3,669,226

PISTON ASSEMBLY FOR DUAL-NETWORK DISK-BRAKE SYSTEM

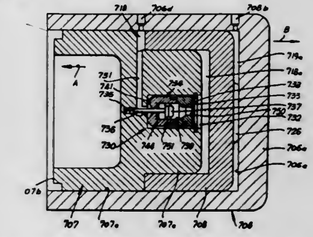
Helmut Marschall, Frankfurt am Main; Wolfgang Kammermayer, Frankfurt/Fechenheim; Hans Albert Beller, Bad Vilbel; Heinz Hahm, Walldorf/Hessen, and Juan Belart, Frankfurt am Main, all of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Germany

Original application June 9, 1969, Ser. No. 831,400, now Patent No. 3,601,233, which is a division of application Ser. No. 681,330, Nov. 8, 1967, now Patent No. 3,490,565, dated Jan. 20, 1970. Divided and this application Dec. 18, 1970, Ser. No. 99,407

Claims priority, application Germany, Nov. 16, 1966, T 32523; Dec. 16, 1966, T 32765; T 32766; T 32768; T 32769; Dec. 17, 1966, T 32784; T 32785; Dec. 7, 1967, T 33161

Int. Cl. B60t 11/28

U.S. Cl. 188—345 **8 Claims**



A vehicle-brake system having a tandem or twin master cylinder for delivering the brake fluid to independent transmission networks each connected with one compartment of a disk brake whose actuating cylinder is located on one side of the brake disk and receives at least one piston defining its working compartments or chambers therein. A pair of pistons are provided, so that the chambers are disposed to one side of the direct-acting piston while the other piston applies pressure to the brake housing or to a force-transmission frame extending around the disk. A double-acting valve maintains the effective cross-section of the actuating assembly in spite of loss of pressure in one of the transmission networks.

3,669,227

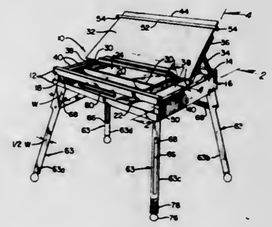
ARTIST'S CARRYING CASE AND EASEL

Glen M. Alford, 2885 Windfall Avenue, Altadena, Calif.

Filed Aug. 6, 1970, Ser. No. 61,770

Int. Cl. A47b 27/02

U.S. Cl. 190—11 **10 Claims**



Artist's carrying case characterized by a partitioned rectangular box having a top compartment closed by a lid which may be angularly elevated to form an easel and also provide access to the top compartment. A second partition forms a lower compartment which is accessible through a slot, closed by a slideably removable bar, which is then

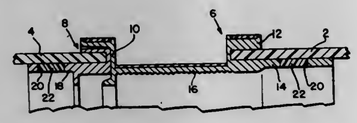
secured to the face of the easel. Foldable legs with nesting angle braces are disposed adjacent the second partition when the case is being transported.

3,669,228

LUGGAGE CONSTRUCTION

Henry L. Kotkins, Seattle, Wash., assignor to Skyway Luggage Company, Seattle, Wash.

Filed Apr. 30, 1970, Ser. No. 33,240
Int. Cl. A45c 3/00
U.S. Cl. 190—41 R **4 Claims**



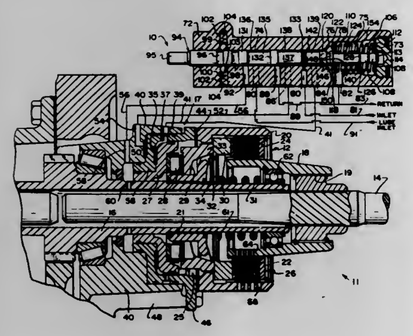
A luggage case having a pair of inwardly facing opposed concave relatively rigid molded shells adapted to abut each other when the case is in a closed condition. Each of the sections includes a rigid framework strip extending around the confronting edge of the shell and includes a means for securing the strip to the shell which includes a hole in the strip where the strip is in contact with the interior of the section. The hole is filled by a rigid material resistant to shear and compatible with and bonded to the material of the concave shell.

3,669,229

POWER TAKE-OFF CONTROL VALVE

Ronald J. Ronayne, and Edwin Ketterling, both of Charles City, Iowa, assignors to White Farm Equipment Company, Cleveland, Ohio

Filed Feb. 9, 1970, Ser. No. 9,489
Int. Cl. F16d 67/02
U.S. Cl. 192—12 C **4 Claims**



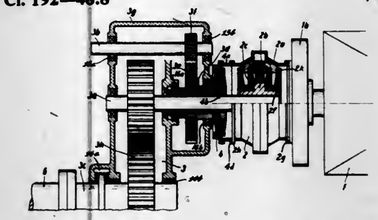
The control valve controls the actuation of an hydraulically actuated clutch mechanism situated between a power input shaft and a power take-off (PTO) shaft on a tractor. The control valve has a biasing spring arrangement which will move the valve spool of the control valve from a clutch-engaged position to a clutch-disengaged position when the pressure of the operating fluid delivered to the control valve falls below a predetermined value. Such a loss of pressure will occur when the prime mover driving the pump which develops the fluid pressure is stopped. The automatic clutch deactivation requires positive actuation of the clutch mechanism to reconnect the PTO shaft with the input shaft, when the prime mover is again energized. The control valve also includes a modulating sleeve which is slidably mounted on the valve spool. When the valve spool is moved to a clutch-engaged position to open a pressure inlet port to communicate same with an outlet port leading to the clutch mechanism, the modulating sleeve is moved to a position partially blocking the flow of pressurized fluid to a fluid return port to thereby modulate the pressure of the fluid flowing to the outlet port communicating with the clutch mechanism. In this way, the modulating sleeve provides smooth clutch actuation. Additionally, the control valve controls the flow of lubricating oil to the clutch mechanism and the actuation of an hydraulically actuated brake mechanism for holding the PTO shaft against rotation.

3,669,230

DRIVE FOR SHIPS

Walter Burkhardt, and Herbert Wedler, both of Witten, Germany, assignors to Lohmann & Stolterfoht Aktiengesellschaft, Witten, Germany

Filed Aug. 21, 1970, Ser. No. 65,798
Claims priority, application Germany, Sept. 5, 1969, P 19 45 797.7
Int. Cl. F16d 21/02; F16h 37/06
U.S. Cl. 192—48.8 **7 Claims**



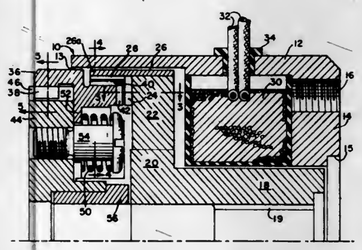
A drive train for ships with plural engines, plural input and common output reduction gearing coupled to the propeller shaft. Resilient shift clutches couple each engine to the reduction gear. Each reduction gear input is received by a hollow shaft and coupled to the input of the respective shift clutch. The hollow shaft is geared to an auxiliary shaft for driving auxiliary equipment.

3,669,231

SYNCHRONIZED ELECTROMAGNETIC CLUTCH

Arnold Schindel, Fairlawn, and Vincent E. Coyle, Wayne, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,716
Int. Cl. F16d 23/10, 27/10
U.S. Cl. 192—53 D **3 Claims**



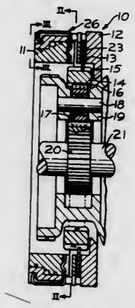
A synchronized electromagnetic clutch is provided having input and output members which are provided with circumferentially disposed teeth which align with each other by means of a flow of magnetic flux so that axially disposed teeth on the face portions of the respective members will be in position to fully engage when the members are attracted to each other.

3,669,232

RETRACTION SPRING FOR CLUTCHES, BRAKES AND LIKE DEVICES

Gerald D. Rohweder, Peoria, and Willis E. Windish, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 3, 1970, Ser. No. 69,240
Int. Cl. F16d 19/00
U.S. Cl. 192—85 A **11 Claims**



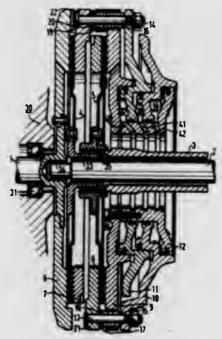
A clutch or brake comprises at least one annular piston reciprocally mounted therein to be selectively moved to compress an annular pressure plate against a friction disc for clutching or braking purposes. A plurality of circumferentially disposed U-shaped resilient pincher-like retraction springs each comprises parallel first and second leg portions connected together by an intermediate portion. The springs are arranged to have each first leg portion engage the piston to urge it towards its retracted position and away from the pressure plate. In one embodiment of this invention, employing a single piston, the second leg portion of the spring engages in a recess formed on a housing having the piston mounted therein. In a second embodiment, employing two back-to-back pistons each positioned adjacent to a friction disc, each leg portion of the spring engages a respective one of the pistons to urge them towards each other.

3,669,233

SIMULTANEOUSLY OR ALTERNATIVELY ENGAGED FLUID CLUTCHES

Helmut Kraus, and Kurt Fadler, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Feb. 18, 1971, Ser. No. 116,573
Claims priority, application Germany, Mar. 4, 1970, 20 10 014.5
Int. Cl. F16d 25/10
U.S. Cl. 192—87.11 **8 Claims**



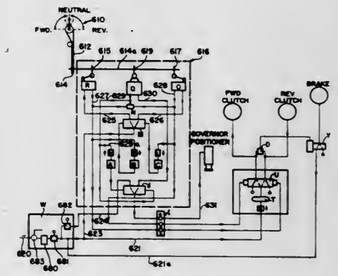
Torque is transmitted from an input shaft to either one or both of two coaxial output shafts by two input discs axially spaced and connected to the input shaft, two friction discs respectively secured on the output shafts against rotation while axially movable, and two pressure plates suspended from one of the input discs by tangentially elongated leaf springs, the friction discs and pressure plates being axially interposed between the input discs, and the pressure plates being moved toward and away from their inoperative positions by a hydraulic motor having annular pistons about the clutch axis which, with other wall elements, enclose the cylinder compartments of the motor.

3,669,234

FLUID CONTROLS FOR ENGINE AND FORWARD-REVERSE TRANSMISSION

Harold M. Mathers, Seattle, Wash., assignor to Mathers Controls, Inc., Seattle, Wash.

Continuation-in-part of application Ser. No. 730,017, May 17, 1968, now Patent No. 3,543,891. This application Feb. 24, 1970, Ser. No. 13,496
Int. Cl. B60k 29/00, 21/00
U.S. Cl. 192—.098 **12 Claims**



This invention relates to control mechanism for propulsion systems wherein single lever control of clutch and engine governor is provided. More specifically, this invention relates to such control mechanism wherein the sequence of application of clutch, engine governor and shaft brake actuation signals is controlled in an automatic, predetermined manner to reduce engine, clutch and gear train wear.

A propulsion control system is also provided with a master control which is connected with a replaceable air drive unit either mechanically or pneumatically. The air drive unit is premanufactured to desired specifications for performing operational functions, including automatic neutral delays between forward and reverse directional modes and speed interrupt delays, so that malfunction of one component of the air drive unit may be corrected by replacing the entire unit.

3,669,235

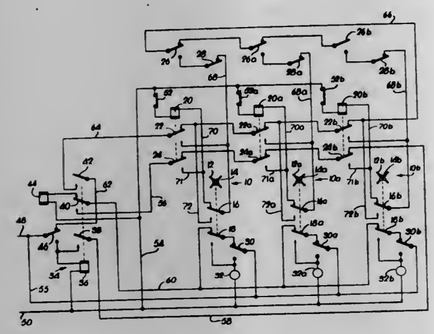
MALFUNCTION ISOLATION APPARATUS FOR SELECTIVE VENDING MACHINES

James A. Breeden, Oak Grove, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Jan. 14, 1970, Ser. No. 2,830
Int. Cl. G07f 11/00
U.S. Cl. 194—10 **4 Claims**

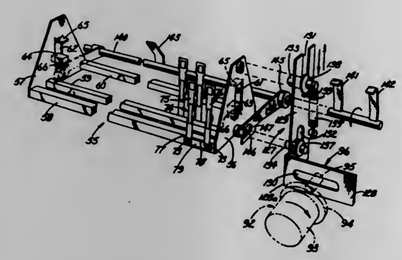
A selective vending machine having switching circuitry which permits the continued purchase of other selections in the event that the dispensing mechanism of one or more selections malfunctions due to jamming or component failure. The circuitry is responsive to the operational condition of the dispensing mechanisms of the various selections and, if a particular mechanism malfunctions, the operating circuit to customer actuatable selection switches is reestablished although the normal cycle is not completed due

to the malfunction. Additionally, the vend solenoid of the malfunctioned mechanism is disconnected from its associated



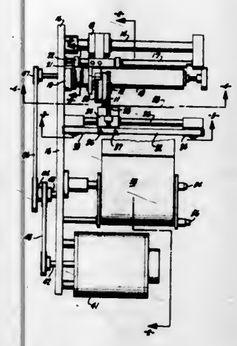
selection switch to prevent energization thereof until the malfunction is corrected.

3,669,236
KEYBOARD FOR A PRINTING MACHINE
Richard W. Pitman, La Fayette Hill, Pa., assignor to Varityper Corporation, Hanover, N.J.
Filed Feb. 9, 1970, Ser. No. 9,502
Int. Cl. B41j 5/08
U.S. Cl. 197—98 16 Claims



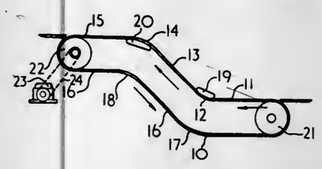
A keyboard operated composing machine comprising a plurality of members which effect selection of printing characters and certain other functions of the machine. Each character or function selection member has a corresponding key on the keyboard and projects into proximity to a corresponding drive element operatively connected to a cage, which is intermittently reciprocated by a power driven mechanism, when one of the keys is depressed a predetermined distance. Means are provided for selectively placing a drive element and particular selection member into engagement when a corresponding key is depressed. Further depression of the key actuates the power driven mechanism for reciprocating the cage through one cycle, thereby driving the engaged member to effect selection of the printing character or machine function corresponding to the depressed key. The design of the keyboard is such that existing manually operated machines can be readily converted to power driven ones without drastically reorganizing the basic structure of the machine.

3,669,237
DOUBLE HELICAL PRINTER
Robert L. Wagner, Menlo Park, and Evan L. Ragland, II, Atherton, both of Calif., assignors to American Regitel Corporation, San Carlos, Calif.
Filed May 4, 1970, Ser. No. 34,437
Int. Cl. B41j 1/32
U.S. Cl. 197—49 13 Claims



A helical printing wheel having an alpha and numeric helical type element paths one being offset from the other by substantially one-half a character width to provide for the elimination of dead space on the wheel.

3,669,238
CONVEYORS
Hugh L. Folkes, St. Leonard's-on-Sea, and Graham F. Devenish, Liverpool, both of England, assignors to Dunlop Holdings Limited, London, England
Filed Sept. 14, 1970, Ser. No. 71,828
Claims priority, application Great Britain, Oct. 8, 1969, 49,340/69
Int. Cl. B66b 9/12
U.S. Cl. 198—16 3 Claims

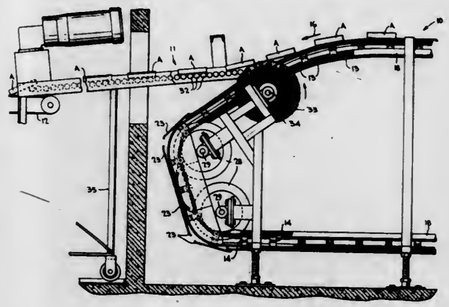


The invention relates to guides for maintaining conveyor belts in the desired path when travelling through a bend, for example at the bottom, or top, of an inclined conveyor. The guides act on the load carrying surface of the conveyor for concave bends and on the lower surface of the belt for converse bends. The guides can comprise various forms of static members, auxiliary belts or endless chains.

3,669,239
METHOD AND MEANS FOR UNLOADING ARTICLES FROM A CONVEYOR
Walter Harper Martin, San Antonio, Tex., assignor to Refrigeration Engineering Corporation, San Antonio, Tex.
Filed Jan. 13, 1971, Ser. No. 106,173
Int. Cl. B65g 47/00, 15/00
U.S. Cl. 198—25 5 Claims

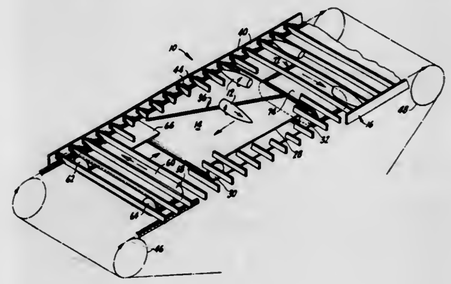
Means for unloading articles from a grid-type conveyor unit comprising a rotary brush mounted for free-wheeling

rotation about an axis lying transverse to the longitudinal movement of the conveyor and being positioned on the conveyor unit below its grid and intermediate its ends, the rotary



brush serving to push the products off the grid-type conveyor unit as its bristles project therethrough.

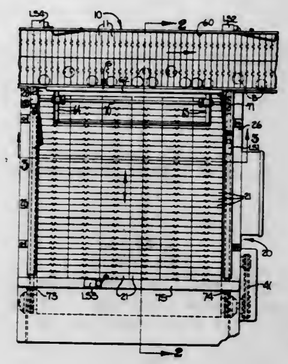
3,669,240
METHOD AND APPARATUS FOR ORIENTING ARTICLES
Edward E. Ross, San Rafael, Calif., assignor to Del Monte Corporation, San Francisco, Calif.
Filed Feb. 18, 1971, Ser. No. 116,525
Int. Cl. B65g 47/26
U.S. Cl. 198—31 AA 13 Claims



Method and apparatus for lengthwise orientation of elongated tapered articles. Articles of random lengthwise orientation are moved along a path over a surface having an upstanding ridge extending diagonally across the path. Conveyor means are provided to move the articles relative to the surface so that the articles spin about their longitudinal axes and migrate to a side of the surface in a direction toward their small ends where they are collected together in common orientation for conveyance to further processing steps.

3,669,241
PACKAGE ACCUMULATING CONVEYOR
Charles Chalich, Salisbury, N.C., assignor to Taylor Manufacturing Company, Salisbury, N.C.
Filed Nov. 13, 1970, Ser. No. 89,249
Int. Cl. B65g 47/44
U.S. Cl. 198—102 9 Claims

Packages are temporarily accumulated from a main conveyor line, in the event of a blockage of the packages from normal movement therealong, and are subsequently redelivered to the main conveyor line by a reversible conveyor apparatus for moving packages in either of two opposite directions away from and toward the main conveyor line. Control over movement of packages on the accumulating conveyor is exercised in response to sensing of the



presence and absence of the excessive number of packages on the main conveyor line as pointed out more fully hereinafter.

3,669,242
ROLLER CONVEYOR
Robert J. Berthelat, Plessis-Trevise, France, assignor to Societe Anonyme dite: Etablissements Jacques Berthelat et Fils, Paris, France
Filed Nov. 13, 1970, Ser. No. 89,358
Claims priority, application France, Aug. 25, 1970, 7031010
Int. Cl. B65g 13/02
U.S. Cl. 198—127 R 4 Claims

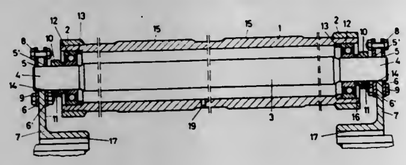


A conveyor constituted of a plurality of successive series of identical rollers, each series being associated with a laterally extending feeler for controlling rollers adapted to drive rollers of an upper series in the direction of movement of a load. Movement of the rollers is predicated upon actuation of a feeler by a load so as to move the latter in predetermined indexed relationship on the conveyor.

3,669,243
CONVEYOR ROLL ARRANGEMENT
Hermann Fischbacher, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland
Filed Feb. 18, 1971, Ser. No. 116,532
Claims priority, application Switzerland, Mar. 6, 1970, 3298/70
Int. Cl. B65g 13/04
U.S. Cl. 198—127 R 6 Claims

A conveyor roll arrangement provides for a hollow roll body that is journalled for rotation about a roll axle that is supported by two elongated supports; and clamping means are provided for supporting each roll axle end on a support and has two normally substantially parallel, normally substantially equidistant elongated plates with aligned apertures which receive the roll axle end, and adjusting means which

can vary the distance between the plates near one end relative to the distance near the other end of said plates, so as to



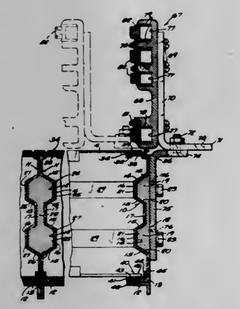
clamp effectively and in exact predetermined position the roll axle ends.

3,669,244

CONVEYOR

William Gordon Pagdin, Milwaukee; Walter I. Smith, Brookfield; Wayne A. Smith, Shorewood, and Eugene F. Le Tendre, Sussex, all of Wis., assignors to Jos. Schlitz Brewing Company

Filed Oct. 28, 1969, Ser. No. 870,033
Int. Cl. B65g *15/00, 17/00, 19/00*
U.S. Cl. 198—137 13 Claims



A conveying mechanism for conveying articles such as bottles or cans. The conveyor is fabricated from a series of modular sections connected together in a manner to provide precise alignment of the endless conveyor chains.

The endless conveyor chain is guided for movement on flexible plastic wear strips which are snapped into position on the guide tracks.

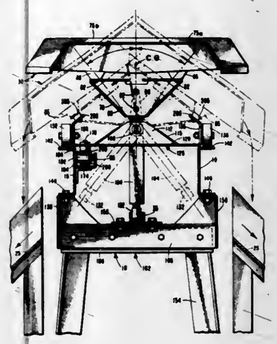
3,669,245

TILT TYPE CONVEYORS

Robert D. Wooten, Rockville; Warren D. Neal, Walkersville, and George J. Einfeldt, Glen Burnie, all of Md., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Jan. 13, 1970, Ser. No. 2,638
Int. Cl. B65g *15/00*
U.S. Cl. 198—155 14 Claims

A closed loop conveyor provides a simple arrangement of tracks on which roll a plurality of cargo carrying devices which are connected to each other by means of a drive chain adjacent one of the tracks and which chain is driven by a sprocket wheel. The chain is of a type having horizontally and vertically pivotal links so that flexibility is provided whereby the tracks can have horizontal bends and vertical slope, the cargo carrying devices thus being enabled to follow a track system which may extend circuitously on the floor of a warehouse and then rise to another floor and ultimately return to the first-mentioned floor. The system is provided with at least one loading station and a plurality of discharge stations at predetermined places along the track circuit. Each cargo carrying device has a normally level load carrying member which can be tilted at any selected station so that cargo can slide gravitationally into a chute or other conveyor means at the selected station, on either side of the track. The drive chain is retained in such a manner that it maintains all of the cargo carrying devices, such units properly disposed on the tracks without any need for additional guide members or specially shaped tracks. The invention is susceptible to use



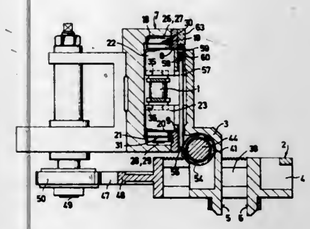
in systems having load carrying members which are trays of sufficient area to support a large cargo load, for example, a postal sack, or where the load carrying members can be relatively narrow slats such that a plurality of slats support an elongated loading. For example, the U.S. Pat. to Atanasoff et al. No. 3,233,720, issued Feb. 8, 1966, and owned by the assignee of the present application, shows a basic arrangement of a plurality of relatively narrow slats wherein several slats can carry a large elongated load, such slats being sequentially tilted at any selected station for discharge.

3,669,246

APPARATUS FOR TRANSPORTING STACKS OF SHEETS OR THE LIKE

Walter Risi, Frauenfeld, Switzerland, assignor to Martini Buchbindereimaschinenfabrik AG, Frauenfeld, Switzerland

Filed Mar. 12, 1971, Ser. No. 123,531
Claims priority, application Switzerland, Mar. 16, 1970, 3875/70
Int. Cl. B42c *19/00*; B65g *15/00*
U.S. Cl. 198—179 11 Claims



Transporting apparatus for stacks of sheets in bookbinding or like machines has an endless chain coupled to equidistant holders which can transport stacks past one or more processing stations. Each holder has a first jaw which is coupled to the chain and is confined to movement in a stationary

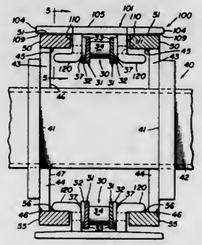
guide member to prevent tilting or other stray movements of the holder with reference to the chain, and a second jaw which is movable toward and away from the first jaw and carries a set of parallel toothed racks meshing with pinions which are mounted on a shaft rotatable in a bore of the first jaw. A torsion spring biases the second jaw toward the first jaw, and a helical spring serves to normally hold the second jaw against movement toward the first jaw but to permit movement of the second jaw away from the first jaw under the action of cams which can be engaged by a follower provided on the second jaw. The means for disengaging the helical spring from the shaft for the pinions in order to permit movements of the second jaw toward the first jaw under the action of the torsion spring comprises a rod which engages one end of the helical spring and has a follower which can engage one or more stationary cams adjacent to the path of the holders to thereby enlarge the internal diameters of convolutions of the helical spring and to thus cause its disengagement from the shaft.

3,669,247

CONVEYOR SYSTEM AND ATTACHMENTS THEREFOR

Willis Clark Pulver, Oak Lawn, Ill., assignor to Velten & Pulver, Inc., Chicago Ridge, Ill.

Continuation of application Ser. No. 787,075, Dec. 26, 1968, now abandoned. This application Mar. 17, 1971, Ser. No. 125,360
Int. Cl. B65g *17/00, 15/30*
U.S. Cl. 198—189 15 Claims



There is disclosed a conveyor system and various forms of attachments therefor for carrying foods and the like including an articulated roller chain conveyor having a support reach and a return reach, support means for the conveyor along the support and return reaches thereof, and a plurality of attachments engagable with the roller chain conveyor and comprising a one-piece body or synthetic organic plastic resin and including a base and a pair of legs depending therefrom and a pair of support flanges extending respectively outwardly from the legs and away from each other, the base having a support surface extending in use laterally of the associated roller chain for supporting foods and the like thereon along the support reach of the conveyor, the legs thereof being engagable with the roller chain conveyor and the support flanges supporting the conveyor along the return reach thereof whereby the support surfaces are maintained out of contact with any adjacent structure along the entire path of the conveyor so as to maintain the support surfaces free of contamination.

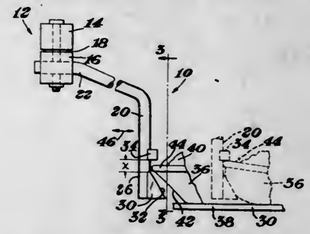
3,669,248

TRAY FORWARDING MECHANISM

Paul Hargash, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 6, 1970, Ser. No. 893
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 3 Claims

A mechanism for pushing forward filled trays such as pulp or plastic trays comprising a shoe means having a slanted face inclined to flushly engage the tray sidewall, and slightly lift the same while forwarding such that the sidewall is lifted into pressure engagement against the underside of a stop means or stop block disposed above the shoe means. The stop block and shoe means cooperately operate to place the



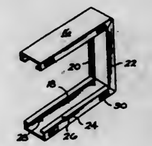
tray sidewall substantially in compression during forwarding. Such a mechanism is advantageously used for forwarding filled trays between various stations, conveyors, elevator lifts and the like as are used in automatic wrapping or packaging apparatus, and with a minimum incidence of tray breakage.

3,669,249

POCKET CLIP FOR AMMUNITION

James Bernard Turner Foster, 67 West 37th Street, Bayonne, N.J.

Filed July 17, 1970, Ser. No. 55,674
Int. Cl. F42b *39/00*
U.S. Cl. 206—3 1 Claim



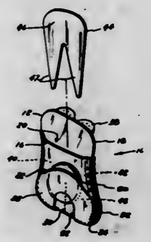
An ammunition clip for carrying small arms cartridges, comprising parallel opposed squared C-section channels for slidably receiving the bases of cartridges, a strut parallel-spacing the channels, and a member for preventing the cartridges from sliding free of the channels; embodiments include a flat-unfolding one-piece clip, and one-way charging and discharging provisions.

3,669,250

POCKET ORGANIZER FOR GOLFERS

Faye M. Maretka, 13688 Hannon, Romulus, Mich.

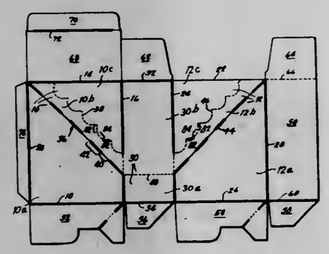
Filed July 2, 1970, Ser. No. 51,785
Int. Cl. A45c *15/00*
U.S. Cl. 206—38 R 4 Claims



A golf accessory for carrying in the pocket and speeding up play, which includes a flexible, triple-pouched, lightweight

unit designed to receive and store a ball spotter in one pouch, a cleat cleaner and green repair tool in a second pouch, and one or more golf tees in the third pouch.

3,669,251
DISPLAY CARTONS AND CONVERTIBLE SHIPPING AND DISPLAY CARTONS AND BLANKS THEREFOR
Floyd L. Phillips, Jr., Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Apr. 3, 1970, Ser. No. 25,461
Int. Cl. B65d 5/50
U.S. Cl. 206—44 R 9 Claims



Display carton for articles having a broad display side and a narrow supporting side, and which tend to be unstable when resting on their narrow sides without lateral support. The carton provides that lateral support by means of two inwardly facing support flaps which cooperatively engage the articles on both their front and back sides and also on their left and right sides. The articles are thus supported securely with the display sides generally vertical and readily visible.

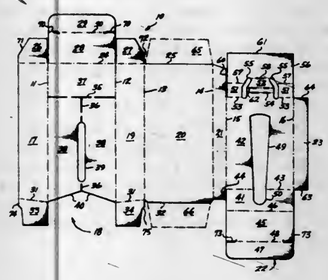
The display carton may be made from a blank formed only for its construction, or it may be formed from a convertible shipping carton by removing part of the shipping carton. A blank for forming such a shipping carton is disclosed.

3,669,252
SURFACE PROTECTION MATERIAL
Ernest C. Evans, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of application Ser. No. 837,563, June 30, 1969, now abandoned. This application Mar. 8, 1971, Ser. No. 122,180
Int. Cl. B65d 85/00; B32b 5/18, 7/02
U.S. Cl. 206—46 FN 7 Claims

A protector sheet material serving as packing material for fine furniture and its combination with the furniture and a surrounding contacting container in such manner as to inhibit marking or buffing of the furniture in shipment. The protector sheet material has a foam surface for contacting the furniture and a paper backing for contacting the container in such manner that slippage in shipment occurs preferentially between the container and paper backing.

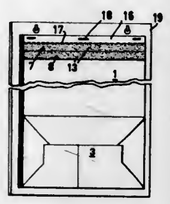
3,669,253
DISPLAY CARTON WITH INNER SHELF PANEL AND AN ARTICLE HOLDING FEATURE
Jimmy J. Hanke, Des Plaines, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Dec. 30, 1970, Ser. No. 102,579
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 10 Claims

A display carton having an open front panel to display an article, and a central shelf panel parallel to and between the front and back panels of the carton. The carton has an article holding pocket formed by upper and lower transverse shelves hinged both to the shelf panel and to a front locking panel.



The latter panel holds the transverse shelves in place by abutting the other end closure.

3,669,254
CLOSURE STRUCTURE FOR PAPER BAGS
Chris A. Chrysanthis, Daly City, and George Chris Kouriogiou, San Francisco, both of Calif., assignors to Alex A. Chrysanthis, Dale City, Calif. and Tony Haldezos, part interest to each
Filed Nov. 12, 1970, Ser. No. 88,800
Int. Cl. B65d 33/20
U.S. Cl. 206—57 A 3 Claims

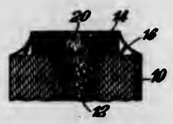


A paper bag having a bottom wall, an open upper end, a front and rear wall in opposed relation connnected by side walls foldable to collapsed positions between said front and rear walls and expandable to positions at right angles to said front and rear walls.

The upper marginal portion of the rear wall is co-planar therewith, and the corresponding upper marginal portion of the front wall is folded to overlie the outer surfaces of the front wall. When the upper end of the bag is collapsed over articles in the bag, the inner surface of said marginal portion on said rear wall and the outwardly exposed surface on said marginal portion on the front wall will be parallel, one above the other and contiguous therewith, and the upper end portions of said side walls will be infolded to lie between said front and side walls, as the upper free edges of said side walls terminate at said marginal portions.

A coating of a conventional non-tacky, pressure sensitive adhesive, such as latex gum is inseparably bonded to said inner and exposed surfaces on said marginal portions, which adhesive coatings are adherent to each other so that by unfolding the folded marginal portion to a position coplanar with the front wall and pressing it against the marginal portion of the rear wall the bag will be tightly sealed against ingress or egress of gaseous or liquid fluids into or out of the bag at the open end.

3,669,255
END-CAPPED CYLINDRICAL PACKAGE
Grantges J. Raymus, Spring Lake, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,497
Int. Cl. B65d 65/44, 85/66
U.S. Cl. 206—59 F 13 Claims



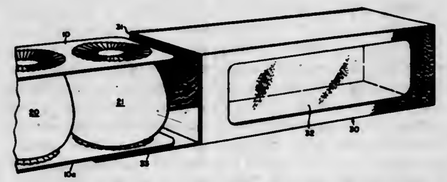
Cylindrical objects, particularly those with readily damaged ends such as rolls of sheeting and the like, are protected in special packaging comprising protective end caps and heat shrunk outer wrapping of plastic film which envelopes the cylindrical objects and the end caps.

3,669,256
SURGICAL BLADE PACKAGE
Ezekiel J. Jacob, 25 Monroe Place, Brooklyn, N.Y.
Filed May 15, 1970, Ser. No. 37,509
Int. Cl. A61b 19/02; B65d 83/00
U.S. Cl. 206—63.2 R 8 Claims



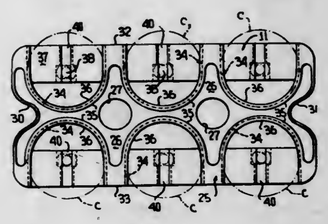
A surgical blade package having improved puncture resistance and a simplified three-ply wall structure comprises two superimposed walls, each of which is formed of an outer layer of foil material and an inner layer of a protective padding secured thereon by an intermediate adhesive stratum. The three-ply walls are sealed together adjacent or along their edges to define therewithin a compartment containing a surgical blade.

3,669,257
PACKAGE FOR A PLURALITY OF ARTICLES
Joseph A. Janicke, 2623 Texel Drive, Kalamazoo, Mich.
Filed Jan. 2, 1970, Ser. No. 76
Int. Cl. B05d 71/00
U.S. Cl. 206—65 4 Claims



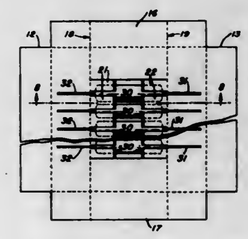
A package for a group of caramel apples incorporates a pair of locating strips having resilient projections engageable with the opposite end indentations of an apple, the surrounding package structure maintaining sufficient confinement pressure to preserve a deflected condition of the projections.

3,669,258
CARRIER-OPENER COMBINATION
Carmen T. Mascia, Westchester, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 19, 1970, Ser. No. 47,789
Int. Cl. B65d 17/16, 71/00, 85/62
U.S. Cl. 206—65 C 16 Claims



This disclosure relates to a carrier-opener combination including a carrier and a plurality of containers having ends provided with tear-out portion, the carrier being constructed as a one-piece molded member having a plurality of T-shaped openings as viewed in horizontal plan in each of which is adapted to be disposed an enlarged head of one of the tear-out portions, each head having a longitudinal axis of a larger dimension than a transverse axis, and each of the openings or channels including an arm of the T which is generally of the size of the longitudinal dimension whereby each enlarged head and its associated opening is interlocked by imparting relative rotation between the container and the carrier.

3,669,259
CONTAINER AND BLANK THEREFOR
Henry W. Brandt, Newark, N.J., assignor to Wagner Electric Corporation
Filed July 13, 1970, Ser. No. 54,360
Int. Cl. B65d 73/02, 85/24
U.S. Cl. 206—65 F 4 Claims

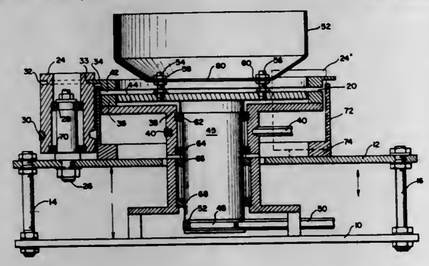


A foldable container and blank therefor, which blank includes two rows of complementary tabs and score lines defining a pair of side flaps and a pair of end flaps. Adjacent tabs are spaced by slots which accommodate the lead wires of electrical resistors positioned to underly the tabs. The side flaps are foldable over the lead wires and the end flaps are folded over the end portions of the side flaps to complete the container.

3,669,260
METHOD OF SORTING PARTICULATE ARTICLES

Kurt H. Hoppmann, and Horst A. Schober, both of Falls Church, Va., assignors to Hoppmann Corporation, Springfield, Va.

Filed Apr. 19, 1971, Ser. No. 135,225
Int. Cl. B07c 5/00
U.S. Cl. 209—73 20 Claims

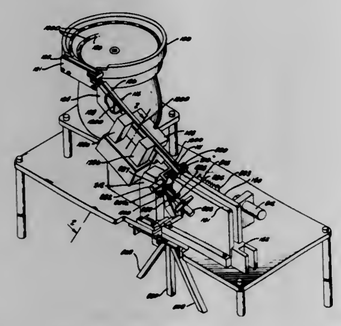


Method of sorting, including feeding, orienting and counting, particulate articles such as coins, shells, candy, pills and the like, wherein the articles are placed upon a rotating inner plane and centrifugally discharged through a peripheral gauging aperture defined at the edges of a rotating inner plane. The peripheral aperture is defined by a pair of top and bottom outer gauging rings rotated at speeds similar to or at variance with the rotating inner plane according to the character of the articles being counted. Also, the size of the gauging aperture may be varied by vertical adjustment of the top outer ring to accommodate centrifugal discharge articles of varying dimension. The discharge articles may be guided tangentially and single file past a conventional photo electric or similar counting device. The rotating inner plane may have a horizontal surface, alternately a concave, convex or contour profile.

3,669,261
HARDNESS TESTING MACHINE

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 19, 1970, Ser. No. 20,963
Int. Cl. B07c 5/00
U.S. Cl. 209—74 14 Claims

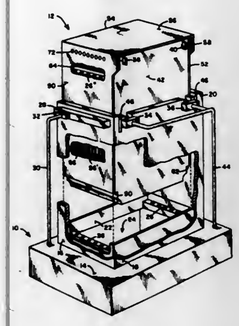


A machine and method for non-destructive testing of the crimp portions of substantially all electrical contacts in a production run and sorting accordingly of the contacts into chutes. From a hopper contacts are fed by gravity along a sloping track, and dropped one by one down a chute. A fall interrupt bracket, clamping, and pendulum cocking and releasing mechanism stops and clamps the contact. The pendulum, from which a hammer is suspended, is released to strike and rebound from the contact crimp portion. Photodiode sensing means determine the distance of rebound and accordingly a chute directing plate assembly is set to later direct the contact into the appropriate soft, too hard, or contact not tested chute. The contact fall interrupt bracket is rotated away from the contact fall path and the contact falls further and is diverted by the chute directing plates into the appropriate chute. Diversion into the non-tested chute is caused by malfunctions of the machine, e.g., failure to clamp the contact when the pendulum hammer strikes the contact. In a second embodiment there is provided an anvil having a groove to retain a specimen. A pendulum suspending a hammer portion is released and the hammer rotates around an axis to strike the specimen and rebound in a return arc path. The return path length is in accordance with hardness. On an adjustably settable swinging frame are mounted an axially aligned photosensitive element and a light source. The frame, anvil and pendulum elements are relatively positioned such that the aligned element and source are along the hammer return path so as to enable the specimen hardness to be measured.

3,669,262
REMOVABLE CARD-HANDLING CARTRIDGE

Le Roy E. Gerlach, Minneapolis; Gordon P. Johnson, and David A. Tandeski, both of St. Paul, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 29, 1969, Ser. No. 828,858
Int. Cl. B07c 3/10
U.S. Cl. 209—80.5 26 Claims

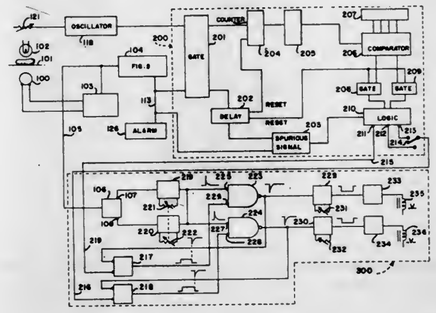


A removable card-handling cartridge for retaining a plurality of cards in a side-by-side relationship for use by a card-handling apparatus is described. Included in the removable cartridge, is a plurality of end-coded cards retained by a plurality of coded card-retaining pins, the pins being selectively actuatable for permitting the selection of individual ones of the end-coded retained cards for access to the card-handling apparatus. In addition to the card-retaining pins, an improved gating-rod arrangement for providing auxiliary support of the cards is shown. An improved high-resistance fluid nozzle arrangement is illustrated for keeping the cards separated while in the retained position. The entire removable cartridge is illustrated in a form permitting the removal of the cartridge, together with the cards retained therein, with a minimum amount of disconnection from the card-handling apparatus.

3,669,263
APPARATUS FOR SORTING PRODUCTS ACCORDING TO THEIR LENGTHS

Raymond E. Babb, Fremont, Calif., assignor to Genevieve I. Hanscom (formerly Genevieve I. Magnuson) and Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson (formerly Lois J. Duggan), trustees of the estate of Roy M. Magnuson, part interest to each

Filed Jan. 21, 1971, Ser. No. 108,310
Int. Cl. B07c 1/14
U.S. Cl. 209—82 14 Claims



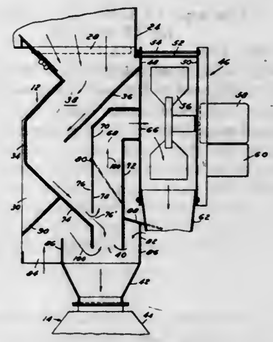
An electrical apparatus for sorting products according to their lengths. In this apparatus the products are passed through a scanning zone which is provided with a light sensitive cell and a source of illumination arranged so that illumination of the light sensitive cell is interrupted while the product is passing through the scanning zone and an electric pulse is generated while the product is in this zone. This pulse is transmitted from the photocell amplifier to the toggle flip-flop which provides one input to an And gate in the circuit which controls the energization of the solenoid valves controlling the air blasts that deflect the product according to their lengths. This pulse is also transmitted from the photocell amplifier to a signal expanding device which controls a gate between an oscillation generator and an electronic counter so that pulses are transmitted from this generator through this gate to the counter for the duration of the expanded pulse to provide a measure of the product length. The expanded pulse is also supplied to delay circuit to provide a strobe pulse to the logic of this apparatus which supplies three outputs corresponding to the long, medium and short product lengths. These outputs are connected to separate product length flip-flops which are connected to the And gates provided to the circuit controlling the air blast control valves. Each of the And gates have a pair of inputs, one of which is supplied by the output of the toggle flip-flop and the other of which is supplied by the product length flip-flops. Thus, the And gates control which of the air blast solenoid valves is to be energized. If the long product flip-flop supplies a signal to the long product And gate then the long product air blast valve is opened and if the medium or short flip-flop supplies the control signal to the medium or short And gate then the medium or short air blast valve is opened.

3,669,264
BUCKET ELEVATOR WITH GRAIN CLEANER

James G. Bryant, Greencastle, Ind., assignor to Bryant-Poff, Inc., Coatesville, Hendricks County, Ind.

Filed Nov. 14, 1969, Ser. No. 876,742
Int. Cl. B07b 4/02
U.S. Cl. 209—138 5 Claims

A grain cleaner for a bucket elevator having a downflow grain passage opening into an upflow air passage connected to a blower. A valve is positioned in the opening so that in a first position it restricts the flow of air with the grain through the opening so that the grain can be cleaned by an airstream created by the blower and in a second position leaves the opening unrestricted so that a large volume of grain can flow freely through the grain passage and lower portion of the air passage.



3,669,265
CLASSIFYING APPARATUS WITH ADJUSTABLE FINES OUTLET

Kurt H. Conley, 214 Grandview Avenue, Hamden, Conn.

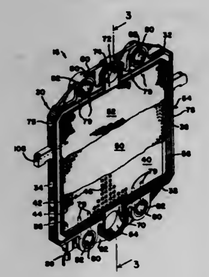
Filed July 17, 1969, Ser. No. 842,540
Int. Cl. B04c 3/06
U.S. Cl. 209—144 13 Claims

In a centripetal classifier an adjustable "fines" outlet opening is provided consisting of a circular array of vertical elongated trapezoidal segments which are mounted by shafts through apertures in a horizontal apron. There are five "control" segments spaced equally around the circle whose lower shaft ends engage five respective arcuate slots in a rotatable cam plate disposed beneath the apron. Between adjacent ones of the control segments are located four interleaved "slave" segments having shorter shafts which do not engage the arcuate slots. A horizontal rod is attached to the cam plate and passes through the enclosure and terminates in a handle outside of the enclosure. When the handle is pulled out or pushed in, the cam plate rotates and the lower shaft ends of the control segments are tilted inwardly or outwardly thereby tilting or pivoting the trapezoidal segments outwardly and inwardly to change the effective size of the outlet opening and hence the fines "cut." Since the control and slave segments are interleaved, the slave segments are similarly caused to pivot.

3,669,266
MINERALS SEPARATION PROCESS
Robert N. Sanders, and James D. Johnston, both of Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 858,124
Int. Cl. B03d 1/02
U.S. Cl. 209—166 6 Claims

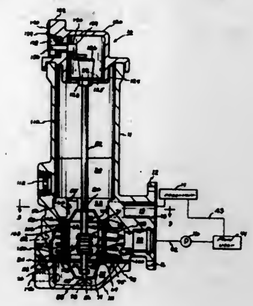
Titanium oxide containing concentrates are recovered from sand composed in the particle size range of 100 mesh and smaller of titanium oxides, heavy metal silicates, and silica. A plural stage flotation process is used. In the first stage the sand in the above size range is subjected to flotation using air and an anionic collector to yield a heavy mineral concentrate. The second stage flotation involves treating this heavy mineral concentrate with nitrogen and an anionic collector to float off the heavy metal silicates, the titanium oxide concentrate remaining in the tailings.

3,669,267
FILTER PRESS PLATE PROCESS AND APPARATUS
William L. Hutton, East Hampton, N.Y., assignor to T. Shriver & Company, Inc., Harrison, N.J.
Filed July 7, 1970, Ser. No. 52,798
Int. Cl. B01d 37/02
U.S. Cl. 210—75 15 Claims



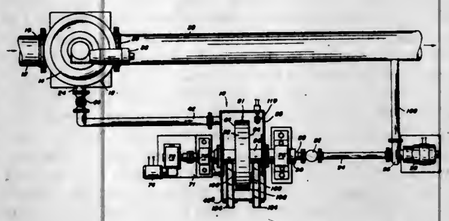
Process and apparatus for chamber-type filter presses formed with a plurality of filter plates, each having a peripheral frame and an integral partition plate dividing the frame into filter cake receiving recesses with filter cloths within the recesses and pressed into grooves on the interior periphery of the filter plate by caulking strips to retain the cloths against the surface of the plates; the plates have a first inlet port extending through the frame on one edge thereof radially outwardly of the filter cloth for communication with a corresponding inlet in adjacent filter plates, a second inlet port extending through the frame on a side thereof opposite the first inlet port for communicating with a corresponding inlet in the adjacent filter plates, both of the inlets communicate, outwardly of the filter cloths, with the recesses formed in the filter plates, and at least one outlet port on each side of the partition plate for discharging fluid flowing through the filter cloths from the filter plate. The filter press is utilized in a process for filtering fluid containing solid substances suspended therein which is initially supplied under pressure to the lower of the inlet ports and flows along the surfaces of the filter cloths towards the upper of the inlet ports whereby the fluid is recirculated and distributed through the upper ports until the press is filled with fluid, and thereafter the fluid to be filtered is supplied to both the lower and upper ports to maintain an even distribution of pressure in the press while filtered effluent is continuously drained therefrom.

3,669,268
FLUID FILTER DEVICE
Carl A. Brown, Birmingham, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Apr. 27, 1970, Ser. No. 32,225
Int. Cl. B01d 27/10
U.S. Cl. 210—90 11 Claims



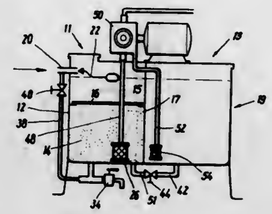
A fluid filter device having a housing defining a fluid chamber with first and second inlet portions connected to a fluid inlet and an intermediate portion connected to a fluid outlet. A cylindrical filter element is disposed in the intermediate portion and is so arranged that fluid flows from the inlet portions into the interior of the filter element, radially through its walls and into the intermediate portion. Pressure responsive means are provided to move the filter element in response to a predetermined pressure increase in the inlet portions to simultaneously open fluid communication between both inlet portions and the intermediate portion, whereby fluid flows from the fluid inlet to the fluid outlet bypassing the filter element at opposite ends thereof.

3,669,269
INDUSTRIAL PLANT FOR RECOVERING SOLIDS FROM LIQUIDS
Selwyne P. Kinney, Carnegie, Pa., assignor to S. P. Kinney Engineers, Inc., Carnegie, Pa.
Filed July 6, 1970, Ser. No. 52,580
Int. Cl. B01d 50/00
U.S. Cl. 210—122 12 Claims



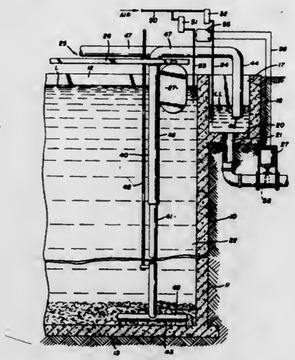
Apparatus for the removal of solids from liquids and concentrating the solids through the use of strainers. Solid-laden water or other liquid is passed through an automatic self-cleaning strainer wherein the strainer media is cleaned by clean water flowing in a reverse direction, relative to the flow of dirty water therethrough. The backwash water is passed through a low pressure rotating screen type strainer assembly where the solids are removed and the clean water returned to the outlet of the self-cleaning strainer. Accumulated solids are continuously removed from the surface of the screens and discharged outside of the strainer assembly.

3,669,270
WATER SOFTENER AND A DEVICE COMBINED THEREWITH
Ernst Flogel, Niederscheld, Germany, assignor to Franckesche Eisenwerke AG, Adolfshutte, Niederscheld (Dillkreis), Germany
Filed Jan. 21, 1970, Ser. No. 4,511
Claims priority, application Germany, Jan. 24, 1969, P 19 03 492.5; Jan. 27, 1969, P 19 03 833.6
Int. Cl. B01d 23/10
U.S. Cl. 210—123 1 Claim



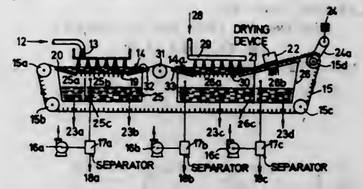
Apparatus for softening water including a tank which is filled with an ion exchange composition and which is open at its upper portion. The tank includes an inlet pipe, an outlet pipe and a valve for controlling the flow at the inlet pipe to maintain a constant level of liquid in the tank. A backwash pipe is connected between a branch on the inlet pipe and a branch of the outlet pipe. A drain cock is provided at the lower portion of the tank.

3,669,271
SIPHON TYPE SLUDGE REMOVAL SYSTEM FOR A SEWAGE SETTLING TANK
Robert F. McGivern, 1404 Holly, Columbus, Ohio
Filed Dec. 11, 1970, Ser. No. 97,078
Int. Cl. B01d 21/24
U.S. Cl. 210—128 8 Claims



A siphon arrangement for removing sludge from the bottom of a sewage settling tank and discharging it into a sludge tank from which it is removed. The inlet of the siphon is submerged in the sewage adjacent the bottom of the settling tank and its outlet is submerged in the sludge discharged into the sludge tank. The siphon is carried by a float supported by the liquid in the settling tank, the level of which may vary as more or less sewage to be treated flows into the tank. The level of the sludge in the sludge tank will always be lower than the level of the liquid in the settling tank and it is important to the operation of the siphon to maintain constant this relationship of the levels of the liquids in the two tanks. This is accomplished by a control arrangement for controlling the discharge of the sludge from the sludge tank in accordance with variations in the level of the liquid in the settling tank.

3,669,272
BAND FILTER WITH VACUUM SUCTION CHAMBER
Friedrich Bilabel, Im Lohl 12, 674 Landau, Pfalz, Germany
Filed Apr. 30, 1970, Ser. No. 33,261
Int. Cl. B01d 33/00
U.S. Cl. 210—152 9 Claims

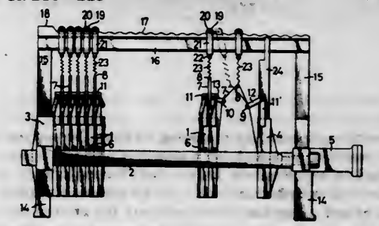


A vacuum band filter comprises a continuously moving filter band having lower and upper runs with the upper run of the band forming a trough to which is fed the liquid to be filtered, and a vacuum exhaust and liquid collecting chamber disposed below and in liquid-tight engagement with the upper run of the filter band. The section of the band subjected to the vacuum action is divided into filtration and drying zones, and possibly one or more rinsing zones therebetween, with intermixing of the liquids of adjacent zones being prevented by passing the portions of the band intervening between adjacent zones above the preceding liquid level in the filter trough. More particularly, the band, in passing from the filtration zone to a rinsing zone, or in passing from a first rinsing zone to a second rinsing zone, is led roof-fashion above the liquid level, and the band, in passing from the filtration or rinsing zone to the final drying zone, has the end of the trough-shaped section extended upwardly from the liquid level. Preferably, each of the zones has its independent vacuum compartment fitted with individual means to control the degree of the vacuum and to separately discharge the different liquids collected.

ERRATUM

For Class 210—169 see:
Patent No. 3,669,297

3,669,273
DEVICE FOR RELEASING FILTER CAKE IN FILTER PRESS
Ken-Ichiro Kurita, Suita, Japan, assignor to Kurita Machinery Manufacturing Company, Limited, Osaka, Japan
Filed Aug. 28, 1970, Ser. No. 68,049
Int. Cl. B01d 25/32
U.S. Cl. 210—225 7 Claims



A plurality of hangers provided with rollers are movably mounted on wavelike rails disposed above a row of filter

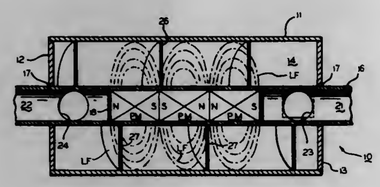
plates and in parallel with the direction in which the filter plates are moved. Springs whose upper ends are connected to the hangers support the opposite ends of a rod from which suspends the upper portion of a filter cloth disposed along the surfaces of each two adjacent filter plates. When the filter plate is released for transport, the hangers with rollers are thereby moved and the filter cloth is subjected to vibration produced by provision of the wavelike rails and springs.

3,669,274

MAGNETIC STRUCTURE FOR TREATING LIQUIDS CONTAINING CALCAREOUS MATTER

George M. Happ, and Merrill F. Kottmeier, 5800 Dempster Street, Morton Grove, Ill.

Filed Dec. 29, 1969, Ser. No. 888,643
Int. Cl. B01d 35/06
U.S. Cl. 210—222 1 Claim



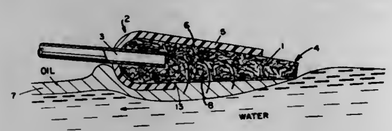
A structure for subjecting liquids having a dissolved and suspended calcareous content to magnetic lines of force. The liquid is caused to pass around a number of permanent magnets developing lines of force through which the liquid moves in a path intersecting such lines of force. This is achieved by mounting the magnets in a non-ferrous carrier with the poles thereof in opposed relationship, i.e., north to north, and south to south. The liquid is confined in such a manner so that it has a substantially helical flow path enabling the lines of force to be cut at right angles thereto.

3,669,275

APPARATUS FOR REMOVING OIL FROM WATER

Ned E. Downs, Raleigh, N.C., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 4, 1970, Ser. No. 86,782
Int. Cl. E02b 15/04
U.S. Cl. 210—242 3 Claims



Improved equipment for removing oil from the surface of a body of water is disclosed. To a previously known apparatus comprised of an oleophilic fibrous batt having one or more perforated pipes embedded in it for taking away adsorbed oil, there is added a flexible shield covering the area where the pipe or pipes are located. The shield prevents water from entering into the area of the pipes and being pumped off with the oil.

3,669,276

SHOE DISPLAY BAG AND SYSTEM

Warren L. Woods, Salt Lake City, Utah, assignor to Wilwood Inc.

Filed Nov. 6, 1970, Ser. No. 87,468
Int. Cl. A47f 7/08
U.S. Cl. 211—34 15 Claims



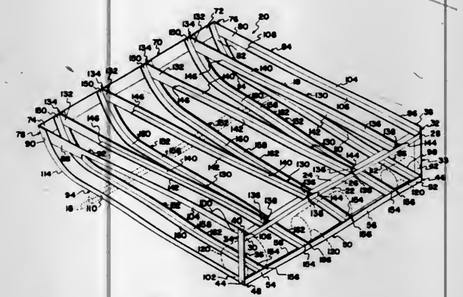
A shoe display bag which includes a flexible sheet having a top end, a bottom end, a rear section, and spaced side members; a plurality of flexible support members connected to the opposite spaced side members of the flexible sheet in a spaced relationship to form a plurality of pockets between the top and bottom ends of the sheet each sized to receive at least one shoe; and attaching means connected proximate the top end of the sheet to hang it in a substantially vertical support position. The bag can be used to market an inventory of shoes of various sizes and types by displaying each type of shoe in the inventory of each predetermined size in a separate vertically supported display bag.

3,669,277

CABINET STORAGE RACKS

William N. Beesley, Jr., 2755 Apple Blossom, Salt Lake City, Utah

Filed Feb. 10, 1971, Ser. No. 114,165
Int. Cl. A47f 7/00
U.S. Cl. 211—49 D 17 Claims



Two tier storage and dispensing racks comprising a frame of components, fabricated of sheet material, comprising in assembled combination, upper and lower ramp-defining members together with stabilizing and reinforcing members. Provision is made for quickly assembling the components without special tools, and the components, when assembled, can be installed in a household kitchen cabinet or secured to related vertical walls, or the like, alone or in combination with additional racks of like configuration arranged vertically

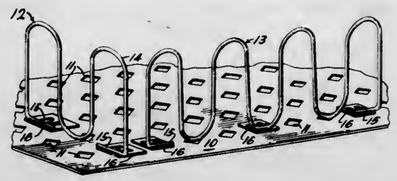
whereby the rack or racks are rigidly maintained for receiving cylindrical containers to be stored and sequentially removed in first-in, first-out fashion.

3,669,278

DISPLAY SHELF DIVIDER

Giles F. Heroy, Adrian, Mich., assignor to Angola Wire Products, Inc., Angola, Ind.

Filed Sept. 25, 1970, Ser. No. 75,531
Int. Cl. A47f 5/00
U.S. Cl. 211—184 4 Claims



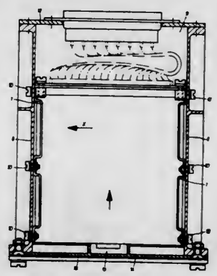
An improved divider for display shelves having a plurality of spaced openings therethrough. The divider comprises a corrugated wire, or the like, which is releasably attached between shelf openings by means of novel brackets. When attached to a shelf, the wire forms a vertical divider. Each bracket comprises a flat member with a depending tab having a pair of opposed, hooked edges for engaging a shelf opening singly or together. The spacing between the hooked edges and the member preferably tapers to less than the thickness of the shelf so that the bracket is urged against the shelf when moved in a plane parallel to the shelf. Embossings are provided on the bracket to facilitate in welding the bracket to the wire.

3,669,279

MULTIPLE HOLDING ARRANGEMENT

Ernst Burgard, Tamm, and Jurajochen Gross, Stuttgart-Freiberg, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 9, 1970, Ser. No. 44,829
Claims priority, application Germany, June 12, 1969, P 19 29 768.8
Int. Cl. A47g 19/08
U.S. Cl. 211—41 6 Claims



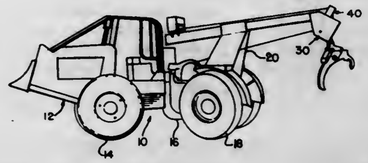
The multiple holding arrangement according to the invention consists of two guide plates of the same kind, which are specially shaped and provided with rows of lamination-like resilient web portions comprising widenings. The resilient web portions serve to compensate for thickness tolerances of plug-in units, and the widenings serve to avoid overstretchings of the web portions in the case of twisted plug-in units.

3,669,280

MOBILE LOGGING VEHICLE AND METHOD OF SKIDDING LOGS

Dwight A. Garrett, and Heinz A. Muehlbauer, both of Enumclaw, Wash., assignors to Garrett Enumclaw Co., Enumclaw, Wash.

Filed Oct. 20, 1969, Ser. No. 867,659
Int. Cl. B66c 17/06
U.S. Cl. 212—7 3 Claims



A mobile logging vehicle is provided with an arch that mounts a telescopic boom. A fairlead is secured to the outer end of the boom. A haul-in line is secured at one end to a winch mounted on the vehicle, passes over a load roller in the fairlead, and is secured at an outer end to a grapple. An opening line is secured at one end to a winch mounted on the boom and passes between spaced guide rollers on the fairlead to position the grapple in the open position on a log. With the fairlead on the outer end of the boom the grapple may be positioned by the operator of the vehicle and closed on the log at the optimum attitude. The grapple is maintained in this general attitude as the boom and haul-in line are retracted. Curved bearings are provided which allow the boom to extend and retract under loading. A method of skidding logs is also disclosed.

3,669,281

VEHICLE MOUNTED HOIST

Frank G. Woodside, Milwaukee, Wis., and Richard F. Uren, Bowling Green, Ohio, assignors to said Woodside, by said Uren

Original application June 5, 1967, Ser. No. 643,637, now Patent No. 3,543,944. Divided and this application Aug. 31, 1970, Ser. No. 68,412
Int. Cl. B66c 23/62
U.S. Cl. 212—144 1 Claim

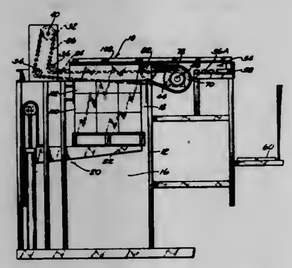


A box frame reinforced by the walls of oil reservoirs has a prefabricated tubular core sleeve on which mast bearings are assembled in inherent alignment. The structure of the main and jib booms in such as to yield high ratio of strength in relation to weight and the tying of the hinge points of the boom and operating cylinder to each other as well as to the mast gives stability. A worm gear connected to the lower end of the mast provides for 360° rotation accommodated by swiveled hydraulic manifold connections. The stabilizer legs are not only strong per se but brace the hoist frame.

3,669,282
PALLET LOADING APPARATUS

Kenneth G. Carlson, 11350 North Valley Drive, Mequon, Wis.

Filed June 8, 1970, Ser. No. 44,288
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P 7 Claims

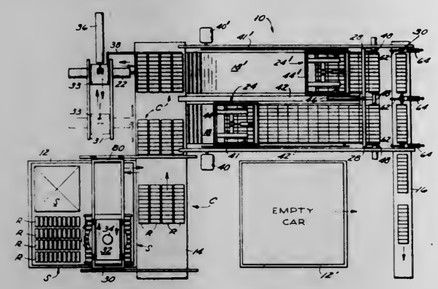


Apparatus for loading cartons on a pallet includes a pallet loading bin with a vertically reciprocal fork lift, a retractable tubular apron movable from a position covering the loading bin to a position exposing the loading bin and a sweep bar which is movable from a recessed position in a slot between two, ball-transfer tables to an extended position over the end of the retractable apron. The ends of the sweep bar are secured to a pair of spaced chains which are movable longitudinally of the apparatus to move the sweep bar from the recessed position to the extended position over the retractable apron to successively push rows of pre-arranged cartons onto the apron. When filled, the apron is retracted to deposit the cartons on a pallet.

3,669,283
METHOD AND APPARATUS FOR DEHACKING BRICK

John J. Brown, Jr., Siler City, N.C., assignor to Forrest Paschal Machinery Company, Silver City, N.C.

Filed Mar. 22, 1971, Ser. No. 126,615
Int. Cl. B65g 59/02
U.S. Cl. 214—8.5 C 10 Claims

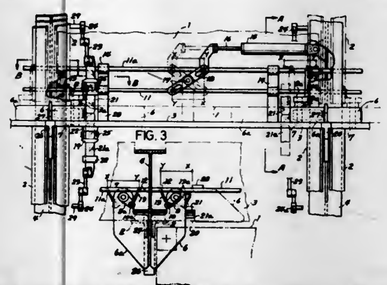


Brick stacked in courses comprised of double-layer rows within which the face sides of the individual pairs of superposed bricks may be confronting are dehacked by sequentially removing complete successive courses from each stack, and pairing courses from the upper and lower portions of the stacks such that the respective double-layer rows thereof are in alignment. Successive double-layer rows are then removed simultaneously from each pair of courses, and the upper layer of each such unit is everted and aligned with the lower layer to form a single-layer line of bricks all having their face sides facing upwardly and alternating in row groupings between bricks from the upper portions of the stacks and bricks from the lower stack portions. The blending of the bricks eliminates marked color gradients sometimes present in the original stacks.

3,669,284
CONTAINER SUPPORTING APPARATUS IN THE CONTAINER SHIP

Ichiro Tabuchi, Chiba; Akira Iwami; Yasuhiro Harita, both of Tokyo, and Toshiaki Yamamoto, Kanagawa, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Sept. 28, 1970, Ser. No. 76,024
Claims priority, application Japan, Oct. 15, 1969, 44/82354
Int. Cl. B65g 1/20
U.S. Cl. 214—10.5 R 5 Claims

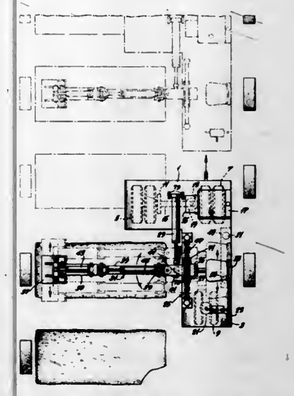


Container supporting apparatus in the container ship having container supporting members at middle stage in the container hold, the supporting members being adapted to be automatically projected into the container cell and retracted therefrom by sensing containers above the supporting members and beneath them.

3,669,285
APPARATUS FOR MOUNTING AND POSITIONING OF EXCAVATING DEVICES

Dean O. Neff, 415 West 8th Street, Rochester, Ind.

Continuation-in-part of application Ser. No. 786,343, Dec. 23, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 670,039, Sept. 25, 1967, now abandoned.
This application Oct. 5, 1970, Ser. No. 77,885
Int. Cl. E02f 3/74
U.S. Cl. 214—138 C 10 Claims

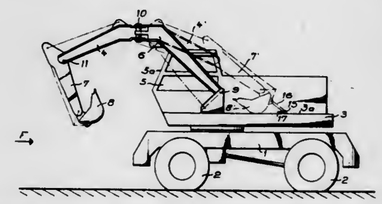


The invention is an apparatus for operably mounting excavating devices, such as backhoe assemblies, especially adapted to facilitate excavating in limited spaces. The device is a wheel-mounted L-shaped frame having a front transverse leg and a rearwardly extending leg. Along the rearwardly extending leg is affixed a support adapted to receive an excavating assembly, such as a backhoe, to extend operably into the angle formed by the legs of the L-shaped frame.

3,669,286
PUBLIC WORKS MACHINES

Yves M. Gauchet, Senlis, France, assignor to Societe Anonyme Poclain

Filed Dec. 30, 1969, Ser. No. 889,073
Claims priority, application France, Feb. 6, 1969, 6902730
Int. Cl. B66f 9/00
U.S. Cl. 214—138 R 4 Claims

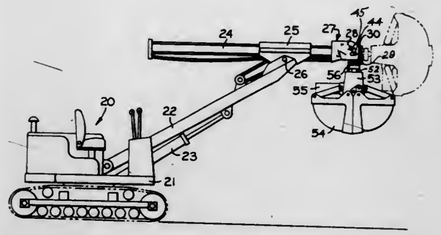


This invention relates to a public works machine comprising a platform equipped with a driver's cabin which is fast therewith and is oriented in the direction of translation of the machine, and with an operating equipment comprising a jib articulated on the platform about an axis 9 disposed substantially to the side of the driver's cabin, while this jib is contituted by two elements articulated with respect to one another about an axis which is substantially perpendicular to the axis of oscillation of the jib on the platform, wherein the axis of articulation of the two elements of the jib may be in a substantially vertical position, in which it is disposed substantially plumb with the front face of the driver's cabin, while the relative rotation of the two articulated elements of the jib may be at least equal to 90° and while rotation preventing means may integrate the two elements of the jib.

3,669,287
PRESSURE PLATE AND LINKAGE CONNECTION BETWEEN A DIPPER STICK AND AN IMPLEMENT

Roy O. Billings, 6621 West Wisconsin Avenue, Milwaukee, Wis.

Filed July 17, 1970, Ser. No. 55,910
Int. Cl. B66c 3/00
U.S. Cl. 214—147 G 11 Claims

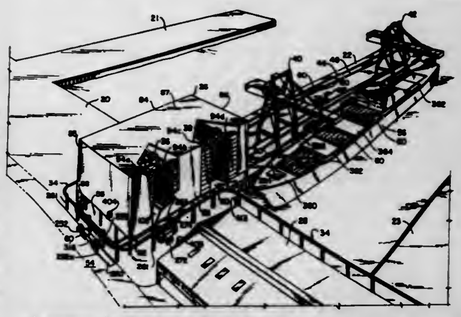


The lower end of the dipper stick of a crane has spaced plates with L-shaped engaging edges forming a female pressure member which coacts with a male pressure plate in the upper end of an implement such as a clamshell bucket. A short flexible connector is connected at its lower end to the male pressure plate and has its upper end within the space between the two plates of the female pressure member, there being means within the cavity at the lower end of the dipper stick for releasably taking up slack in the flexible connector to provide a desired amount of snugness or looseness in the connection between the bucket and the dipper stick, with, however, the male and female pressure members always being engaged in a manner which will prevent rotating movement or undesired swinging of the implement relative to the dipper stick. A guide roller in the female pressure member coacts with one of the connector links to allow the bucket to be snugged up in most positions.

3,669,288
METHOD OF HANDLING AND STORING CONTAINERS AT A SHIPPING TERMINAL

Robert R. Young, Danville, Calif., assignor to Kaiser Industries Corporation, Oakland, Calif.

Original application Mar. 29, 1968, Ser. No. 717,174, now Patent No. 3,543,952, dated Dec. 1, 1970. Divided and this application June 22, 1970, Ser. No. 59,825
Int. Cl. B65g 1/06
U.S. Cl. 214—152 2 Claims

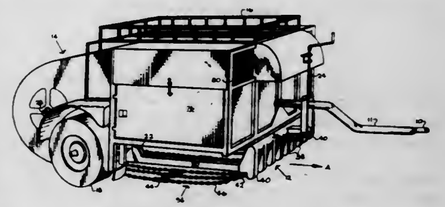


A system for handling large, heavy containers of relatively uniform shape at a shipping terminal including a vertical storage housing, a stacker crane for inserting containers into and removing containers from the storage facility, a carrier crane for loading containers into and unloading containers from a carrier at a terminal, conveyor units for transporting containers and being movable along a predetermined path into and out of transfer stations at the carrier crane and the stacker crane, a conveyer for moving containers between an input/output station for the terminal and the transfer station at the stacker crane, and a control center including computer means for coordinating the movement, storage, loading and unloading of containers by the cranes, conveyer units and conveyer.

3,669,289
HIGHWAY CLEANER

Norbert Mattison, 5102 West 14th Street, Lubbock, Tex.

Filed Aug. 11, 1970, Ser. No. 62,944
Int. Cl. B60p 1/00
U.S. Cl. 214—353 29 Claims



Litter and refuse along the side of a highway is picked up by dragging a series of chains along the ground. Dragging

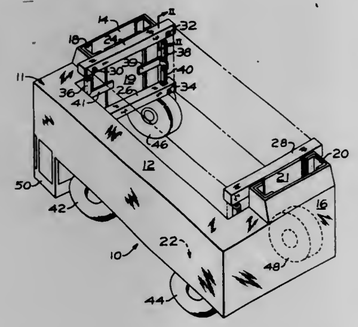
lead chains cause the litter, such as cans, to start rolling. Each lead chain terminates with a plate to which are attached two intermediate chains. Most of the refuse rides and rolls along the top of the intermediate chains, each of which terminate with another plate. Three follow chains are attached to each of these plates and the refuse rides along the top of the follow chains to be swept into a basket.

3,669,290

CONTAINER HANDLING VEHICLE

James R. Doyle, Leicester, England, assignor to Towmotor Corporation, Cleveland, Ohio

Filed June 26, 1970, Ser. No. 50,232
Int. Cl. B60p 1/64
U.S. Cl. 214—392 7 Claims



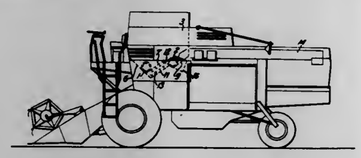
An operator driven, wheeled vehicle is provided having a U-shaped configuration which is adapted to partially encompass a load container, said vehicle being adapted to grasp and lift the load by means of retractable hooks mounted on telescoping masts on the U-shaped arms, which hooks mate with corresponding openings in container corner brackets whereby said container may be transported, lifted and stacked for storage.

3,669,291

GRAIN TANK UNLOADING DEVICE FOR COMBINES

Frans J. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed July 22, 1970, Ser. No. 57,249
Claims priority, application Belgium, July 30, 1969, 49355
Int. Cl. B60p 1/42
U.S. Cl. 214—519 11 Claims



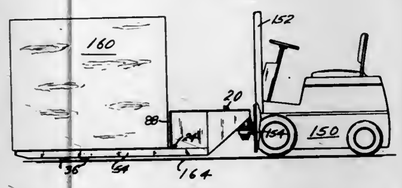
The invention comprises an improved grain tank unloading device for agricultural machines, more especially combine-harvesters of the type having a grain tank for temporary storage of the harvested material, wherein two parallel augers are mounted on top of the grain tank bottom extending across the direction of travel, one of said augers having its discharge end at the outlet opening of the grain tank, in combination therewith a third auger, mounted perpendicular to both of said parallel augers, at the grain tank side opposite to the outlet opening and having its front end close to the discharge end of the first of the parallel augers and its discharge end close to the front end of the next of the parallel augers, which itself ends at the outlet opening of the grain tank.

3,669,292

MOVABLE PLATFORM

Eugene F. Tuura, 1741 4th Avenue South, Seattle, Wash.

Filed Feb. 28, 1968, Ser. No. 709,137
Int. Cl. B60p 1/02
U.S. Cl. 214—620 1 Claim



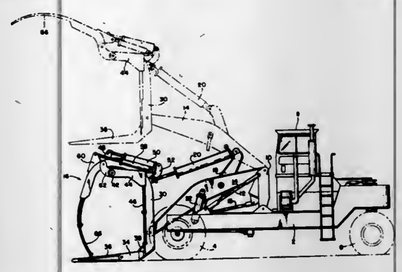
This invention is for a movable platform capable of moving containers weighing up to 50,000 pounds. The movable platform must be able to go under a container on blocks, and then be elevated so as to lift the container off the blocks for moving to a new location. The movable platform comprises a set of wheels which contact a floor and also comprises the load deck. There is an extendable means between the frame for the wheels and the load deck so that the vertical position of the load deck with respect to the wheels can be varied. Normally, these large containers are placed on blocks having a height of 6 inches. Therefore, it is necessary that the movable platform be able to go under a container on a 6 inch block. With this in mind, I have invented this movable platform which from the floor to the top of the load deck encompasses a distance of approximately 5 ½inches. With this low vertical height, the movable platform can be moved underneath a container on the 6 inch blocks and then the movable platform elevated so as to lift the container off the 6 inch blocks for movement to a new location.

3,669,293

FLEXIBLE LEAF SPRINGS FOR KICKERS AND CLAMPS FOR LOG STACKERS

Darrel L. Bryan, and Larry D. Maisch, both of Overland Park, Kans., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed June 26, 1970, Ser. No. 50,032
Int. Cl. B66f 9/00
U.S. Cl. 214—767 4 Claims



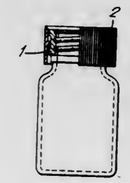
A material handling vehicle including a load handling head mounted upon the end of a boom, said load handling head including a load carrying platform, a pair of clamping arms and a pair of kicking or platform sweeping arms. The clamping arms, used for retaining the load in place upon the platform, are of a flexible spring material enabling them to equalize pressure on and conform to the irregular loads without damage to the clamps. The pair of kicker arms, likewise of a spring material, are used for removing the loads from the platform and are flexible so that they may exert pressure against unevenly shaped loads without material damage to the "kickers" or load removed.

3,669,294

SAFETY CLOSURES

Claudio Petronelli, 45 Koromiko Road, and Gavin Muldrew Park, 192 Cornfoot Street, both of Wanganui, New Zealand

Filed June 16, 1970, Ser. No. 46,697
Claims priority, application New Zealand, June 19, 1969, 156850; Oct. 28, 1969, 158232
Int. Cl. H61j 1/00; B65d 55/02
U.S. Cl. 215—9 11 Claims



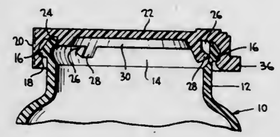
A safety closure with an outer ring mounted over the threaded cap for a bottle with an annulus extending in from the outer ring engageable in a groove on the outer surface of the cap and with a clutch engagement between the annulus and the side of the groove at one limit and preferably the upper limit of axial movement between the ring and the cap.

3,669,295

SAFETY CAP FOR CONTAINER

William Horvath, Chatham, N.J., assignor to Diamond International Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,971
Int. Cl. B65d 55/02, 41/22
U.S. Cl. 215—9 8 Claims



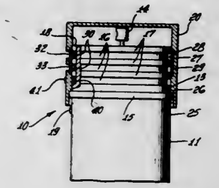
A unitary closure cap having a skirt receiving and snap-fitted on the end of a container neck to close the mouth of the container and also to rotatably support the closure cap on the neck. A radially inwardly directed locking flange carried within the container mouth is formed with a plurality of relatively spaced gaps and the cap has support means extending into the mouth and supporting a plurality of lugs which project radially beneath and in axial abutment with the flange when the cap is operatively applied. These lugs are positioned and proportioned for registry with the respective gaps so that in a predetermined position of angular orientation of the cap on the container they are no longer operative and the cap may be removed from the container simply by releasing the snap-fit in known manner.

3,669,296

SAFETY CONTAINER

Dennis H. Drew, and Paul F. Hecht, both of 1126 Huff Street, San Bernardino, Calif.

Filed Nov. 12, 1970, Ser. No. 88,829
Int. Cl. B65d 55/02; A61j 1/00
U.S. Cl. 215—9 2 Claims



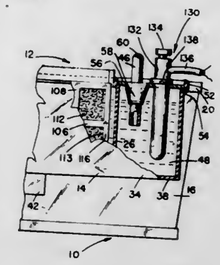
A metal aerosol type canister, the top of which is cylindrical and is provided with three annular grooves forming three annular ribs, each of which ribs has a narrow gap, all three of which gaps are aligned axially. A mark is provided on the cannister body which is aligned with said gaps and low enough to be exposed to view when a safety cap is applied to cover the canister top. This cap is a hollow cylinder having an internal lug which must be aligned with said gaps in order for the cap to be applied to or removed from the canister. Such alignment is facilitated by an external mark on the cap which is radially aligned with said lug. Above said lug, the cap is provided with an annular internal recess for holding a pair of plastic rings snapped in place in said recess so as to be trapped therein, in end-to-end relation. Semi-annular slots are formed in the cap in the area of said recess to accommodate two finger engaging lugs, one of which extends radially outwardly from each ring for use in manually rotating said rings independently of each other. Each ring also has a locking lug extending radially inwardly therefrom and these lugs must both be axially aligned with said mark on said cap and the mark on the canister for the cap to be applied to or removed from the latter. Circumferentially spaced on said rings and outwardly exposed through said semi-annular slots are code marks for enabling a person who understands the code combination to set the rings to properly align the internal ring lugs for facilitating applying the cap to or removing the same from the container.

3,669,297

AUTOMATIC SIPHONING FILTRATION DEVICE

Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.

Filed June 3, 1970, Ser. No. 43,040
Int. Cl. E04h 3/20; B01d 27/08
U.S. Cl. 210—169 28 Claims



An automatic siphoning filtration device having a filter receptacle provided with communicating compartments to receive a siphon, filtering materials and a pump for use with an aquarium to circulate the aquarium water for the purpose

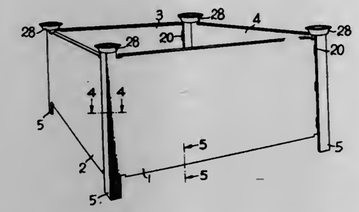
of filtration. The siphon is provided with a tube having an end submerged in the aquarium water, whereby the siphoning action is automatically started when water within the filter receptacle is removed from the siphon compartment. The filtering materials are held within containers positioned in their respective compartments located between the siphon compartment and the pump compartment. The pump is provided with a tube to return clear water to the aquarium, whereby the aquarium water flows from the siphon compartment, through the containers holding the filtering materials, into the pump compartment.

3,669,298

MATERIAL HANDLING BOX

Robert L. Silver, Racine, and Adrian J. Schmidt, West Allis, both of Wis., assignors to Triple E Corporation, Racine, Wis.

Filed Oct. 12, 1970, Ser. No. 79,779
Int. Cl. B65d 7/38, 21/02
U.S. Cl. 220—4 R **8 Claims**



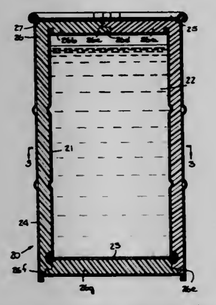
A metal material handling box for industrial use which is fabricated from sheet steel to form a particularly rigid and strong box that can be used for transporting and storing articles. The box is fabricated from four similarly formed sides which provide a double thickness leg at each corner and also provide a support for the bottom of the box at an elevated position from the floor.

3,669,299

MECHANICAL AND THERMAL DAMAGE PROTECTION AND INSULATION MATERIALS USABLE THEREFOR

Doyle P. Jones, Arlington, Va.; Robert C. Kohrn, and Donald V. Perkins, both of South Bend, Ind., assignors to Uniroyal, Inc.

Filed Oct. 30, 1970, Ser. No. 85,417
Int. Cl. B65d 7/22
U.S. Cl. 220—10 **6 Claims**



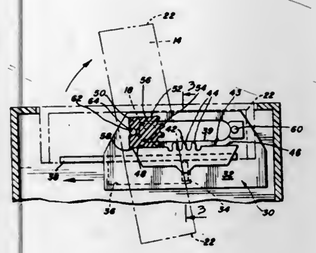
Insulation material capable of providing, for any given thickness thereof, a superior combination of thermal and mechanical damage protection, as well as products incorporating such insulation, are disclosed. The insulation is an intumescent composition made from a particulate mixture of elastomeric polymeric materials, a phenolic or comparable resin, a moisture-liberating substance, and certain other additives, and produces a hard porous char of low thermal conductivity when subjected to elevated temperatures. Although the mixture may be used in granular form, it is preferably combined with an elastic or flexible resinous binder to enable the mixture to be bonded and molded to the shape required for its use. Depending on the particular application involved, the insulation may be used with or without additional protective facings. A representative product utilizing a layer of such insulation between metal facings is a container construction designed for the shipment of hazardous materials such as radioactive wastes, the construction being characterized by an inner steel drum within an outer steel drum and having the space between the drums filled with the insulation.

3,669,300

CONTAINER WITH LOCKING ACTUATOR

Michael D. Thomas, 640 Fern Court, Elmhurst, Ill.

Filed Dec. 30, 1970, Ser. No. 102,680
Int. Cl. B65d 43/16; E05f 11/14
U.S. Cl. 220—36 **13 Claims**



A container including a main body having a cover pivotable between open and closed positions. Drive and locking means are interposed between the container body and cover for pivoting the cover between its open and closed positions and locking the container cover to the body in either of the positions. The means includes an actuator supported for reciprocal movement between extreme positions on the body, with cooperating surfaces on the actuator and the cover. The cooperating surfaces have a drive means on the intermediate portion thereof for moving the cover between opened and closed positions in response to movement of the actuator between extreme positions, and first and second locking means adjacent opposite ends of said intermediate portion of said cooperating surfaces for maintaining the cover in either position, as desired.

3,669,301

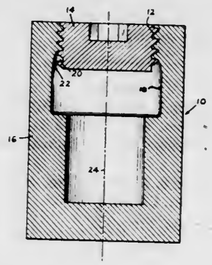
UNDERCUT THREAD CLOSURE

Donald E. Witkin, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Filed June 11, 1970, Ser. No. 45,449
Int. Cl. B65d 41/04
U.S. Cl. 220—39 R **8 Claims**

A thread system for use on screw type closure structures for high pressure vessels and the like wherein a helical fillet blends the undercut of the vessel wall to the first thread, thereby lessening stress concentrations in the vessel wall. The fillet is shaped such that at all points around the helical path

described by the leading surface of the first thread, the transition from that surface into the undercut is by means of



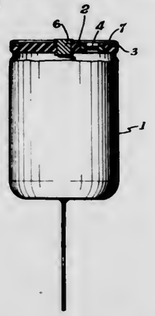
the desired fillet. In some embodiments the fillet is in the form of a quarter of an ellipse.

3,669,302

MOLDED COVER AND VENT FOR ELECTROLYTIC CAPACITORS

Mark Markarian, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 24, 1970, Ser. No. 66,367
Int. Cl. B65d 51/16
U.S. Cl. 220—44 R **10 Claims**



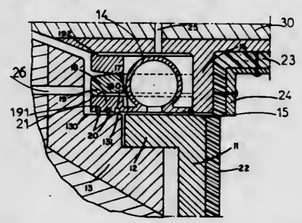
A molded cover of high melting organic polymer is molded around a low melting vent of organic polymer. The combination is suitable for sealing electrolytic devices.

3,669,303

SEAL FOR THE COVER OF A VESSEL WITH A CIRCULAR OPENING

Pierre Launay, 108 Boulevard de la Reine, Versailles, France

Filed Jan. 13, 1971, Ser. No. 106,210
Claims priority, application France, Feb. 4, 1970, 7003962
Int. Cl. B65d 53/00
U.S. Cl. 220—46 MS **8 Claims**



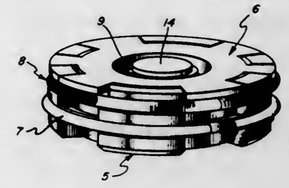
A seal for location between a vessel and a closure, which seal is of omega cross-section, one base being fast with the closure and one base bearing through resilient material on the vessel.

3,669,304

RELEASABLE CLOSURE MECHANISM

Harvey Gordon Hansen, Sunnyvale, Calif., assignor to Sylvania Electric Products Inc.

Filed Jan. 4, 1971, Ser. No. 103,619
Int. Cl. B65d 45/32
U.S. Cl. 220—55 K **7 Claims**



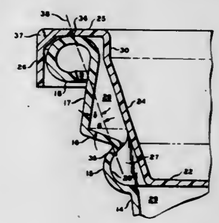
This releasable closure comprises a butterfly spring separating a base plate and a movable weight that are coaxial and have interspersed fingers on the peripheries thereof. A first loose garter spring is located completely in first annular grooves in the peripheries of the plate fingers and under first lands on the weight fingers to keep the plate and weight axially spaced apart. A second tight locking ring spring is located in second annular grooves in the plate fingers and on second lands on the weight fingers. The second spring extends beyond the peripheries of the base plate and weight and protrudes into a mating groove in a vehicle to hold the closure securely therein. Forward motion and rotation of the vehicle and closure causes the loose spring to be ejected. Upon impact with the ground, forward movement of the weight compresses the butterfly spring and causes the second spring to slip off the second lands and completely into the second grooves to release the closure and a self-erecting antenna in the vehicle.

3,669,305

CONTAINER AND CLOSURE THEREFOR

Alfred W. Kinsey, Kansas City, Mo., and Frederick P. Marshall, Park Forrest, Ill., assignors to Phillip Petroleum Company

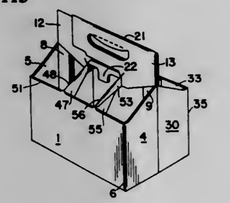
Filed Feb. 5, 1970, Ser. No. 8,960
Int. Cl. B65d 43/10, 21/02, 51/16
U.S. Cl. 220—60 R **7 Claims**



A container having a closure retention groove is combined with a closure having a retention bead. The closure is formed so that the portion thereof between the closure rim and the retention bead grips the portion of the container between the retention groove and the container rim to secure the closure to the container. The container wall section between the points on the rim and retention groove comprises two inter-

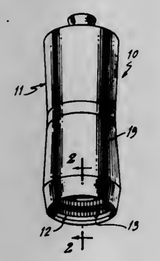
secting substantially straight sidewall sections, each being inclined at an acute angle to a line through the points of contact of the container and closure. One of the substantially straight sidewall sections also serves as a lower stacking shoulder which rests upon the rim of the next lower container in a stack of identical containers.

3,669,306
ARTICLE CARRIER HAVING IMPROVED PARTITION STRUCTURE
Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation
Filed Dec. 2, 1969, Ser. No. 881,558
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 **9 Claims**



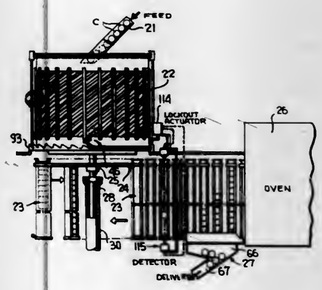
A basket-style article carrier having bottom, side and end walls and a multi-ply handle connected at its ends with the end walls is provided with improved transverse partition elements wherein a partition strip is foldably joined to one ply of the handle in conventional fashion and a reinforcing strip is foldably joined to the partition strip along the generally transverse fold line. An anchoring tab foldably joined to the end of the reinforcing strip which is remote from the handle is secured to the side wall in flat face contacting relation by means of glue or other suitable means. Preferably the anchoring tab is foldably joined to a portion of the top edge of the associated side wall. If desired, more than one partition structure may be employed.

3,669,307
PLASTIC CUP DISPENSER
Adolph Pfund, Milford, N.J., and Morton Sobel, Easton, Pa., assignors to Sobel Industries, West Easton, Pa.
Filed Nov. 6, 1970, Ser. No. 87,450
Int. Cl. B65h *1/00*
U.S. Cl. 221—63 **4 Claims**



A plastic cup dispenser includes a housing to receive a stack of plastic cups, and a resilient plastic strip which is mounted within the housing above, and in encircling relation to the bottom opening of the housing so that projections extending inwardly from the strip in a circular array and having a special shape will be engaged by rims of the cups at the bottom of the stack to ensure the one-at-a-time withdrawal of the cups through that bottom opening. Each projection has an inwardly convex surface of substantial vertical extent formed with a central recess to achieve the desired one-at-a-time withdrawal, and each projection is preferably in the form of a bowed ribbon joined to the remainder of the strip only at its upper and lower ends.

3,669,308
TRANSFER ASSEMBLY FOR CYLINDRICAL MEMBERS
Ben E. Werner, Golden, and Richard D. Setty, Lakewood, both of Colo., assignors to UR Industries, Inc., Golden, Colo.
Filed June 8, 1970, Ser. No. 44,515
Int. Cl. B65g *60/00*
U.S. Cl. 221—119 **19 Claims**

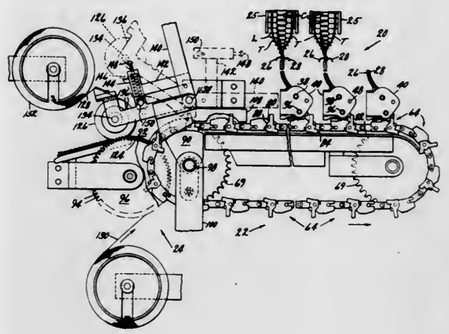


This disclosure relates to a transfer assembly for automatically transferring or distributing a continuous supply of members from a main source into a plurality of carriers. The transfer assembly includes a continuously rotating drum loader having storage chutes spaced about the periphery thereof for continuously receiving members. The carriers into which members are to be distributed are mounted so that they pass around the axis of rotation of the drum loader in unison therewith and in alignment with lower ends of the chutes. Each chute is provided with a gate at its lower end and means are provided for serially operating the gate to dispense a predetermined number of members into each carrier. Each carrier is also provided with escapement mechanisms which repeatedly dissipate the energy of the falling members received therein and which also serve to spaced vertically adjacent members within a carrier.

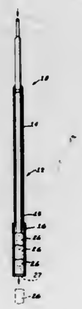
3,669,309
MACHINES FOR SEQUENCING ELECTRONIC COMPONENTS
Vincent P. Romeo, Danvers, Mass., assignor to USM Corporation, Flemington, N.J.
Filed June 2, 1970, Ser. No. 42,830
Int. Cl. B65h *5/26*
U.S. Cl. 221—225 **5 Claims**

For providing a continuous feed strip of programmed electronic components, a plurality of components, releasable in selected predetermined order from their respectively unique sources, is fed to a conveyor carrying them seriatim to a taping station. The conveyor includes a series of articulated carriers movable relative to the delivery zones of dispensers and adapted, respectively, to exercise full and continuous control of each component until released therefrom to be taped.

Production is thereby insured, even at a high rate of operation, of a programmed component supply tape, its components uniformly and closely spaced as desired and none missing or damaged.



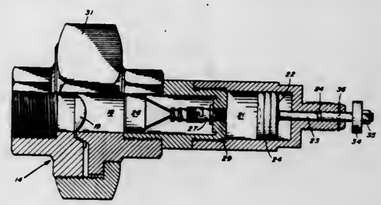
3,669,310
BALLING GUN
Eli A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.
Filed Oct. 15, 1969, Ser. No. 866,639
Int. Cl. B65h *3/00*
U.S. Cl. 221—279 **1 Claim**



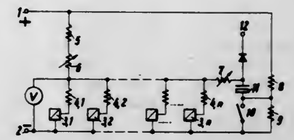
A tablet dispenser is disclosed which is particularly adapted to function as a balling gun for animals. It includes an elongated barrel portion for holding a plunger and a widened mouth portion with an accordion fold for retaining tablets in place.

3,669,311
UNDERSEA PRESSURE SENSITIVE ACTUATOR
Virgil A. Folden, Jr., Falmouth, and Johnny Miller, Jr., Fredericksburg, both of Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Apr. 27, 1970, Ser. No. 31,893
Int. Cl. B67b *7/24*
U.S. Cl. 222—3 **1 Claim**

A pressure sensitive actuator for use in underwater recovery systems. A diaphragm is selected so as to burst at a predetermined depth. Water entering the actuator, through the ruptured diaphragm, actuates a salt water battery which, in turn, fires a cartridge. The cartridge gases act upon a piston to displace an attached rod thereby actuating a high pressure valve causing inflation of flotation bags.



3,669,312
CONTROL ARRANGEMENT FOR FLUID DISPENSERS
Alexander Kuckens, Bellevue 20, 2 Hamburg 39, and Wolfgang Niehaus, Sandheide 15, 2104 Hamburg-Neugraben, both of Germany
Filed Dec. 8, 1969, Ser. No. 883,094
Claims priority, application Germany, Dec. 7, 1968, P 18 13 318.1
Int. Cl. G01f *15/02*
U.S. Cl. 222—70 **11 Claims**

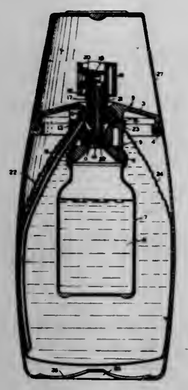


Fluid flow taking place from a dispenser and is blocked or released by an electromagnet. The release is effective by a start signal such as a dropped coin or a pushed button. The flow of fluid continues for a time determined by a timing circuit. The timing circuit has a counter which counts the number of start signals by causing counting stages to become energized in dependence of the number of start signals received. Energization of the different counting stages causes a variation in the current supplied to a resistance-capacitance timing circuit, thus varying the timing of the timing circuit to allow the same quantity of fluid to flow for each individual portion dispensed, regardless of the static pressure of the fluid remaining in the dispenser.

3,669,313
AEROSOL DISPENSER HAVING FLEXIBLE COLLAPSIBLE PRODUCT CONTAINING SAC
Jean Marand, and Felix Rousselot, both of St. Benoit, France, assignors to Ciba-Geigy Corporation
Continuation of application Ser. No. 766,549, Oct. 10, 1968, now abandoned. This application Feb. 2, 1971, Ser. No. 112,055
Claims priority, application France, Oct. 11, 1967, 124018
Int. Cl. B05b *7/30;* **B65d** *35/28*
U.S. Cl. 222—95 **3 Claims**

An aerosol dispenser of the type in which the propellant and the product to be dispensed are kept separate until dispensed. The dispenser has an outer container with a valve means on said outer container. A propellant cartridge is provided in said outer container and is coupled to said valve means. At least one fluid tight flexible sac is provided in said outer container and contains the product to be dispensed in a

fluid condition, and means is provided coupling said sac to said valve means for aspirating the contents of the sac when



the valve means is opened to allow propellant to flow from said propellant cartridge. The sac collapses due to the atmospheric pressure around it as the contents are aspirated.

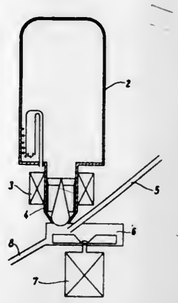
3,669,314
UNDER DASH HOT AND COLD DRINK DISPENSER
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed Sept. 11, 1970, Ser. No. 71,607
Int. Cl. B67d 5/52
U.S. Cl. 222—136 **4 Claims**

A hot and cold drink dispenser for under dash mounting in motor vehicles includes a refrigeration unit for cooling water in an insulated container, a heat exchanger associated with the radiator water for heating water and a plurality of flavor concentrates mounted on the side of the container. Vacuum from the vehicle engine provides the force for moving water and flavors in the apparatus and a dispenser head is provided for dispensing hot water, cold water, and one or more flavors as desired.

ERRATUM

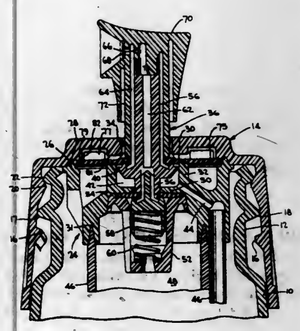
For Class 222—129 see:
Patent No. 3,669,358

3,669,315
LIQUID-DISPENSING APPARATUS HAVING ELECTROMAGNETICALLY OPERATED VALVE
Alexander Kuckens, Belevue 20, 2 Hamburg 39, Germany
Filed June 26, 1970, Ser. No. 59,868
Claims priority, application Germany, June 28, 1969, P 19 32 935.2
Int. Cl. B67d 1/08
U.S. Cl. 222—148 **13 Claims**



A concentrate container has a downwardly directed outlet passage provided with an internal valve seat and an outlet downstream thereof. A valve member is accommodated in the outlet passage and consists of a tubular first portion of magnetizable steel within which but with clearance from the inner surface of which a valve seat engaging streamlined second portion is centered and positioned by sharp-edged struts or webs extending across the clearance. An electromagnetic device is so positioned as, when energized, to lift the valve seat engaging second portion out of contact with the valve seat so that concentrate can pass from the outlet under the influence of gravity. Means is provided for admixing water with the thus-dispensed concentrate to produce a beverage or other mixed liquid.

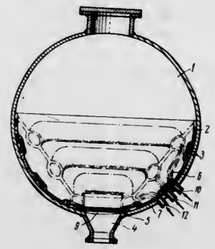
3,669,316
CARTRIDGE VALVE DISPENSER WITH PRESSURE REGULATING VALVE
Douglas F. Corsette, Los Angeles, Calif., assignor to Diamond International Corporation, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,583
Int. Cl. B67d 5/54
U.S. Cl. 222—193 **12 Claims**



A valve plunger movable through an opening in the wall of the product container, cooperates with a valve housing which

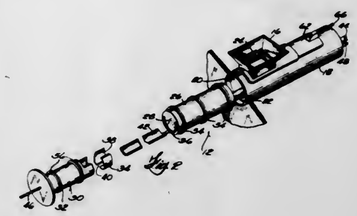
receives product from the container and with a propellant cartridge carried by such housing within the container. Discharge of the propellant through a passage in the plunger in aspirating relation to a passage from the valve housing induces a flow of product which is discharged together with the propellant into the atmosphere. A resiliently deformable annular valve within the product container is clamped between the valve housing and the container wall with its inner periphery in sealing engagement with the valve plunger to prevent leakage of product externally of the plunger through the opening in which the plunger moves. The outer peripheral portion of the valve projects outwardly from the housing and across an annular channel encircling the housing to sealingly engage an annular valve seat concentric with the annular channel. The channel communicates with the atmosphere through the aforesaid opening and atmospheric air entering said channel may unseat the valve to permit influx of atmospheric air into the container for pressure equalizing purposes. One or more grooves or passages opening from the channel through the valve seat at locations normally covered by the valve, are uncovered in the event the valve is deformed by an internal superatmospheric pressure so as to be depressed into the annular channel and rocked about the inner edge of the valve seat whereby to uncover the vent passage.

3,669,317
DEVICE FOR UNLOADING BULK MATERIAL FROM RESERVOIRS
Georgy Semenovich Ivchenko, Donetskoi oblasti, pereulok Semafory, 5"b"; Anatoly Mikhailovich Berestovoi, Donetskoi oblasti, Prospekt Metallurgov, 35, kv. 42; Vladislav Fedorovich Khanchas, Donetskoi oblasti, 24 kvartal, 19, kv. 4; Nina Ivanovna Orlitskaya, Donetskoi oblasti, ulitsa Sechenova, 57, kv. 60, and Anatoly Pavlovich Nikodimov, Donetskoi oblasti, ulitsa Artema, 46, kv. 33, all of Zhdanov, U.S.S.R.
Filed May 7, 1969, Ser. No. 822,559
Int. Cl. B65g 3/12
U.S. Cl. 222—195 **3 Claims**



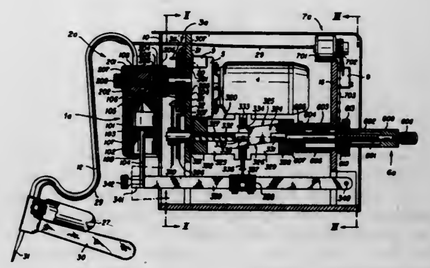
A device is provided for unloading bulk materials from reservoirs by the use of the energy of a compressed gaseous medium. The device comprises elastic sloped walls disposed in the reservoir at the bottom thereof, the walls having a plurality of spaced passages therein which are connected to a system for the intermittent supply of a gaseous medium into the passages for imparting vibratory motion to the sloped walls, i.e., movement towards and away from the walls of the reservoir. Between the passages in the elastic walls there are provided porous sections which permit the flow of compressed gaseous medium therethrough and into the reservoir to impart fluidity to the bulk material therein.

3,669,318
FEEDER FOR HIGH PRESSURE AUTOCLAVE
Mehmet Adnan Goksel, Houghton, Mich., assignor to Michigan Technological University, Houghton, Mich.
Filed Oct. 15, 1970, Ser. No. 81,018
Int. Cl. G01f 11/18
U.S. Cl. 222—307 **12 Claims**



A material handler for a high pressure autoclave includes a combination of a body and a dished in cross section material carrier relatively arranged in a telescoping manner. The material carrier can be withdrawn from the body to a carrying position or telescoped into the body to eliminate the volume of the carrier. The body and carrier move in a passage to alternately position the carrier at a material transfer opening or in the autoclave. The carrier is telescoped into the body after material is removed therefrom, and while still in the autoclave, to eliminate its volume and avoid transferring atmosphere from one position to the other. The body and carrier combination has a sealed engagement in the passage.

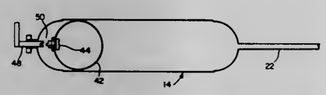
3,669,319
METERING CUM DISPENSING APPARATUS
Manuel Sanz, Geneva, Switzerland, assignor to Micromedic Systems, Inc., Philadelphia, Pa.
Filed Apr. 1, 1969, Ser. No. 812,177
Claims priority, application Switzerland, Apr. 2, 1968, 4868/68; Aug. 19, 1968, 12496/68
Int. Cl. G01f 11/06
U.S. Cl. 222—309 **16 Claims**



Apparatus for repeatedly metering and dispensing, by means of a piston pump, predetermined quantities of liquid via a switching valve to which are connected inlet and outlet conduits for the liquid. The pump and the valve are actuated in timed relation by a drive mechanism powered by an electric motor which is controlled by selectively operable means that automatically cut off the motor supply once the piston has completed a stroke. There are also provided means for varying the length of the piston stroke to adjust the volume

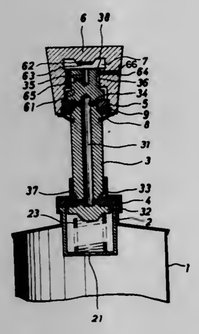
of said quantities and means for displaying to the outside a number indicative of this volume.

3,669,320
RESERVE LIQUID STORAGE AND DISPENSING DEVICE
Thomas H. Purcell, Jr., Raleigh, N.C., assignor to ESB Incorporated
Filed Oct. 13, 1970, Ser. No. 80,268
Int. Cl. B67d 5/42
U.S. Cl. 222—389 4 Claims



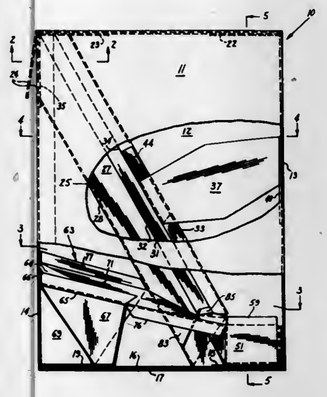
A reserve liquid storage and dispensing device is described in which liquid stored in a container is dispensed by the motion of a piston. The piston is a tank containing high pressure gas, the gas supplying the energy required to cause the piston to move.

3,669,321
NOZZLE HEAD FOR SPRAYING AEROSOL
Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Shinichi Araki, Funabashi, and Takashi Ohshita, Tokyo, all of Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 15, 1970, Ser. No. 28,907
Claims priority, application Japan, Apr. 18, 1969, 44/30142; 44/35682; 44/35688
Int. Cl. B65d 83/00
U.S. Cl. 222—402.24 6 Claims



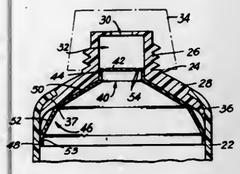
The present invention relates to a nozzle head for spraying aerosol and provides a novel nozzle head for spraying aerosol which head can eliminate the defect that the leakage remained in the valve passage through the nozzle occurs even when the nozzle head valve is closed by stopping the depression thereof and which can prevent the leakage of the remaining liquid immediately after the release of the nozzle head. The construction which characterizes the present invention is such that two valves are interposed in the passage through which the aerosol liquid is sprayed, the first valve being disposed adjacent to the container while the second valve, adjacent to the nozzle orifice; and the spring for the second valve is weaker than that for the first valve so that when spraying is stopped, the first valve is first closed so that the flow of the liquid from the container is stopped and then the second valve adjacent to the nozzle orifice is closed so that the leakage of the liquid remained in the valve passage can be completely prevented.

3,669,322
MEASURING AND DISPENSING CONTAINER
Andrew C. Popivalo, 2028 Webster Street, Sanger, Calif.
Filed Apr. 8, 1970, Ser. No. 26,530
Int. Cl. G01f 11/26
U.S. Cl. 222—454 3 Claims



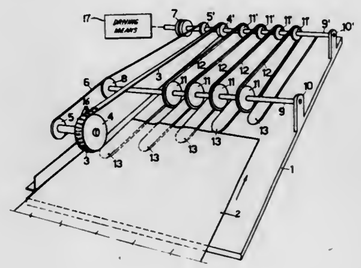
A container for free flowing granular and other particulate materials having a dispensing chute arranged to dispense a predetermined quantity of material each time the container is inverted. The chute and the supporting structure therefor folds with the container so that the container can be shipped flat and when erected for filling the chute and its supporting structure are simultaneously erected into operating position.

3,669,323
ONE-WAY VALVE INSERT FOR COLLAPSIBLE DISPENSING CONTAINERS
Royce Kenneth Harker, Lombard; Warren Wilson Prickett, Elgin, both of Ill., and Kurt Fritz Roesch, Andernach, Germany, assignors to American Can Company, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,484
Int. Cl. B65g 35/38
U.S. Cl. 222—490 7 Claims



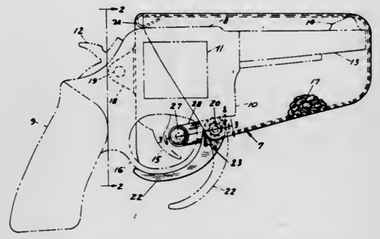
A collapsible dispensing container tube having a thermoplastic headpiece united to a tubular body with a one-way valve insert positioned in the upper part of the tube to perform an anti-suck-back function by blocking the flow of air into the tubular body when manual pressure on the tubular body is released after the dispensing of a desired portion of product from the tube.

3,669,324
COVER MATERIAL FEEDING AND FORMING APPARATUS FOR A QUILTING MACHINE
Giannino Landoni, 133, Via Verdi, 21012 Cassano Magnago, Italy
Filed July 15, 1970, Ser. No. 55,138
Claims priority, application Italy, July 19, 1969, 19856 A/69
Int. Cl. A41h 43/00; D06j 1/00, 1/10
U.S. Cl. 223—32 7 Claims



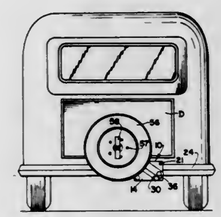
Apparatus for feeding cover material into a quilting machine and simultaneously forming the same for covering longitudinal strips of elastic padding supported on a lower base material in order to obtain padding materials tin the form of attached tubes filled with said strips. The cover material is fed along a plane surface by a belt provided with nails. Such surface has projecting parts with the same cross-section and size as the padding tubes to be manufactured. The cover material is gradually forced to adapt itself to such projecting parts by means of chains running in the cavities therebetween and in the same direction as the cover material itself. These chains are driven by pairs of sprockets mounted on two parallel shafts and at the end of said projections, the cover material is contacted with the padding strips and directed to the needles of the quilting machine.

3,669,325
QUICK DRAW HOLSTER
Ben R. Furman, 9651 Elm Street, Taylor, Mich.
Filed Apr. 26, 1971, Ser. No. 137,309
Int. Cl. F41c 33/02
U.S. Cl. 224—2 C 7 Claims



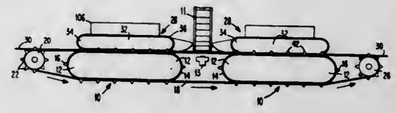
A rigid holster having a spring biased, pivotable, arcuate lever arm positively engaging the trigger guard to prevent the displacement of the firearm from the holster. The lever is released from locking position by a spring loaded push button. The replacement of the firearm and the locking and unlocking may be accomplished by a simple one hand movement.

3,669,326
SPARE TIRE AND WHEEL CARRIER FOR TRAVEL TRAILERS, MOTOR HOMES, PICKUP TRUCKS, CAMPERS, AND THE LIKE
Chester S. Podraza, Chicago, Ill., assignor to Blackstone Manufacturing Co., Inc., Chicago, Ill.
Filed Dec. 4, 1969, Ser. No. 882,151
Int. Cl. B62d 43/02
U.S. Cl. 224—42.21 5 Claims



A spare tire and wheel carrier secured to the rear bumper of a vehicle, particularly a travel trailer and/or motor home, pickup truck, camper, and the like, whereby the tire and wheel is normally positioned to be carried on a pivotal arm supported on a mounting member behind the rear door of the vehicle, with the arm maintained at an inclined angle so that the weight is supported on the mounting member, and with the arm adapted to be pivoted through an arc past center to position the tire and wheel outwardly away from the door to permit the door to be opened, and wherein the arm is in a vertical plane substantially parallel with the rear door of the vehicle.

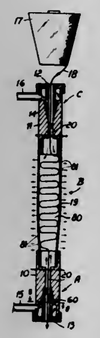
3,669,327
FORMS FEEDING TRACTOR AND JAM DETECTOR THEREFOR
Albert A. Dowd, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,208
Int. Cl. B65h 29/12
U.S. Cl. 226—11 7 Claims



A fixed belt support is peripherally grooved to receive headed tractor drive pins which project through perforations within an endless pin support belt conforming to the periphery of the fixed support. The ends of the pins project through similar perforations in an overlying endless drive belt and also a perforated form carried thereon. A spring biased "floating" pressure shoe carries a third endless cover belt having similar perforations which finally receive the ends of the pins and sandwichs the form between the drive belt and the cover belt to facilitate forms alignment and continuous precision in feeding.

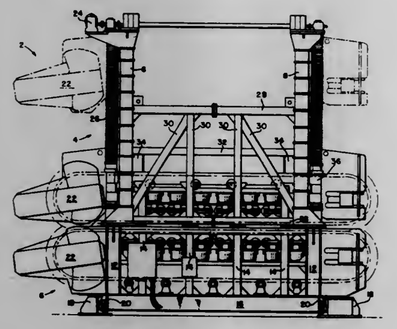
A microswitch on a fixed block is operatively coupled to a forms detecting lever carried by the shoe to sense the absence of a form, the presence of a correct form or jamming of the form between the floating pressure shoe and the underlying drive belt.

3,669,328
YARN FEEDING AND TENSIONING APPARATUS
Luigi Castelli, Via Opifici 16, Gandino, Italy
Filed June 12, 1970, Ser. No. 45,667
Claims priority, application Italy, June 21, 1969, 18520 A/69
Int. Cl. B65h 17/32
U.S. Cl. 226—97 2 Claims



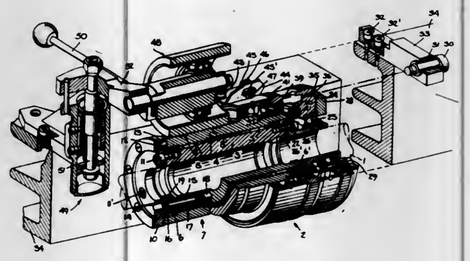
A device for controllably guiding yarns in textile machines consisting of a hollow member through which the yarn is caused to pass by nozzle means which controllably supply compressed air into said hollow member.

3,669,329
PIPE TENSIONING UNIT
James P. Blanchet, Arlington; Charles M. Hotes, Edmonds, and Thomas J. Reynolds, Seattle, all of Wash., assignors to Western Gear Corporation, Everett, Wash.
Filed Nov. 2, 1970, Ser. No. 85,951
Int. Cl. B65h 17/24, 25/22
U.S. Cl. 226—108 8 Claims



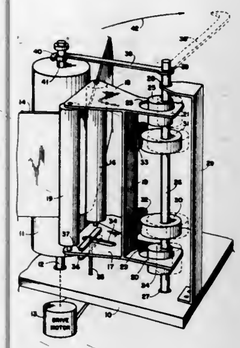
Apparatus for laying offshore pipelines including a pipe tensioning device for maintaining a constant tension and thereby an optimum catenary upon the pipe during the laying thereof including a pair of pipe-engaging, opposed caterpillar type tractor units operable to impart continuously effective, longitudinally applied forces to the pipe line extending from the apparatus into the body of water and resting upon the bottom.

3,669,330
YARN HANDLING APPARATUS
Helmut Ritter, Wattwil, Switzerland, assignor to Heberlein Patent Corporation, New York, N.Y.
Filed July 7, 1970, Ser. No. 52,787
Claims priority, application Switzerland, July 8, 1969, 10397/69
Int. Cl. G11b 19/22
U.S. Cl. 226—174 11 Claims



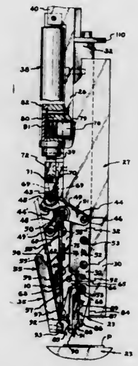
Apparatus for driving individual selected driving rollers in a multipstation textile machine wherein the rollers are shiftable longitudinally between a braking position and an accelerating position on a main drive shaft.

3,669,331
FREE FLOATING PRESSURE ROLLER MEANS AND RETRACTING MECHANISM FOR FILM DRIVE
Walter Renold, 7044 Mary Ellen Avenue, Hollywood, Calif.
Filed Mar. 4, 1971, Ser. No. 120,965
Int. Cl. G11b 15/29
U.S. Cl. 226—176 5 Claims



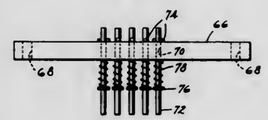
Slippage of a wide film engaged by a driving capstan is prevented by resiliently urging a pair of rollers mounted in a free floating yoke structure against the drive capstan. The yoke structure is guided by a frame means which also includes cam means for effecting the urging of the yoke structure. A lever element terminating in a hook is arranged to engage a bearing on the free end of the capstan to stabilize the same when the pressure rollers are in engagement with the capstan.

3,669,332
TERMINAL TAB STRIP AND APPLICATOR
Quentin Berg, c/o Berg Electronics, Inc., 142 Reno Street, New Cumberland, Pa.
Filed Apr. 9, 1970, Ser. No. 27,099
Int. Cl. H01r 9/16
U.S. Cl. 227—80 10 Claims



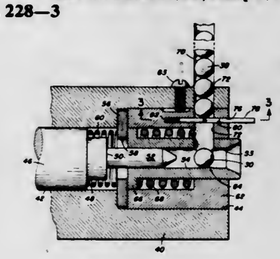
A flexible strip provides elongated weld tabs integrally connected sequentially and lengthwise, being also grouped in integral transverse sets. The strip is fed downwardly into the guide slot of a feeding, staking and cut-off assembly, which includes a vertically acting feed and cut-off sub-assembly slideably mounting a feed bar, and a tab staking and cut-off punch sub-assembly, to which the first named sub-assembly is pivoted. The assembly is reciprocated vertically, with a slight relative lost motion of the relative stationary feed bar, by means of a reversing air cylinder operation of the staking punch sub-assembly, which in turn drives the feed and cut-off sub-assembly through a toggle unit; and that unit produces a swinging action of the feed and cut-off sub-assembly relative to the other sub-assembly to clamp and unclamp the terminal strip, to cut the latter into tab sets, and to stake the tabs into a printed circuit panel.

3,669,333
BONDING WITH A COMPLIANT MEDIUM
Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 651,411, July 6, 1967. This application Feb. 2, 1970, Ser. No. 7,473
Int. Cl. B23k 21/00
U.S. Cl. 228—3 12 Claims



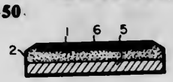
A plurality of independently displaceable pins are employed to apply bonding pressure to a compliant medium at widely spaced bonding sites. The pins permit compensation for workpiece irregularities between the bonding sites such as substrate waviness, warpage, lack of parallelism, etc., while the compliant medium compensates for localized workpiece irregularities such as variations in the thickness of leads and/or land areas.

3,669,334
METHOD AND APPARATUS FOR FEEDING DISCRETE PARTS TO A COLD HEADING MACHINE
John W. Meistering, Rocky Hill, Conn., assignor to Contacts, Incorporated, Wethersfield, Conn.
Filed June 30, 1970, Ser. No. 51,291
Int. Cl. B23k 21/00; B23p 3/02
U.S. Cl. 228—3 4 Claims



The machine is described with reference to the production of cold bonded composite electrical contacts. A cold heading machine is altered to permit contact facing material to be fed into the coning punch assembly in discrete pieces such as balls, cylinders or the like. Ordinarily, pieces severed from a wire feed are delivered directly to the header die. In the present invention, the coning punch acts as a carrier of this material to the header die. The preferred apparatus is inherently self-timing, loading the contact facing material into the coning punch at its "rest" position. Optionally, individual body and facing components may be initially bonded as by brazing, and fed to the cold heading machine by the apparatus of the invention, eliminating wire feed and severing entirely. By virtue of the invention, facing and body components need not be of the same diameter, coning shapes are optimized, and a larger variety of heading diameters, facing thicknesses and heading ratios may be obtained. Stronger interfacial bonding is also achieved.

3,669,335
BACKING STRIP FOR SINGLE SIDE WELDING OF STEELS
Masayasu Arikawa; Motomi Kano; Katsuro Iio, and Toshio Tanaka, all of Kanagawa-ken, Japan, assignors to Kobe Steel Ltd., Kobe-shi, Hyogo-ken, Japan
Filed July 14, 1969, Ser. No. 841,420
Claims priority, application Japan, July 26, 1968, 43/53151
Int. Cl. B23k 5/22
U.S. Cl. 228—50 4 Claims



The disclosure is an improved type of a backing strip particularly adapted for use in the single side welding of steels. The means of the invention is suitable for welding operations such as at a high location or in the field and permits the welding of a curved surface or of complex shapes owing to the flexibility afforded by its special design. The backing strip embodied in this disclosure consists of a cylindrical body made of a heat contractive synthetic plastic with flux filled therein, the former of which is designed to shrink by heat to thereby enclose the flux which consists of powder or grain metal oxides, metal carbonates or the like.

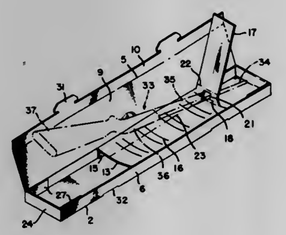
Upon application of the said backing strip to the undersurface of the welding groove, there is provided flexibility sufficient to compensate for the misalignment in the undersur-

faces of the welding groove or in the curved surface, thus presenting superior adaptability over conventional methods.

ERRATUM

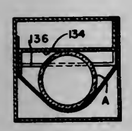
For Class 228—5 see:
Patent No. 3,669,478

3,669,336
ELONGATED ARTICLE CONTAINER
Ray M. Robinson, Rochester, N.Y., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Mar. 23, 1971, Ser. No. 127,107
Int. Cl. B65d 5/50, 5/58
U.S. Cl. 229—14 C 8 Claims



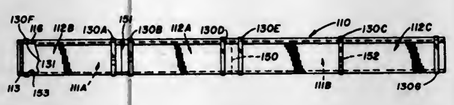
An elongated container for a rifle or the like is of basically standard design but has an improved pressure plate and locking flap assembly. A pressure plate and supporting panel are hingedly connected to a side panel and the pressure plate is provided with an outwardly extending locking flap which has a longitudinal dimension approximately equal to that of the pressure plate. An aperture is provided in the locking plate in order to accommodate the article to be packed. The locking flap is folded back over the rifle and is locked in place after which the external front closure panel and top panel are locked in the closed position.

3,669,337
PACKAGING SLEEVE WITH HEAT-SHRINKABLE PROTECTION SLING AND BLANK FOR PRODUCING SAME
Glenn E. Struble, New York, N.Y., assignor to Diamond International Corporation, New York, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,413
Int. Cl. B65d 5/58, 81/10, 85/30
U.S. Cl. 229—14 BA 6 Claims



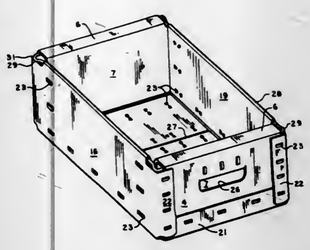
A tubular packaging sleeve and blank in which a heat-shrinkable membrane or sleeve is integrally incorporated in the blank construction, and after assembly of the blank and insertion of an article in an erected sleeve, the application of heat causes a protective sling to be intimately formed about the article and to suspend the article in protective relationship in a package.

3,669,338
PACKING CONTAINER OR THE LIKE
Richard R. Cornell, Newcomerstown, Ohio, and William F. Koehler, State College, Pa., assignors to Richard Cornell & Associates, Newcomerstown, Ohio
Filed July 15, 1970, Ser. No. 55,192
Int. Cl. B65d 13/00
U.S. Cl. 229—23 BT 5 Claims



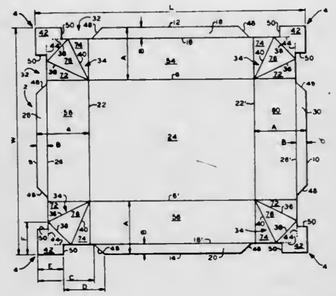
A container is disclosed that comprises one or more base units of substantially U-shaped section over which one or more cover units of inverted, substantially U-shaped section are received with the side walls on the cover units contiguously embracing the side walls on the base units. Each base and cover unit is engaged by at least one strap means when the units are assembled as a container. Moreover, when multiple base and/or cover units are employed to provide a composite container of greater overall length than the length of the individual base and cover units, the abutments between successive base units are staggered in relation to the abutments between successive cover units. This result can best be achieved by employing modular base and cover units. In any event, both the base and cover units are preferably folded into their U-shaped configuration from sheet material that has been incised with V-shaped rabbets along predetermined fold lines that are preferably reinforced with hinge means. End closure members may be positioned within the container transversely thereof and retained either by frictional engagement with the base and cover units or other securing means operative therebetween.

3,669,339
CONTAINER HAVING MULTI-PLY BOTTOM AND UPRIGHT WALLS
Paul Schilling, Bogalusa, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.
Filed Apr. 13, 1971, Ser. No. 133,614
Int. Cl. B65d 13/00
U.S. Cl. 229—23 A 7 Claims



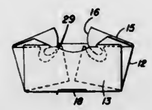
A container or box made of two integral blanks of flexible material is formed with panels hingedly connected together, which provide walls all of multi-ply thickness with each wall of one pair of opposite walls comprising spaced apart plies forming an air space therebetween. The bottom wall is of at least three ply thickness to provide strength and cushioning. Anchor flaps hingedly connected to at least some of the panels of each blank secure the container into a substantially rigid structure. Stitching in the form of staples secure various of the anchoring flaps and wall plies together.

3,669,340
FOLDED, ONE-PIECE, LIQUID-TIGHT TRAY AND BLANK FOR FORMING SAME
Alfred W. Kinney, Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Dec. 1, 1970, Ser. No. 94,003
Int. Cl. B65d 5/24
U.S. Cl. 229—31 10 Claims



A folded, one-piece, liquid-tight tray and blank for forming same. The blank is of rectangular configuration having corners. A plurality of score lines are formed on the blank for forming a tray having a bottom, side and end walls, outwardly extending edge rims, and a corner fold line of triangular configuration in each tray corner for forming a corner supporting column. The corner fold lines define a tab at each corner each of which has two cut lines for inserting associated edge rims therein and maintaining the folded supporting column.

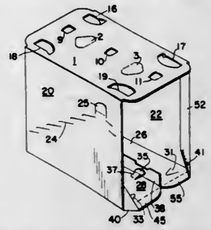
3,669,341
DISPENSER FOR CONTINUOUS BUSINESS FORMS
William W. Hughes, Eggertsville, N.Y., assignor to Westvaco Corporation, New York, N.Y.
Filed Sept. 15, 1970, Ser. No. 72,356
Int. Cl. B65d 5/22
U.S. Cl. 229—33 1 Claim



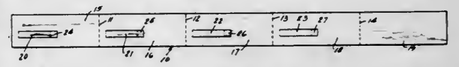
A container for packaging, shipping, and dispensing continuous business forms having top panels and side panels which are flared outwardly to open the container permitting access to the interior thereof with a locking means on the top panels to retain the container in an open condition during the dispensing operation.

3,669,342
ARTICLE CARRIER
James B. Funkhouser, Doraville, Ga., assignor to The Mead Corporation
Filed Dec. 11, 1969, Ser. No. 884,298
Int. Cl. B65d 33/16
U.S. Cl. 229—40 5 Claims

An article carrier of the open ended wrap-around type having foldably joined top, side and bottom walls is provided with article engaging and retaining structure at its bottom corners which structure comprises a holding tab disposed astride the carton corners and which is foldably joined along angularly related fold lines to an anchoring strap and an anchoring panel which in turn are foldably joined respectively to the carton side and bottom walls. The fold line between the anchoring flap and side wall is spaced inwardly from the fold line between the anchoring panel and the bottom wall and the anchoring panel is foldably joined to the bottom panel so as to accommodate movement of the anchoring panel out of the plane of the bottom wall during the formation of the carrier.

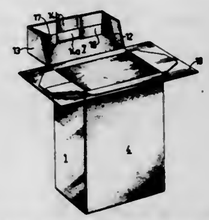


3,669,343
HOLDER FOR TETRAHEDRON PACKAGES
Darwin R. Howard, 140 Melrose Avenue, Kenilworth, Ill.
Filed Mar. 1, 1971, Ser. No. 119,705
Int. Cl. B65d 5/50, 71/00
U.S. Cl. 229—42 7 Claims



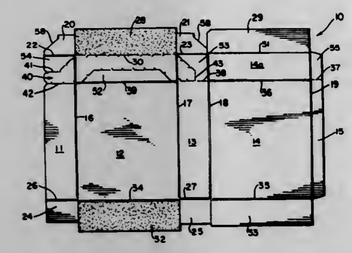
A support device for tetrahedron packages consisting of a single strip of material folded into a pleated structure consisting of alternating V- and inverted V-shaped compartments, the vertices of the V's being proportioned to snugly receive the vertical fins of the tetrahedron packages, and a support strip extending across each of the open ends of the V's arranged to support the horizontal fins of each of the tetrahedron packages.

3,669,344
CARTON WITH CAPPED LID
Rolf Urban Andersson, Malmo, and Lennart Gerhard Persson, Lund, both of Sweden, assignors to AB Akerlund & Rausing, Lund, Sweden
Filed Mar. 10, 1970, Ser. No. 18,075
Claims priority, application Sweden, Mar. 31, 1969, 4485/69
Int. Cl. B65d 5/66
U.S. Cl. 229—44 CB 8 Claims



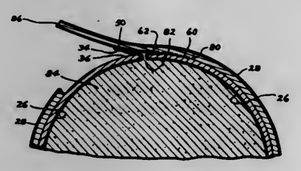
A carton provided with a capped lid formed by folding flaps inwardly to form a lid which fits over and around the top of the carton to enable reclosing after opening. An inner seal may be provided so as to view the contents before opening the carton and means for engaging the recloseable capped lid with the carton may also be provided.

3,669,345
RECLOSABLE COMPOSITE PACKAGE
Raymond A. Cote, Charlotte, N.C., assignor to Riegel Paper Corporation, New York, N.Y.
Filed Jan. 7, 1971, Ser. No. 104,730
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TS 4 Claims



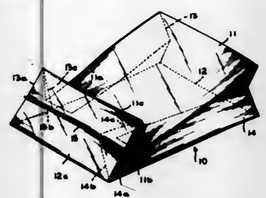
The disclosure relates to a package for foodstuffs and the like including a sealed, reclosable pouch or bag carried by a sealed parallelepiped carton structure. The carton is opened by the removal of a tear strip and is so configured that the tear strip removal forms a telescopically reclosable, lockable chest-type cover, i.e., a cover which is adapted to completely overlap and be securely "locked" to the side and front walls of the opened carton upon hinging movement about a horizontal axis in the carton rear wall.

3,669,346
QUICK OPENING CONTAINER
James R. Leezer, Jeffersonville, Ind.; Francis R. Reid, Minneapolis, Minn.; Charles H. Turpin, Louisville, Ky., and Jack J. Rejas, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
Filed July 3, 1969, Ser. No. 838,926
Int. Cl. B65d 3/26
U.S. Cl. 229—51 BP 12 Claims



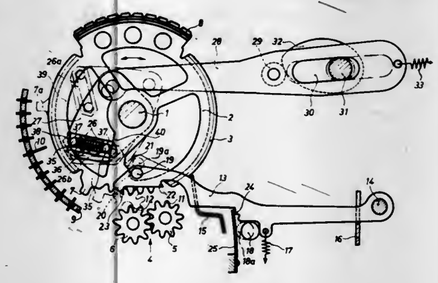
A cylindrical dough can including a body wall formed from two rectangular sheets of approximately equal size bonded together with two pairs of corresponding edges out of alignment so as to form two extensions. The body wall is made into a tube with the extensions bonded together in overlapping relationship along a permanent longitudinally extending seal. Within the body wall is a thin fluid impervious sealing liner, e.g., a foil having a mechanically weak but fluid tight inner seal isolated from the longitudinal seal. A provision such as a tear string is used for severing the outer sheet along a line spaced circumferentially from the overlap area. When pulled, the string penetrates the complete thickness of the outer sheet thereby providing a flap which serves as a pull tab. When the pull tab is lifted, tension is transmitted from the outer extension to the inner extension through the permanent seal thereby separating adjacent cut edges of the inner sheet from one another. The inner seal is then opened.

3,669,347
FLAT-BOTTOM PLASTIC BAGS
Gerald M. Platz, Champaign, and James B. Honn, Arcola, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.
Original application Jan. 12, 1970, Ser. No. 2,020, now Patent No. 3,606,822. Divided and this application June 7, 1971, Ser. No. 150,616
Int. Cl. B65d 31/10
U.S. Cl. 229—58 2 Claims



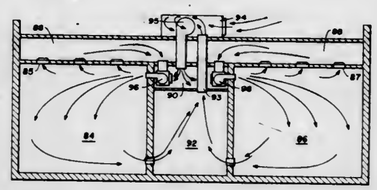
A flat-bottom plastic bag produced from an extruded length of gusseted thermoplastic material which can be snapped open, as is customary in bagging operations, will have self-sustaining walls, and will remain erect, resting upon its flat bottom, during the filling operation.

3,669,348
APPARATUS FOR SENSING DIGITAL INFORMATION
Paul Thevis, Oberndorf; Adolf Schneider, Altoberndorf, and Horst Jakubaschk, Oberndorf, all of Germany, assignors to Olympia Werke A.G., Wilhelmshaven, Germany
Filed May 3, 1971, Ser. No. 139,536
Claims priority, application Germany, May 22, 1970, P 20 24 928.9
Int. Cl. G06c 23/00, 15/26
U.S. Cl. 235—60 R 12 Claims



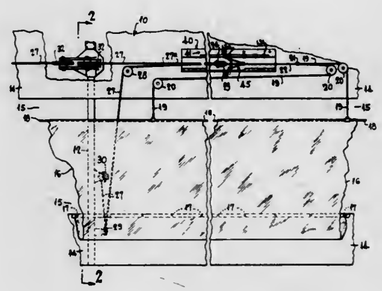
The ordinal series of the pins of a pin carriage are sensed by ordinal sensing wheels which are advanced and returned by a common reciprocating drive bar carrying a connecting spring for each sensing wheel. The first end of the connecting spring abuts a step of a rim portion and the second end abuts a spoke portion of the same sensing wheel in the zero position. The set pin stops the sensing wheel during advance movement in the corresponding digital position, so that the first end of the connecting spring passes this step while the drive bar moves on with the other connecting springs to sense the set pins of the other orders. During the return of the sensing wheels, the second ends of the connecting springs act successively on the respective spoke portions to return all sensing wheels to the zero position.

3,669,349
AIR FLOW CONTROL SYSTEM
William K. Hall, Jr., 1221 Frito-Lay Tower, Dallas, Tex.
Continuation-in-part of application Ser. No. 577,298, Sept. 6, 1966, now abandoned. This application May 8, 1967, Ser. No. 636,748
Int. Cl. G05d 11/16; F24f 13/04
U.S. Cl. 236—13 10 Claims



Environmental temperatures are controlled by selectively proportioning air flow from a pair of air flow paths by generation of a force proportional to temperature and dependent solely upon temperature for oppositely and proportionally changing registration of small openings in pairs of perforated plates laterally disposed in the air flow paths.

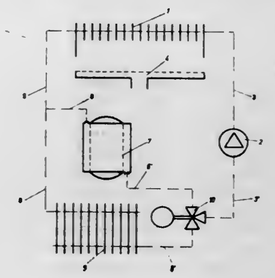
3,669,350
AUTOMATIC TEMPERATURE CONTROL APPARATUS FOR POULTRY HOUSES AND THE LIKE
Billy C. White, 511 West Sypert Street, Nashville, Ark.
Filed Dec. 11, 1970, Ser. No. 97,111
Int. Cl. F24f 11/02
U.S. Cl. 236—49 6 Claims



Temperature control apparatus for a building having a ventilation opening therein over which a closure is movable in opposite directions to vary the opening size and wherein a series of temperature ranges of a multi-stage thermostat correspond respectively to stationary positions of the closure. When the temperature in the building rises or falls beyond any of the ranges, the direction of closure movement is electromagnetically selected, followed by movement of the closure toward and adjacent stationary position corresponding to the next temperature range.

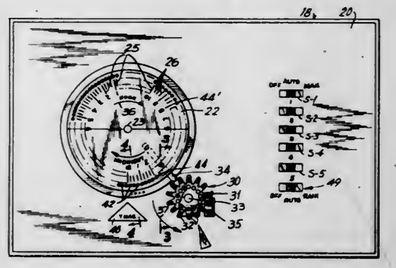
The invention is characterized by the provision of a limit switch individual to each directional movement in each temperature range, and a trolley-type switching hog roller movable with the closure and adapted to travel back and forth across these switches. During this travel, the switch corresponding to the next stationary position the curtain is to occupy will be actuated to arrest the closure in the latter position.

3,669,351
CIRCULATION WATER HEATER WITH DOMESTIC HOT WATER SUPPLY
Hans Meier, Remscheid, and Frithjof Carouge, Solingen, both of Germany, assignors to Joh. Vaillant KG, Remscheid, Germany
Filed Aug. 7, 1970, Ser. No. 62,054
Claims priority, application Austria, Sept. 9, 1969, 8891/69
Int. Cl. F24d 3/08
U.S. Cl. 237—19 1 Claim



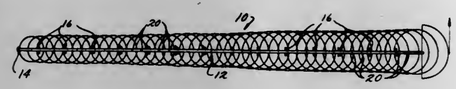
A feed line leads from a water heater to a radiator and to a heat exchanger for domestic water. A return line has branches from both the radiator and the heat exchanger to a valve which communicates with the return trunk to the water heater.

3,669,352
AUTOMATIC SPRINKLER SYSTEM
Peter C. Zaphiris, 73 Mall Drive, Commack, L. I., N.Y.
Filed Oct. 19, 1970, Ser. No. 82,014
Int. Cl. A01g 27/00
U.S. Cl. 239—70 9 Claims



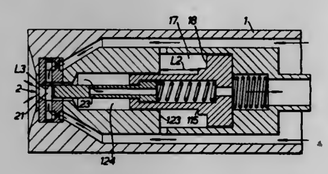
A system for controlling the operation of a plurality of sprinklers distributed over an area to be irrigated includes a timer clock wheel mounting a plurality of indexer clips which successively actuate a photoelectric switch located below the clock wheel. The photoelectric switch controls the on-off operation of the variously located sprinklers in succession in accordance with the time positions of the indexer clips.

3,669,353
PIVOT MOVE AGRICULTURAL IRRIGATION SYSTEM WITH IMPROVED WATER DISTRIBUTION AND SPRINKLER HEAD UTILIZED THEREWITH
Richard E. Hanson, Peoria, Ill., and Raymond F. Lippitt, Bethesda, Md., assignors to L. R. Nelson Mfg. Co., Inc., Peoria, Ill.
Filed July 21, 1970, Ser. No. 56,809
Int. Cl. B05b 3/12
U.S. Cl. 239—177 3 Claims



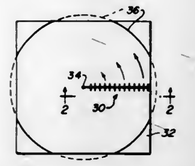
A pivot move agricultural irrigation sprinkler system in which at least a plurality of longitudinally spaced sprinkler heads adjacent the outer end portion of the conduit assembly are arranged to distribute the source of water within the adjacent portion of the conduit assembly onto the forward portion of the adjacent sprinkler head pattern area at an average application rate which is greater than the average application rate at which the water is applied to the rear portion of the adjacent sprinkler head pattern area, the water applied to the forward portion of the sprinkler head pattern area being distributed with a distribution pattern which rises rapidly to a maximum adjacent the leading portion of the sprinkler head pattern area and a sprinkler head for use in such a pivot move system embodying a stream diffusing member mounted for movement into and out of the path of water flowing from the outlet during each cycle of operation and a mechanism for effecting repeated cycles of operation which include step-by-step incremental rotational movement in an operative direction and rotational movement in a reverse direction, one cycle including an operative movement of an arcuate extent greater than 360° but less than 720° and a reverse movement of an arcuate extent equal to the operative movement less 360°.

3,669,354
FLUID INJECTORS
Lawrence Edward Helyer, Ascot, England, assignor to J&T Engineers (Ascot) Limited
Filed Sept. 8, 1970, Ser. No. 70,226
Int. Cl. B05b 9/00
U.S. Cl. 239—126 16 Claims



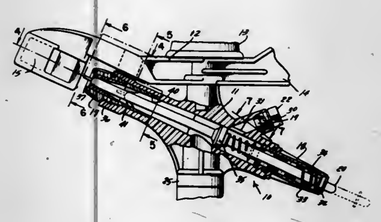
The invention comprises a fluid injector including a discharge passage, and a tip sealing valve for controlling fluid discharge through said passage, said tip sealing valve being responsive to a fluid differential operative thereon in a non-discharge condition of the fluid injector to close said discharge passage, said tip sealing valve being responsive to another fluid differential operative thereon in a discharge condition of said fluid injector to permit fluid discharge through said discharge passage, said tip sealing valve comprising first and second relatively movable parts with a spring means interposed between said parts, said first part having a cross-sectional area effective to the pressure of fluid flowing in said fluid injector in the non-discharge condition thereof such that said first part will be seated in closure relationship with said discharge passage, and said second part being responsive to the pressure of said fluid in said fluid flow to compress said spring means against said seated first part, by which the force with which said first part is seated is a function of said fluid pressure effective cross-sectional area of said first part and the rating of said spring means.

3,669,355
IRRIGATION APPARATUS
Adolph C. Jurgens, 5135 North Keating Avenue, Chicago, Ill.
Filed Nov. 12, 1968, Ser. No. 774,656
Int. Cl. B05b 3/00
U.S. Cl. 239—177 12 Claims



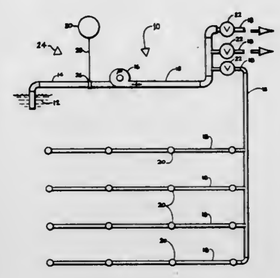
Irrigation apparatus including a water supply pipe supported by a plurality of carriages spaced therealong, the carriages having wheels spaced in the direction of movement and on opposite sides of the pipe, and vertically retractable and extendible in response to unevenness in the ground tending to support the pipe evenly, and cables supporting the pipe at a plurality of points between the carriages and from points on the carriages spaced transversely of and on opposite sides of the pipe.

3,669,356
SPRINKLER HEAD APPARATUS
Earl J. Senninger, deceased, late of Orange County, Fla. (by Annette M. Senninger, executrix), assignor to Senninger Irrigation, Inc., Orlando, Fla.
Filed Nov. 6, 1970, Ser. No. 87,380
Int. Cl. B05b 3/02
U.S. Cl. 239—230 8 Claims



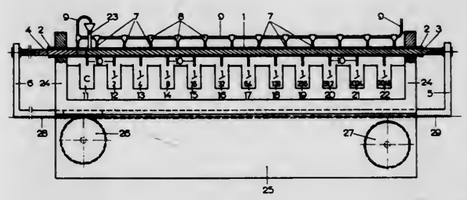
A step by step rotatable sprinkler head apparatus of the impulse arm type is provided having improvements in the impulse arm water engaging portion in which two separate curved surfaces are employed, one for repelling the impulse arm and the other for providing a better distribution of water. The sprinkler head also has a new nozzle with removable inserts for changing the wear surface without replacing the complete nozzle portion of the sprinkler head. Improved internal water vanes and rear spreader nozzle having internal angular vanes are also provided.

3,669,357
INJECTION AND DISTRIBUTION UNIT FOR A LAWN SPRINKLER SYSTEM
Charles A. Overbey, 16 Bougainvillea Drive, Cocoa Beach, Fla.
Filed Aug. 19, 1970, Ser. No. 65,143
Int. Cl. A62c 5/02; B05b 7/26
U.S. Cl. 239—310 7 Claims



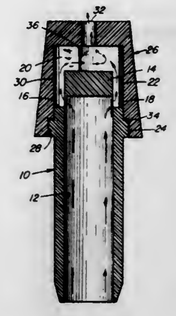
An injection and distribution unit for a lawn sprinkler system. The unit, which includes a reservoir, transfer tube and connector, injects liquid fertilizers and pesticides into the lawn sprinkler system. The fertilizer or pesticide is injected upstream of the pump and is mixed with water passing through the sprinkler system and distributed to the lawn or to nursery stock. The injection and distribution unit does not materially reduce flow through the system and is easily connected to existing pump suction pipes made of galvanized iron, polyvinal chloride (PVC), polyethylene and other materials.

3,669,358
MIXING AND DISPENSING APPARATUS
Jan Waldman, 13 Raadhuisplein, Zandvoort, Netherlands
Filed Dec. 9, 1970, Ser. No. 96,360
Claims priority, application Netherlands, Dec. 10, 1969, 6918495
Int. Cl. B67d 5/56
U.S. Cl. 222—129 14 Claims



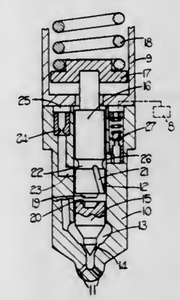
A mixing and dispensing apparatus comprises at least one horizontal main cylinder having a row of inlet openings at its top and a row of outlet openings at its bottom. Two pistons are displaceable in the cylinder in such manner that they may either be independently displaced, or simultaneously displaced at a constant distance from each other. At the end of each displacement, only one opening is uncovered. For preparing a dilution series, a separate inlet opening is provided for the liquid to be diluted and the other inlet openings are connected with a feed line for the diluent.

3,669,359
AEROSOL MECHANICAL BREAK-UP NOZZLE INSERT
John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,537
Int. Cl. B05b 1/34
U.S. Cl. 239—491 3 Claims



An insert for adapting the product passage of a conventional aerosol dispenser actuator comprises a hollow pin member and an overfitting cap member which together form a swirl chamber and feed passages for mechanical nebulization purposes.

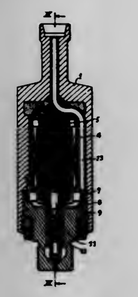
3,669,360
FUEL INJECTION NOZZLES
Basil Edward Knight, Pinner, England, assignor to C.A.V. Limited, Birmingham, England
Filed July 7, 1970, Ser. No. 52,908
Claims priority, application Great Britain, July 7, 1969, 34,132/69
Int. Cl. B05b 1/30
U.S. Cl. 239—533 15 Claims



A fuel injection nozzle comprising a supply orifice through which fuel flows to a combustion space of an associated engine a resiliently loaded valve member which co-operates with a seating to prevent the flow of fuel through the supply orifice until the pressure of fuel applied to the valve member from an inlet attains a sufficiently high value, the mechanical connection between the valve member and the resilient means which loads the valve member being divided to define a variable volume chamber. Fuel is supplied to the chamber from the inlet and means is provided to limit the maximum volume of the chamber the arrangement being that fuel flowing through the inlet initially flows at a restricted rate through the supply orifice and when said chamber has attained its maximum volume the valve member is lifted to

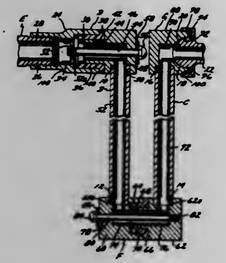
allow substantially unrestricted flow through the supply orifice.

3,669,361
ELECTROMAGNETIC FUEL INJECTORS FOR INTERNAL COMBUSTION ENGINES
Herve Gueret, Versailles, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France
Filed July 9, 1970, Ser. No. 53,340
Claims priority, application France, Aug. 1, 1969, 6926491
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 **8 Claims**



An electromagnetically controlled injector for internal combustion engines adapted to cut out the effects on uniformity of feed of all parasitic phenomena such as the rebounds of the needle and modifications in the pressure prevailing in the feed pipes. To this end, the liquid fuel is protected against the formation of waves by a throttling of the incoming liquid in a channel extending laterally of the stationary armature or else axially through the latter directly into the needle. Thus it is possible to obtain for the curve of injected fuel amounts vs. time a straight line between the desired minimum and maximum amount values.

3,669,362
ADJUSTABLY MOVABLE SHOWER HEAD SUPPORTING ASSEMBLY
Leonard G. Meyerhofer, 1567 Stoneman Place, Anaheim, Calif., and Carl E. Meyerhofer, 9772 Lullaby Lane, Anaheim, Calif.
Filed Aug. 6, 1970, Ser. No. 61,652
Int. Cl. B05b *15/08*
U.S. Cl. 239—587 **4 Claims**

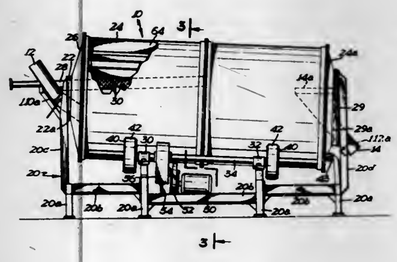


An adjustably movable water conducting assembly for use with a fixed water outlet and a shower head to dispose said head at a desired position. The assembly includes first and second laterally spaced parallel rigid tubes, first and second rotatable water conducting means, and a ball and socket water conducting shower head support. The first rotatable means is connected to said outlet and a first end of said first tube, with said second means being connected to second ends of said first and second tubes, and said ball and socket water conducting shower head support mounted on a second end of said first tube. Said water conducting assembly permits the shower head associated therewith to be adjustably disposed at any desired position within an imaginary circle that has a radius that is the distance between the center of rotation of said first water conducting means and the center of the outlet from said head when said first and second tubes are longitudinally aligned with one another.

ERRATUM

For Class 239—544 see:
Patent No. 3,669,419

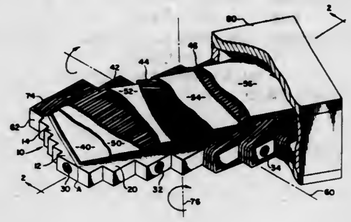
3,669,363
APPARATUS FOR HEATING GRAIN
Joseph M. Peebles, Wayzata, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed Dec. 15, 1969, Ser. No. 884,925
Int. Cl. B02b *1/08*
U.S. Cl. 241—8 **3 Claims**



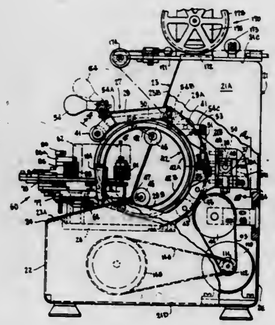
Grain such as wheat is heated to improve the yield of high-grade flour by elevating the wheat and allowing it to fall repeatedly through a steam-filled vessel thereby providing intimate contact between the steam and the individual grains for a period of about 30 to 40 seconds. The temperature of the wheat is raised to about 85° F. and maintained at this temperature for about 2 to 4 hours before milling.

3,669,364
STRESS-ORIENTED FILAMENT WINDING IN COMPOSITE PANELS
David I. Sinitzer, Playa del Rey; Albert Toy, Gardena; David G. Atteridge, Santa Monica, and Louis H. Fanelli, Los Angeles, all of Calif., assignors to North American Rockwell Corporation
Division of Ser. No. 646,582, June 16, 1967, Pat. No. 3,537,170
Filed Feb. 9, 1970, Ser. No. 14,701
Int. Cl. B65h *75/06*
U.S. Cl. 242—1 **5 Claims**

Removable terraced peripheral edges on a rotating mandrel are adapted to receive successive windings of thin filament in a plurality of separate layers to form reinforced composite panels. The mandrel edges are reversed in position between each winding step to permit winding of filaments at stress-oriented cross-ply angles with a minimum of filament wastage, after which the workpiece components are diffusion bonded together. Rare earth oxides are used in stop-off coatings to prevent bonding of workpiece materials to mandrel surfaces.



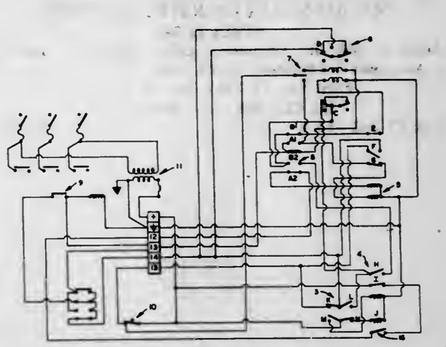
3,669,365
TOROIDAL COIL WINDING MACHINE
Joseph A. Loturco, 102 Central Avenue, Bridgeport, Conn.
Filed Jan. 27, 1969, Ser. No. 841,638
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B **18 Claims**



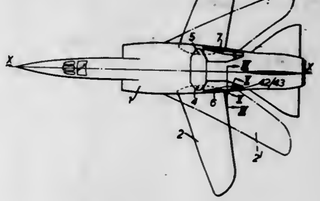
Machine for winding wire onto a toroidal core by rotating a wire carrying shuttle interlinked with said core. A drive motor rotates the shuttle in a transmission terminating in peripheral shuttle driving and supporting roller means. The motor also drives through a variable speed transmission to a core holder which includes a pair of resiliently biased, pivoted arms with drive roller journalled thereon to support and index said core in timed relation with the shuttle rotations. An actuating lever is connected to said core support arms to effect release of the core from its holder. The shuttle support has suitable linkage to separate the ends thereof to permit removal of the core from the shuttle.

3,669,366
ELECTRO-BUNCH ATTACHMENT
Marvin N. Trotter, Anderson, S.C., assignor to J. P. Stevens & Co., Inc., New York, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,353
Int. Cl. B65h *54/36;* **D01h** *1/38*
U.S. Cl. 242—26.41 **4 Claims**

Prevention of winding bad bunches on bobbins in a manually doffed spinning frame when the traverse chain or mechanism is incompletely rewound is effected by a double switch actuated by a projection or cam on a spinning frame ring rail. When the traverse chain is completely rewound, the ring rail can rise only sufficient to maintain a switch closed but not sufficient to rock the switch to a position where it opens and closes a second switch. In this case a latching relay is actuated by a timing delay circuit closed and the spinning cycle continues. If the traverse chain has not been completely rewound at the start of winding the ring rail rises to a position where the second of the above switches is closed before the latching relay, and this results in stopping the spinning frame, which can only be started by manual reset.



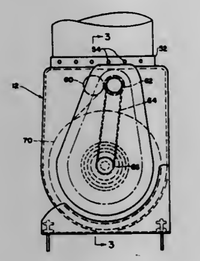
3,669,367
AEROPLANES HAVING VARIABLE SWEEP WINGS
Arthur Neville Rhodes, and Denis Edward Blackburn, both of Preston, England, assignors to British Aircraft Corporation Limited, London, England
Filed Feb. 13, 1970, Ser. No. 11,278
Claims priority, application Great Britain, Feb. 14, 1969, 8,301/69
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **8 Claims**



An aircraft having variable-sweepback wings accommodated in longitudinal slots formed in the sides of the aircraft fuselage, each slot being provided with sets of upper and lower doors which are located above and below the wing and co-act with the wing to keep the gaps between the wing surfaces and the upper and lower edges of the slot substantially closed in all sweepback positions. The upper and lower door sets are spring-biassed towards one another by means of a mechanism comprising a pair of arms pivoted at a common pivot point and inter-connected by a biassing spring, their outer ends being connected respectively to the upper and lower door sets. The arrangement is that as the sweep-back angle is increased, the wing wedges the upper and lower doors apart against the bias, and when the wing deflects vertically, it moves one door set vertically with it and the reac-

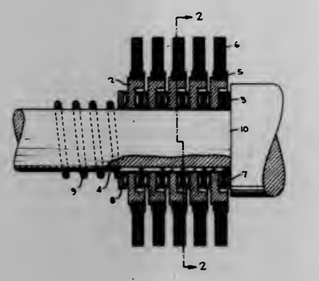
tion of the biasing spring causes the other door set to follow by moving simultaneously in the same sense.

3,669,368
MECHANICALLY OPERATED ERECTABLE STRUCTURE
James C. Bell, Jr., Uniontown, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed Nov. 17, 1969, Ser. No. 877,327
Int. Cl. E04h 12/34; B65h 75/00
U.S. Cl. 242—54 A 6 Claims



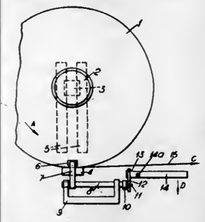
The invention relates generally to extensible and retractable structure and more particularly to such a structure which may be used as a rigid support for loads applied axially thereof and/or laterally therealong, and where no fluid pressurization is required, but that stability is attained by the mechanical interrelation of the structure itself. Essentially, the bands of flexible curved metal are slidably interrelated and bent back on themselves to achieve the structural concept.

3,669,369
WINDING SHAFT
Georg Konrad Emich, Darmstadt, Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Germany
Filed July 24, 1969, Ser. No. 844,267
Claims priority, application Germany, July 27, 1968, P 17 74 616.6
Int. Cl. B65h 19/04
U.S. Cl. 242—56.9 2 Claims



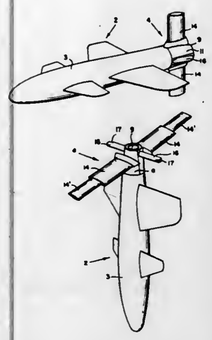
Winding shaft with a plurality of lap creels and bushings or disks driven by a revolving shaft with anti-friction bearings in the form of needle bearings interposed between the lap creels and the bushings or disks.

3,669,370
TAPE TENSION CONTROL APPARATUS
Peter Arthur Mason, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,353
Claims priority, application Great Britain, June 18, 1969, 30,938/69
Int. Cl. B65h 23/08, 25/28
U.S. Cl. 242—75.45 8 Claims



An apparatus for controlling the tension and acceleration of a strip being unwound from a spirally wound roll includes means for rotatably mounting the roll about its center, a stop member disposed against a peripherial portion of the circumference of the roll for establishing tension in the strip being unwound, means for allowing the center of the roll to approach the stop member as the diameter of the roll decreases, and brake means for applying braking force to each side of the roll for maintaining the tension of the strip at a constant level.

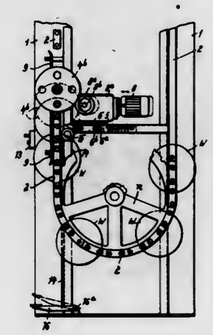
3,669,371
JET-PROPELLED AIRCRAFT HAVING VERTICAL AND HORIZONTAL FLIGHT PROPERTIES
Peter Romhild, and Eugen Herpfer, Markdorf, Germany, assignors to Dornier System GmbH Friedrichshafen, Bodense, Germany
Filed Aug. 3, 1970, Ser. No. 60,511
Claims priority, application Germany, Aug. 9, 1969, P 19 40 754.6
Int. Cl. B64c 27/22
U.S. Cl. 244—7 A 4 Claims



This invention relates to a jet-propelled aircraft having both vertical and horizontal flight properties which comprises tail unit means mounted on a rotor head which means act as rotor blades during vertical flight, jet arm means mounted on the rotor head and having jet nozzles thereon, jet-deflecting means in the jet arms for conveying to the arms the rearwardly emerging gas jet serving for the forward thrust, and

means for pivoting the jet arms into and out of an effective position.

3,669,372
DEVICE FOR DISPLAYING RUGS OR LIKE MERCHANDISE STORED IN FORM OF ROLLS
Bernulphus A. De Jong, Gouda, Netherlands, assignor to Joh. Friedr. Schneider, Vorst Post Schenke uber Halver, Germany
Filed Feb. 5, 1971, Ser. No. 112,889
Claims priority, application Germany, July 31, 1970, P 20 38 034.1
Int. Cl. B65h 19/06
U.S. Cl. 242—55 9 Claims



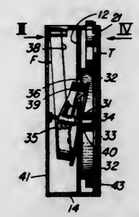
A device for displaying merchandise consisting of sheet material convolutely wound to form a roll. The device includes means for raising such a roll to a desired level. It further includes motor driven means for rotating the roll after it has been positioned at the desired level to unwind a desired length of material from the roll, or to rewind previously unwound material upon the roll.

3,669,373
METHOD OF TAKING UP YARNS OF SYNTHETIC FIBERS
Kikuo Hori, and Yoshito Sato, both of Matsuyama, Japan, assignors to Teijin Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 726,156, May 2, 1968, now abandoned. This application July 6, 1970, Ser. No. 52,255
Claims priority, application Japan, May 9, 1967, 42/29364
Int. Cl. B65h 54/34, 54/00
U.S. Cl. 242—18 EW 4 Claims



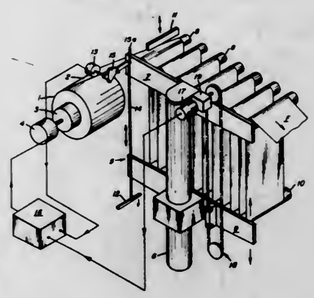
A method of taking up waste yarns of non-uniform quality occurring at the start and stoppage of taking up yarns onto waste yarn take-up members situated below, and coaxially with, take-up bobbins in a yarn take-up apparatus having many spindles, characterized in that the waste yarns are traversed on the said members.

3,669,374
COMBINED ENDLESS LOOP FILM AND ENDLESS LOOP MAGNETIC TAPE CARTRIDGE
Paul Catalano, Manhasset, and John Bickel, Ossining, both of N.Y., assignors to Retention Communication Systems, Inc., New York, N.Y.
Filed Apr. 23, 1969, Ser. No. 818,683
Int. Cl. B65h 17/48; G03b 23/02, 21/00
U.S. Cl. 242—55.19 A 10 Claims



A pair of reels holding endless loops of film, and magnetic recording tape, respectively, are nested wholly, or partly with one reel located within an unobstructed space beneath the rim of the other; when partly nested (FIGS. 2–4) the film reel rotates about an axis inclined with respect to the axis of tape reel, so that the film reel dips (through an opening in a central support) into the unobstructed space within the tape reel to enable the lower edge of film to clear the diametrically opposed upper edge of the reel. When wholly nested (FIGS. 1*a* and 1*b*), one reel (either film or tape) is nested completely within the other with co-planar axes of rotation, the film and tape being taken off and guided to projection and reproduction positions, respectively.

3,669,375
WEB OR STRIP MATERIAL HANDLING APPARATUS
John M. Bruton, North Harrow, Middlesex, England, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 12, 1970, Ser. No. 18,896
Claims priority, application Great Britain, Mar. 21, 1969, 14,938/69
Int. Cl. B65h 23/06, 51/20
U.S. Cl. 242—75.4 4 Claims



Web material is processed through a magazine mechanism which stores a quantity of such web material, thereby to permit successive rolls of the web material to be spliced together without stopping the processing. The magazine comprises two relatively movable sections which come together gradually as web material is given up from the magazine during the splicing operation; and gradually part, after splicing is effected, thereby to refill the magazine. Means is disclosed

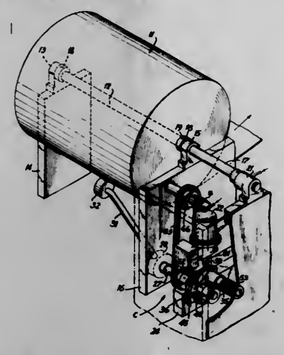
for assuring that the movement of the relatively movable magazine parts do not cause undulation or the like within the web material.

3,669,376

SYSTEM FOR CONTROLLING APPLICATION OF BRAKING FORCE TO A ROLL OF SHEET MATERIAL

Raymond L. R. Lucas, c/o Office Tech. 133 Bis Rue Mounyra, Prechac, France

Filed Aug. 10, 1970, Ser. No. 62,310
Claims priority, application France, Sept. 11, 1969, 6931050
Int. Cl. B65h *25/28, 25/22*
U.S. Cl. 242—75.45 7 Claims



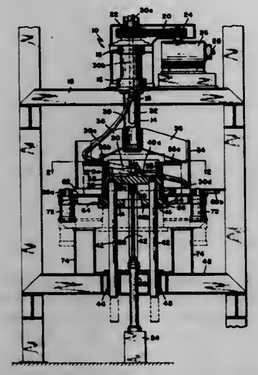
A system for controlling the application of braking force to a roll of sheet material in which a sensing member controlled by the diameter of the unwinding roll, moves a cam surface to actuate a control device that in turn controls the energization of a brake for such roll, the cam surface being adjustable to provide a braking force that may be varied from zero to a predetermined amount between the extreme ranges of the maximum and minimum roll diameters.

3,669,377

COILING APPARATUS

Martin Gilvar, Westboro; Charles E. Conlon, Worcester, and Alfred R. Leger, Leominster, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Dec. 9, 1970, Ser. No. 96,516
Int. Cl. B21c *47/00*
U.S. Cl. 242—82 8 Claims



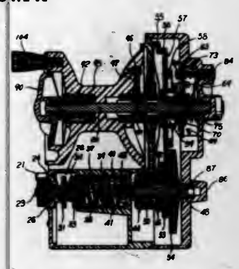
Apparatus and method for forming a coil by winding an axially advancing product length around a mandrel. The rotational speed of the winding means is initially adjusted relative to the axial speed of the product length to loosely encircle the mandrel with a relatively short leading section of the product. The leading section is then temporarily held against the mandrel and the speed of the winding means is increased while axially reciprocating the mandrel to produce an evenly distributed, closely packed and tightly wound coil. Upon completion of the coil forming operation, the mandrel is axially withdrawn from the coil, and the coil is discharged from the apparatus.

3,669,378

FISHING REEL WITH MANUAL OR MOTOR DRIVE

Toshiaki Miyamae, 292 Nishi-Iwata, Higashi-Osaka, Japan

Filed Oct. 2, 1970, Ser. No. 77,550
Claims priority, application Japan, Aug. 12, 1970, 45/80884; Aug. 17, 1970, 45/71922
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.1 A 17 Claims



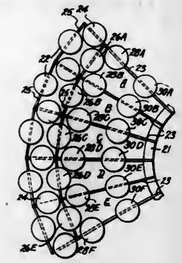
In a power driven fishing reel construction, a power unit includes a torque motor; a power transmission unit is adapted to be associated with a speed change actuating unit; the speed change actuating unit comprises a cylindrical cam means and an actuating plate interposed between spring members; the control of the reeling-in speed is effected by selective engagement of a pair of dog clutch means; and detachable spool means can be changed over to be independently operable either by disconnecting further clutch means out of engagement, or by displacing a speed change lever into neutral position.

3,669,379

YARN STAND

Morris Philip, 2519 Grand Avenue, Bronx, N.Y.

Filed May 18, 1970, Ser. No. 38,082
Int. Cl. B65h *49/02*; D02h *1/00*; D03j *5/08*
U.S. Cl. 242—131 8 Claims



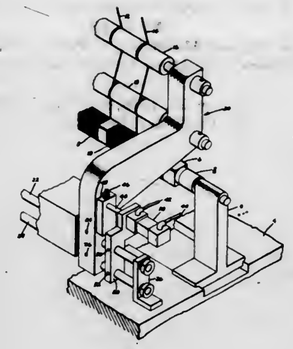
A cylinder knitting machine yarn stand which has an outer ring of yarn holders, an inner ring of yarn holders, and one or more intermediate rings of yarn holders between the inner and outer rings. Spaced apart voids are provided in the stand between the inner and outer rings so that cones of yarn can be inserted from the underside of the stand onto the yarn holders of at least the inner ring and the innermost of the intermediate rings.

3,669,380

APPARATUS FOR WINDING ELECTRICAL COILS

Saverio Caltagirone, Danville, Ill., assignor to General Electric Company

Filed Feb. 16, 1970, Ser. No. 11,455
Int. Cl. B65h *54/28*
U.S. Cl. 242—158 R 7 Claims



A multiple coil winding machine for winding a plurality of layer wound coils on a single insulating winding form common to all of the coils, with insulating sheets common to all of the coils inserted between layers of the coils. The wire payoff carriage transverses in an axial direction with respect to the winding arbor carrying the insulating winding form, to provide the desired number of turns in each layer of the coil. In presently available multiple coil winding machines the traversals of the wire payoff carriage is effected by a reciprocating drive mechanism including a cardioid cam drive having two null points, one occurring at each reversal in the direction of movement of the wire payoff carriage, and providing certain amount of dwell in movement of the wire payoff carriage at each reversal. A separate reversal mechanism acting between the wire payoff carriage and the reciprocating drive mechanism driving the wire payoff carriage provides an accelerated reversal at each reversal of the wire payoff carriage traverse.

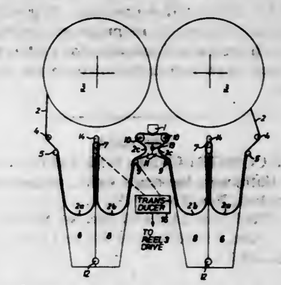
3,669,381

TAPE RECORDER REELING CONTROL DEVICE

Gunter-Karl Schmidt, Constance, Germany, assignor to LICENTIA Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Dec. 21, 1970, Ser. No. 99,813
Claims priority, application Germany, Dec. 19, 1969, P 19 63 687.4
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 3 Claims

In a tape recorder tape reeling device including a plurality of buffer chambers each for containing a pneumatically drawn tape loop forming part of a buffering length of tape between a transducer head and a reel, a tape tension sensor supporting the tape between such loops and providing an indication of the pneumatic attraction forces applied to such loops and hence of the length of the loops in the chambers.

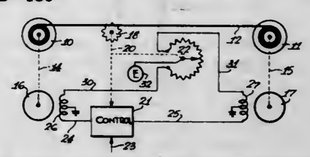


3,669,382

STRIP POSITIONING APPARATUS

Richard J. Struzina, Ottawa, Ontario, Canada, assignor to Computing Devices of Canada Limited, Ottawa, Ontario, Canada

Filed July 18, 1969, Ser. No. 843,108
Int. Cl. B65h *23/18, 25/22*; G03b *21/44*
U.S. Cl. 242—186 4 Claims



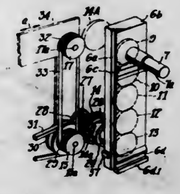
A strip positioning apparatus in which the strip is wound between two motor driven spools. A sensor provides a signal representing actual position to a control. A desired position signal is also applied to the control and a difference signal applied to control windings on the motors. Tension is maintained on the strip material by applying signals to the control windings in an opposite sense and the signals varied in accordance with the amount of strip material on each spool.

3,669,383

MOVIE PROJECTOR ADAPTED TO USE BOTH A FILM CARTRIDGE AND AN OPEN REEL

Tatsusuke Kadowaki, Kanagawa, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

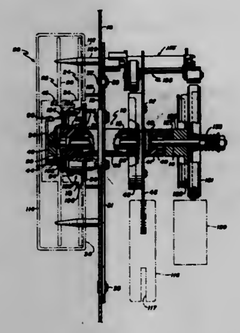
Filed Dec. 14, 1970, Ser. No. 97,651
Claims priority, application Japan, Dec. 19, 1969, 44/102774
Int. Cl. G03b *23/02*
U.S. Cl. 242—192 5 Claims



A movie projector has a reel support arm mounted in its housing for movement between a retracted, film cartridge attaching position and a projected reel mounting position, and has a film feed spindle adjacent its outer end. A film stripper pawl and a film threader are cooperable with film in a cartridge attached to the support arm to feed the film automatically to a film gate, and are connected to a driving means by

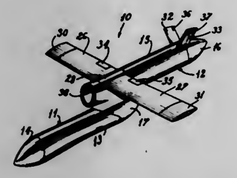
operating mechanism including a clutch. A control mechanism for the clutch is operated, responsive to movement of the support arm to its projected position, to disengage the clutch means and maintain the clutch means disengaged while an open reel is mounted on the projected reel support arm.

3,669,384
SPINDLE CONSTRUCTION FOR TAPE TRANSPORT
Richard A. Hathaway, Saratoga, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,204
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—194 **44 Claims**



An improved spindle for mounting a tape reel of a tape cartridge for rotation wherein the spindle includes the shaft provided with a rotor for insertion into the hub of the tape reel. The rotor has detent means which cooperate with inner peripheral teeth on the reel hub to couple the reel to the spindle rotor for rotation about the axis of the spindle shaft. The invention is especially adapted for use with a reel-over-reel cartridge wherein a pair of co-axial spindles are adapted to be connected with the two reels of the cartridge.

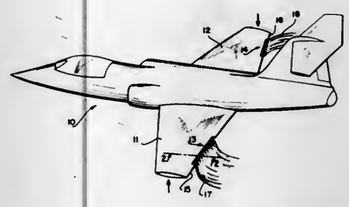
3,669,385
AIRCRAFT OF IMPROVED AND SIMPLIFIED CONSTRUCTION
Earl Glantz, Baldwin, and Jean W. McComas, Islip, both of N.Y., assignors to Fairchild Industries, Inc., Montgomery County, Md.
Filed Oct. 8, 1970, Ser. No. 79,197
Int. Cl. B64c 1/26
U.S. Cl. 244—13 **15 Claims**



An aircraft of improved of simplified construction having forward and aft generally cylindrical and substantially identical fuselage sections that are connected to a central fuselage section that houses an engine that has an inlet located above the forward fuselage section for powering the aircraft in flight. The central long axis of the aft fuselage section is located above the central long axis of the forward fuselage section. Wings are connected to the central fuselage section and a tail assembly is connected to the aft portion of the aft fuselage section. Many of the component parts of the aircraft are interchangeable and the aircraft is especially suited for use as a drone for towing aerial targets.

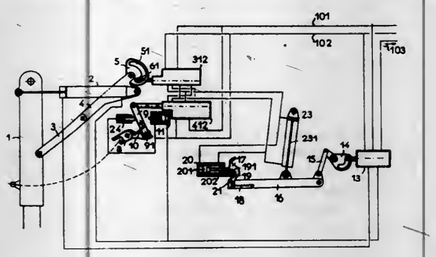
ERRATUM
For Class 244—46 see:
Patent No. 3,669,367

3,669,386
AIRFOIL INCLUDING FLUIDICALLY CONTROLLED JET FLAP
Willi F. Jacobs, and Maximilian F. Platzer, both of Atlanta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 25, 1970, Ser. No. 40,270
Int. Cl. B64b 1/36; B64c 15/14
U.S. Cl. 244—52 **8 Claims**



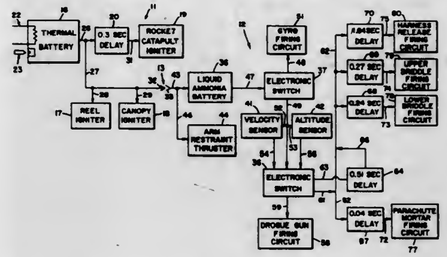
Controlled deflection of a jet flap emanating from an airfoil is accomplished by control fluid streams aligned at a substantial angle to the fluid jet which produces the jet flap. Disclosed embodiments show the use of the fluidically controlled jet flap to adjust the attitude and/or airfoil loading of an aircraft, to generate oscillatory lift forces for flight flutter testing of an aircraft, and to generate and control gusts in wind tunnels.

3,669,387
CONTROL DEVICE FOR AIRCRAFT UNDERCARRIAGES AND TRAP-DOOR HOUSING CLOSURE
Rene Lucien, Neuilly S/Seine, France, assignor to Societe Messier, Paris, France
Filed June 29, 1970, Ser. No. 50,495
Claims priority, application France, June 27, 1969, 6921852
Int. Cl. B64c 25/16
U.S. Cl. 244—102 SL **7 Claims**



A control device for a retractable aircraft undercarriage and for the trap-door closing its housing, with their actuating and locking members and control members supplying them in mechano-hydraulic sequences from a general undercarriage-lifting conduit and a general undercarriage-lowering conduit jack serves for actuating the trap-door, and a first slide-valve distributor and a second slide-valve distributor cooperate in supplying the jack. A first kinematic coupling is controlled by the retracted position of the undercarriage and places the first slide-valve in a characteristic undercarriage-up position and in a non-characteristic position. A second kinematic coupling is controlled by the down position of the undercarriage and places the second slide-valve in a characteristic position. A mechano-hydraulic means connects, in the non-characteristic positions, the opening chamber of the trap-door jack to the high-pressure supply, with hydraulic locking, and the closure chamber to the low-pressure supply.

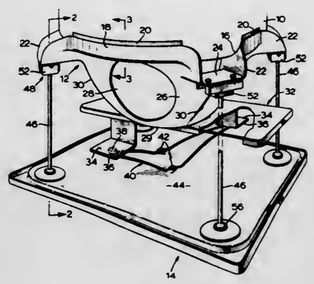
3,669,388
ELECTRONICALLY CONTROLLED AND PYROTECHNIC CREW ESCAPE SYSTEM AND METHOD
Rudolf Van Kreuningen, Torrance, Calif., assignor to Explosive Technology, Fairfield, Calif.
Filed Oct. 29, 1969, Ser. No. 872,023
Int. Cl. B64d 25/00
U.S. Cl. 244—138 R **8 Claims**



Pyrotechnic crew escape system having electronic switches and time delays for sequencing the firing of pyrotechnic devices in the ejection and recovery of a crew member from an aircraft.

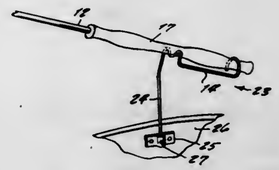
ERRATUM
For Class 244—7 A see:
Patent No. 3,669,371

3,669,389
TUB WASHING MACHINE SUPPORT STRUCTURE
Kazuhiro Goto, London, Ontario, Canada, assignor to GSW Limited-GSW Limitee
Filed July 28, 1970, Ser. No. 58,905
Int. Cl. F16j 15/02
U.S. Cl. 248—22 **4 Claims**



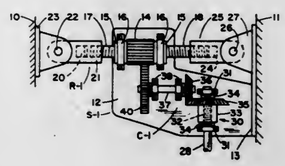
An upright tub of a washing machine is supported above a base on a plate which in turn is supported by flexible rods attached to the plate and the base, with the corresponding one end of the rods rigidly secured and the other end located in resilient means; in a preferred arrangement, the plate has an upwardly extending flange and a flexible member is bearingly inserted between the flange and the adjacent side wall of the tub.

3,669,390
FISHING POLE HOLDER
Caldon M. Nielson, P.O. Box 481, Ephraim, Utah
Filed May 14, 1970, Ser. No. 37,093
Int. Cl. A01b 97/10
U.S. Cl. 248—42 **3 Claims**



A support for a fishing rod, the device comprising a unitary structure formed of configurated wire having stiff properties, the device including a horizontal arm having at its rear end a hook which is fitted over the rear end of the fishing pole handle, the forward end of the arm having a cradle upon which a forward portion of the fishing pole handle can rest, the forward portion of the arm being adjacent to a downwardly extending leg the lower end of the leg having means for being inserted either into the ground or support or else being fitted into a bracket mounted upon a boat, thus comprising a means for supporting a fishing pole.

3,669,391
MECHANICAL SHOCK AND SWAY ARRESTOR
Leonard S. Suozzo, 366 Maple Hill Drive, Hackensack, N.J.
Filed Oct. 14, 1970, Ser. No. 80,659
Int. Cl. F16l 3/16
U.S. Cl. 248—54 R **11 Claims**



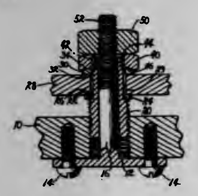
A mechanical arrestor for protecting equipment, such as high temperature piping, vessels or the like, against shock loading or undesirable vibratory movement while permitting requisite movement of the equipment due to normal changes in the temperature or thermal movement of the equipment. The arrestor is comprised of a rigid strut unit, which is adjustable in effective length and is anchored at one end to a stationary structure and at its other end to the equipment, and a control unit which is coupled to and automatically adjusts the effective length of the strut unit in response to said changes in temperature or thermal movement of the equipment.

3,669,392
COLLAPSIBLE STAND-UP TRAY HOLDER
William C. Saunders, 4402 Daffodil Circle North, Palm Beach Gardens, Fla.
Filed Sept. 10, 1969, Ser. No. 856,534
Int. Cl. A47g 29/00
U.S. Cl. 248—121 4 Claims



The device of this invention is a collapsible, tray holder having an upper tray cradle, universally adapted to hold a variety of different types of trays, an upright support, and a base. The cradle portion includes a rear stabilizer and a spring loaded front clasp designed to receive and hold trays of different sizes and shapes. The base and the cradle are connected to the upright with locking hinge connections forming, when assembled, a substantially C-shaped support. The tray cradle may be unlocked and folded at the hinge connections, parallel to the upright, with or without a tray therein. The base connection may also be unlocked for pivotal movement to collapse the holder to an I-shaped configuration for shipment or storage.

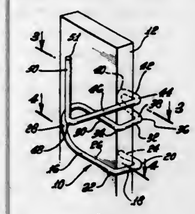
3,669,393
ADJUSTABLE SUPPORT
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Thomas W. Andrews, 2029 North Grand Oaks, Altadena, Calif.
Filed July 31, 1970, Ser. No. 59,968
Int. Cl. F16m 13/02
U.S. Cl. 248—188.4 2 Claims



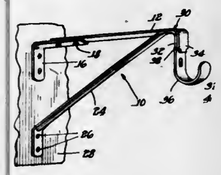
An adjustable support by which the distance at which a member is supported with respect to a base may be altered, is readily accessible for adjustment at a point remote from the supported member with respect to the base, and includes a junction with the supported member which is capable of limited universal movement to accommodate misalignment of the supported member with respect to the base.

3,669,394
SNAP-ON BRACKET
Wynn R. Loucks, 11224 East Lambert, El Monte, Calif.
Filed July 8, 1970, Ser. No. 53,171
Int. Cl. F16m 13/02
U.S. Cl. 248—221 4 Claims

A snap-on bracket of unitary resilient construction adapted to be releasably positioned on a support structure. The bracket includes at least three spaced apart areas of gripping contact with said support structure wherein downward pressure on said snap-on bracket will enhance the binding relationship between said bracket and said support structure.



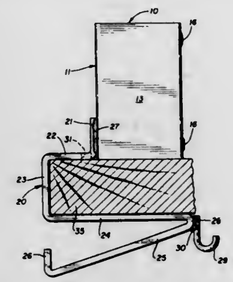
3,669,395
SHELF AND POLE BRACKET
Howard G. Gehrke, Rock Falls, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.
Filed Dec. 3, 1970, Ser. No. 94,673
Int. Cl. A47f 5/00
U.S. Cl. 248—235 7 Claims



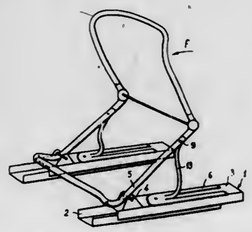
The present invention relates generally to a combined closet shelf and pole bracket, and more particularly to a novel and improved structural arrangement in which the elements comprising the bracket are readily attachable and detachable with respect to each other. The embodiment of the invention disclosed herein includes a horizontally disposed bracket member attachable at one extremity to a vertical work surface and formed at its opposite extremity with a first depending section. A second bracket member is in the form of a brace bar diagonally disposed with respect to the horizontal bracket member. The upper end of the brace bar engages the underside of the outer portion of the horizontal bracket member and is formed with a second depending section adapted to engage the inner surface of the first depending section, said section having an interlocking connection. A pole support forms an extension of the second depending section.

3,669,396
BRICKLAYERS' TOOL HOLDER
Charles P. Gantzler, 5253 South Pennsylvania Street, Littleton, Colo.
Filed Nov. 2, 1970, Ser. No. 86,103
Int. Cl. A47f 7/00
U.S. Cl. 248—309 1 Claim

A bricklayers' tool holder comprising a unitary structure consisting of a pair of open top and bottom containers for receiving levels and other tools, and a bracket consisting of a length of strap iron bent to form a vertically extending arm fastened to the containers, a horizontal member extending away from the containers, the lower surface of said member being in a plane with the bottom of the containers for bearing on the upper surface of a scaffold, a downwardly extending portion, a second horizontal member for contacting the lower surface of a scaffold, and a downwardly inclined arm terminating in an upturned end which provides a hook for receiving the strap of a tool bag. The two horizontal members of the bracket together with the bottom edges of the containers form a clip for mounting the holder on a scaffold by sliding movement.



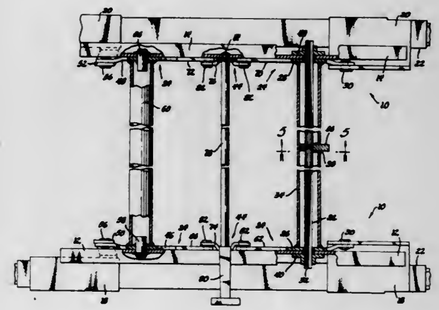
3,669,397
VEHICLE SEATS
Noel Le Mire, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) France and Automobiles Peugeot, Paris, France
Filed May 5, 1970, Ser. No. 34,830
Claims priority, application France, May 8, 1969, 6914745
Int. Cl. B60r 21/10; B61l 1/00; E01b 7/00
U.S. Cl. 248—371 1 Claim



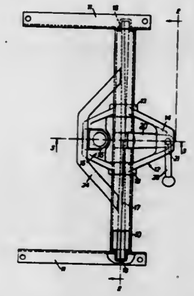
A seat for automotive vehicles of the like, rigid with a first section and movable in translation in relation to a second section secured to the floor of the vehicle. The first section carries at least one transverse pivot pin for the seat which lies substantially at the upper level of said movable section and is adapted to move parallel to itself in conjunction with said first section. A member is rigid with said movable section and formed with a zone of lesser strength, the seat is secured at at least one point to said member. The point of securing being shifted longitudinally in relation to the transverse pivot pin of the seat and capable of performing a limited movement of rotation about said transverse pivot pin.

3,669,398
ADJUSTABLE SEAT SUPPORTING ASSEMBLY
David S. Robinson, Detroit, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.
Filed July 23, 1970, Ser. No. 57,692
Int. Cl. F16m 11/24, 13/00; B60n 1/02
U.S. Cl. 248—373 16 Claims

An adjustable seat supporting assembly including a pair of spaced seat support members and base means. The seat support members are supported on the base means by elongated levers. Each lever is pivotally connected to the base means and independently pivotally connected to the seat support members. There are two sets of levers on each side of the assembly. The levers on each side of the assembly have ends facing one another with notches therein. Control links and latching plates are secured to the seat support members for selectively allowing the levers to pivot to adjust the vertical position of the seat support members. The improvement comprises the use of a torsion bar associated with the levers at the rear of the assembly. The torsion bar is twisted to react between the seat support members and the rear levers to urge the rear levers to pivot in a manner to raise the rear portion of the seat support members.

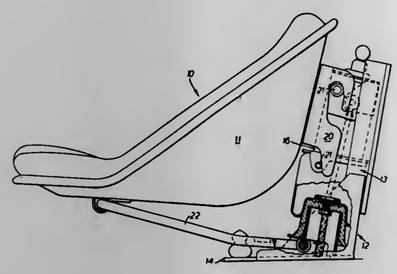


3,669,399
MECHANISM FOR THE TILTABLE SEAT OF A CHAIR
John Stewart Wager, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 5, 1970, Ser. No. 77,998
Claims priority, application Great Britain, Oct. 4, 1969, 48865/69
Int. Cl. A47c 3/023
U.S. Cl. 248—373 6 Claims



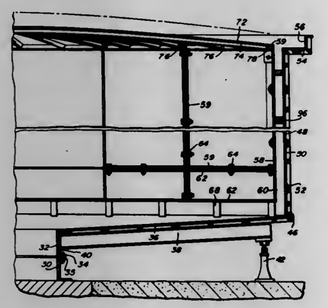
A pivot mechanism for a chair seat in which a torsion bar is fastened at its ends within a tube and to the underside of a seat. A support member fastens the tube for relative rotation about its own axis to a seat base. The tube has a transverse opening therein through which an arm rigidly attached to said torsion bar extends. The arm is positionable with respect to an abutment on the support member by means of a manually operable torque varying mechanism.

3,669,400
VEHICLE SEATS
Charles B. Lowe, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed July 24, 1970, Ser. No. 57,970
Int. Cl. F16m *13/00*
U.S. Cl. 248—400 11 Claims



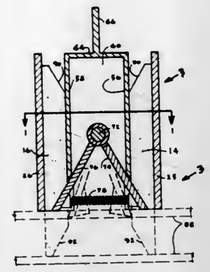
A vehicle seat having a seat part and a base part with a gas spring interposed therebetween. A source of compressed gas forms part of the vehicle seat and is fixed to the base part and connected to the gas spring. The seat frequently entails a pump to form the source of compressed gas. The pump preferably has a unique piston arrangement whereby an O-ring seals a piston to a cylinder in the pump during the compression stroke and allows gas passage past the piston during the recovery stroke.

3,669,401
FIBER GLASS REINFORCED MOLD FOR CEMENTITIOUS BUILDING
Ricardo J. Ocampo Nevarez, Mexico City, Mexico, assignor to Joseph Abelow, Miami Beach, Fla.
Filed Mar. 13, 1970, Ser. No. 19,429
Int. Cl. E04g *11/02*
U.S. Cl. 249—27 10 Claims



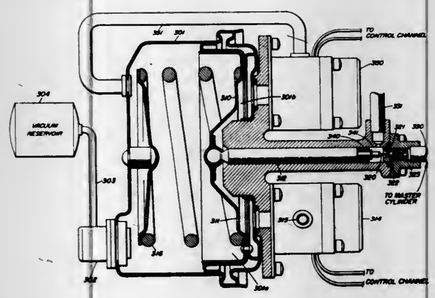
A mold form of plastic material for forming a building of cementitious material having structural features which enable its re-use and being constructed of fiber glass reinforced polyester resin with reinforcing elements incorporated therein to provide sufficient strength requirements to effectively form a concrete building.

3,669,402
MOLD FOR A HOLLOW BLOCK
Theodore C. Paulson, 2485 Hidden Valley Road, La Jolla, Calif.
Filed July 10, 1970, Ser. No. 53,905
Int. Cl. B28b *7/04*
U.S. Cl. 249—150 8 Claims



A mold for a hollow block such as one formed of concrete in which the mold includes a pair of outer side walls, end walls therefor and inner walls. Portions of the lower ends of the inner walls terminate above the lower ends of the outer side walls to form spaces. Pivotally mounted vanes extend downwardly and outwardly from between the inner walls and through the spaces, which vanes, together with a pallet, form the bottom of the mold. The vanes are yieldingly urged outwardly but yield inwardly when the pallet is lowered and pressure is applied to the top of the block, whereby the formed block can be removed through the bottom of the mold.

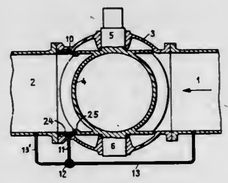
3,669,403
HYDRAULIC PRESSURE MODULATOR FOR USE IN ADAPTIVE BRAKING SYSTEMS
Michael Slavin, and Ralph W. Carp, both of Baltimore, Md., assignors to The Bendix Corporation
Original application Mar. 13, 1968, Ser. No. 712,672, now Patent No. 3,494,671. Divided and this application Oct. 20, 1969, Ser. No. 867,840
Int. Cl. F16k *31/42*
U.S. Cl. 251—30 6 Claims



A vacuum actuated hydraulic pressure modulator for use in an adaptive braking system for automobiles, trucks and the like, which is interposed in the vehicle hydraulic brake line between the master cylinder and the wheel cylinders to be controlled in response to error signals generated in an adaptive braking system control channel includes a diaphragm

and a cooperating displacement rod within the modulator body which are positioned in accordance with the volumetric rate of air admitted to one side of the diaphragm by a solenoid valve which opens in response to an error signal generated by the adaptive braking system control channel when the vehicle wheels attain a certain dynamic condition. The displacement rod cooperates with a ball valve to normally allow free communication between the master cylinder and wheel cylinder; however, when the air is admitted through the solenoid valve in response to the error signal the displacement rod is displaced so as to isolate the wheel cylinders from the master cylinder and additionally to rapidly attenuate the hydraulic pressure at the wheel cylinders. In response to the decreasing brake pressure at the wheel cylinders, the wheel begins to accelerate to its vehicle speed. At another dynamic wheel condition, the error signal is extinguished thereby closing the solenoid valve. The modulated diaphragm and displacement rod are now repositioned so as to slowly increase the braking pressure, the rate of pressure increase being determined by the amount of air leakage across the modulator diaphragm. If wheel acceleration, in spite of the increasing brake pressure, increases to a third reference level, a modulator bypass valve is opened in response to a second control channel error signal so as to pneumatically shut the aforementioned diaphragm causing the displacement rod and diaphragm to be repositioned more rapidly, thus increasing the brake pressure at a more rapid rate, which rate is determined by the size of the bypass valve.

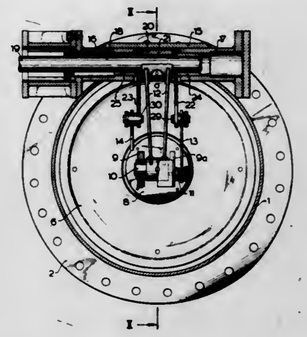
3,669,404
CLOSURE DEVICE ON A PIPE CONDUIT
Friedrich Kaiser, Mannedorf, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland
Filed Mar. 19, 1970, Ser. No. 21,080
Claims priority, application Switzerland, Mar. 20, 1969, 4357/69; Apr. 15, 1969, 5788/69
Int. Cl. F16k *25/00*
U.S. Cl. 251—172 1 Claim



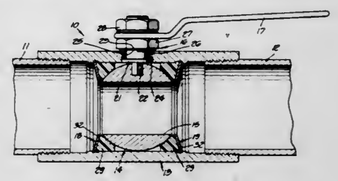
A rotary valve to be mounted in a pipe conduit and including an elastically yieldable packing cylinder fixed at one end by means of a short radial collar confined between the housing and a section of said conduit, and an annular sealing seat fixed to the rotatable ball member. The packing cylinder is arranged in a counterbore formed in the walls of said housing, and covers a space in said counterbore. The space, in the closed position of said closure member, being brought under liquid pressure so as to press the free end of said packing cylinder onto said seat.

3,669,405
FLAP VALVE
Heinz Baum, Saarbrucken, Germany, assignor to Jansen Th. GmbH, Rohrbach, Germany
Filed Feb. 23, 1971, Ser. No. 117,941
Claims priority, application Germany, Feb. 23, 1970, P 20 08 359.4
Int. Cl. F16k *31/44*
U.S. Cl. 251—279 6 Claims

The specification describes a flap valve with a generally transversely extending flap arranged to be operated by a driving shaft lying outside the passage through which material flows through the valve. The shaft carries a lug fixed on it which extends into the passage and is pivotally connected with the flap near the center of the latter. Rocking of the shaft about its axis causes the flap to be moved towards and away from its seating. In order to ensure that the flap, after being moved clear of its seating, swings into a position perpendicular to its closed position in the passage, a linkage is provided. This linkage comprises two arms and two links. The arms are carried on the shaft and are normally stationary during operation. The links are connected with the arms and the flap. The angular setting of the arms, and hence of the flap can be changed by means of an adjustable stop mounted on the casing.



3,669,406
BALL VALVE
Howard V. Moore, Long Beach, Calif., assignor to Pacific Valves, Inc., Long Beach, Calif.
Filed Feb. 10, 1971, Ser. No. 114,195
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 9 Claims

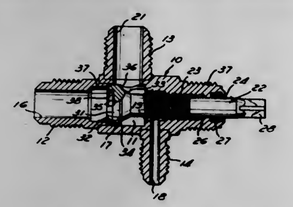


The rotary ball valve includes a generally annular seal which is held in place by an edge anchored annular retainer. The retainer is oversized for the valve housing and on installation resides in a state of compression.

3,669,407
VALVE STEM
James E. Mundt, Mentor, Ohio, and Milan Powell, Angola, Ind., assignors to The Weatherhead Company
Original application Nov. 20, 1967, Ser. No. 684,285, now Patent No. 3,587,157. Divided and this application June 1, 1970, Ser. No. 54,060
Int. Cl. F16k *25/00, 29/00*
U.S. Cl. 251—334 4 Claims

A cold forged valve stem for a three-way valve includes a conical valving portion provided by a conical skirt of work hardened material. The skirt is radially deflectable to insure

proper seating and hardened to reduce wear. An oppositely facing conical valve seat is also work hardened. The valve stem is cold formed from cylindrical stock without scrap. The skirt is formed by first upsetting an intermediate head and



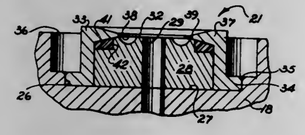
subsequently further upsetting such head while backward extruding a tubular skirt. Subsequently the tubular skirt is deformed by a conical tool to a conical shape. The opposite end of the valve stem is forward extruded to a polygonal shape to provide a wrenching portion.

3,669,408

METAL TO METAL SEA FOR EXTREME TEMPERATURE APPLICATIONS

David W. Baxter, Jr., Sylmar, Calif., assignor to Textron Inc.

Filed Jan. 14, 1970, Ser. No. 2,814
Int. Cl. F16k *51/00, 1/226*
U.S. Cl. 251—359 9 Claims



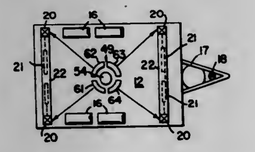
Disclosed is an electromagnetically operated force motor which positions a valve member with respect to a valve seat to open and close a valve, thereby controlling the flow of fluid through a chamber which is sealed with respect to the force motor. The valve seat is maintained in position by a mechanical bond which provides a fluid-tight seal under extreme temperature conditions, for example, cryogenic applications.

3,669,409

VEHICLE ATTITUDE STABILIZATION AND CONTROL SYSTEM

John Eranosian, 175 Phillips Road, Woodside, Calif.

Filed Dec. 14, 1970, Ser. No. 97,774
Int. Cl. B66f *7/26*; B60s *9/02*; B66f *3/22*
U.S. Cl. 254—45 8 Claims



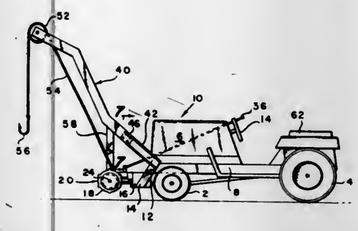
A system for stabilizing and controlling the attitude of a vehicle with respect to the underlying terrain when stationary by means of double acting jacks including means for pressure equalization therebetween is disclosed. Electrical control circuitry providing means for fully automatic leveling including a novel pendulum actuated electrical switch is described. Novel jack means particularly adapted for use in the system and preferred electrical control circuitry are disclosed.

3,669,410

HOIST CONVERSION UNIT FOR SMALL TRACTORS

John F. Burr, 32 North Kanawha, Buckhannon, W. Va.

Filed July 24, 1970, Ser. No. 57,941
Int. Cl. B66c *23/60*
U.S. Cl. 254—139.1 2 Claims



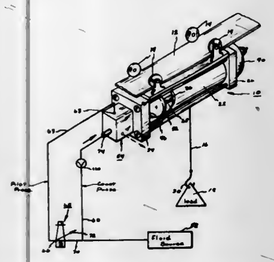
The invention comprises an attachment for a hoist assembly for attachment to a self-powered vehicle having a front power takeoff comprising; a gear case assembly coupled to the fore frame of the tractor; a shaft extending horizontally through said gear case; a reeling drum and a ratchet wheel mounted on said shaft; a releasable pawl mounted on said gear case assembly for engagement with said ratchet wheel, a hoisting boom having means for mounting on the fore frame of the tractor, brace means for said boom supported on said gear case assembly and a cable trained around said reeling drum and extending over the upper end of said boom.

3,669,411

LOAD BALANCER

Lorne J. McKendrick, 5131 Surfwood Drive, Milford, Mich.

Filed Mar. 26, 1970, Ser. No. 22,986
Int. Cl. B66d *1/00*
U.S. Cl. 254—168 6 Claims



A pneumatic load balancer having a hoist cylinder adapted for attachment to an overhead support such as a hook, rail, trolley or the like having a piston assembly disposed in the cylinder, a fluid chamber and a lifting cable which is wound around a dual set of pulleys with one end anchored with respect to the cylinder and the other end arranged for attachment to a load. One set of pulleys is fixed against motion near the center of the cylinder and the other set is carried by the piston assembly to reel in or to unwind the cable from the cylinder upon movement of the piston assembly by means of fluid pressure. A pneumatic control system is provided which comprises a monostat in the form a pilot pressure operated fluid pressure regulator having a built-in relief valve and which is fitted to the cylinder inlet and which can be

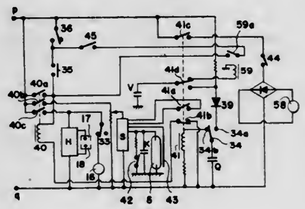
operated either through pilot or mechanical connections to adjust the pressure of fluid available at the inlet of the cylinder in correspondence with the load carried by the cable. Valve means are also provided which are normally open to communicate the fluid chamber with atmosphere and which closes upon an increased pressure in the chamber to thereby dampen upward movement of the cable.

3,669,412

CIRCUITRY FOR CONTROLLING AN ELECTROSTATIC COPIER

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha

Filed Dec. 22, 1969, Ser. No. 887,072
Claims priority, application Japan, Dec. 31, 1968, 44/730
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 6 Claims



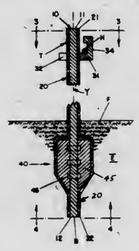
A safety relay is serially connected with a manual switch for initiating operation of an electrostatic copier. A first contact of the relay maintains current in the relay coil, a second contact interconnects the power source with a high voltage generating source, and a third contact interconnects the power source with a discharge circuit. A two-position switch has a first position for connecting a voltage storage device to a power source and a second position for actuating a flash circuit. Another relay releases the safety relay with the two-position switch in the second position.

3,669,413

ELECTRICAL FENCE CONSTRUCTION

Ralph L. Laible, 14008 North 24th Street, Route 6, Omaha, Nebr.

Filed Nov. 9, 1970, Ser. No. 87,979
Int. Cl. E01k *3/00*
U.S. Cl. 256—10 3 Claims



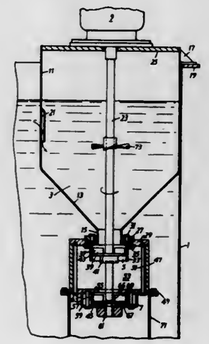
There is described electrical fencing comprising a plurality of upright elongate fence posts, each fence post comprising an upright rigid metallic-rod adapted to be embedded into the earth, said metallic-rod carrying an uprightly extending resinous electrically-insulative resinous sheath disposed at an elevation common to the fencing current-carrying conductor wire(s). Although the conductor wire might be tied directly to the fence post external resinous sheath, preferably an intervening C-shaped wire-connector member is utilized which is removably frictionally engaged at a selectable continuum of elevations along the fence post sheath. The lower portion of the fence post might include an angular anchor-plate admirably suited to maintain the fence post perpendicular to the earth's surface.

3,669,414

MIXING APPARATUS

Gordon D. Love, 171 Battersea Road, London, England

Filed Mar. 19, 1969, Ser. No. 808,499
Claims priority, application Great Britain, Mar. 25, 1968, 14,363/68
Int. Cl. B01f *7/26*
U.S. Cl. 259—8 13 Claims



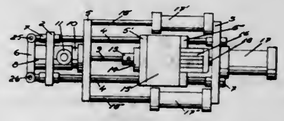
Apparatus for mixing solid material with a liquid wherein a mixer device comprising a casing and an impeller is mounted below an outlet at the bottom of a subsidiary vessel. Liquid and solid material are continuously supplied to the subsidiary vessel, separately or together. Material within the casing is expelled outwardly by the impeller and is subjected to thorough mixing and disintegration. Further material, drawn downwardly in the subsidiary vessel, is directed towards the mixer casing by inwardly and downwardly sloping side walls of the subsidiary vessel.

3,669,415

MACHINE FOR MIXING, PLASTICATING AND PRESSING OUT OF PLASTICS, RUBBER AND OTHER HIGHLY VISCOUS MATERIALS AT CONTROLLED PRESSURE

Henrik Nielander, Schaufelbergerstrasse 58, CH-8055 Zurich, Switzerland

Filed Feb. 10, 1970, Ser. No. 10,215
Claims priority, application Switzerland, Feb. 11, 1969, 2011/69
Int. Cl. B01f *9/02*
U.S. Cl. 259—12 20 Claims



A mixing and plasticating machine which comprises a mixing and plasticating cylinder, an axially movable mixing and

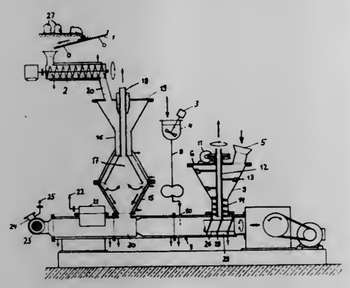
plasticating rotor with passages, the shaft of said mixing and plasticating rotor being connected to a rotary drive outside the mixing and plasticating cylinder, and an axially movable pressing piston. Said mixing and plasticating rotor and said pressing piston are axially movable independently of each other in said mixing and plasticating cylinder.

3,669,416

METHOD AND AN APPARATUS FOR THE PRODUCTION OF DISPERSIONS OF DYESTUFFS

Fritz Sutter, and Andreas Maier, both of Pratteln, Switzerland, assignors to Buss AG, Basel, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,853
Claims priority, application Switzerland, Dec. 10, 1969, 18481/69
Int. Cl. B01f *7/08, 15/02*
U.S. Cl. 259—21 **4 Claims**



The present invention relates to a method for the production of dispersions of dyestuffs, in which the initial ingredients are fed individually and at different locations and stages into a continuously operating mixing and kneading machine and are processed therein. The dyestuff pigments are first mixed and degassed with slight heating whereafter they are conveyed in sliding motion into the apertures of the mixing and kneading machine and in such a manner that the material falls into the machine adjacent the periphery of the cross-section of the filling aperture leaving in the center, a free space for the exhaustion of gas. In addition, the invention relates to an apparatus for carrying out this method comprising a continuously operable mixing and kneading machine, having a rotatable and simultaneously oscillatable shaft with worm blades, said machine being provided with spatially separated filling apertures, a heatable conveyor worm and a drop chute for feeding dyestuff pigments, the said drop chute having conical enlargements at its upper and lower end and a downwardly open slide cone having a central upwardly directed exhaust pipe, which is provided in the end region of the lower conical enlargement.

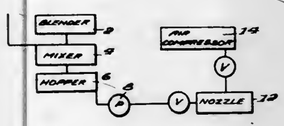
3,669,417

METHOD OF MIXING AND PLACING CONCRETE

Charles E. Cornwell, Alexandria, Va., assignor to Jennings Bailey, Jr., Frederick, Md.

Filed Dec. 21, 1970, Ser. No. 100,198
Int. Cl. B28c *5/06*
U.S. Cl. 259—147 **2 Claims**

Concrete is produced by mixing cement with substantially the exact amount of water needed to produce a setting of the cement, and the mixture is then thoroughly agitated until its viscosity is substantially reduced. Dry sand or other aggregate is then added, and mixed with the slurry. This mixture is then pumped under pressure to a nozzle, which has an outlet passage tapering inwardly and ending in a transverse slot. Air under pressure is emitted in the form of jets into the



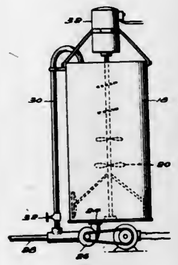
tapering end part of the nozzle on the outside of the concrete mix flowing therethrough.

3,669,418

METHOD OF SPRAYING CONCRETE

Charles E. Cornwell, and James H. Backus, both of Alexandria, Va., assignors to Jennings Bailey, Jr., Frederick, Md.

Filed July 14, 1969, Ser. No. 841,298
Int. Cl. B28c *5/06*
U.S. Cl. 259—147 **4 Claims**



A method of producing concrete includes admixing with dry cement the amount of water for producing complete setting, thoroughly beating the cement and water, and adding substantially dry sand or aggregate. The water-cement mixture is usually too stiff to be workable, but is reduced by the beating action to a less viscous product, capable when aggregate is added thereto of being blown into a reinforcing material such as a wire screen and of penetrating through the screen into contact with a backing. The amount of water is preferably of the order 35 – 37 lbs. per 100 lbs. of cement. The equipment for carrying out the spraying may be such that compressed air alone is used to provide the power for stirring and to transport the material.

3,669,419

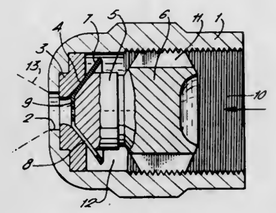
ATOMIZING NOZZLE, PARTICULARLY FOR OIL-BURNERS

Jorgen Hartvig Petersen, Nordborg, and Leif Viggo Sturlason, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordberg, Denmark

Filed Jan. 13, 1971, Ser. No. 106,054
Claims priority, application Germany, Feb. 18, 1970, P 20 07 342.1
Int. Cl. B05b *1/26*
U.S. Cl. 239—544 **4 Claims**

The invention relates to an atomizing nozzle having a tubularly shaped housing with an outlet orifice at one end thereof. An annularly shaped member having a frustoconically shaped backing surface is adjacent the orifice. A frustoconically shaped shell member is held in position against the backing surface with a screw member having a frustoconically shaped

male surface. Grooves or slots are provided in the shell member and either or both of the frustoconically shaped sur-



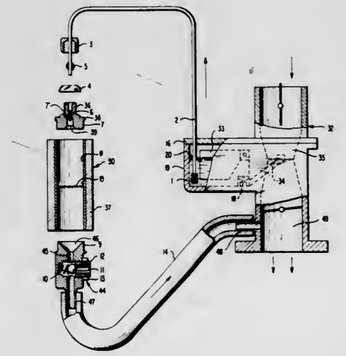
faces are cooperable with the grooves or slots to provide fluid flow passages.

3,669,420

AUXILIARY AIR FUEL MIXTURE CONTROL SYSTEM FOR REDUCING AUTOMOTIVE EXHAUST EMISSIONS

Ray D. Loudenslager, St. Petersburg, Fla., assignor to Automotive Exhaust Control Corporation, St. Petersburg, Fla.

Continuation-in-part of application Ser. No. 17,520, Mar. 16, 1970, now abandoned. This application Nov. 17, 1971, Ser. No. 199,456
Int. Cl. F02m *7/24*
U.S. Cl. 261—23 A **4 Claims**



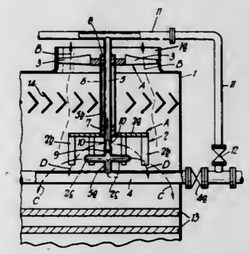
A generally sealed, thermally insulated diffusion chamber is coupled via a capillary tube to the fuel bowl of an automotive internal combustion engine with the capillary tube terminating at the upstream end of the diffusion chamber in a fuel jet nozzle which directs fuel into a venturi leading into the diffusion chamber. A plurality of small air inlet holes upstream of the venturi intersects the fuel leaving the jet nozzle to effect a low temperature thermally and molecularly changed air fuel mixture which is highly diffused and which is delivered by means of insulated tubing from the diffusion chamber to the intake manifold downstream of the carburetor under a delayed or partially retained action, greatly reducing exhaust emissions, especially during deceleration of the vehicle.

3,669,421

COOLING MEDIUM-MOVING DEVICES FOR GAS-LIQUID CONTACTING APPARATUS

Edmund Murphy, La Spezia, Italy, assignor to Cooling Developments Ltd., Lucerne, Switzerland

Filed Mar. 6, 1970, Ser. No. 17,068
Claims priority, application Great Britain, Mar. 24, 1969, 15,194/69
Int. Cl. B01f *3/04*
U.S. Cl. 261—25 **7 Claims**



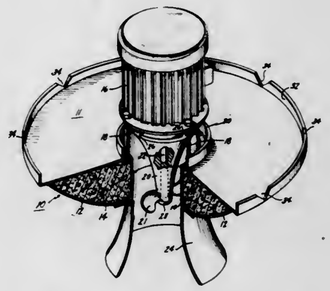
The operating fluid supply means for the fan-driving turbine of a cooling medium-moving device for a gas-liquid contacting apparatus comprises a plurality of supply pipes, one of which is designed to supply fluid to a main nozzle or nozzles to effect the operation of the turbine and the other or others of which is/are designed to supply fluid to a secondary nozzle or nozzles to assist the driving of the turbine and/or is/are provided with a fluid outlet aperture or apertures, the fluid issuing from which does not assist in driving the turbine, whereby the operating fluid may be selectively distributed amongst any one or more of said pipes so as to vary the speed of rotation of the turbine as desired.

3,669,422

AERATION APPARATUS

Richard J. Nogaj, Winfield, Ill., assignor to Keene Corporation

Filed Oct. 19, 1970, Ser. No. 81,994
Int. Cl. B01f *7/16*
U.S. Cl. 261—34 **11 Claims**



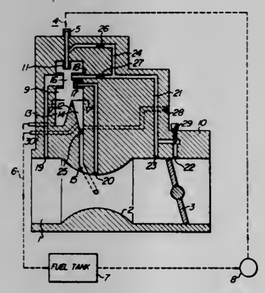
An aerator for use in waste water treatment plants for imparting oxygen to liquid moving through the system including a buoyant pontoon having a central opening designed to float on the liquid. A motor mounted on the pontoon has its shaft extending axially through the pontoon opening and propeller blades are attached to the end of the shaft for pumping the liquid up through the opening and outwardly therefrom for imparting oxygen to the liquid. A shelf located on the pon-

toon upper surface is dry when the unit is not in operation and therefore tends to counterbalance the downward pull of the propellers during starting. As a portion of the pumped liquid fills the tray, it acts as a ballast for the unit during the pumping operation.

3,669,423
CARBURETOR

Yukio Hohsho, Katsuta; Koichiro Yamada, Hitachi; Yoshishige Oyama, Hitachi; Takao Teranishi, Hitachi, and Seikou Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1970, Ser. No. 39,076
Claims priority, application Japan, May 21, 1969, 44/38734
Int. Cl. F02m *69/04*
U.S. Cl. 261—36 A 5 Claims

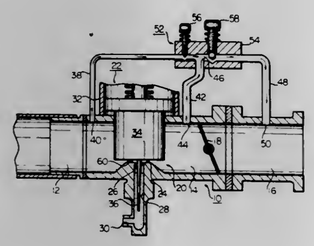


A carburetor capable of suitably controlling the fuel flow rate over the entire operational range of the associated engine using a three-dimensional-type fluidic device.

3,669,424
CARBURETOR OF VARIABLE-AREA VENTURI TYPE

Masaji Shiobara, Chigasaki City, and Genji Watanabe, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Dec. 8, 1970, Ser. No. 96,141
Int. Cl. F02m *3/08*
U.S. Cl. 261—44 R 2 Claims

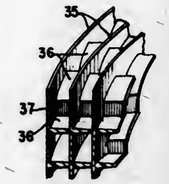


A carburetor of the variable-area venturi type for an internal combustion engine, adapted to reduce the amount of hydrocarbons in the exhaust gases emitted from the engine during idle operation of the automotive. The carburetor includes additional passages by-passing the carburetor throttle valve and means to adjust an air-fuel ratio and amount of a fuel mixture to be supplied to the engine during the idle operation.

3,669,425
WATER COOLING TOWER

John H. Copeland, Borough of Ringwood, N.J., assignor to P. T. & T. Industries, Inc., Franklin Lakes, N.J.

Filed July 30, 1970, Ser. No. 59,559
Int. Cl. B01d *45/00*; B01f *3/04*
U.S. Cl. 261—79 A 4 Claims

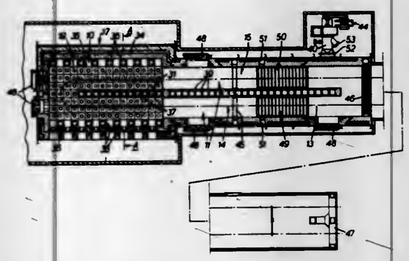


A water cooling tower is shown which comprises a blower opening into the bottom of the tower for introducing or blowing air into the tower. A continuously walled wet decking arranged in a spiral mounted above the air inlet port and having a large number of regularly spaced projections arranged in an inclined checkerboard or step like pattern to control the counterflowing air and water in the tower. A spray tree for introducing water into the vessel is mounted above the wet decking and a mist eliminator mounted above the spray tree. The mist eliminator is also constructed in the form of a continuously spirally wound vertical wall with adjacent surfaces of the eliminator wall being separated by a multiplicity of step like baffles.

3,669,426
FURNACES

Robert George Whitehouse, Wombourne, England, assignor to Ferro Corporation

Filed Oct. 26, 1970, Ser. No. 83,701
Claims priority, application Great Britain, June 26, 1970, 31,118/70
Int. Cl. F27b *9/24*
U.S. Cl. 263—8 R 4 Claims



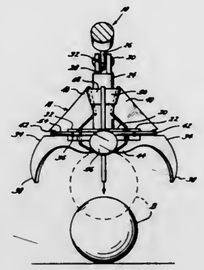
A direct fired tunnel-type continuous heat treating furnace, particularly adapted to fire porcelain enamel articles, wherein the conventional muffle has been eliminated in favor of a system of perforate refractory shapes, so disposed to channel, and directly and evenly distribute, heat from the burners of said furnace throughout its hot zone.

3,669,427
GOLF BALL RETRIEVER

Gerald J. Curtis, 8806 Glen Loch, Houston, Tex.

Filed July 13, 1970, Ser. No. 54,169
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 5 Claims

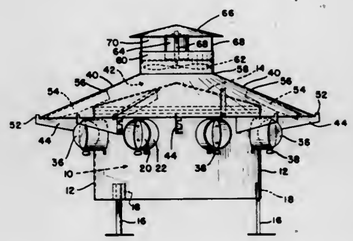
A golf ball retriever having pivotally mounted claw members which are yieldably urged toward closed position and which are held in open position by trigger mechanism operated by engagement with the ball to be retrieved to cause the claw members to snap closed on the ball. The trigger mechanism includes means for adjusting the sensitivity thereof so that the mechanism operates in response to very light contact with the ball to actuate the claw members. Sighting means is provided for positioning the mechanism accurately over the ball by manipulation with an extensible telescoping handle.



3,669,428
TOBACCO HEATING AND CURING APPARATUS

Donald E. Jones, Clinton, N.C., assignor to Vann Industries, Inc., Clinton, N.C.

Filed June 1, 1970, Ser. No. 41,889
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 D 10 Claims



A pipeless tobacco curing apparatus including a cylindrical heat chamber having a plurality of releasable heat outlets extending radially therefrom and a conical hood mounted in spaced relation with respect to a slanted roof supported by brackets releasably secured to the chamber. Air is forced by a blower intermediate the hood and roof in directions generally radially of the chamber and over the heat outlets while being controlled by a series of air deflectors.

3,669,429
TOBACCO CURING APPARATUS

Robert C. Dew, New Albany, Ind., assignor to Stratton & Terstegge Co., Inc.

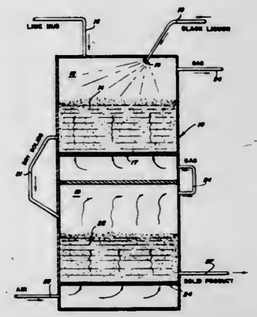
Filed Mar. 26, 1971, Ser. No. 128,272
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 D 11 Claims

Tobacco curer for enclosed space having open top combustion chamber with heat exchanger housing surrounding and spaced therefrom. Horizontal top of housing connected to depending side wall with air inlet adjacent bottom of housing. Angularly spaced radial outlets in housing discharge but air and products of combustion. Conical hood spaced from top of housing provides continuous annular outlet which receives air under pressure from a blower through a central inlet in hood. The blower receives air from inside and outside the enclosed space and air discharged from annular outlet moves at greater velocity than air and products of combustion discharged from radial outlets.

3,669,430
TWO-STAGE LIME MUD CALCINER

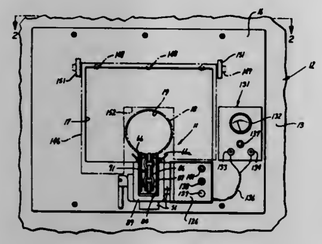
George G. Copeland, Western Springs, Ill., assignor to Copeland System Inc., Oak Brook, Ill.

Filed Aug. 13, 1970, Ser. No. 63,544
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 A 6 Claims



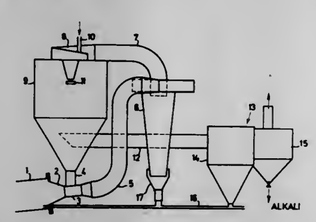
A two-stage system for calcining lime mud. In the first stage the lime mud is mixed with kraft black liquor and dried in a fluidized bed or spray dryer, using as a source of heat for drying, the hot exit gases from the second stage. In the second stage, the dried mixture of mud and black liquor solids is calcined in a fluidized bed operation carried on at temperatures between 1400° and 1900° F. The dried black liquor solids are used as fuel for the calcining operation. The hot exhaust gases from the second stage calcining operation are recycled to the first stage and are used to dry the kraft black liquor in the first stage drying system. Calcined product is continuously removed from the second stage calcining operation and conveyed back to the recausticizing system for reuse in the process.

3,669,431
BOAT PULLING APPARATUS FOR DIFFUSION FURNACE AND METHOD
Andris Lenss, Sunnyvale, and Lionel A. Kirton, Saratoga, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.
Filed Jan. 25, 1971, Ser. No. 109,232
Int. Cl. F27b *9/00*
U.S. Cl. 263—28 **11 Claims**



Boat pulling apparatus for use with a diffusion furnace having motive means, means connecting the motive means to the boat, and means for controlling the operation of the motive means whereby the boat is withdrawn at a predetermined rate of speed from the diffusion furnace.

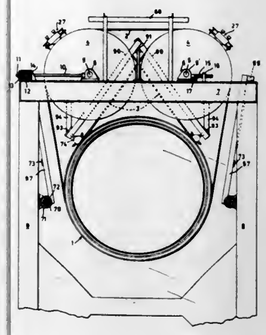
3,669,432
PROCESS FOR PRODUCING CEMENT FROM CEMENT SLURRY AND A PLANT FOR CARRYING OUT THE PROCESS
Klaus Erik Gude, Virum, and Bjorn Lund, Kobenhavn F, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark
Filed Sept. 4, 1970, Ser. No. 69,801
Claims priority, application Denmark, Sept. 10, 1969, 4850/69
Int. Cl. F27b *7/20*
U.S. Cl. 263—32 R **7 Claims**



Cement is produced from cement slurry which is spray-dried and preheated by means of exhaust gas from a kiln. The heat exchange between the exhaust gas from the kiln and the spray-dried material is controlled observing certain temperature limits, whereby an efficient elimination of harmful alkalies is obtained. Saving of investment is possible due to the fact that the kiln can be constructed shorter, or the capacity of an existing kiln can be increased.

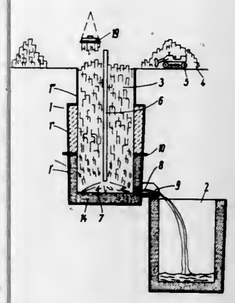
3,669,433
WIRE ROPE SUSPENSION SYSTEM AND ROPE CONNECTOR FOR ROTARY DRYERS AND THE LIKE
George P. Hurst, 235 Hill Street, Jackson, Calif.
Filed Jan. 4, 1971, Ser. No. 103,634
Int. Cl. F27b *7/20*
U.S. Cl. 263—33 R **16 Claims**

A rotary, horizontally-extending tube-dryer, kiln, washer and the like, suspended by sets of wire ropes from over head sheaves for rotation. Each of the wire ropes and its sheave are rotatable independently of the others, and each rope comprises a length connected at its ends by a connector to make it endless, and each connector includes elements to enable shifting the length thereof bodily relative to the body of the connector to distribute the wear to different portions of the rope to prolong its life. Each connector is also constructed to enable replacement of any rope independently of



the others without jacking up the tube or shifting the sheave over which the rope extends, and guide elements on one or more connectors of each set of ropes cooperate with stationary members to support the connectors when out of contact with the sheaves or tube. Also, the tube-supporting wire ropes, in some installations, support the tube against lateral swaying without the use of rollers in fixed positions at the sides of the tube, a pair of supporting sheaves being provided for each rope.

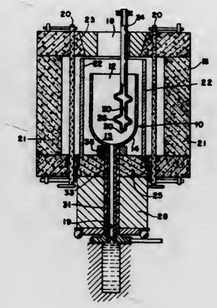
3,669,434
APPARATUS FOR MELTING PARTICULATE METAL
Gunter Geck, and Hans Jurgen Langhammer, both of Hagen, Germany, assignors to Klockner-Werke AG, Duisburg, Germany
Original application Oct. 1, 1969, Ser. No. 862,762. Divided and this application Jan. 13, 1971, Ser. No. 106,127
Claims priority, application Germany, Oct. 2, 1968, P 18 00 610.5
Int. Cl. C21c *5/00*
U.S. Cl. 266—33 S **10 Claims**



An upright elongated in part refractory lined melting chamber in which a charge of particulate metal is melted by the flame of a lance such that the metal of the charge melts and flows onto the bottom wall of the chamber and thereby becomes interposed between the flame and the bottom wall,

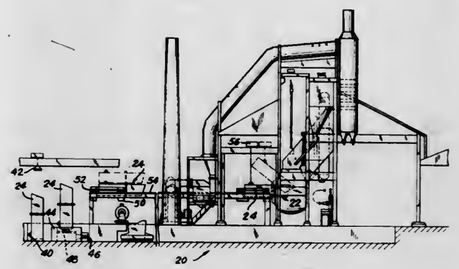
whereby the bottom wall is protected from the flame of the interposed metal. An outlet is provided beneath the flame for evacuating the melted metal from the melting chamber.

3,669,435
ALL-CERAMIC GLASS MAKING SYSTEM
Carl G. Silverberg, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Feb. 26, 1970, Ser. No. 14,599
Int. Cl. F27b *3/00*
U.S. Cl. 263—40 R **23 Claims**



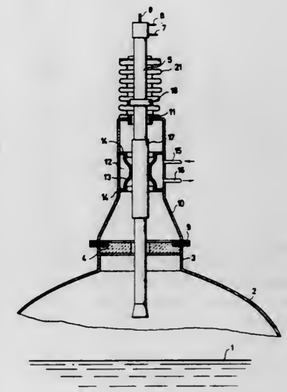
System for producing high quality laser glass including an all-ceramic melter with an integral orifice tube. One important embodiment of the invention includes an all-ceramic hollow bladed stirrer with means for rotating the stirrer in any desired direction and at controllable speed.

3,669,436
APPARATUS FOR PREHEATING SCRAP
Roland Kemmetmueller, Pittsburgh, Pa., assignor to American Waagner-Biro Company, Inc., Pittsburgh, Pa.
Filed Apr. 14, 1970, Ser. No. 28,456
Int. Cl. C21c *5/00*
U.S. Cl. 266—13 **9 Claims**



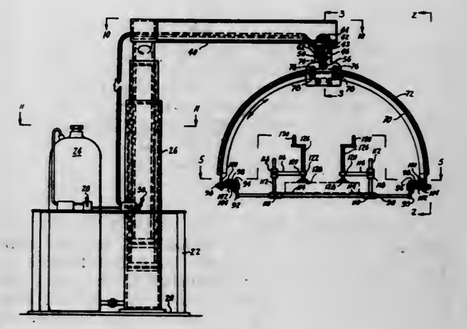
An apparatus for operating furnaces in metal-treating plants. The furnaces require a charge made up at least in part of scrap metal. The scrap metal is preheated prior to reaching the furnace, either by making use of special burners or by utilizing waste heat which is available in the plant. The scrap in a suitable container is preheated and then delivered in this condition to the furnace so that the extent to which heat must be supplied in the furnace itself is reduced.

3,669,437
HOLDER FOR AN OXYGEN SUPPLY PIPE
Hans-Joachim Wernicke, Neuenhain, Taunus, Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Germany
Filed Dec. 17, 1970, Ser. No. 99,004
Claims priority, application Germany, Dec. 22, 1969, P 19 62 653.0
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 LM **6 Claims**



A holder for an oxygen supply pipe for a vacuum furnace having a lid including a sleeve, said sleeve being disposed around said pipe. A pressurizable sealing means is disposed in the sleeve and, when pressurized, forms a releasable vacuum seal between the interior of the sleeve and the exterior of the pipe. Operating means are provided for pressurizing the sealing means.

3,669,438
RADIATOR HOLDING DEVICE
McNeal Pannell, 210 Knowles Street, Kilgore, Tex.
Filed Oct. 22, 1970, Ser. No. 83,124
Int. Cl. B25b *1/18, 1/22;* **B25q** *1/04*
U.S. Cl. 269—20 **1 Claim**

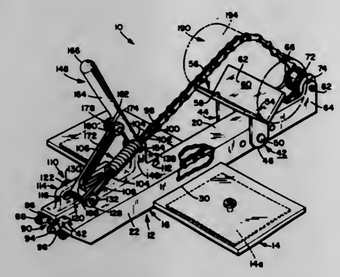


A hydraulic holding and positioning device having a rotatable arm in a horizontal plane and a holder pivotable in a vertical plane.

3,669,439
CLAMP

Anastacio V. Sanchez, 10775 Foothill Boulevard, Cupertino, Calif.

Filed July 6, 1970, Ser. No. 52,213
Int. Cl. B23q 3/18; B25b 1/24, 5/14
U.S. Cl. 269—130 1 Claim

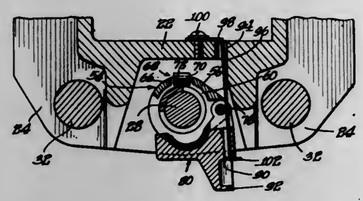


The present invention provides a clamp, which includes a seat arranged to engage the wall of a body of varying dimensions. Confronting the seat in spaced relation is a flexible member which engages the wall of the body to urge the body toward the seat to be clamped thereby. The flexible member is anchored at one end and at the other end is attached to a mechanism for releasably urging the flexible member to engage the body at varying degrees of force for a clamping action in cooperation with the seat. The seat, the flexible member and the mechanism are supported by a base to provide a unitary structure.

3,669,440
QUICK ENGAGING AND DISENGAGING NUT MECHANISM

Ray Kartasuk, Lincolnwood, and Ray Gloridso, Oak Park, both of Ill., assignors to Wilton Corporation, Cook County, Ill.

Continuation-in-part of application Ser. No. 860,661, Sept. 24, 1969, now abandoned. This application June 18, 1970, Ser. No. 47,302
Int. Cl. B25b 1/12; F16h 1/16
U.S. Cl. 269—181 19 Claims

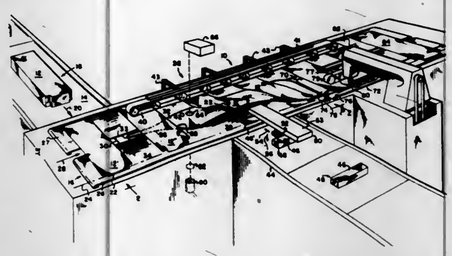


A screw-threaded device as for use in a vise or other clamping mechanism which includes a threaded shaft received in a partially threaded nut. The threaded shaft is axially movable under an axial actuating force at a rapid rate, and is incrementally advanced axially by a rotative force thereon, the screw threads of the shaft being automatically moved into or out of engagement with the partial threads of the nut upon rotation of the shaft in advancing or retracting direction. One spring coacts between the nut and a guide yoke on the shaft to guide the nut in and out of engagement with the shaft, while a second spring on the yoke bears against the shaft and tends to turn the yoke with the shaft. A second form of the invention uses the same, or essentially the same, partially threaded nut and guide yoke, but uses a positive pivot pin for guiding the partially threaded nut in and out of engagement with the threaded shaft.

3,669,441
METHOD AND SYSTEM FOR AUTOMATICALLY ASSEMBLING LIMP WORKPIECES, SUCH AS GARMENT SECTIONS AND THE LIKE

Harry B. Minasian, Bronx, N.Y., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,838
Int. Cl. B42b 1/02; B65h 5/30
U.S. Cl. 270—53 7 Claims

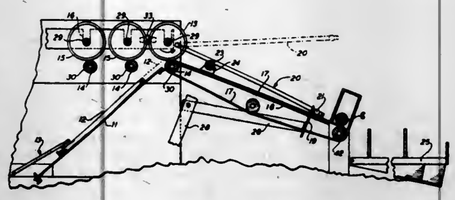


Method and system for automatically assembling limp workpieces, such as garment sections and the like in which a succession of first workpieces are transported by a compound conveyor system, and an overhead ramp displaces a portion of each of the first workpieces away from the conveyor to provide a clearance space for insertion of a succession of second workpieces. The conveyor system includes a pair of spaced parallel conveyor belts defining a gap between them, and the ramp has a leading end extending down into the gap to engage beneath the first workpieces with the ramp sloping upwardly and widening in the direction of advancement for elevating the displaced portions of the first workpieces. Transfer apparatus is arranged to reach into the clearance space beneath the ramp to deposit the second workpieces onto the conveyor belt beneath the ramp, and first clamping means holds another portion of the first workpiece on the other belt. The ramp descends to merge the first and second workpieces. The belt beneath the ramp terminates and is replaced by a pair of conveyor belts defining a gap corresponding with the desired line of attachment between the merged workpieces, this attachment being accomplished at a fastening station including additional clamping means, extending along on either side of the attachment line.

3,669,442
COLLATOR

Wilbur E. Thomas, Wayne, N.J., assignor to General Binding Corporation, Northbrook, Ill.

Filed Sept. 23, 1970, Ser. No. 74,666
Int. Cl. B65h 39/02, 31/36
U.S. Cl. 270—58 8 Claims



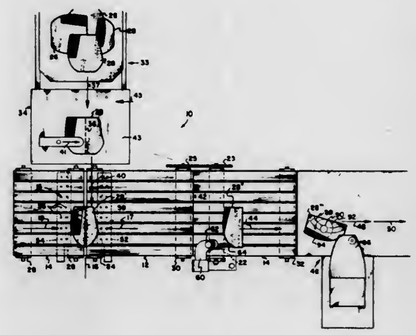
A collator wherein an inertial roller projects successive sheets toward a gate, and the roller support intercepts sheets

that may bounce back; idlers adjustable with respect to feed rollers; a paper deflector imparting a concave aspect to sheets moving onto a stacking table; and idlers larger than driven rollers in juxtaposition peripherally with adjacent idlers.

3,669,443
METHOD AND SYSTEM FOR AUTOMATICALLY FORMING PARTS FOR GARMENTS, AND THE LIKE

Douglas G. Nolles, New Canaan, Conn., assignor to Ivanhoe Research Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,607
Int. Cl. B65h 45/00
U.S. Cl. 270—69 12 Claims



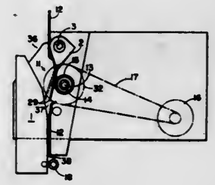
A method and system for automatically forming parts for garments and the like is described wherein limp workpieces such as garment sections which are precut, are fed to an alignment station to register a desired predetermined crease line of the workpieces in precision alignment with a fold line defined by the nip of a pair of merging endless conveyors. The aligned workpieces are then deposited on the conveyors with the predetermined crease line aligned with the fold line, and the conveyors begin moving so that they can draw the workpiece between them and simultaneously fold it along the desired crease line. The conveyors transport the folded workpieces, such as pocket sections, downwardly past a pressurized region and back to an elevated workpiece delivery plane where the conveyors diverge. An attachment station in operative alignment with the delivery plane receives the folded workpieces and fastens the sides to each other along a predetermined attachment line, for example to form a sewn pocket assembly.

3,669,444
CARD HANDLING APPARATUS FOR CARDS IN DATA PROCESSING MACHINES

Frederik Tjado Van Namen, Nijmegen, Netherlands, assignor to The Singer Company, Rochester, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,422
Int. Cl. B65h 5/06, 29/20
U.S. Cl. 271—3 11 Claims

The invention relates to an apparatus for transferring a data card, such as a magnetic stripe ledger card, from a first card guide channel, which leads from the card feed entrance, into a working position or station, to a second card guide channel which leads from said working position to a parking or waiting position. The apparatus comprises means which cooperates with the card feed mechanism and with the card to be parked, and while maintaining that cooperation, transfers the card from the first card guide channel to the second card guide channel and holds it in said second card guide channel, pending a requirement to return the card to the first card guide channel for a subsequent use or operation on the card. The two card guide channels have a common section

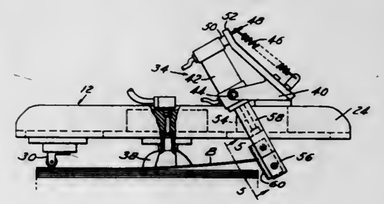


and a selectively operated pivotal vane guides the card from said first channel to said second channel.

3,669,445
DE-STACKING DEVICE FOR SHEET METAL BLANKS

Bernard J. Wallis, 25200 Trowbridge Avenue, Dearborn, Mich.

Filed Sept. 15, 1970, Ser. No. 72,400
Int. Cl. B65h 3/08
U.S. Cl. 271—26 6 Claims



A de-stacking device for a stack of sheet metal blanks having a vertically movable head adapted to engage the top of the stack of blanks and a saw-tooth blade on the head adapted to engage the edge of the topmost blank and upwardly movable for peeling the topmost blank from the stack.

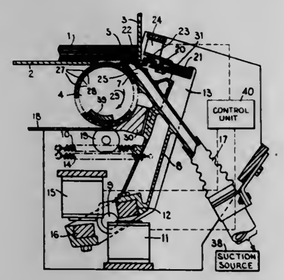
3,669,446
DOCUMENT FEEDING APPARATUS

Roman Derc, Letchworth; Ronald John Frank Eitel, Welwyn, and Cecil Bragg, Congleton, all of England, assignors to International Computers Limited, London, England

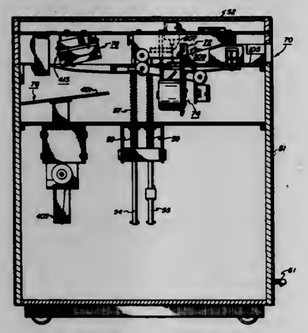
Filed Sept. 3, 1970, Ser. No. 69,200
Claims priority, application Great Britain, Sept. 5, 1969, 44,026/69
Int. Cl. B65h 3/50
U.S. Cl. 271—29 5 Claims

Document feeding apparatus has provision for supporting a stack of documents above and spaced away from a vacuum feeding drum. A suction shoe is interposed between the stack and the drum and has a depression in that face nearer to the stack. The leading edge of the lowermost document of the stack is attracted into the depression so that it is separated from the stack and a knife is moved into the gap between the attracted edge and the stack to maintain the separation. The suction shoe is then withdrawn to allow the separated edge to move into contact with the vacuum drum which then withdraws the lowermost document completely from the stack.

A refinement allows the thickness of document in the depression of the vacuum shoe to be examined in order to detect the separation of more than one document or to detect failure of a document to be separated before the feeding cycle is proceeded with.



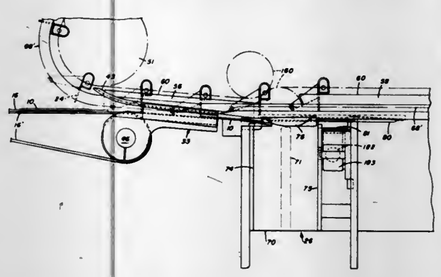
3,669,447
SHEET PROPELLING APPARATUS
Lyman H. Turner, Pittsford, and Rhinehart A. Manzek, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 9, 1970, Ser. No. 70,833
Int. Cl. B65h 9/16
U.S. Cl. 271—53 **8 Claims**



Sheet propelling apparatus for use with a sheet stacking assembly which includes a shaft member, a hub member affixed thereto, and a plurality of blade members extending from the hub member to contact sheet material fed along a sheet path. The blade members are made from a flexible material of predetermined shape and thickness and formed to make a helix angle with the shaft axis of from about 20° to about 50° to imparting one component of thrust on the sheet material at right angles to the sheet path and another component of thrust in the same direction of the sheet path.

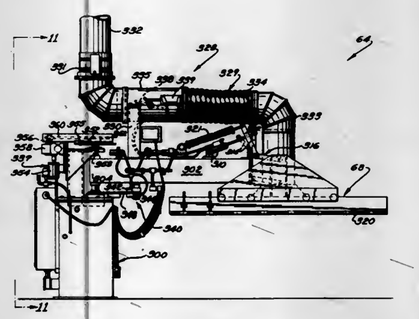
3,669,448
SHEET FEEDING AND STACKING APPARATUS
Stanley R. Schieven, Webster, and Gerald A. Sampson, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed June 1, 1970, Ser. No. 42,104
Int. Cl. B65h 29/60, 29/26, 31/26
U.S. Cl. 271—64 **12 Claims**

An apparatus for feeding sheet-like articles along a path and selectively diverting them into one or the other of a plurality of bins where they are collected in stacked relation, comprises a series of pusher fingers spaced along an endless chain which is driven in synchronism with a source of supply of the articles so that the pusher fingers move in behind each article as it is fed to the stacker and pushes it until it is diverted into one of the bins. The drive for the pusher fingers is such that the fingers remain in substantially perpendicular relation to the plane of the article whether it is being diverted into a bin or is being moved along a horizontal path over one bin to the next, and the fingers are lifted from engagement with a diverted sheet as it enters a bin so as not to force the leading edge of the article against the side of the bin and damage it.



To insure the article being dropped horizontally into a bin, rather than dropping in at an angle, means are provided in the bin for supporting the article in a horizontal position until the entire article is within the confines of the bin at which time the support means moves from beneath the article and allows it to drop down into the bin in a horizontal or flat condition. To aid in stacking the articles, one end portion thereof is provided with an aperture which drops down over an inclined spindle projecting upwardly from the bottom of the bin.

3,669,449
METHOD AND APPARATUS FOR FORMING REFRACTORY PANELS
Robert R. Hayes, Euclid; John L. Fuller, Shaker Heights, and James R. Stockham, Lakewood, all of Ohio, assignors to Oglebay Norton Company, Cleveland, Ohio
Filed Apr. 20, 1970, Ser. No. 30,114
Int. Cl. B65h 29/32
U.S. Cl. 271—74 **3 Claims**



An improved apparatus for forming refractory panels includes a shredder assembly for shredding asbestos. Vacuum or suction is applied to an upper portion of a mix tank, which is partially filled with water, to pneumatically introduce the shredded asbestos and a silica flower into the mix tank at a level below the water line to facilitate the formation of a refractory slurry in the mix tank. This refractory slurry is then conducted to a holding tank and from there to an associated vacuum box molding assembly. The vacuum box molding assembly includes a universal contour plate assembly for forming a mold cavity which is flooded with the refractory slurry. Vacuum or suction is applied to the mold cavity to draw off water from the slurry and form a wet cake panel. After the universal contour plate assembly has been pivoted to a raised position, a vacuum lift head on a radial arm machine pneumatically engages the wet cake panel and transfers it to a conveyor which transports the wet cake panel to a drying oven.

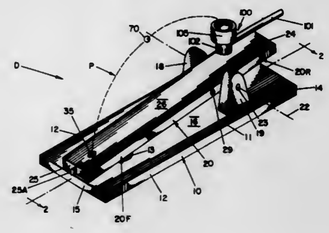
3,669,450
PORTABLE AND ADJUSTABLE MINIATURE BASKETBALL GOAL
John W. Mason, Danville Street, Lancaster, Ky.
Filed Aug. 4, 1969, Ser. No. 847,116
Int. Cl. A63b 63/04
U.S. Cl. 273—1.5 R **7 Claims**



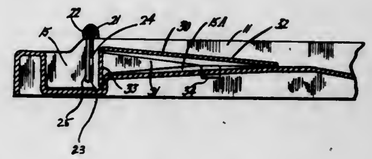
A portable miniature basketball goal for use by small children has a base adapted to rest on a flat supporting surface and carries a vertical standard to which is secured a backboard carrying a hoop. The base includes a platform for receiving anchor means and has flat, vertically extending front and side walls surrounding the front and side edges of the base. The walls are devoid of sharp corners throughout. Brace means extend between the base and vertical standard to secure the latter in vertical position, and the brace means are confined within the boundaries of and are completely shielded by the walls, so that the danger of physical injury to a child from collision with the goal or brace means is minimized, and recovery of a ball fumbled in the playing area is made easy.

3,669,451
CATAPULT GAME INCLUDING STRIKING WALLET AND RECEIVER
Dale K. Welbourn, P.O. Box 26, Neola, Iowa
Filed July 23, 1970, Ser. No. 57,726
Int. Cl. A63b 63/00
U.S. Cl. 273—95 R **7 Claims**

A portable amusement device that also trains and develops the manual dexterity and coordination skills of a wide range of human subjects. The amusement device generally comprises a pivotal lever member having a rearward-portion and a forward-portion extending in opposite directions from a fulcrum; the lever forward-portion carries at least one projectile that is adapted to be catapulted freely upwardly rearwardly therefrom toward the operator who attempts to retrievably capture the projectile in mid-air with an appropriate receptacle.



3,669,452
TABLE GAME TOP INSERT FOR CHANGING CONTOUR OF TABLE GAME SURFACE
Charles F. Foley, 3908 Merriam Road, Minnetonka, Minn., and Charles D. McCarthy, Route 3, Box 217BA, Deephaven, Minn.
Filed July 13, 1970, Ser. No. 54,508
Int. Cl. A63b 65/12
U.S. Cl. 273—101 **4 Claims**

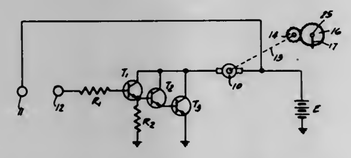


A table game normally for four players which is adaptable for use with two or more players, up to four, by the insertion of playing surface adapter pieces that transform the game board into a usable item for a fewer number of players than normal. The game board has goals or pockets and inclined surfaces leading to each of the goals. The insert disclosed herein provides a false floor so that at least one of the surfaces normally leading to the goal will be changed to a surface to urge a game piece to roll toward the goals in use, when less than the full number of players are playing the game.

3,669,453
ROTATABLE POINTER DRIVEN AND INDEXED BY THE ROTOR OF AN ELECTRONICALLY CONTROLLED MOTOR HAVING PERMANENT MAGNET POLES
John L. Du Bois, 1137 Noyes Street, Evanston, Ill., and Louis F. Grein, 6804 North Wolcott Avenue, Chicago, Ill.
Filed Sept. 11, 1970, Ser. No. 71,458
Int. Cl. A63f 5/04
U.S. Cl. 273—141 A **5 Claims**

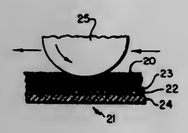
An electronic game which includes a motor with its output shaft connected to a non-integral gear train for driving a pointer and in which the pointer may randomly stop at any of a number of discrete positions. The motor is energized in response to contact made by the user between a pair of ter-

minals and the motor rotates the pointer such that it stops in a random manner after the circuit has been interrupted with



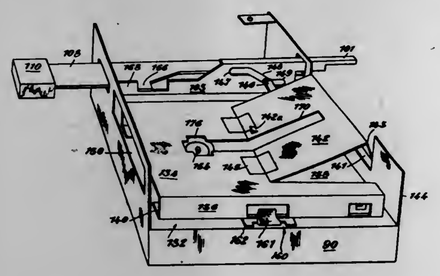
the indexing depending unpon the permanent magnets of the motor stopping the rotor of the motor at discrete positions.

3,669,454
TWO-SPEED GOLF MAT
Arthur Kolonel, 2661 South Course Drive, Apt. 510, Pompano Beach, Fla.
Filed Jan. 2, 1970, Ser. No. 299
Int. Cl. A63b *67/02*
U.S. Cl. 273—176 F **2 Claims**



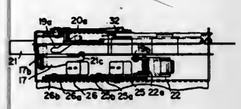
A golf putting mat for both indoor and outdoor use in which grass-simulating mat material has directionally oriented pile that resists the motion of the ball in one longitudinal direction of the mat more than in the reverse direction. Natural slow and fast conditions are obtained by using monofilament synthetic fibers 2 to 10 mils in diameter, with 2,000 to 8,000 fibers per square inch extending one-eighth to three-eighths inches above the mat backing and oriented between 5° and 15° off normal. Detachable or nondetachable putting holes are provided at both ends of the mat.

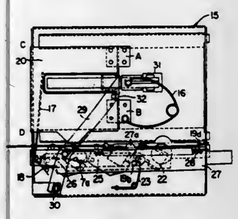
3,669,455
TAPE RECORDING DEVICE
Rodolfo Cicatelli, Roma, Italy, assignor to Antovox S.p.A., Rome, Italy
Filed Mar. 3, 1969, Ser. No. 803,692
Claims priority, application Italy, Oct. 9, 1968, 40334 A/68
Int. Cl. G11b *15/20, 15/24*
U.S. Cl. 274—4 E **12 Claims**



The tape recording device comprises a mechanism wherein the change from one speed mode to another is controlled by a single connecting plate, which is in turn actuated by an assembly which also governs the cassette slip-in, cassette positioning and ejecting units.

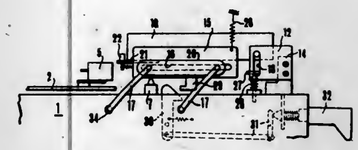
3,669,456
CASSETTE MOUNTING AND DISMOUNTING DEVICE
Yuzo Oteki, Tokyo-to, Japan, assignor to Beltek Kabushiki Kaisha, Tokyo-to, Japan
Filed Dec. 1, 1969, Ser. No. 881,117
Claims priority, application Japan, Feb. 21, 1969, 44/12511
Int. Cl. G11b *23/10*
U.S. Cl. 274—4 C **3 Claims**





A device comprising a casing for receiving a cassette, a suspending plate for swingably lowering or elevating the casing, a tumbler spring for automatically receiving and expelling the cassette in and out of the casing, means for automatically displacing the cassette and casing to an operating position comprising a locking lever and a slidable plate, a cassette dismounting plate having a push button, and a knife-edged member rotatable around a fixed point in accordance with the displacement of the dismounting plate, so that when a cassette is pushed into the casing past a predetermined point, the cassette is automatically brought into the operable position, and, when the push button is depressed, the cassette is automatically removed from the operable position and expelled from the casing.

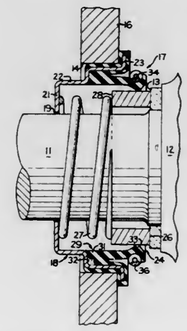
3,669,457
CASSETTE-LOADING MEANS FOR CASSETTE TAPE RECORDER
Yoshikuni Nozawa; Mitsuo Ishikawa, and Junjiro Kikuchi, all of Nagano, Japan, assignors to Sankyo Kogaku Kogyo Kabushiki Kaisha, Nagano, Japan
Filed Mar. 2, 1970, Ser. No. 15,695
Claims priority, application Japan, Mar. 3, 1969, 44/16397; 44/19205; 44/19206; July 24, 1969, 44/70748; July 28, 1969, 44/72084
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E **8 Claims**



A tape cassette-loading means including a tape cassette receiving means which is mounted on a tape recorder for up-

ward and downward movement between a lowered operating position and a raised non-operating position. The cassette receiving means is provided with a cassette ejector to eject the tape cassette out of the receiving means thereby permitting it to be easily withdrawn or removed. As the tape cassette is manually inserted into the receiving means against the action of the ejector, the sliding movement of the cassette results in the automatic lowering of the receiving means to the lowered operating position where the tape cassette is in operative association with the tape recorder elements. The cassette receiving means is operatingly connected to the tape recorder body through at least two parallel-extended levers which are pivotally articulated at their opposite ends to the receiving means and the tape recorder body, respectively, so that the receiving means undergoes the vertical movement while constantly maintaining a parallel relation to the tape recorder base.

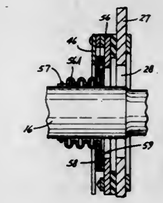
3,669,458
WATER PUMP SEAL
Marion J. Witzenburg, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 25, 1970, Ser. No. 75,625
Int. Cl. F16j *15/32*
U.S. Cl. 277—38 **6 Claims**



A water pump seal including a lip-type sealing member restrained in a sealing position to a containing case and engaging the outer periphery of a cylindrical face seal member for the purpose of providing a pressure balance seal by eliminating the communication of water pressure to the rear face of the face seal member. The face seal member is held concentric with a shaft to be received by the seal and restrained from rotation by a spring secured to the face seal member at one end and to the case at its other end. Such manner of rotation restraint and the use of a lip-type sealing member further contribute to increased seal life.

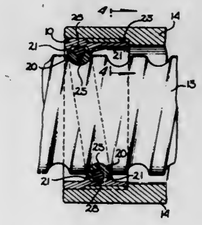
3,669,459
OSCILLATING SPINDLE SEAL
Miles M. Bass, Kalamazoo, Mich., assignor to Hammond Machinery Builders, Inc., Kalamazoo, Mich.
Filed Mar. 31, 1970, Ser. No. 24,188
Int. Cl. F16j *15/00*
U.S. Cl. 277—174 **11 Claims**

A sealing assembly, particularly adapted for use with an electrochemical grinding machine, for permitting relative radial oscillation and/or axial reciprocation between a spindle housing and a hood. The hood is provided with an elongated opening therein through which passes the spindle housing, the elongated opening permitting the spindle housing to radially oscillate. The seal assembly comprises a stationary seal means which is in sealing engagement with the hood and surrounds the opening therein. A movable seal means is in surrounding sealing engagement with the spindle housing.



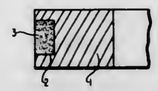
Said stationary and movable seal means are slidingly and sealingly interconnected.

3,669,460
SCREW SEAL
Paul V. Wysong, Northridge, Calif., assignor to Schrillo Company, Sepulveda, Calif.
Filed Feb. 22, 1971, Ser. No. 117,605
Int. Cl. F16j *15/16*
U.S. Cl. 277—24 **10 Claims**



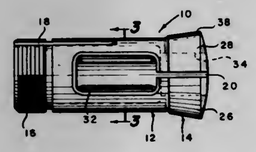
A screw seal for providing a dynamic seal between a screw and a nut is disclosed. The seal which may be coupled to a nut, is incorporated within a carrier disposed about the screw and includes a chipping surface for shipping away foreign matter on the screw, a wiping surface for wiping the screw and sealing member which forms a seal between the nut and screw.

3,669,461
PISTON RING
Shunji Togami, Zushi, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed May 19, 1970, Ser. No. 38,825
Claims priority, application Japan, May 20, 1969, 44/45818
Int. Cl. F16j *9/00*
U.S. Cl. 227—235 R **2 Claims**



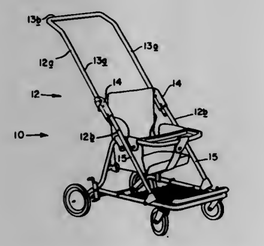
A cast iron piston ring which has an annular groove cut at the outer periphery and a stainless steel insert sprayed into the annular groove.

3,669,462
THREE AND FOUR LEAF MACHINE TOOL COLLETS
Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers Inc., Elmira, N.Y.
Filed Apr. 3, 1970, Ser. No. 25,456
Int. Cl. B23b *31/20*
U.S. Cl. 279—51 12 Claims



A machine tool collet of the three or four leaf type including a cylindrical body having a longitudinal axis, a collet head at the outer end of the body, a plurality of radial slots extending parallel to the longitudinal axis for dividing the body and the head into a plurality of arcuate segments, the slots having a narrow forward portion and an enlarged portion rearwardly of the forward portion, each of the arcuate segments adjacent the enlarged portion of the slots comprising an arcuate distance of approximately 50°. Alternatively, if the arcuate segments are machined to be substantially flat, then the degree of arc of the segments may be as much as approximately 70°.

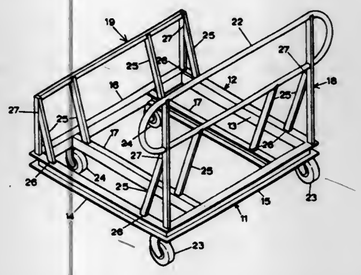
3,669,463
CARRIAGE PUSHER HANDLE RELEASE
Alban M. Boudreau, Bedford, Pa., assignor to Hedstrom Company, Bedford, Pa.
Filed Nov. 19, 1970, Ser. No. 90,953
Int. Cl. B62b *11/00*
U.S. Cl. 280—47.37 6 Claims



The conventional telescoping pusher handle for a baby carriage slides in housings attached to the carriage frame. Spring-loaded pins are mounted on one or both legs of the pusher handle. These snap into properly placed openings in housings when the handle is fully extended. To collapse the handle, one presses these pins inward with his fingers so that they disengage from the registering openings in the housings, allowing the handle to slide downward. The present release employs saddle-shaped triggers which can be rocked easily by the operator so that they depress the pins, thereby facilitating release of the pusher handle.

3,669,464
MATERIAL CART
Leonard J. Linzmeier, 244 Bird Street, Sun Prairie, Wis.
Filed Aug. 10, 1970, Ser. No. 62,436
Int. Cl. B62b *3/10*
U.S. Cl. 280—47.34 1 Claim

A material handling car that automatically aligns elongate material pieces that are dropped thereon. The cart has a substantially horizontal wheel-supported bed having end members connecting a pair of side members. Guide rails, that automatically align the material pieces dropped on the cart, are attached to the end members inwardly of the side members and extend upwardly and outwardly from their points of attachment.



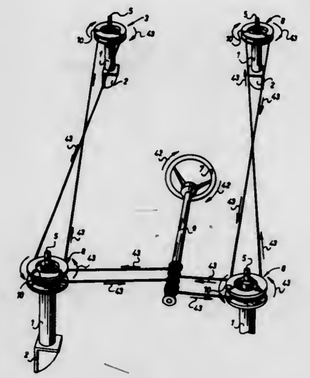
3,669,465
DUAL WHEEL STEERING MEANS
Matthew Vacante, 500 Dawson Lane, Jericho, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,685
Int. Cl. B62d *1/04*
U.S. Cl. 280—87 R 6 Claims



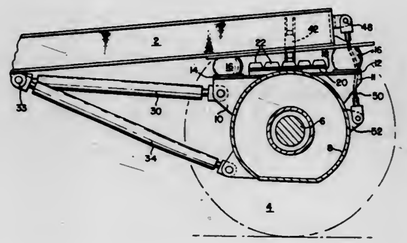
A dual hand wheel steering assembly is adapted to be substituted for the conventional steering wheel on vehicles. The assembly consists of left and right hand wheels and a gear box which is mounted on the existing steering shaft. Horn buttons are provided. An instrument panel and an air bag safety device may be mounted on the gear box between the hand wheels for the protection of the operator.

3,669,466
CABLE-STEERED VEHICLE HAVING A CABLE TENSIONING AND ACTUATING ASSEMBLY THEREFOR
William George Spence, 2375 Wilson Avenue, Apt. 8, Montreal 260, Quebec, Canada
Filed Dec. 21, 1970, Ser. No. 99,963
Int. Cl. B62d *1/00*
U.S. Cl. 280—91 11 Claims

A steering cable assembly adapted to tension and actuate a steering cable adapted to tension and actuate a steering cable in a cable-steered vehicle. A cable assembly of the above type which includes two spools to attach and wind the ends of the cable, a bevel gear coaxially secured at one end of each spool, the toothed faces of the bevel gears facing each other in spaced-apart relation, along a common steering axle, at least one of the two gears is rotatable around the common steering axle, a locking element is arranged to engage between the teeth of each gear to releasably lock the gears together for concomitant rotation, and when disengaged, to allow relative rotation between the two gears and the attached spools upon insertion and rotation of a toothed tool in meshing engagement with both gears.



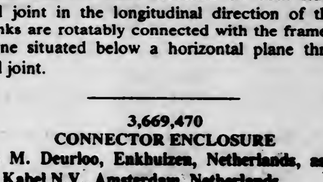
3,669,467
VEHICLE ELASTOMERIC SUSPENSION SYSTEM
Dennis L. Dunlap, Kansas City, Mo., and Darrel L. Bryan, Overland Park, Kans., assignors to Pacific Car and Foundry Company, Bellevue, Wash.
Filed Feb. 26, 1970, Ser. No. 50,042
Int. Cl. B60g *11/22*
U.S. Cl. 280—124 9 Claims



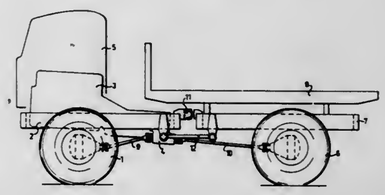
An elastomeric rear axle suspension system for a vehicle consisting of spherical springs of an elastomeric material and elastomeric support pads, the spherical springs and support pads being in position between a support mounted to the axle and the vehicle frame. The spherical springs and support pads contact the frame when the vehicle is loaded, and the spherical springs lift the frame away from the support pads. Rebound cables control excessive motion which would separate the axle from the frame.

3,669,468
WHEELED TOY
Everett W. Rich, 424 West Pardee Lane, Stockton, Calif.
Filed Jan. 30, 1970, Ser. No. 7,096
Int. Cl. B62k *9/00, 21/00*
U.S. Cl. 280—267 3 Claims

A three-wheeled vehicle including an occupant supporting body having front and rear ends with a center front wheel journaled from the front end of the body for rotation about a fixed horizontal transverse axis and having foot pedals operatively associated therewith for driving the front wheel. A pair of opposite side rear wheels are journaled from opposite ends of a horizontal rear transverse axle assembly and the axle assembly is oscillatably supported from the rear of the body for angular displacement about a rearwardly and upwardly inclined axis. Further, the body includes a seat structure for the occupant of the vehicle and controls for oscillating the rear axle assembly are supported from the body for actuation by an occupant seated on the seat structure.



3,669,469
ARTICULATED VEHICLE FRAME
Nils Magnus Hartellus, Gothenburg, Sweden, assignor to Aktiebolaget Volvo, Gothenburg, Sweden
Filed Dec. 28, 1970, Ser. No. 101,512
Int. Cl. B62d *53/02*
U.S. Cl. 280—492 5 Claims

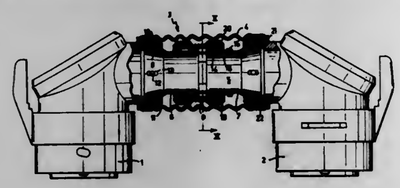


An articulated vehicle frame, preferably for cross country vehicles, comprising an articulation mounted between the front and rear wheel axles and dividing the frame in two portions, in which the articulation consists of a universal joint mounted in the longitudinal vertical plane of symmetry of the frame and hingedly connecting the two frame portions with each other and two links mounted on both sides of the universal joint in the longitudinal direction of the frame, which links are rotatably connected with the frame portions in a plane situated below a horizontal plane through the universal joint.

3,669,470
CONNECTOR ENCLOSURE
Johannis M. Deurloo, Enkhuizen, Netherlands, assignor to Draka Kabel N.V., Amsterdam, Netherlands
Filed June 3, 1970, Ser. No. 43,117
Claims priority, application Netherlands, Aug. 12, 1969, 6912273
Int. Cl. F16l *27/00*
U.S. Cl. 285—45 3 Claims

To connect two apparatuses a connector assembly is used comprising two connector units and a plurality of conductors, and to protect said conductors a connector enclosure is provided consisting of an inner member of non elastic material, which member is constructed with two articulate inner tubes adapted to be coupled with the said two connector-units and with an outer tube, which is coupled telescopi-

cally and rotatably about a limited angle with the coupling extremities of the inner tubes opposite the articulate extremities of said inner tubes; and as an outer enclosure a bellow or



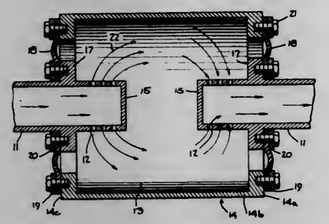
sleeve of elastic material is used, said connector assembly permits a limited relative movement of the connector units, which is for an improved protection of the conductors against damage through imprudent use.

3,669,471

FLEXIBLE CONNECTING DEVICE

William H. Fetish, Jr., Saddle Brook, N.J., assignor to Uniroyal, Inc., New York, N.Y.

Filed May 19, 1970, Ser. No. 38,788
Int. Cl. F16l 11/12
U.S. Cl. 285—49 11 Claims



A flexible connector for isolating noise and vibration in a pipeline. The connector includes a casing having a pair of openings at opposite ends thereof which define an internal chamber. A pair of axially spaced tubular members extend into the internal chamber through the openings and are connected to corresponding portions of the pipeline. A diaphragm surrounds each of the tubular members for flexibly fastening and sealing each of the tubular members to the casing.

The foregoing abstract is not intended to be limiting as to the scope of the invention in any way.

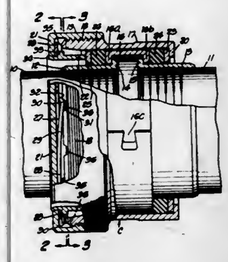
3,669,472

COUPLING DEVICE WITH SPRING LOCKING DETENT MEANS

Clarence A. Nadeady, Downey, Calif., assignor to E. B. Wiggins, Inc., Los Angeles, Calif.

Filed Feb. 3, 1971, Ser. No. 112,126
Int. Cl. F16l 15/00
U.S. Cl. 285—87 10 Claims

A detachable coupling device for joining pipe and tubing members in end-to-end relation and providing an hermetic seal, comprising an axially contractible two-part coupling structure in which the parts are rotatably united by screw thread means and are operable to compress enclosed O-ring sealing members with respect to the connected tubing. Tightening of the coupling parts is readily accomplished, but untightening and particularly accidental loosening is restrained by unique releasable detent means in which spring fingers carried by one of the coupling parts engage indentations or notches on the other coupling part in such a manner as to favor relative rotation of the parts in one direction



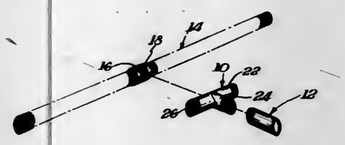
while restraining with greater force the rotation of the parts in the opposite direction.

3,669,473

FLEXIBLE COUPLING

Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advance Drainage Systems, Inc., Waterville, Ohio

Filed Dec. 11, 1970, Ser. No. 97,149
Int. Cl. F16l 41/06
U.S. Cl. 285—197 8 Claims



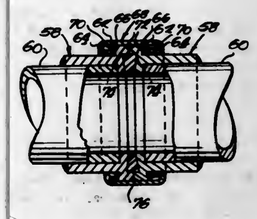
Flexible coupling for interconnecting tubular lateral line with unbroken tubular main line comprises T-shaped tubular body section having first leg with second leg integrally connected to first leg at angle thereto. Slot in first leg extends full length thereof so that first leg may be expanded open and snapped onto unbroken tubular main line to facilitate interconnection of tubular lateral line with main line when lateral line is secured to free end of second leg of tubular body section.

3,669,474

COUPLED JOINT OF AXIALLY ALIGNED ELONGATED MEMBERS

Richard M. Bode, 7403 Fifth Avenue, Kenosha, Wis.

Filed Aug. 26, 1970, Ser. No. 66,928
Int. Cl. F16l 19/02
U.S. Cl. 285—365 16 Claims



A coupled joint of axially aligned elongated members, which members may be tubular members or solid rods, or

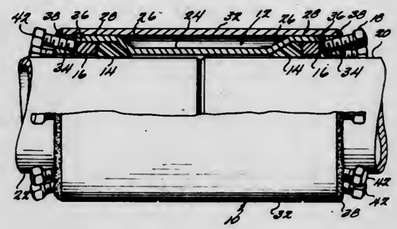
may have rectangular transverse cross sections which are solid or hollow, has opposed flanges on the adjacent ends of the elongated members and a plurality of clamping bands or jaw members holding said flanges together in aligned abutting relationship. The opposed flanges may be formed integrally at the adjacent ends of the elongated members or may constitute portions of ferrules secured to the ends of said members. Said opposed flanges have squared end surfaces in abutting relationship with each other, opposed outwardly diverging surfaces and aligned peripheral surfaces. The jaw members have web portions peripherally embracing the flanges and a plurality of opposed pairs of fingers which extend substantially axially under the web portions and exert a vise-like grip on the outwardly diverging surfaces of the flanges to maintain the flanges in aligned abutting relationship. Washers may be disposed between said outwardly diverging surfaces and the opposing ends of said fingers. A recess may be provided in each of said flanges to form a chamber of substantially trapezoidal axial section, and a gasket of similar axial section fills said chamber.

3,669,475

COMPRESSION COUPLINGS

Lawrence F. Luckenbill, and Frank C. Hackman, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed May 22, 1970, Ser. No. 39,706
Int. Cl. F16l 21/02
U.S. Cl. 285—348 1 Claim



A fabricated pipe coupling for connecting meeting ends of a pair of pipe sections, the coupling including a tubular member rolled from steel to form a cylindrical center portion having outwardly flaring portions at each end thereof, the outwardly flaring portions being provided with cylindrical end portions to define a gasket and follower channels. Rigid end rings which define end flanges are welded to the tubular member for entrapping the followers and the gaskets in the channels. Each follower ring is endless and rigid and is inserted into the chamber prior to enclosing the chamber with the end ring. The end rings have a plurality of circumferentially spaced thread holes for receiving set screws, the set screws being utilized to advance the follower rings against the gaskets to cause the gaskets to deform and provide seals with the end of the pipe sections. A further reinforcing sleeve member is provided about the tubular member and is welded to the tubular member and to the end rings.

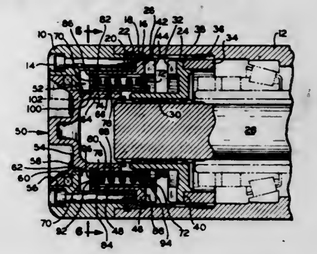
3,669,476

SELECTIVE FRONT WHEEL DRIVE HUB

Denney R. Wilson, Ossian, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed June 25, 1971, Ser. No. 156,631
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R 10 Claims

A drive hub is provided having an inner actuating sleeve operatively connected to and selectively controlled by a manual external actuator and wherein a coupling connection is provided between the actuating sleeve and a cooperating outer clutch gear, so that when the manual actuator is operated in either direction, the actuating sleeve will move axially relative to the clutch gear to apply a preload thereon. The coupling connection includes a pair of spaced tabbed



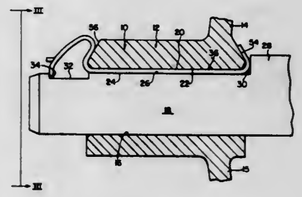
guide washers slidably supported between the actuating sleeve and the clutch gear and a coil spring interposed between the washers.

3,669,477

HUB AND SHAFT SECUREMENT MEANS

Michael D. Ulich, South Wellfleet, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1970, Ser. No. 65,985
Int. Cl. F16d 1/06
U.S. Cl. 287—52.07 3 Claims



A hub and shaft securement arrangement is provided in which a spring clip having a loop portion and a tongue portion is arranged with an extension thereof between the loop and tongue portions disposed within a hub so as to be squeeze between flattened portions on it and an inserted shaft and with the tongue end in compressing relationship relative to the hub and the loop portion compressingly engaged between the other termination of the hub and a shoulder formed by a cross groove in the shaft. This clip arrangement, then, provides a securement means which may mount a fan hub on either end of a double shafted motor, and yet still may secure the hub to the shaft. It also provides a securement means which eliminates close tolerance requirements between various faces and shoulders on the hub and shaft.

3,669,478

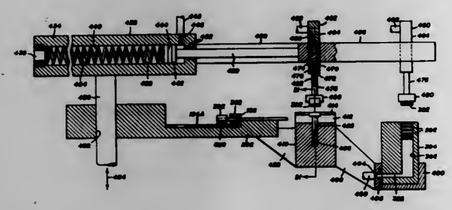
MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY

Richard J. Desmond, North Syracuse; Edward J. Fronczek, Auburn, and John J. McCarthy, Port Byron, all of N.Y., assignors to General Electric Company

Filed May 4, 1970, Ser. No. 34,042
Int. Cl. B23k 1/20
U.S. Cl. 228—5 13 Claims

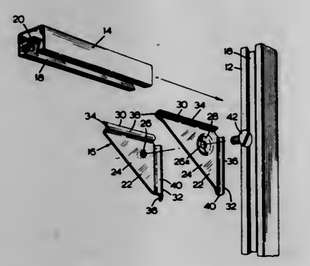
A machine and process are disclosed for assembling a plurality of semiconductor devices having heat sinks initially

united in a common strip. A track is provided for allowing a heat sink strip to be sequentially transported through a plurality of assembly stations. A magazine is provided for dispensing heat sink strips to the track. The strip is advanced by fingers engaging regularly recurring apertures in the strip. The heat sink strip is first burred and then a solder preform is



stamped onto the strip at spaced intervals overlying the burrs. Lead carrying headers are fed into association with spaced foot portions of the strip. A dispenser feeds a solder ball to a window in each header. A forming and pick up mechanism positions sub-assemblies including semiconductive elements and internal connectors on the heat sink strip overlying the solder preforms.

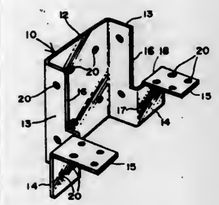
3,669,479
STRUCTURAL CONNECTIONS
Harold A. Payne, 252 Bering Avenue, Toronto, 18 Ontario, Canada
Filed Nov. 13, 1970, Ser. No. 89,314
Int. Cl. F16b 7/04
U.S. Cl. 287—189.36 C **8 Claims**



A device adapted for connection to a structural element of the type having a longitudinally extending channel formed therein. The device may be used for connecting two or more such structural elements to one another. The device preferably consists of two plate elements which are folded preferably adjacent to side edges to form two pairs of outwardly directed lugs and two pairs of inwardly directed ridges. The device includes clamping means which may be in the form of a clamping screw for pulling the main body portions of the plates together to cause the plates to pivot about the ridges to force the lug members away from one another into locking engagement within the channel structure of one structural element.

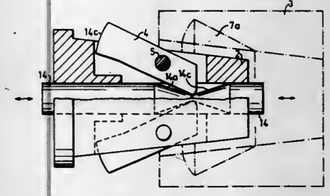
3,669,480
GUARD RAIL DEMOUNTABLE SOCKET
James E. Fugate, 9740 S.W. 167th Street, Perrine, Fla.
Filed May 3, 1971, Ser. No. 139,654
Int. Cl. F16b 21/00
U.S. Cl. 287—20.95 **2 Claims**

A demountable socket for receiving guard rail posts having a front wall and a pair of side walls forming an opening at both top and bottom portion for extending a post therethrough with a plurality of tabs mounted on each of the side walls, one of each of the tabs lying in a plane parallel



with the front wall and the other of the tabs extending at right angle to the first named tabs with openings in the tabs for fastening the socket to a form for pouring concrete.

3,669,481
COUPLING OR LOCKING MEANS
Hermann Gustav Adolf Bergmann, Stocksund, Sweden, assignor to Liber Shovel Co. A.G., Zug, Switzerland
Filed May 23, 1969, Ser. No. 827,259
Claims priority, application Sweden, May 27, 1968, 7065/68
Int. Cl. E05c 3/28
U.S. Cl. 292—49 **8 Claims**

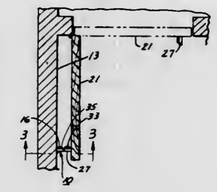


In a means for coupling or locking two parts together, one part is provided with a preferably conical stud which can be inserted against a stop in a conical recess in the other part. One or preferably two or more spring actuated latching members pivotal about shafts at right angles to the axial direction of the stud are free to enter an enlarged section of the recess so that the latching members like barbs of a hook or harpoon prevent the stud from returning. An operating device rotatable or axially displaceable within the stud and actuated from one or both ends thereof effects the return of the latching members. The means may be used for coupling together two machine parts, e.g. in a chuck or the like, as a hose coupling, in a safety lock system for vehicles etc.

3,669,482
CLOSURE FASTENER
Dominick J. DeFazio, 8022 Glenwood Avenue, Youngstown, Ohio
Filed May 15, 1969, Ser. No. 824,956
Int. Cl. E05c 19/06
U.S. Cl. 292—80 **2 Claims**

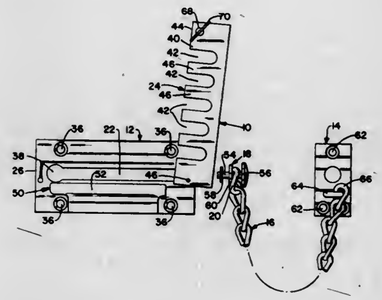
This invention relates to a door check or closure fastener which is operable to retain a door positively in open position in a primary locking position and upon further opening of the door operable to automatically release the closure fastener to

permit closing of the door, all of the above operations being accomplished without manual intervention with the closure



fastener other than manually opening and closing of the door.

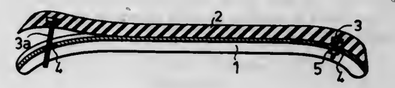
3,669,483
CHAIN DOOR LATCH
Fred A. Trachsler, 617 Tenth Avenue, San Francisco, Calif.
Filed Dec. 14, 1970, Ser. No. 97,869
Int. Cl. E05c 17/36
U.S. Cl. 292—264 **11 Claims**



A chain latch for a swingable door wherein a first member adapted to be secured to one side of a door has a slot for receiving a stud on one end of a flexible chain whose opposite end is secured to a second member adapted to be secured to the jamb of the door. A rigid strip having a plurality of spaced teeth is shiftably mounted on the first member and is movable into a position with the spaces between the teeth in alignment with the slot, whereby the stud, when disposed in the slot, will be releasably held in a fixed location therein. Means is provided to releasably secure the strip to the first member.

3,669,484
BUMPER FOR MOTOR VEHICLES
Bernhard Bernitz, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Dec. 17, 1969, Ser. No. 885,679
Claims priority, application Germany, Oct. 19, 1968, P 18 15 655.3
Int. Cl. B60r 19/08
U.S. Cl. 293—71 R **9 Claims**

A bumper structure with attached strip of yieldable resilient material such as rubber, for motor vehicles in which the strip is stretched in longitudinal direction while engaging the bumper at least over portions thereof and being connected to said bumper by screws, hooks, or the like, extending through holes in said bumper, the total of the length of said screws, hooks, or the like, being at least 1.5 times longer than the difference between the spacing of said screws,

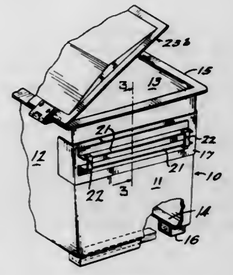


hooks, or the like, when the strip is detached from the bumper and the spacing between the holes in said bumper.

ERRATUM

For Class 294—19 see:
Patent No. 3,669,427

3,669,485
REFUSE CONTAINER
David T. Stihler, 4602 Sylvania Avenue, Toledo, Ohio
Filed Jan. 11, 1971, Ser. No. 105,420
Int. Cl. B65f 1/12
U.S. Cl. 294—73 **3 Claims**



An open topped refuse container fabricated from fiber reinforced, hard resinous material. The end and side walls and the bottom are unitary in construction. The walls taper outwardly so the open top is larger than the bottom and there is an outwardly extending lip formed at the upper edge of the side and end walls. The end walls have extra reinforcing layers. Two vertically spaced channels are removably bolted at the outside of the reinforced end walls for receiving the tines of a lifting fork. Retaining straps extend vertically across between the channels. The container has a lid that is hinged to the lip at the front or back.

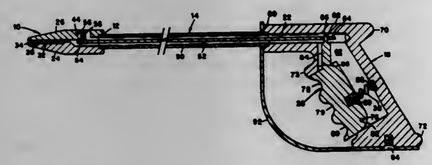
3,669,486
CORNER CLIP AND BALE LIFTING METHOD
James A. Pasic, Aberdeen, Wash., assignor to Ovalstrapping, Inc., Hoquaim, Wash.
Continuation of application Ser. No. 836,281, June 25, 1969, now abandoned. This application Aug. 17, 1970, Ser. No. 64,610
Int. Cl. B66c 1/12
U.S. Cl. 294—74 **5 Claims**



A corner clip is formed of a single strip of metal into a horizontal leg which fits beneath the top run of a strap, a ver-

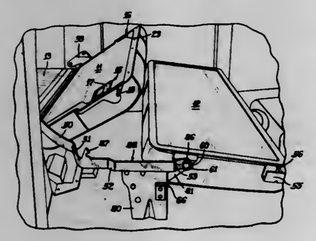
tical leg, and a loop which fits beneath the side run of a strap. The loop and horizontal leg have lateral upturned ends for confining the strap in the clip. In the method the strap is spaced from the side of the bale of the loop of the clip and the lifting force is applied at each corner at an angle of substantially 45°.

3,669,487
TOOL
Lonnie D. Roberts, 4408 O'Hara Drive, Knoxville, Tenn., and Claude A. Plummer, Route 1, Box 114, Heiskell, Tenn.
Filed Nov. 9, 1970, Ser. No. 87,660
Int. Cl. B25b 5/04
U.S. Cl. 294—104 6 Claims



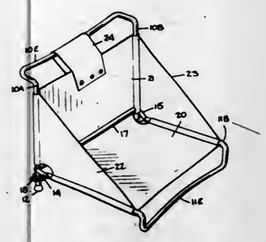
A tool including a set of jaws mounted in one end of a hollow extension whose other end is secured to a handle which includes a trigger. Shield means disposed between the handle and jaws isolates the operator's hand so that the jaws on the extension can be presented to a hazardous work region without exposing the operator's hand to injury. A linkage system disposed within the hollow extension and handle connects the trigger to one of the jaws so as to positively move the jaw between open and closed positions upon movement of the trigger. Tooth means in one jaw mesh with cavity means in the opposing jaw of the set to securely grasp a object therebetween.

3,669,488
FOLD-DOWN SEAT MECHANISM FOR VEHICLES
Charles Derrickson, Jr., and Robert A. Rodgers, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,838
Int. Cl. B60n 1/10
U.S. Cl. 296—66 16 Claims



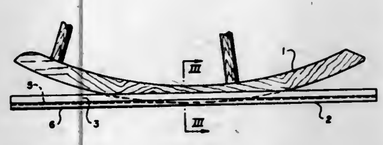
A folding seat mechanism for vehicles such as station wagons and panel trucks wherein a passenger seat is folded down so that the backs of both the seat back and seat cushion provide additional cargo carrying space. The mechanism includes torsion bars connected to bias the seat back into an upright position and a linkage mechanism joining the seat back and cushion and effective to transmit the folding motion of one into the folding motion of the other. The mechanism also includes latching mechanisms effective to hold the seat back and cushion in either an upright position or in a completely fold-down position, and suitable built-in load carrying supports.

3,669,489
COMBINED BAG, SEAT AND STOOL STRUCTURE
Thomas Rock, 39 Woodland Avenue, East Orange, N.J.
Filed July 30, 1970, Ser. No. 59,414
Int. Cl. A47c 7/62
U.S. Cl. 297—217 4 Claims



A foldable multi-purpose structure adapted in the folded state to serve as a carry-bag and a two-legged stool, and in the unfolded state as a backed seat. The structure includes a frame having U-shaped major and minor sections, the ends of the legs of the minor section being pivotally connected to the legs of the major section at a point adjacent the feet thereof, the yoke portions of the sections being bent outwardly in opposing directions to define a stool surface. A flexible covering is marginally joined to the legs of the frame to define the seat and back panels, and side-pieces are joined to the legs to provide gussets. A broad strap overlying the stool surface is detachably connected between the back and seat panels to provide a seat for the stool as well as a bag closure.

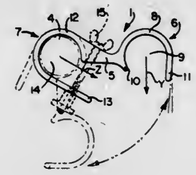
3,669,490
FLOOR PRESERVING SHOE FOR PLATFORM ROCKERS AND THE LIKE
Doris Y. Bertolet, R.D. #1, Oley, Pa.
Filed Jan. 8, 1971, Ser. No. 105,029
Int. Cl. A47c 3/02
U.S. Cl. 297—272 5 Claims

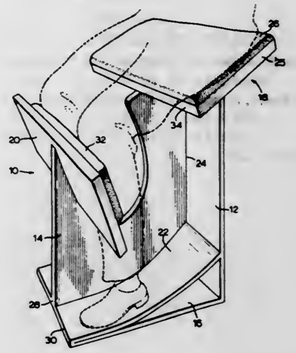


This invention relates to a floor preserving shoe of resilient material and of substantially channel-shape for closely fitting about the foot portion of a piece of furniture, such as a platform rocker. The bottom surface of the shoe is preferably concave across the width so that the weight of the furniture will flatten the curvature and in so doing the sidewalls of the shoe will more firmly engage said foot portion.

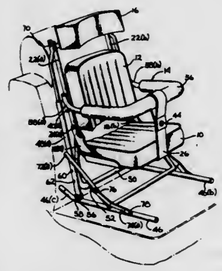
3,669,491
GANGING DEVICE
Ernest A. Weslock, Sturgis, Mich., assignor to The Sturgis Company, Sturgis, Mich.
Filed June 8, 1970, Ser. No. 44,361
Int. Cl. A47c 1/124
U.S. Cl. 297—248 6 Claims

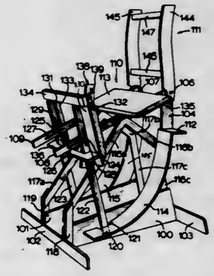
A chair ganging device includes an elongated member having an attaching element pivotally connected to a tubular member of one chair. A resilient clamp element adjacent the attaching element includes a snap cavity adapted to removably engage a similar juxtaposed tubular member of an adjacent chair.





3,669,492
RECLINING CAR SEAT
Arnold E. Peterson, Glendale, Calif., assignor to Peterson Baby Products, Hollywood, Calif.
Filed May 27, 1971, Ser. No. 147,540
Int. Cl. A47d 1/10
U.S. Cl. 297—253 8 Claims



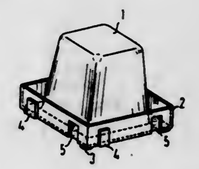


An infant car seat with its own headrest so constructed that it is pivoted from the upper end and is capable of being moved to a reclining position from the standard sitting position without interfering with the top of the automobile seat on which it is mounted or the headrest associated with such an automobile seat. The invented infant seat is also constructed to provide a rugged and safe infant car seat which because of the unique pivoting structure can be compactly folded for storage, handling or shipping.

3,669,493
CHAIR
J. Harding Vowles, 106 Doulea Drive, Toronto, 17 Ontario, Canada
Filed Nov. 3, 1970, Ser. No. 86,408
Int. Cl. A47c 7/50, 7/00
U.S. Cl. 297—429 8 Claims

A chair adapted to support a person so that his weight is distributed between his posterior and his knees. The chair includes a knee support and a seat support sloping generally downward toward the knee support. The sloping seat and the knee support co-operate to shift a portion of the person's weight onto the knee support so that the weight borne by the person's posterior is reduced, thus permitting use of the chair over an extended period of time without the person developing a pain in his posterior. An arcuate, lateral foot rest permits the person to place his feet in a number of comfortable positions.

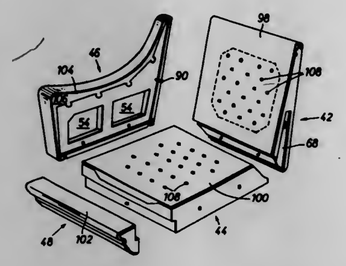
3,669,494
MODULAR FURNITURE PIECES
Hartmut H. Lohmeyer, Schleissheimer Strasse 189, 8 Munich, 13, Germany
Filed Apr. 9, 1970, Ser. No. 26,975
Claims priority, application Germany, Apr. 11, 1969, P 19 18 540.1
Int. Cl. A47c 7/00
U.S. Cl. 297—440 23 Claims



A unit for constructing modularized body supporting furniture pieces comprising a box having an outwardly upturned trough around the bottom portion and an upholstered cap covering the upper portion thereof. The upholstered cap can be of such configuration as to provide a seating surface on the top, or it can be such that it provides a body supporting surface, such as a backrest, on the side thereof. The trough includes means for aligning adjacent units in the course of constructing a furniture piece with a plurality of units. U-

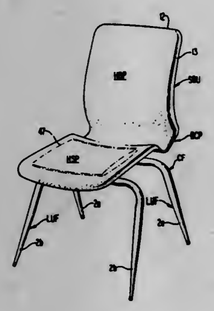
shaped clips are used to attach adjacent units together. By combining seat units and support units, various pieces of furniture can be constructed.

3,669,495
UPHOLSTERED SEATING FURNITURE
Edgar Von Rudgisch, Schinkelstr. 10, 5 Cologne 41, Germany
Filed June 15, 1970, Ser. No. 46,064
Claims priority, application Germany, June 16, 1969, P 19 30 583.0; Dec. 5, 1969, P 19 61 153.1
Int. Cl. A47c 1/12, 5/00, 7/02
U.S. Cl. 297—445 10 Claims



This invention relates to upholstered seating furniture which comprises a unit of upholstered seating furniture which includes a plurality of framing elements made from rigid foam and a plurality of upholstering elements made from soft foam wherein the improvement comprises at least one opening defined in at least some of the framing elements, the surface of rigid foam around said opening being in a compressed condition, a layer of semi-rigid foam at least partly covering at least one framing element, said semi-rigid foam serving as both a base for the seat and back and as a resilient base for soft foam in other parts of said unit.

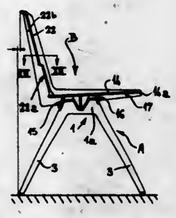
3,669,496
CHAIR AND SEAT AND BACK UNIT THEREFOR
William A. Chisholm, Temple, Tex., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed Dec. 3, 1970, Ser. No. 94,725
Int. Cl. A47c 4/02, 7/00
U.S. Cl. 297—445 33 Claims



A chair comprises a frame, which may be somewhat flexible, and a unitary blow-molded plastic seat and back unit including a hollow, relatively non-bendable seat portion, a hollow, relatively non-bendable back portion, and a relatively bendable portion intervening between and connecting the seat and back portions. The seat and back unit is blow-molded in substantially, i.e. generally, flat, over-all condition, in which it may be stored and shipped, and is conditioned for mounting on the chair frame by bending about the intervening connecting portion. The latter is formed to provide for controlled bending with avoidance of sharp localized bends, and to provide for such lateral flexing of the seat and back portions as to conform to a sitter's position, such as a slouched position, and to prevent stress-induced edge cracks. The seat and back unit is attached to the chair frame by bolts engaging internally threaded fastening elements molded in situ in the plastic unit, the bolts extending through and beyond the fastening elements and biting into the plastic to lock the bolts against unintentional unscrewing.



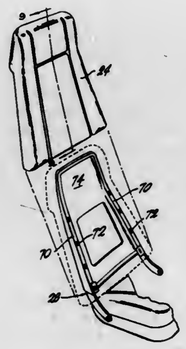
3,669,497
CHAIRS
Henry Massonnet, Nurieux, Ain, France
Filed Feb. 10, 1970, Ser. No. 10,176
Claims priority, application France, Feb. 17, 1969, 6903959
Int. Cl. A47c 1/12
U.S. Cl. 297—445 2 Claims



A sectionalized chair comprising a stand including two pairs of legs joined by a cross bar and a unit comprising an integral back and seat, the cross bar having inclined and divergent rear and front faces and the lower surface of the seat being provided with formations for centering the seat relative to and attaching it to the inclined faces and the lateral or side edges of the seat fitting between the upper ends of the two pairs of legs.

3,669,498
SEAT STRUCTURE
John S. Meyers, Ann Arbor, and Nicholas Wolofski, Whitmore Lake, both of Mich., assignors to Hoover Ball and Bearing Company, Saline, Mich.
Filed Aug. 3, 1970, Ser. No. 60,317
Int. Cl. A47c 7/20, 7/14; B60n 1/06
U.S. Cl. 297—452 14 Claims





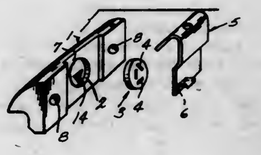
A seat structure consisting of a seat cushion unit and a seat back unit wherein each of said units comprises a foam body and a spring assembly embedded in the body. The seating units are mounted on a frame and each spring assembly includes a plurality of spaced linear springs which project from the foam body and are attached to the frame so as to mount the seating unit on the frame. In the seating cushion unit, the linear springs, border wire and bolster wires cooperate to provide desired seating resilience and the spring end portions are snapped over upstruck tabs formed on the frame. In the seating back unit, the spring end portions extend through mounting slots in the frame. In both units, the springs are connected by bolster wires and the foam bodies are formed with grooves aligned with the bolster wires to enable mounting of the seat structure covering on the foam bodies by attachment to the bolster wires.

3,669,499
CHAIR
Frans Semplonius, Kentwood, and Stephen B. Kolk, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Dec. 30, 1970, Ser. No. 102,592
Int. Cl. A47c 7/00, 7/02
U.S. Cl. 297—455 18 Claims

The specification discloses a chair whose structural strength is derived from a molded, high-impact polystyrene structural shell. The face of this shell is covered with suitable cushioning and upholstery and arms may be provided if desired. This structural shell is then joined to a decorative, molded polypropylene trim shell which covers the rear of the structural shell and which includes a recessed portion to accommodate the seat supporting pan of a chair base which is secured to the structural shell, through the trim shell.

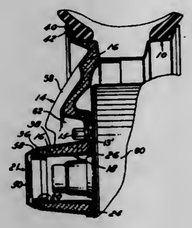


3,669,500
BALANCE WEIGHT FOR VEHICLE WHEELS
Kurt Hans Dietrich Ende, Onstmettingen, Wurttemberg, Germany, assignor to Dionys Hofmann, Maschinenfabrik GmbH, Onstmettingen, (Wurttemberg), Germany
Filed Dec. 23, 1969, Ser. No. 887,794
Claims priority, application Germany, Dec. 23, 1968, P 18 16 669.3
Int. Cl. B60b 13/00
U.S. Cl. 301—5 B 3 Claims



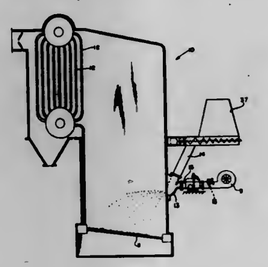
A balance weight with a separate and adjustable holding clip for balancing vehicle wheels. The balance weight is comprised of a balance weight piece and an adjustable holding clip which is interconnected to the balance weight piece.

3,669,501
VEHICLE WHEEL CONSTRUCTION
Robert J. Durloth, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.
Continuation of application Ser. No. 735,157, June 6, 1968, now abandoned. This application Mar. 3, 1970, Ser. No. 16,254
Int. Cl. B60b 3/00, 7/00
U.S. Cl. 301—37 R 18 Claims



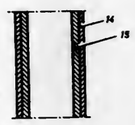
A vehicle disc wheel construction wherein at least a portion of the outboard face of the disc and/or rim of a conventional steel disc wheel is covered by an ornamental plastic wheel cover. The cover has its inner and outer margins in contact with the wheel but intermediate its margins the cover is spaced outwardly from the outboard face of the wheel. The void between the cover and wheel face is filled by a low density adhesive material such as polyurethane foam which adherently secures the cover permanently to the wheel.

3,669,502
PNEUMATIC SPREADER STOKER
Marvin J. Leman, Shelton, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Jan. 5, 1971, Ser. No. 104,002
Int. Cl. F23k 3/02
U.S. Cl. 302—19 9 Claims



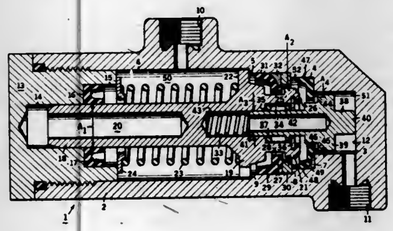
An improved pneumatic spreader stoker is disclosed for delivering a controlled amount of pulverent fuel at a uniform rate over the grate of a combustion furnace. Fuel feeding means uniformly feeds the fuel into the path of gas flow from a high velocity air jet for discharging the fuel into the combustion chamber of the furnace. A pair of opposed, powered rotary dampers are disposed in the path of gas flow ahead of the fuel infeed for evenly and alternately increasing and decreasing the quantity and pressure of gas delivering the fuel to the combustion chamber. A bypass conduit having air flow control means therein bypasses the rotary dampers and allows a minimum of gas flow to the combustion chamber at all times. The fuel feeding means comprises a pair of rotary screw conveyors preferably operated 90° to 180° out of phase with one another and disposed in side-by-side relation for delivering fuel from an infeed end to a discharge end. The flights of each of the screw conveyors are of increased pitch at the discharge end. Discharge openings in the screw housings below the flights of increased pitch of each screw conveyor diverge outwardly toward the discharge end and allow the fuel to flow uniformly by gravity into the path of gas flow for discharge into the combustion chamber of the furnace.

3,669,503
APPARATUS FOR HANDLING AND PROCESSING CURRENTS OF GAS-BORNE DRY SOFT POWDERS
Walter Zimmermann, Fallerslefenstrasse 11a, 89 Augsburg, Germany
Filed July 22, 1969, Ser. No. 843,450
Int. Cl. B65g 53/58, 53/04
U.S. Cl. 302—64 6 Claims



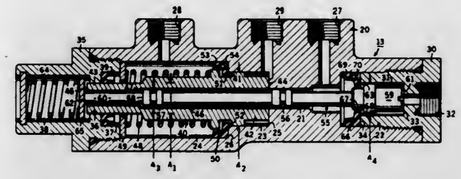
Solid coatings are disclosed that are particularly useful for lining or application to the inner walls of processing equipment, for preventing the formation of deposits from currents of gas and soft powders. The coatings are especially suited for use in mills, particularly baffle rimmed grinding track mills, classifiers, sifting rotors, cyclones, and piping, more particularly in bends. Apparatus is disclosed provided with linings of soft elastic material having a hardness within the range of 10 to 50 Shore, such as rubber foam, and in some instances the soft elastic material is coated with a wear-resistant cover layer, such as natural rubber.

3,669,504
CONTROL VALVE
Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed May 20, 1970, Ser. No. 39,069
Int. Cl. B60t 8/26, 11/34
U.S. Cl. 303—6 C 18 Claims



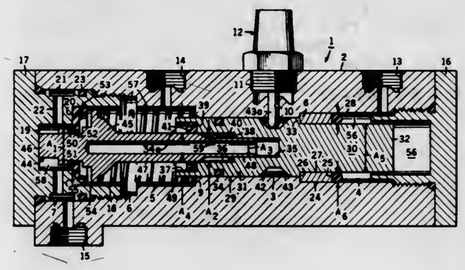
A control valve for use in a hydraulic brake system having a pressure source and a pressure responsive brake is provided with an aligned and interconnected pair of proportioning members in series flow relation which respectively proportion the fluid pressure supplied from said source to said brake. One of the proportioning members is actuated in response to supplied fluid pressure from the source in excess of a predetermined value to effect the application of proportionally reduced pressure to the brake, and the other of the proportioning members is aligned with and slidably received in the one proportioning member being actuated in response to the proportionally reduced pressure of another predetermined value predeterminately in excess of the first named predetermined value to further proportionally reduce the pressure applied to said brake.

3,669,505
CONTROL VALVE AND SYSTEM
Edward J. Falk, St. Louis, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,584
Int. Cl. B60t 17/22, 8/26
U.S. Cl. 303—6 C 15 Claims



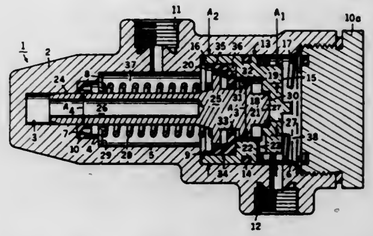
A control valve is provided in a horizontally split brake system having separate fluid pressure supplies wherein at least one brake of the front and rear brake sets is connected in each system, and said control valve includes separate spring-loaded proportioning pistons generally operable in said systems in response to a predetermined value of the fluid pressures supplied thereto from said fluid pressure supplies to thereafter proportion the fluid pressures applied to the rear brakes. Upon the failure of one system, the proportioning piston of the other or operating system is operable not only against its spring load but also against the spring load of the proportioning piston in the failed one system to increase the predetermined value of the supplied fluid pressure at which the proportioning actuation thereof is effected.

3,669,506
CONTROL VALVE
Joseph E. Papin and Stanley L. Stokes, Florissant, Mo., assignors to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,611
Int. Cl. B60t 17/22, 8/26
U.S. Cl. 303—6 C 13 Claims



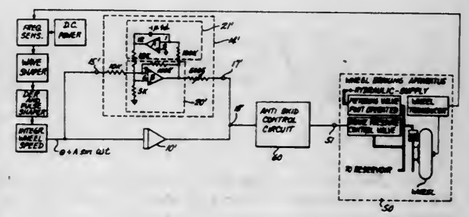
A control valve for use in a dual hydraulic brake system having a switch actuating piston movable to opposed translatory positions to energize a driver warning circuit upon the failure of one of the dual systems. A proportioning valve is also provided and is operable generally in response to supplied fluid pressure of one of the systems to effect a proportionally reduced application thereof through the control valve. The proportioning valve has one end thereof slidable in an end of the switch actuating piston, and upon the translatory movement of said switch actuating piston to one of its translated positions, an additional area on said proportioning valve is exposed to the supplied fluid pressure which thereafter effects a different proportionally reduced applied fluid pressure.

3,669,507
CONTROL VALVE
Stanley L. Stokes, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Apr. 28, 1970, Ser. No. 32,612
Int. Cl. B60t 8/26, 11/34
U.S. Cl. 303—6 C 22 Claims



A control valve for use in a hydraulic brake system is provided with a spring loaded piston which carries a proportioning member. The proportioning member is actuated in response to supplied fluid pressure in excess of a predetermined value to effect the application of a proportionally reduced fluid pressure through the control valve, and the piston is movable against its spring in response to another predetermined value in excess of the first named predetermined value acting thereon to increase the applied fluid pressure. The actuation of the proportioning member is thereafter resumed in response to a third predetermined value predeterminately in excess of the other predetermined value of the supplied fluid pressure acting thereon to further effect proportionally reduced increases in the applied fluid pressure.

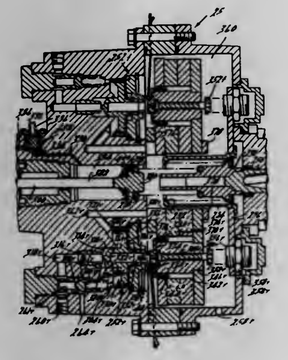
3,669,508
WHEELSPEED INFORMATION SIGNAL PROCESSING SYSTEM
Narinder S. Attri, 11901 SE. 16th St., Renton, Wash. 98055
Filed June 8, 1970, Ser. No. 44,296
Int. Cl. B60t 8/12
U.S. Cl. 303—21 R 12 Claims



A braking system which includes means for generating signals having predefined relationships with respect to wheelspeed information signals having undesired frequency

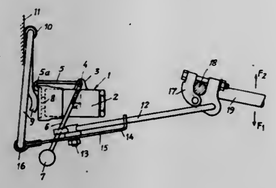
components. The error signal in an anti-skid system is effectively differentiated in a circuit which provides a positive sinusoidal signal at gear (or landing gear truck) frequency which is utilized in the wheelspeed information signal processing system to cancel an undesired gear walk generated negative sinusoidal signal component also at gear frequency which is superimposed upon the true wheelspeed information signals.

3,669,509
CONTROLLER FOR A SKID CONTROL SYSTEM
Malcolm D. Jones, Belleville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Aug. 3, 1970, Ser. No. 60,300
Int. Cl. B60t *8/08*; F17d *1/14*
U.S. Cl. 303—21 F **19 Claims**



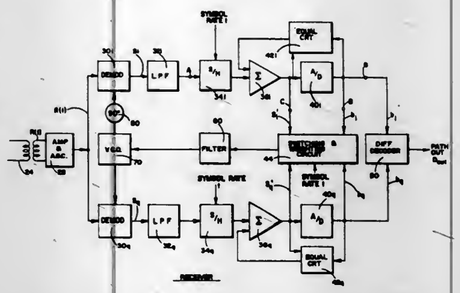
A hydraulic brake controller for a skid control system in which the controller uses hydraulic amplification and response generally proportionally to the magnitude of an error signal.

3,669,510
BRAKING PRESSURE DISTRIBUTING DEVICES
Michel Guettler, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed Dec. 17, 1969, Ser. No. 885,690
Claims priority, application France, Dec. 23, 1968, 180,046
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R **1 Claim**



This distributor comprising a body provided with means for regulating the braking fluid pressure and disposed between the master-cylinder and the rear brakes of the vehicle, has a pivot pin carried on said body and rotatably rigid with a pair of arms of which one is in temporary contact with the front face of the control piston of the device, the other arm carrying an inertia weight.

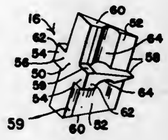
3,669,511
SYSTEM FOR PHASE LOCKING ON A VIRTUAL CARRIER RECEIVED BY AN ASYMMETRICAL RECEIVER
David M. Motley, Santa Ana, and Naif D. Salman, Orange, Calif., assignors to North American Rockwell Corporation
Filed Sept. 17, 1970, Ser. No. 72,949
Int. Cl. H04b *1/30*
U.S. Cl. 325—329 **4 Claims**



The present invention is directed to a phase-lock system which can derive a demodulating carrier reference signal for use in a suppressed carrier quadrature, amplitude modulating digital data transmission system which does not require the transmission of a low level carrier or pilot tones.

The system operates by multiplying the equalized received cross coupled signal in each channel by a specified function of the decoded *n*-level data signal of both channels and subtracting the products and dividing the results by the error signal coefficient to arrive at an error signal which is proportional to the phase error between the demodulating carrier reference signal and the suppressed transmitting carrier. The derived error signal can be made independent of data signal level values and the received signal levels even in the presence of severe intersymbol interference and cross coupled terms. The derived phase error signal is then fed back to a variable oscillator providing the demodulating carrier reference signal to change the phase of the reference signal so as to reduce the error signal towards zero.

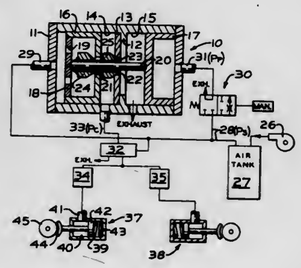
3,669,512
IMPACT TOOL AND COMPOUND HANDLE-RETAINING WEDGE THEREFOR
Worthel C. Parks, Bushnell, Ill., assignor to Vaughan & Bushnell Mfg. Co., Hebron, Ill.
Filed Nov. 18, 1970, Ser. No. 90,578
Int. Cl. B25g *3/28*
U.S. Cl. 306—33 **1 Claim**



A compound wedge adapted to be pressed into the conformably slotted distal end of a fresh wooden impact tool handle in order to spread such end and compress the wood thereof outwardly against the walls of the eye in the head of the impact tool and thus permanently tighten the handle and head together. The wedge exerts a spreading action in both lateral directions and it is comprised of a resilient compressible plastic material having a modulus

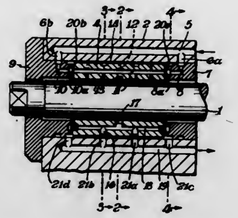
of elasticity which substantially matches the shrinkage and expansion factor of the wood which it displaces so that, as the moisture content of the wood evaporates and shrinkage takes place, the restorative property of the wedge compensates for such shrinkage. Conversely, as the shrunken wood absorbs moisture and regains size, the wedge is forcibly contracted. Thus, in any condition of the wood, the handle remains tight. An impact tool embodying such a wedge.

3,669,513
BRAKING CIRCUIT WITH FLUID PRESSURE CONTROL VALVE
Donald L. Smith, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Original application Oct. 22, 1968, Ser. No. 769,482, now Patent No. 3,539,228. Divided and this application May 11, 1970, Ser. No. 48,718
Int. Cl. B60t *15/04*
U.S. Cl. 303—50 **16 Claims**



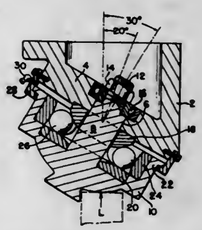
A pressure control valve of the inverter type is employed in a hydropneumatic braking circuit and comprises spaced pistons reciprocally mounted therein and connected together by a rod for simultaneous movement. Selective pneumatic actuation of the pistons sequentially opens and closes spaced poppet valve members, slidably mounted on the rod, for engaging a normally disengaged hydraulic brake or the like.

3,669,514
GASEOUS BEARING WITH STABILIZER
Ryuji Wada, Hiroshi Suzuki, and Masuo Nakato, Asahi-machi, Japan, assignors to Toyoda Koki Kabushiki Kaisha (trading as Toyoda Machine Works, Ltd.)
Filed May 28, 1970, Ser. No. 41,440
Claims priority, application Japan, May 30, 1969, 44/50,662
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **4 Claims**



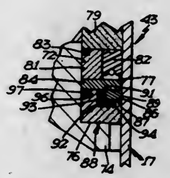
Present invention relates to gas bearing with stabilizer intended to elevate occurence range of whirl phenomenon thereby reliably preventing deterioration of rotating accuracy due to phenomenon and seizure of bearings to extend service life of gas bearing for high speed rotation at several tens of thousands to several hundred thousands revolutions per minute. Gas bearing has rotating shaft surrounding housing with bearing bush inserted between shaft and housing so that clearance of gas film are provided on inside and outside of bearing bush. Bearing bush has inclined nozzles which incline in direction opposite to rotation of shaft. Pressurized gas is supplied through nozzles to rotate bearing bush at appropriate speed and in same direction as rotating shaft. Gas lubricating film is formed by pressurized gas at internal and external clearances of bearing bush whereby rotating shaft is supported by bearing bush on film.

3,669,515
BALL BEARING STRUCTURE
Takeo Nojima, Chiba-ken, Japan, assignor to Jupitor Corporation of Washington, Seattle, Wash.
Filed June 24, 1970, Ser. No. 49,453
Int. Cl. F16c *35/06, 33/60*; B60b *17/00*
U.S. Cl. 308—16 **5 Claims**



The present invention relates to a roller bearing structure wherein the axis of the force bearing wheel is mounted at an angle of 20 to 30 degrees relative to the major force component exerted upon the structure. The structure is such that the main force supporting roller bearings are captured by three bearing races providing three point contact with each bearing, thus eliminating the need for a cage.

3,669,516
PUMP
James H. Larson, Anoka, Minn., assignor to Graco Inc., Minneapolis, Minn.
Filed Mar. 4, 1970, Ser. No. 16,376
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **11 Claims**

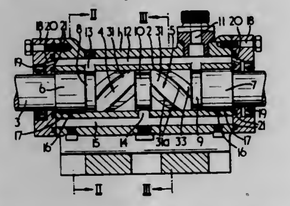


A pump for fluid slurry materials is provided with bearing and sealing portions and with one-way valve constructions which permit the pumping of slurry materials and prevent such materials from penetrating bearings, seals and valves in such a way as to cause binding or other problems in the operation of such parts. The bearing and sealing construction includes a plurality of annular members which essentially completely fill a specified critical area or space within an annular bearing and sealing section located between relatively movable inner and outer cylindrical surfaces. Each such section includes a radially resilient scraper member, which has a scraping edge resiliently engaging one of the cylindrical surfaces and an opposite edge spaced from the other

cylindrical surface. The scraper member is supported and guided immediately adjacent its scraping edge by two relatively rigid annular members or bearing wall portions, one on each side of the scraping edge. A resiliently compressed annular filler member of expansible material, such as rubber, is located immediately adjacent the opposite edge of the scraper member and thus prevents slurry material from penetrating into the space between said opposite edge and the remaining cylindrical surface. In one form, the bearing and sealing section also includes one or more ceramic or other hard nonmetallic annular bearing or gland members.

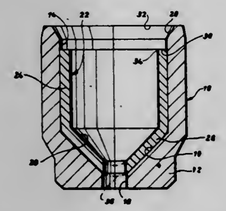
The one-way valves in the pump include metallic valve ball members supported in sliding engagement with nonmetallic plastic or ceramic guiding portions and valve seats.

3,669,517
HYDROSTATIC/HYDRODYNAMIC SHAFT BEARING ARRANGEMENTS
Edward Victor Lawson Hughes, Solihull, England, assignor to Corporation of The City of Coventry, Coventry, England
Filed Aug. 24, 1970, Ser. No. 66,412
Claims priority, application Great Britain, Aug. 26, 1969, 42,418/69
Int. Cl. F16c *33/66*
U.S. Cl. 308—122 **5 Claims**



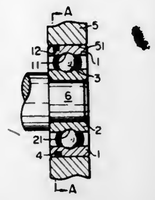
Hydrostatic/hydrodynamic shaft bearing arrangements are disclosed in which journalling of a shaft in a bearing body is provided with at least one journal portion formed with helicoidal relief for effecting hydrodynamic pumping of lubricant from low pressure lubricant supply passageway means in the bearing body to plain bearing journalling or location of the shaft relative to the bearing body via separate high pressure lubricant flow passageway means in the bearing body for hydrostatic lubrication at said plain bearing journaling or location.

3,669,518
FOOTSTEP BEARING
Gisbert Kohler, Stuttgart, Germany, assignor to SKF Kugellagerfabriken G.m.b.H., Schweinfurt, Germany
Filed June 17, 1970, Ser. No. 46,906
Claims priority, application Germany, June 19, 1969, G 69 24 371.6
Int. Cl. F16c *17/10, 33/04*
U.S. Cl. 308—156 **7 Claims**



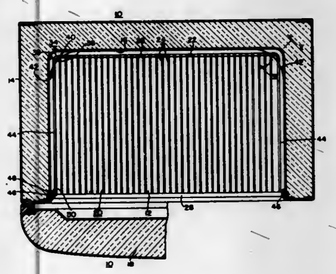
A footstep bearing for spinning and twisting spindles comprising a carrier having a cylindrical interior and a conically formed lower end. A bearing box separably formed having a complementary shape is press fit within the carrier. The bearing box is thin walled made of sheet bearing material while the carrier walls are of thicker dimension, of non-bearing material and provide support for the bearing load exerted thereon.

3,669,519
ANTICREEP BEARING ASSEMBLY FOR AN ANTIFRICTION BEARING
Tadanobu Takahashi and Kunihiko Usami, Fujisawa, Japan, assignors to Nippon Seiko Kabushiki, Tokyo, Japan
Filed Dec. 2, 1970, Ser. No. 94,450
Claims priority, application Japan, Dec. 9, 1969, 44/116,336
Int. Cl. F16c *33/30*
U.S. Cl. 308—236 **3 Claims**



Anticreep bearing assembly provided with an anticreep ring for frictional engagement with each of a pair of radically spaced annular surfaces. The anticreep ring having a resilient property is provided with at least two outwardly or inwardly expanded arched portions and an intermediate arched portion between the outwardly or inwardly expanded arched portions. The anticreep ring is fixed at its seated position by engagement of at least a portion thereof with an annular groove which is formed at a deviated position upon a fitting periphery surface of outer ring or inner ring.

3,669,520
SHELF AND LINER ASSEMBLY
Robert A. Jansen, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 31, 1970, Ser. No. 68,225
Int. Cl. A47b *88/00*
U.S. Cl. 312—351 **7 Claims**

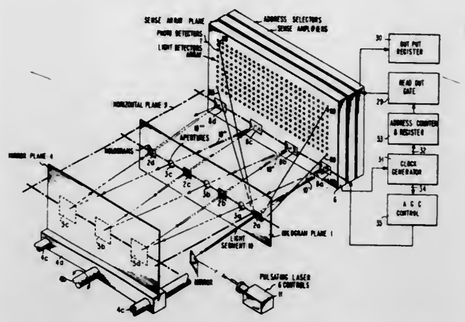


The invention provides an easily mountable and dismountable shelf which is supported on the inner liner of a refrigerator at its rear side by fillet grooves integrally molded in the inner liner and at its front side by resilient legs of an angled member, forming a portion of the frame of the shelf, which are disposed in apertures integrally molded in the inner liner.

ERRATUM

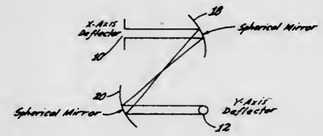
For Class 325—329 see:
Patent No. 3,669,511

3,669,521
TIME SENSED STATIC BEAM HOLOGRAPHIC STORAGE SYSTEM
John B. Tait, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,663
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **7 Claims**



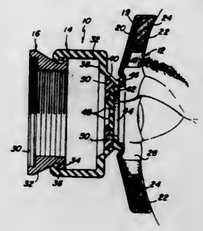
A finite segment of coherent light issued by a pulsating light source is utilized to read out images of information patterns from a plurality of holograms. An arrangement of reflecting mirrors provides a reflecting path by virtue of which the light segment passes through each hologram at differentially timed intervals in the time domain to cause different images of said patterns to be read out sequentially from said holograms and onto a plane array (or arrays) of photodetectors disposed in the path of said images. The sensing of information at the sense array provides a light pulse position sensing signal to control automatic gain control in the sense amplifiers. The coincidence of a readout gate signal with differentially timed light pulse position signals causes electrical information pattern signals, corresponding to said information patterns, to be read out at said differentially timed intervals.

3,669,522
REFLECTIVE RELAY OPTICAL SYSTEM FOR TWO-AXIS DEFLECTION
Robert J. Anderson, Rockville, Md., assignor to The Singer Company
Filed Mar. 20, 1970, Ser. No. 21,307
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **5 Claims**



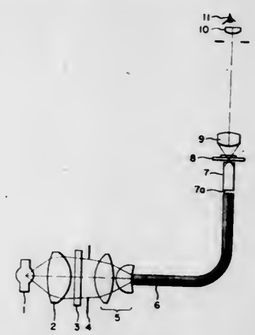
A reflective optical system is provided which serves basically to relay a laser, or other, beam from a first deflector to a second deflector in order to achieve two dimensional scanning of the beam. A spherical mirror is used in the relay system to achieve optical coupling between the two axes of beam deflection. The relay ouptical system of the invention, therefore, is reflective, and is less subject to optical losses, less expensive, and easier to align, than the prior art refractive relay systems. Electronic means may also be provided in the relay system of the invention to compensate for any interaction produced by the system between otherwise orthogonal scan axes.

3,669,523
PROTECTIVE EYESHIELD
Oliver J. Edwards, Jr., Rochester, N.Y., assignor to Raytheon Company, Lexington, Mass.
Filed June 22, 1970, Ser. No. 48,396
Int. Cl. G02b *23/16*
U.S. Cl. 350—57 **7 Claims**



An eyeshield which applies reduced peak pressures to the head of a user, comprising a mounting base and an eye seal section interconnected by a rubber spring section which rolls upon itself when subjected to recoil and other pressures, and including an axial aperture with covering flaps adapted to automatically open when the device is subjected to relatively light pressures.

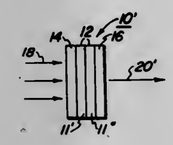
3,669,524
BRIGHT ILLUMINATOR FOR MICROSCOPES
Megumu Shio, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Aug. 5, 1970, Ser. No. 61,280
Claims priority, application Japan, Aug. 8, 1969, 44/74,827
Int. Cl. G02b *21/12*
U.S. Cl. 350—87 **1 Claim**



This invention provides a high brightness illuminating device for microscopes. The device includes a light source,

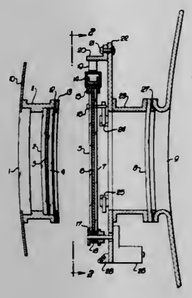
a condenser system consisting of a condenser lens and a collector lens, an iris diaphragm, a heat ray absorbing filter, a light guide and a cylindrical mirror. The iris diaphragm and the filter are placed between the collector lens and the cendenser lens. One end of the light guide is placed very close to the condenser lens and at the other end of the light guide the cylindrical mirror is placed. The cylindrical mirror has a finished and chromium plated mirror surface and entrance surface functioning as diffuser.

3,669,525
LIQUID CRYSTAL COLOR FILTER
James E. Adams, Ontario, and Werner E. L. Haas, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,367
Int. Cl. G02f *1/24*
U.S. Cl. 350—158 **15 Claims**



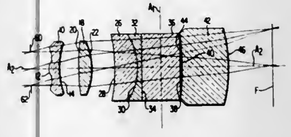
An optical filter system capable of transmitting a single wavelength band or a plurality of wavelength bands of incident radiation while simultaneously rejecting substantially all other wavelengths of incident radiation is described. The optical filter system utilizes liquid crystal films having optical negative properties.

3,669,526
AUTOMATIC ELECTRIC SELF-SYNCHRONIZING POLARIZING WINDOWS
Alvin Weiss, 342 N. Cordova, Burbank, Calif. 91505
Continuation of application Ser. No. 660,115, Aug. 11, 1967, now Patent No. 3,521,300, dated July 21, 1970. Divided and this application Sept. 2, 1969, Ser. No. 863,742
Int. Cl. G02b *27/28*
U.S. Cl. 350—159 **10 Claims**



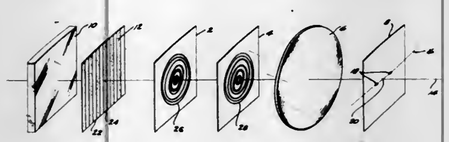
A first polarizing window element is positioned over a window opening in the wall of an aircraft cabin and fixedly attached to the cabin wall. A second polarizing window element is positioned over this opening in overlying relationship to the first element, this second element being supported for rotation relative to the first. The rotatable element is circular and is rotatably driven by means of a friction roller drive which engages the rim thereof. The amount of light entering the cabin through the window is controlled by rotating the rotatable element relative to the fixed element, either by means of a manual control or in response to a light sensitive detector.

3,669,527
WIDE ANGLE PHOTOGRAPHIC OBJECTIVE HAVING NONSPHERICAL SURFACES
David L. Fuller, Atlanta, Ga., assignor to Scripto, Inc., Atlanta, Ga.
Filed Dec. 3, 1970, Ser. No. 94,830
Int. Cl. G02b *13/18*
U.S. Cl. 350—189 **11 Claims**



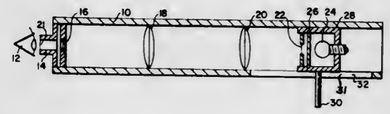
A wide angle photographic objective is disclosed using lens elements whose surfaces are axially symmetrical in the vertical plane to define an axi-symmetric optical system and whose surfaces are concentric in the horizontal plane about a common axis of revolution to define a concentric optical system. Excellent correction of spherical aberration is attained for the axial system by the use of an aspheric front surface for the objective and correction for spherical aberration for the concentric system is contributed largely by separate lens means. Substantially cylindrical tangential and sagittal images for the objective with little residual astigmatism is also achieved by the use of a specially constructed lens group which also contributes substantially to correction for lateral color in the axi-symmetric system.

3,669,528
DEVICE FOR PRODUCING IDENTIFIABLE SINE AND COSINE (FOURIER) TRANSFORMS OF INPUT SIGNALS BY MEANS OF NONCOHERENT OPTICS
John M. Richardson, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of abandoned application Ser. No. 770,230, Oct. 24, 1968. This application July 8, 1971, Ser. No. 160,852
Int. Cl. G02b *27/38*
U.S. Cl. 350—205 **13 Claims**



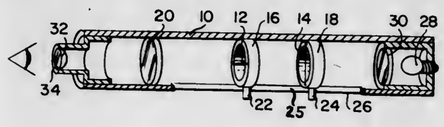
Fourier transforms are produced on an output plane when input images are projected by means of spatially incoherent light through a pair of transparencies each having a Fresnel zone pattern thereon. The system is designed to operate as close to the geometrical optics limit as is practically feasible.

3,669,529
OPTICAL SYSTEM FOR VARYING THE POWER RANGE AND SCALE SPACING IN A LENS MEASURING INSTRUMENT
David Guyton, Brookline, Mass. (5505 Huntington Parkway, Bethesda, Md. 20014)
Filed Jan. 2, 1970, Ser. No. 234
Int. Cl. A61b *3/00, 3/02*
U.S. Cl. 351—17 **4 Claims**



In an instrument for measuring the refractive power of lenses having a target, a scale, and a converging lens, an auxiliary lens system added to the converging lens is disclosed which allows manipulation of power range and scale spacing independently of one another.

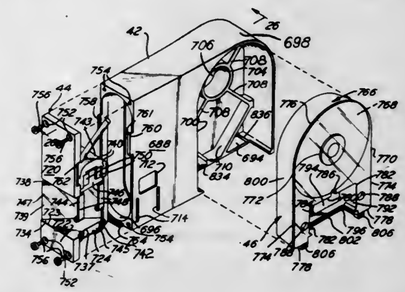
3,669,530
LENS FOR TARGET IMAGE DISPLACEMENT IN A LENS MEASURING INSTRUMENT
David Guyton, Brookline, Mass. (5505 Huntington Parkway, Bethesda, Md. 20014)
Filed Jan. 26, 1970, Ser. No. 5,705
Int. Cl. A61b *3/00, 3/02*
U.S. Cl. 351—17 **5 Claims**



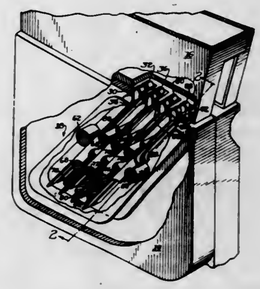
In a lens measuring instrument or optometer of the type employing a target, scale, and converging lens for measuring the power of a lens or the power error of an eye in two principal meridians, means are disclosed for moving an image of one orthogonal target segment through the plane of an image of another such target segment facilitating simultaneous measurement of the two meridians and allowing the use of a plurality of types of targets.

3,669,531
COMBINATION CARTRIDGE CONTAINING REMOVABLE TAPE MAGAZINE AND REMOVABLE FILMSTRIP HOLDER
Donald A. Youngblood, 111 Dolly Lane, Chalfont, Pa. 18914
Original application June 14, 1968, Ser. No. 739,909, which is a continuation of application Ser. No. 535,149, Mar. 17, 1966. Divided and this application Apr. 6, 1970, Ser. No. 25,707
Int. Cl. G03b *31/00*
U.S. Cl. 352—31 **5 Claims**

An audio-visual cartridge containing a removable filmholder having an endless filmstrip mounted thereon and a removable magazine containing an endless audio tape mounted therein. The cartridge has, adjacent the opening of its compartment which receives the filmholder, a window or framing aperture against which the filmstrip moves; adjacent the window are a pair of slots for receiving the film strip drive sprockets. The filmholder also contains an angularly-mounted mirror for directing the projection light beam through the portion of the filmstrip adjacent the window. The cartridge also has, adjacent the opening of its compartment which receives the magazine, openings for providing access to the audio tape for moving same from a protected to an operative position via aligned openings in the magazine.



3,669,532
PROJECTOR CONTROL APPARATUS
Erwin E. Figge, Des Plaines, Ill., Joseph H. Lancor, Jr., Arcadia, Calif., and Edward H. Lodge, Wilmette, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Mar. 23, 1970, Ser. No. 21,607
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 C **9 Claims**

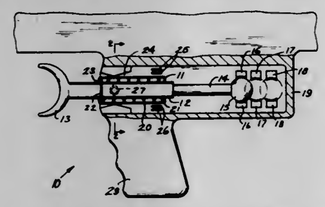


A motion picture film projector control apparatus which automatically selects the operational mode of the projector to accommodate the particular film format to be displayed. Upon the outer surface of the lower wall of a film cartridge is placed a label having an electrically conductive surface. The mounting module of the projector, which receives the cartridge, includes parallel electrical contacts. The contacts are aligned for engagement with the conductive surface of the label upon positioning of the cartridge. In this manner, a circuit is completed which serves to actuate predesignated machine functions corresponding to the film format.

3,669,533
CAMERA DEVICE
Sabino J. De Angelis, 87—03 235th Court, Bellerose, N.Y. 11427
Filed May 6, 1971, Ser. No. 140,777
Int. Cl. G03b *19/18*
U.S. Cl. 352—95 **3 Claims**

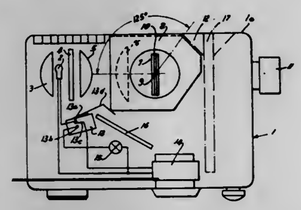
A device for a motion picture camera, having a trigger with a flexible rod which will alternately make contact

with electrical contacts so as to change the camera to shoot for wide angle, single frame or telephoto. The



device also includes spring return means for the trigger rod.

3,669,534
SLIDE PROJECTOR AND VIEWER
Erich Hofmann, Kriftel, Taunus, Ernst Krull, Kronberg, Taunus, Werner Hans Johannsen, Frankfurt am Main, Robert Oberheim, Neu Isenburg, and Josef Scheibel, Ober-Morlen, Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed June 27, 1969, Ser. No. 837,100
Int. Cl. G03b *21/00, 23/00*
U.S. Cl. 353—21 **18 Claims**



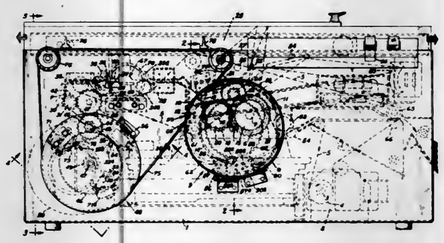
A slide projector and viewer wherein the housing supports a pivotable insert provided with a gate for slides and carrying an optical element which acts as a magnifying lens in one angular position and as a component of a condensing lens in another angular position of the insert. The projection lamp directs light through the condensing lens in the one position of the insert whereby such light passes through the slide in the gate and through a projection lens so that the image of the slide is projected onto a screen. In the other position of the insert, the operator can look through the magnifying lens of the insert and a slide in the gate to see an enlarged image because the gate then extends across the path of a second light source, either a separate lamp or a reflector which directs some light issuing from the projection lamp against the underside of the slide.

ERRATUM

For Class 355—3 see:
Patent No. 3,669,412

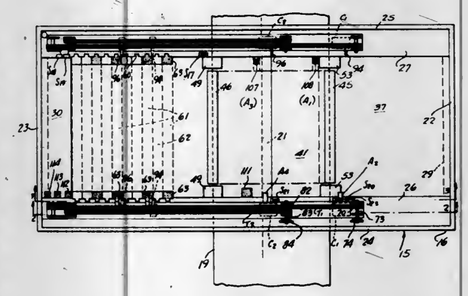
3,669,535
PHOTOCOPY MACHINE
Alfred M. Hyosaka, Morton Grove, and Charles W. Giebelhausen, Buffalo Grove, Ill., and Arthur L. Kaufman, Westport, Conn., assignors to Speed-O-Print Business Machines Corporation, Chicago, Ill.
Filed Jan. 21, 1970, Ser. No. 4,534
Int. Cl. G03g *15/00, 15/04*
U.S. Cl. 355—8 **8 Claims**

An electrostatic photocopy machine moves a graphic original on a carriage from an intermediate normal or "home" position first in one direction, to a position at or beyond the position which it is to occupy at the beginning of the copy stroke, then in a second or opposite direction for the copy stroke, and finally in the first direction again back to the home position. A control circuit controlled by cam actuated switches controls the movement of the original in synchronization with movement of the copy material. A cam actuated switch is provided



which is operable before the machine can be cycled to move the carriage to the home position when the machine is turned on in the event the carriage has been stopped in a position other than the home position. A time relay is provided which is activated simultaneously with a cam actuated knife switch. When the relay cuts out the direction of movement of the carriage is reversed.

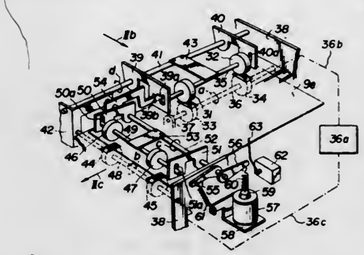
3,669,536
DATA STRIP COPYING ATTACHMENT FOR A PHOTOCOPYING MACHINE
Kenneth N. Scott, P.O. Box 213, Toyah, Tex. 79785
Filed Dec. 18, 1970, Ser. No. 99,548
Int. Cl. G03l *27/62*
U.S. Cl. 355—40 **21 Claims**



A machine for copying data to be incorporated in tax statements, or the like. The data is in the form of information carried on sets of strips slidably-mounted on a supporting feeder plate. The machine has a seat to receive the loaded feeder plate. The seat is aligned with a fixed-positioning plate located over the exposure area of a photo-copying machine. Another seat on the opposite side of the positioning plate contains a removable aligned receiving plate on which the strips are slidably-received after they have been copied. The strips have end lugs engageable by electrically-controlled drive pawls carried on carriages connected to sets of endless sprocket chains mounted on the chassis of the machine. The strips have end markers sensed by photoelectric sensing elements mounted on the carriages connected to one set of endless sprocket chains. A programming electrical circuit operates the sprocket chain motors and drive elements to sequentially move sets of related strips to specific copying

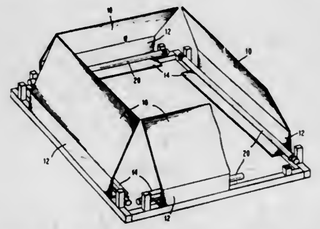
positions on the positioning plate, and thence to the receiving plate. Limit switches control the cycle of operations so that the machine stops when all the information strips have been copied and delivered to the receiving plate.

3,669,537
AUTOMATIC COPYING AND BINDING MACHINE
Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1970, Ser. No. 66,736
Claims priority, application Japan, Aug. 30, 1970, 45/68,803
Int. Cl. G03b *27/62*
U.S. Cl. 355—50 **10 Claims**



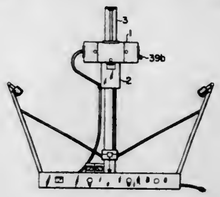
An automatic copying and binding machine capable of automatically producing duplicates of original documents to be copied and, when necessary, binding the duplicates together. The duplicates produced, either bound or not bound, and the originals from which the duplicates are produced may be stamped or sealed or have other simple clerical operations optionally performed thereon and copies and the original are automatically returned to the operator situated in front of the machine. Suitable means are accordingly disclosed for changing the direction of movement of the original and the copies within the machine, comprising cooperating sets of rollers arranged at right angles to each other and which respectively engage and release the processed sheets in response to the actuation of sensing switch means.

3,669,538
ILLUMINATION SYSTEM
Raymond L. Fowler, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 31, 1970, Ser. No. 68,264
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **5 Claims**



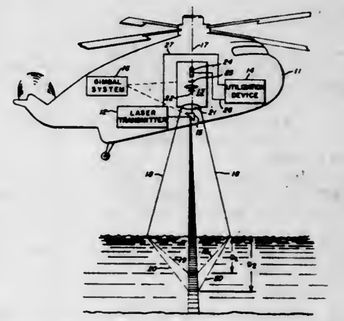
A plane mirror illumination system for illuminating a document plane of a document copying machine in such a manner that the light intensity at any point of the document plane varies inversely to the relationship known as the cosine fourth power law. This compensates for the attenuation of light by the focusing lens according to the cosine fourth power law and provides a uniform illumination level on the image plane.

3,669,539
MICROFILM CAMERA
Susumu Okuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation-in-part of application Ser. No. 33,177, May 8, 1970, which is a continuation of application Ser. No. 769,990, Oct. 23, 1968. This application July 9, 1970, Ser. No. 53,494
Claims priority, application Japan, Oct. 28, 1967, 42/69,251, 42/69,252
Int. Cl. G03b *27/58*
U.S. Cl. 355—64 **9 Claims**



A microfilm copying camera has a fixed horizontal base adapted to receive an object to be photographed and a lens movable vertically along a fixed optical axis. A camera body is located above the lens with means provided for moving the body horizontally transversely of the optical axis. Means are provided for advancing roll film in a film plane above an aperture in line with the optical axis. The aperture is defined on one side by a frame edge fixed with respect to the camera body and on the other side by a movable masking edge which moves in a direction opposite to that of the camera body relative to the optical axis whereby the size of the aperture may be changed without moving the center of the aperture away from the optical axis. A variable film advance is provided to move the film a distance corresponding to the size of the aperture. As an aid to the selection of the proper aperture means are provided for projecting through the lens prior to the operation of photographing a rectangle of light delineating the area which will be imaged on the film.

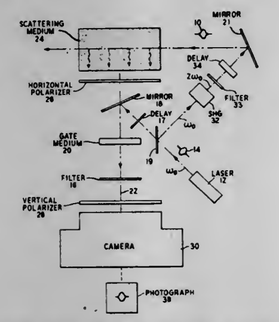
3,669,540
OPTICAL DEPTH FINDER AND ELEMENTS THEREFOR
William J. Rattman, Needham, Frank R. Wasson, Jr., Chelmsford, and Gordon C. MacKenzie, North Billerica, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Aug. 31, 1970, Ser. No. 68,206
Int. Cl. G01c *3/08;* **G02b** *27/28*
U.S. Cl. 356—4 **7 Claims**



An improved optical depth finder, and elements therefor, for depth sounding and detection of submerged targets

from an airborne vehicle. The disclosed system uses a coherent beam of polarized light from a laser directed downwardly toward the surface of a body of water and processes the polarized surface specular reflected energy, energy reflected by submerged targets within the beam, and energy reflected by the bottom of the body of water to derive the desired information. Means are provided selectively to attenuate the reflected energy in accordance with the particular source thereof so as to permit the dynamic range of the processor of the reflected energy to be reduced and the system to be used when the height of the airborne vehicle changes or condition of the water varies.

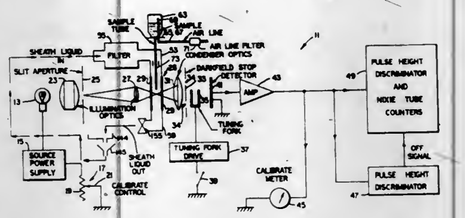
3,669,541
DIRECT DISPLAY OF LIGHT IMAGES WITH PICOSECOND RESOLUTION
Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed June 19, 1970, Ser. No. 47,838
Int. Cl. G01c 3/08; G02f 1/28
U.S. Cl. 356—5 **18 Claims**



A light image such as a picosecond optical pulse generated by a laser or an optical echo signal generated by picture ranging system, is displayed directly with picosecond resolution. A laser pulse, for example, is made incident upon a scattering medium to produce a scattered form of the pulse which is viewed by the naked eye, a camera or other display device through an optical gate which functions as a camera shutter having an extremely short framing time of the order of a few picoseconds or less. The optical gate utilizes a material in which birefringence is optically induced by an optical control pulse of high intensity and picosecond duration. Other applications, including optical read-out of computer memories formed by stacks of photographs or holograms, are described.

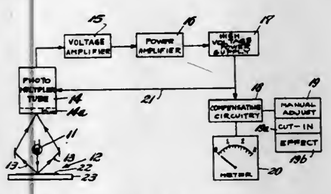
3,669,542
LIQUID BORNE PARTICLE SENSOR
David F. Capellaro, Palo Alto, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed Oct. 9, 1969, Ser. No. 865,098
Int. Cl. G01n 1/00, 15/02, 21/06
U.S. Cl. 356—36 **9 Claims**

An optical particle sensor determines the number of particles suspended in a liquid sample by measuring the scattering of a focused light beam projected through a flowing stream of the liquid sample. The sensor includes a flow cell having a pair of windows. Sheath liquid flows through the flow cell, and the sample liquid is introduced into the center region of the sheath liquid. The liquid sheath shields the particles from the cell walls and accurately positions the particles at the focus of the light beam. The light beam is focused on the liquid sample in the center of the fluid flowing through the flow cell so that any contaminate on the cell windows will have minimum effect. The sensor includes a sample container mounting assembly that rotates the sample container from an upright loading position to an inverted operating position. The sample is introduced into the flow cell by



gravity and air pressure feed. A back flush of the sample container with the sheath fluid is provided to assure a complete count and system cleanliness. An automatic cut-off that senses a stream of air bubbles, and a tuning fork calibration system are also provided.

3,669,543
METHOD AND APPARATUS FOR STANDARDIZING DENSITOMETERS
Angelo Vaccaro, Port Washington, N.Y., assignor to Columbia Controls Research Corporation, Glen Cove, N.Y.
Filed Feb. 6, 1970, Ser. No. 9,284
Int. Cl. G01n 21/20, 21/48, 33/16
U.S. Cl. 356—42 **7 Claims**

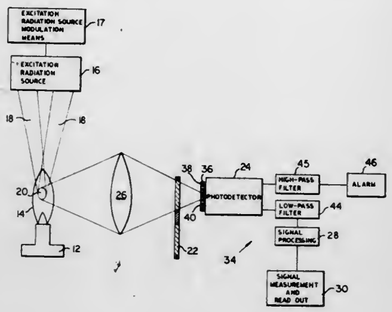


A method and apparatus for standardizing two densitometers to have the same reading for samples having the same optical density even though both densitometers are not identically calibrated by reading the sample with one densitometer and noting its density. An opaque screen having an aperture is then positioned before the light entrance of the densitometer with the size of the aperture being adjusted to produce the same densitometer reading as the sample. An opaque screen having the same size opening is then placed before the light entrance of the second densitometer and this second densitometer is adjusted to have the same reflectivity reading as the first densitometer. A sample accordingly having the same optical density will be read identically by both meters. Also, the openings, accurately sized for desired density readings may be used for calibrating a densitometer.

3,669,544
APPARATUS FOR THE ELIMINATION AND/OR DETECTION OF SCATTER SIGNALS IN ATOMIC FLUORESCENCE SPECTROSCOPY ANALYSIS MEANS
Zindel H. Heller, Plainview, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,540
Int. Cl. G01n 21/52, 21/54
U.S. Cl. 356—85 **6 Claims**

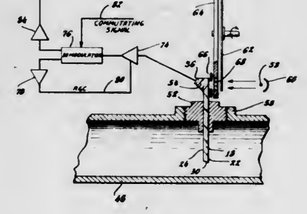
New and improved apparatus for eliminating and/or detecting scatter signals from the radiation scattered by

scattering particles in the sample flame of atomic fluorescence spectroscopy analysis means are provided, and comprise means to convert the scattered radiation to relatively high frequency scatter signals which occupy a higher fre-



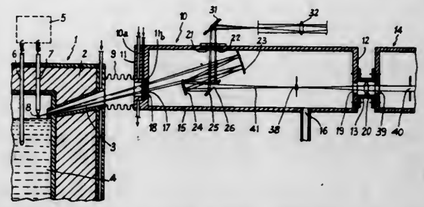
quency region of the output signal frequency spectrum than that occupied by the atomic fluorescence analysis output signal, and means to separate said scatter signals from said output signal to eliminate the former from the latter and/or to enable detection of said scatter signals.

3,669,545
APPARATUS AND METHOD FOR ANALYSIS BY ATTENUATED TOTAL REFLECTION
Anthony C. Gilby, Darien, Conn., assignor to Wilks Scientific Corporation, South Norwalk, Conn.
Filed May 6, 1971, Ser. No. 140,677
Int. Cl. G01j 3/00; G01n 1/10
U.S. Cl. 356—74 **18 Claims**



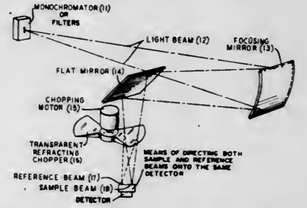
There is disclosed a novel family of crystal probes for use in making spectroscopic studies by the technique of attenuated total reflection. In prior art crystals used for probe type measurements, only approximately half the radiant energy passing through the crystal reached the detector. There is disclosed herein a class of crystals in which one face serves simultaneously to both totally reflect energy into the crystal and transmit energy out of the crystal. As a result, substantially all the entering energy reaches the detector. There is also disclosed a novel, double beam instrument which employs a crystal of the type referred to herein. In this instrument a portion of the radiation is directed into the crystal and thence to the detector. A reference beam of the radiation is passed directly to the detector. By means of a chopper and an electronic circuit there is provided a ratio readout of the sample and reference beams.

3,669,546
DEVICE FOR SPECTROGRAPHIC ANALYSIS OF A LIQUID METAL
Jean Marcel Virloget, Le Mesnil-Saint-Denis, France, assignor to Société Francaise d'Instruments de Controle et d'Analyses, Yvelines, France
Filed Oct. 26, 1970, Ser. No. 83,801
Claims priority, application France, Oct. 28, 1969, 6936939
Int. Cl. G01j 3/30, 3/00
U.S. Cl. 356—86 **13 Claims**



Apparatus for receiving a light beam from a selected region of an electric arc and transmitting it without alteration into a spectrograph, comprises a sealed enclosure having a controlled atmosphere, a concave receiving mirror which is adjustable in position relative to two perpendicular axes, a flat mirror, a flat dividing mirror which divides the beam into a main fraction, which forms a real image at the spark point of the spectrograph, and a secondary fraction which controls the position of the receiving mirror.

3,669,547
OPTICAL SPECTROMETER WITH TRANSPARENT REFRACTING CHOPPER
Darrell Dean Sell, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Sept. 14, 1970, Ser. No. 71,910
Int. Cl. G01j 3/08
U.S. Cl. 356—93 **6 Claims**

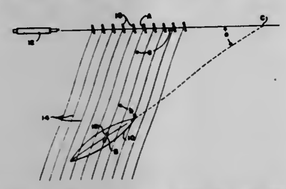


A sensitive and versatile apparatus is described for measuring the optical properties of materials. A transparent refracting chopper is used to alternately displace the radiation from the source into the sample and reference beams. Both transmittance and reflection measurements can be made using this apparatus.

3,669,548
METHOD FOR DETERMINING A SHIP'S HEADING EMPLOYING AN ELECTRO-OPTICAL ANGLE MEASURING DEVICE
Daniel E. Altman, San Diego, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed July 13, 1970, Ser. No. 54,502
Int. Cl. G01e 1/02
U.S. Cl. 356—141 **1 Claim**

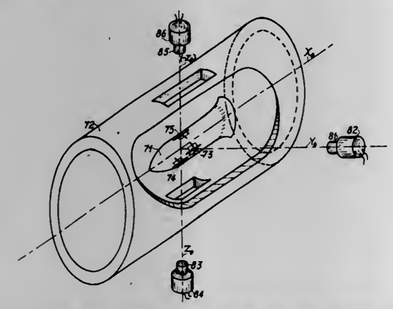
Surveying means and method are shown for measuring the angles of a triangle one corner of which is on an un-

stable platform. An optical system establishes a base line, which will move parallel to itself in response to movement



of the platform without altering any of the angles of the triangle. Measurement of two angles, yields the third.

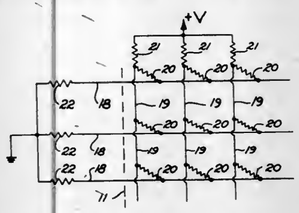
3,669,549
OPTO-ELECTRONIC DEVICE FOR THE REMOTE MEASUREMENT OF THE SHIFTS OF A MOVABLE OBJECT
Jean R. Benson, Boulogne, Joseph F. Cumer, Paris, and Roland J. Hoarau, L'Hay-les-Roses, France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon-Sous-Bagneux, France
Filed June 18, 1970, Ser. No. 47,332
Claims priority, appplication France, June 20, 1969, 6920825
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **4 Claims**



Apparatus for distant measuring of the displacement about a fixed reference position of a solid object carrying at least one optical sighting mark, comprising opto-electronic devices each including a photomultiplier tube and each having a main sighting axis, a conductive target in each one of said devices on which an electronic image of said object is formed, means for causing an electron beam to periodically scan said target, a small aperture in said target letting through a thin electron beam, means for amplifying the current of said beam, means for deriving from said amplified current an electric signal, and computer means for combining the signals delivered by all of said devices into other signals representing the components of said displacement in a three-dimensional coordinate system.

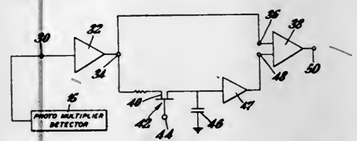
3,669,550
COORDINATE DETECTOR
John M. Grant, Granada Hills, and Albert D. Stolzy, Sherman Oaks, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,651
Int. Cl. G01b *11/26*; H01j *39/12*
U.S. Cl. 356—152 **13 Claims**

Apparatus to detect the Cartesian or angular coordinates of an object having a different chromaticity or light intensity than its background so as to make its discernment possible. An electron multiplier is employed which has columns and rows of holes in a dielectric. The holes have surfaces which support secondary emission. The coordinates of the object are thus determined



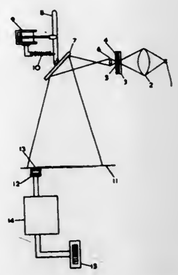
by detecting which hole is flooded or denied electrons from a photocathode due to the existence of the object.

3,669,551
ANALOG DATA REDUCTION CIRCUIT FOR A ROTATING SPECTROPHOTOMETER WHEREIN THE LIGHT PASSING THROUGH A SELECTED CHAMBER IS COMPARED WITH ALL OTHERS
Paul E. Bucher and Thomas Picunko, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Apr. 15, 1971, Ser. No. 134,338
Int. Cl. G01n *21/24*
U.S. Cl. 356—197 **1 Claim**



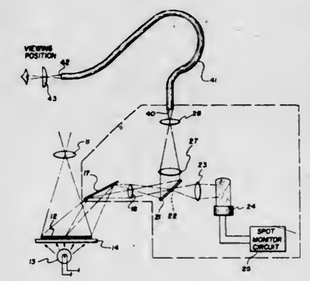
Known rotating spectrophotometers have a series of cuvettes arranged concentrically around a horizontally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvettes. As each cuvette passes a light source, the absorbence of each individual sample is detected and measured photometrically, and is converted to an electrical signal pulse.

3,669,552
METHOD AND APPARATUS FOR SPREADING AND COUNTING FILAMENTS IN A YARN
Josiah Alfred Briscoe, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England
Filed July 6, 1970, Ser. No. 52,464
Claims priority, application Great Britain, July 9, 1969, 34,582/69
Int. Cl. G01n *21/22*
U.S. Cl. 356—199 **8 Claims**



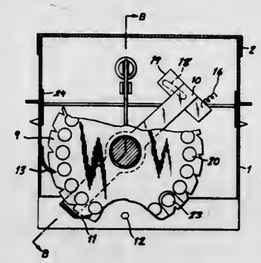
A method and apparatus for counting filaments in a yarn by gripping the filaments between smooth surfaces which are capable of making line contact to spread the filaments into a single layer array, which may be checked before counting.

3,669,553
SPOT MONITOR AND VIEWING APPARATUS FOR FILM PRINTING
James E. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 9, 1970, Ser. No. 17,814
Int. Cl. G01n *21/22*
U.S. Cl. 356—202 **4 Claims**



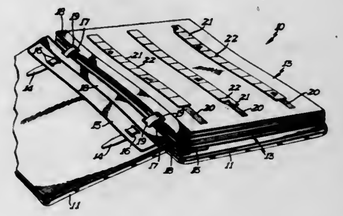
A spot monitor system for use during film printing including a flexible fiber optic rod and a lens assembly to permit the operator to view the monitored portion of a film from a convenient location.

3,669,554
DEVICE FOR ANALYZING CHROMATOGRAPHIC DISK IN A SPECTROPHOTOMETER
Oswald Horer and Eugen Bujor, Bucharest, Rumania, assignors to Institutul de Virusologie "Stefan S Nicolae," Bucharest, Rumania
Filed July 29, 1970, Ser. No. 59,080
Claims priority, application Rumania, Aug. 11, 1969, 60,776
Int. Cl. G01j *3/50*
U.S. Cl. 356—244 **3 Claims**



The invention refers to a device adaptable to common single- or double-beam spectrophotometers, which permits serial determination of substances impregnated on disks, and which consists in a mechanism for changing and centering of the disks mounted in a holder within the cell compartment of the spectrophotometer. A manually or an automatic sample change is made from within or without of the cell compartment of the spectrophotometer. The control disk is mounted in a mobile holder, which can be adapted to the sample holder or in front of the reference beam, depending upon the spectrophotometer type.

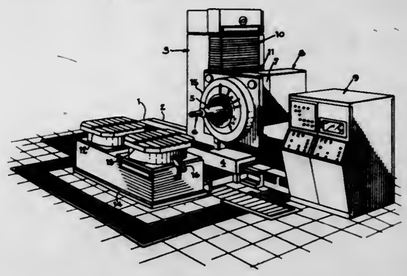
3,669,555
PHOTOGRAPH ALBUM PAGES AND METHOD OF MAKING THE SAME
William W. Holes, 1610 S. 18th Ave., and Roger A. Wenstrom, 1710 10th Ave. S., both of St. Cloud, Minn. 56301
Filed Mar. 24, 1970, Ser. No. 22,164
Int. Cl. B42f *13/06*
U.S. Cl. 402—8 **2 Claims**



An album comprises front and rear covers and a plurality of pages bound by flexible straps and hinge elements to the covers. A plurality of adhesive coated segments are applied to opposite sides of each page and each segment has a removable liner element covering its exterior surface. The attachment segments serve to mount photographs and other materials on each surface of the page.

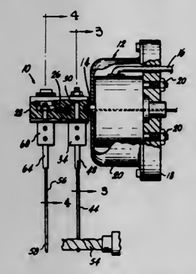
The process of making the album page comprises moving a sheet of album page material through a predetermined path of travel and applying the hinge elements and the hinge binding tape to a longitudinal edge of the page. A plurality of strips of adhesive coated attatchment material is simultaneously applied on opposite sides of the sheet, and the sheet is then cut by a cutting medium into individual pages.

3,669,556
AUTOMATIC MACHINING CENTER
Robert Lehmkuhl, Cincinnati, Ohio, assignor to The Carlton Machine Tool Company, Cincinnati, Ohio
Filed Aug. 10, 1970, Ser. No. 62,507
Int. Cl. B23c *1/00*
U.S. Cl. 408—10 **6 Claims**



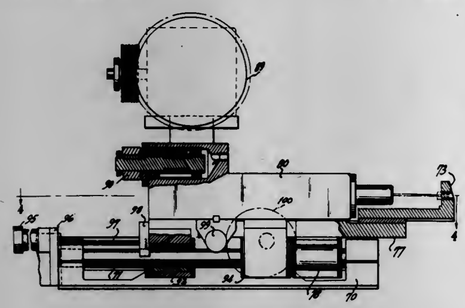
An automatic machining center having a free floating spindle in a head for carrying a tool, the head being secured to a vertical saddle, which in turn is secured to a column, which in turn is secured to a horizontal saddle, and a method for advancing head and spindle to a predetermined position, then advancing the spindle until it contacts the work surface, then employing a spindle clamp and surface sense memory clamp and feeding the head and spindle at a predetermined rate until the tool reaches a predetermined depth.

3,669,557
APPARATUS FOR DETECTING BROKEN TOOLS
Archibald S. Mitchell, East Detroit, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed May 5, 1970, Ser. No. 34,694
Int. Cl. B23b 49/00
U.S. Cl. 408—16 14 Claims



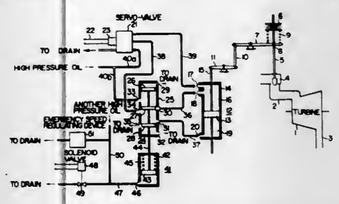
Apparatus for monitoring the condition of machine tools for the purpose of detecting a broken or missing tool. The apparatus consists of an electric current carrying tool sensing probe which is rotatably mounted adjacent a tool to be monitored. When the tool is in proper condition, rotation of the probe through a predetermined angle will result in contact of the probe with the tool. In the case of a broken or missing tool condition, such as when the tool has been broken off, no contact between probe and tool will be obtained resulting in an electric signal indicative of this tool condition. A rotary solenoid is employed to rotate the tool sensing probe, and in one form of the invention a second probe, parallel to the first probe, is connected to ground for completing the circuit when the tool to be detected is in proper condition. In another form of the invention, the second probe is omitted and the drive spindle for the tool is connected to ground.

3,669,558
APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS
Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation
Continuation of abandoned application Ser. No. 763,043, Aug. 9, 1968. This application Mar. 1, 1971, Ser. No. 119,807
Int. Cl. B23b 39/20, 47/22, 47/32
U.S. Cl. 408—43 4 Claims



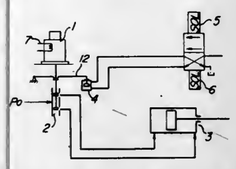
The apparatus, intended primarily for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of working positions includes an annular table supporting a plurality of tapping and drilling assemblies at a plurality of spaced working positions. Rotatably mounted within the annular table support is a turret having a plurality of radial arms on which are supported retractable work supporting shuttles movable toward and from working positions adjacent the tapping and drilling assemblies mounted on the annular table. Means are provided for rotating the turret to successive working positions. A novel clamp and positioning means are mounted on the shuttles for holding and accurately positioning a work supporting cartridge. Novel multiple spindle tapping and drilling assemblies permit tapping and drilling from different angles, simultaneously of a plurality of rigidly held work pieces mounted on the shuttles.

3,669,559
CONTROL SYSTEM FOR STEAM TURBINES
Tetsuzo Sakamoto, Yokohama-shi, and Akiomi Torii, Kamakura-shi, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha (also known as Tokyo Shibaura Electric Co., Ltd.), Horikawa-cho, Kawasaki-shi, Kanagawa-ken, Japan
Filed July 14, 1969, Ser. No. 848,135
Claims priority, application Japan, July 15, 1968, 43/49,028
Int. Cl. F01b 25/06
U.S. Cl. 415—10 10 Claims



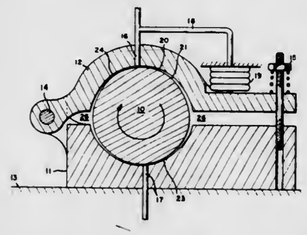
A steam turbine control system including a valve means for regulating the flowrate of steam supplied to the turbine in response to an electric signal is featured by the combination of a servo-motor for driving the valve means upon reception of comparatively high pressure oil as its operative fluid, a servo-valve for distributing the operative fluid to the servo-motor in accordance with the above mentioned electric control signal, a by-pass valve inserted in the fluid path from the servo-valve to the servo-motor for the purpose of operating the valve means in the closing direction in response to a trip signal which supersedes the electric control signal at an emergency, regardless of the distribution of the operative fluid from the servo-valve, and a dump-valve driven by a comparatively low pressure operative fluid for driving the by-pass valve in response to the above mentioned trip signal.

3,669,560
CONTROL DEVICE FOR STOPPING ROTATION OF WATER TURBINE
Asao Oishi and Shozzo Sashino, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 7, 1970, Ser. No. 78,810
Claims priority, application Japan, Oct. 9, 1969, 44/80,788, 44/80,789
Int. Cl. F01b 25/06
U.S. Cl. 415—41 2 Claims



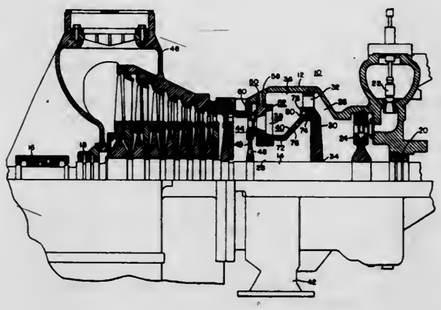
The opening of a guide vane is locked or maintained in its present position at the time a water turbine is stopped upon removal of a load, and the guide vane is started to be closed after a time interval predetermined by the opening of the guide vane locked or in response to a predetermined rotational speed of the water turbine.

3,669,561
HYDRODYNAMIC PUMP
Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 9, 1970, Ser. No. 79,418
Int. Cl. F01d 1/36; F03b 5/00
U.S. Cl. 415—90 10 Claims



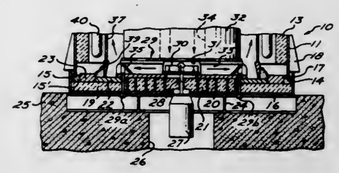
A high pressure, low volume, hydrodynamic pump comprising a sleeve, a shaft rotatable within the sleeve, means to vary the gap between the shaft and the sleeve, and an outlet in the sleeve. When submerged in or otherwise provided with a supply of fluid such as oil, relative motion between the sleeve and the shaft results in the establishment of a hydrodynamic pressure between the sleeve and the shaft which pressure can be increased or decreased by decreasing or increasing the gap between the sleeve and the shaft.

3,669,562
EXTRACTION TURBINE WITH A SERVO ACTUATED BALANCED GRID VALVE FOR EXTRACTION CONTROL
John M. McNally, Wallingford, and Albert H. Molette, Jr., Media, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 12, 1971, Ser. No. 105,798
Int. Cl. F01d 9/00, 1/00, 17/00
U.S. Cl. 415—159 11 Claims



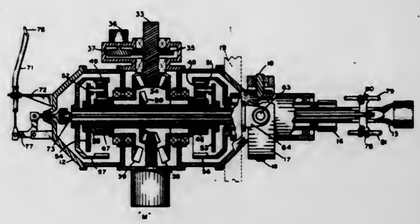
In an extraction turbine provided with a grid valve having a stationary port ring and a rotatable port ring actuated by a servomotor for controlling the flow of a highly pressurized elastic fluid, such as steam, pressure forces on the contacting interfaces of the two rings are minimized by providing an annular balancing member secured directly to the rotatable ring and acted upon by the high pressure elastic fluid in a manner to substantially balance the pressure forces on the rotatable ring, thereby enabling the grid valve to be utilized in higher pressure systems without increasing the effort required to operate the valve.

3,669,563
CENTRIFUGAL FAN
Robert Lee Corbett, Jr., 22732 Lake Road W., Rocky River, Ohio 44224
Filed Feb. 10, 1971, Ser. No. 114,150
Int. Cl. F04d 17/08, 29/26, 29/00
U.S. Cl. 415—211 13 Claims



There is disclosed herein a centrifugal fan for circulating atmosphere gas in an annealing furnace. A circular base plate carries a plurality of radially disposed, upwardly projecting blades, each blade having a main blade portion providing a leading surface tilted backwardly and an upper edge portion curved forwardly with respect to the direction of rotation of the fan. Each blade is reinforced at its trailing side by a support which tilts forwardly and converges upwardly, the upper edge of the support intersecting and being secured to the main blade portion. The fan is disposed within a central opening of a full-flow load support diffuser having an intake opening equal to the diameter of the fan and substantially unrestricted outlet means.

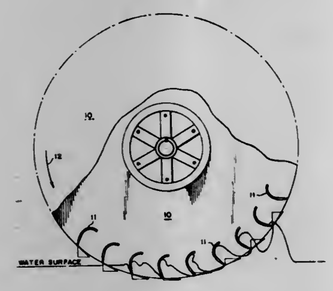
3,669,564
COAXIAL HELICOPTER ROTOR SYSTEM AND TRANSMISSION THEREFOR
Marvin Garfinkle, Cleveland, Ohio, assignor to Helicorporation, Philadelphia, Pa.
Filed Mar. 26, 1970, Ser. No. 22,898
Int. Cl. B64c 27/10
U.S. Cl. 416—121 9 Claims



Disclosed is a helicopter control system having a unitized rotor and transmission assembly for a craft using coaxial counter-rotating rotors. The assembly is gimbal mounted so that the transmission achieves directional

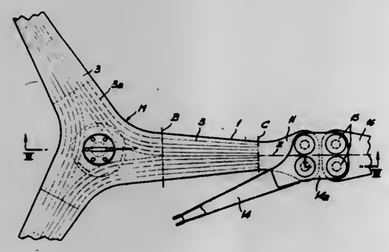
control without altering blade pitch and the rotor head is of simplified construction to achieve collective control of the blades.

3,669,565
IMPULSE TURBINE PROPULSION DEVICE FOR MARINE CRAFT
Melville W. Beardsley, 40 Windward Drive, Severna Park, Md. 21146
Filed Sept. 25, 1970, Ser. No. 75,420
Int. Cl. F04d *17/04*
U.S. Cl. 416—185 5 Claims



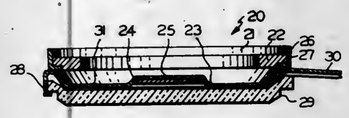
An impulse propulsion wheel for boats and the like having a plurality of blades spaced around the circumference of a wheel and having open spaces between them. The blades being shaped to have at least two distinct radii of curvature on the face of the blade and being mounted to have the greatest curvature nearest the center of the wheel and to have the tip of the blade enter the water at substantially right angles to the surface of the water at the design speed.

3,669,566
ROTOR CONSTRUCTION
Gaston Bourquardez, Aix en Provence and René Louis Coffy, Marseille, France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed May 15, 1970, Ser. No. 37,826
Claims priority, application France, May 20, 1969, 6916289
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 18 Claims



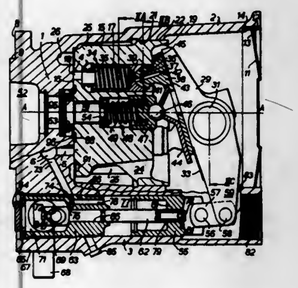
A connecting element particularly useful for connecting a variable pitch rotor to a hub comprises a flexible elongated portion formed of strong and resilient fibres individually enclosed and agglomerated by a vulcanised elastomer.

3,669,567
GETTERING
Paolo Della Porta and Elio Rabusin, Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy
Filed May 4, 1970, Ser. No. 34,319
Claims priority, application Italy, June 14, 1969, 18,187/69, Patent 865,904
Int. Cl. F04b *37/02*; H01k *1/52*; H01j *7/18, 17/26*
U.S. Cl. 417—48 22 Claims



A getter device comprising an evaporable getter metal and first and second sources of gas; means for releasing the gas from the first source prior to and preferably also during evaporation of the getter metal; and means for releasing the gas from the second source during the latter part of the period of getter metal evaporation.

3,669,568
PUMP
Donald Patterson McLeod, Cheltenham, England, assignor to Dowty Technical Developments Limited
Filed May 1, 1970, Ser. No. 33,716
Claims priority, application Great Britain, Mar. 14, 1970, 12,355/70
Int. Cl. F04b *23/14*
U.S. Cl. 417—203 7 Claims

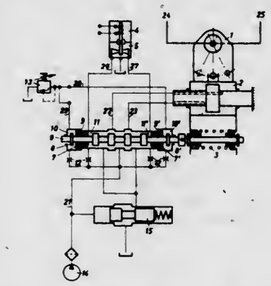


A swash plate pump having means to boost liquid into the low pressure port of the pump which comprises, a groove in the interior of the pump casing adjacent to the valve and facing towards a surface of the rotary cylinder block, a connection between the pump inlet port and the groove and means to feed liquid into the casing to enter the said groove. The motion of the cylinder block over the said groove is arranged to urge the liquid into the inlet port by virtue of the viscous drag exerted by the cylinder block on the liquid in the groove.

3,669,569
APPARATUS FOR CONTROLLING THE DELIVERY QUANTITY OF ADJUSTABLE AXIAL PISTON PUMPS
Ludwig Wagensell, Vohringen, Germany, assignor to Constantin Rauch, Ulm (Donube), Germany
Filed Apr. 24, 1970, Ser. No. 31,563
Claims priority, application Germany, Apr. 25, 1969, P 19 21 298.7; Feb. 2, 1970, P 20 04 577.6
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 5 Claims

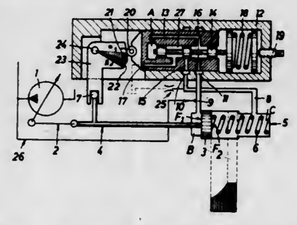
An apparatus for regulating the delivery quantity of adjustable piston pumps, including a control apparatus

constituted of a two-chamber slide valve permitting control over the pumps without varying the auxiliary hydraulic fluid pressure. One of the chambers of the slide



valve is in communication with a servo valve, and the other chamber in communication with a control circuit regulated by a control device adapted to provide the required regulated delivery conditions for the pumps.

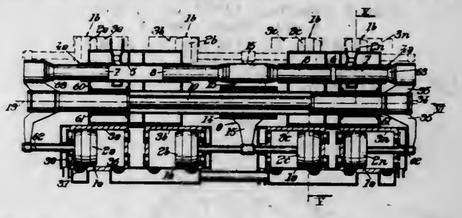
3,669,570
POWER REGULATION FOR FLUID MACHINES
Conrad Richard Himmler, Les Essarts le Roi, France, assignor to Mannesmann-Meer Aktiengesellschaft, Moenchengladbach, Ohlerkirchweg, Germany
Filed Mar. 9, 1970, Ser. No. 17,444
Int. Cl. F04b *1/30, 13/64*
U.S. Cl. 417—222 6 Claims



A swash plate fluid pump or motor is controlled for constant power through fluid regulation control devices operating with feedback which provides for hyperbolic regulating characteristics as between fluid flow and operating pressure. The regulator includes a control piston and a regulator valve piston in a casing the relative position of which is determined through feedback from the control piston-swash plate linkage.

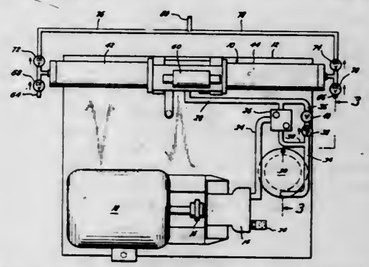
3,669,571
TANDEM, FREE-PISTON MACHINE
Henry Benaroya, 41 Boulevard du Commandant Charcot, Neuilly-sur-Seine, France
Filed Dec. 23, 1969, Ser. No. 887,637
Claims priority, application France, Dec. 27, 1968, 181,237
Int. Cl. F04b *17/00, 35/00*; F02b *71/00*
U.S. Cl. 417—341 16 Claims

Tandem, free-piston machine including at least one group of compressor pistons connected to drive pistons, the latter forming at least two groups which comprise each two pairs of drive pistons, these two pairs working in two drive cylinders arranged in alignment and the two drive pistons of each pair working in opposition in the corresponding drive cylinder, the outer drive portions of said two pairs being connected by a central rod and the inner drive pistons of said two pairs being connected by a linking element mounted slidably on said central rod, so that the outer drive pistons and the inner drive pistons form, respectively, an outer movable train and an inner movable train reciprocating in opposition, means of



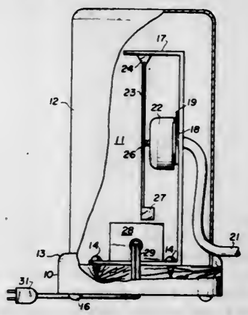
synchronization being provided between the outer movable train and the inner movable train.

3,669,572
CONSTANT FLOW PUMPING SYSTEM
William R. King, 1909 Sunshine Square, Longview, Tex. 75601
Filed June 8, 1970, Ser. No. 44,383
Int. Cl. F03b; F04b *9/08, 17/00, 35/00*
U.S. Cl. 417—390 17 Claims



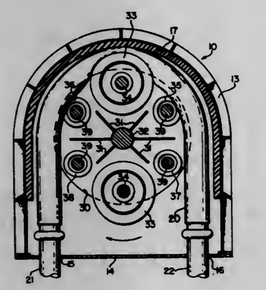
A system for providing liquid at high pressure at a substantially constant flow rate including a fluid powered pump operated by power fluid supplied at a lower pressure, the power fluid also being supplied in a desired proportion to an accumulator which discharges to the fluid powered pump at the beginning of each stroke of the pump.

3,669,573
NOISELESS AQUARIUM PUMP
David Levensohn, New York, N.Y., assignor to Continental Pet Innovations, Inc.
Filed Oct. 23, 1970, Ser. No. 83,312
Int. Cl. F04b *35/04, 17/04*; H02k *33/00, 35/00*
U.S. Cl. 417—416 5 Claims



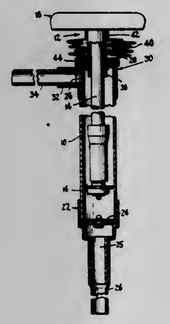
A vibrator pump is disclosed which is mounted on a rigid base member for absorbing vibrations resulting in a quieter running pump.

3,669,574
DEEP WATER PUMPING OF FLUIDS AND SEMI-FLUIDS
John T. Broadfoot, 12714 Aurora Ave. N., Seattle, Wash. 98155
Filed Mar. 18, 1970, Ser. No. 20,501
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—477 3 Claims



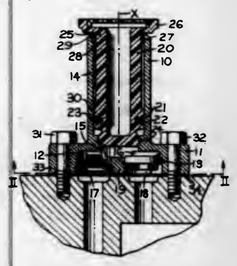
A rotary peristaltic pump for pumping fluids and semi-fluids in underwater locations includes a semi-circular piece of compressible tubing disposed around the inner arcuate surface of a substantially water-tight housing with pump action obtained by a pair of power driven compression wheels. A check valve mounted on the housing and communicating with the interior thereof is used to maintain a predetermined pressure differential between the interior and exterior of the housing.

3,669,575
SEALED PLUNGER-TYPE PUMP
Frank S. Beckerer, 134 Far Horizons Drive, Easton, Conn. 06612
Filed Mar. 24, 1970, Ser. No. 22,165
Int. Cl. F04b *39/10*
U.S. Cl. 417—555 6 Claims



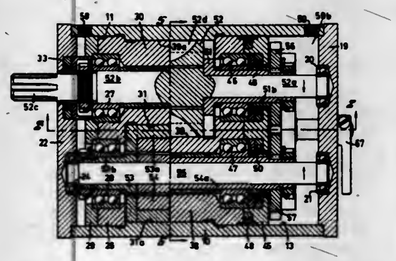
A hand pump comprising a cylinder and reciprocatable plunger therein, the shank of the plunger passing out through an apertured end fitting of the cylinder. To prevent leakage of liquid past the end fitting between the latter and the shank of the plunger, there is secured to the cylinder end and to the shank adjacent the handle thereof a tough, paper-thin, impervious, flexible and collapsible plastic sleeve having its ends respectively connected to the cylinder and hub of the handle. During reciprocation of the plunger, the sleeve experiences a random folding and unfolding. The sleeve thus acts somewhat like a water-tight container, supplementing the packing around the plunger shank and containing any liquid which seeps past the same. The paper-thin nature of the sleeve enables it to be economically produced in the form of a smooth cylinder, since its thin walls readily permit collapsing. This is in sharp contrast to thick-walled flexible bellows or accordion-like devices which are costly to tool and to produce.

3,669,576
FUEL PRIMING PUMP
Joseph P. Little, Morton, and Jerry A. Clouse, Washington, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed June 15, 1970, Ser. No. 46,117
Int. Cl. F04b *21/03, 39/10*
U.S. Cl. 417—571 1 Claim



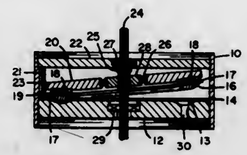
A manually actuated fuel priming pump for an internal combustion engine comprises a one-piece housing having a barrel terminating at its lower end in a flange disposed transversely to the barrel. A plunger is reciprocally mounted in a chamber of the barrel to selectively pump fuel from a first to a second valve located in the flange of the housing. The plunger has an annular groove formed thereabout which seats an annular ring of low friction material therein. An O-ring seal is also disposed in the groove to urge the annular ring into intimate contact with wall portions defining the chamber.

3,669,577
VARIABLE HIGH SPEED GEAR PUMP
Swan G. Swanson, Rte. 1, Rock, Mich. 49880
Filed Dec. 31, 1970, Ser. No. 103,263
Claims priority, application Sweden, Jan. 2, 1970, 32/70
Int. Cl. F01c *1/18, 21/16;* F04c *15/04*
U.S. Cl. 418—21 9 Claims



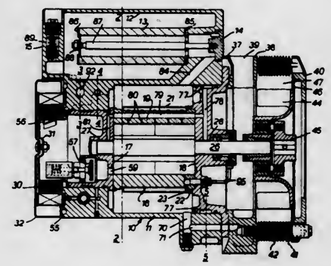
A gear type fluid pump having pumping gears provided with boosting channels and cooperating head channels which supply fluid from the pressure side of the pump via the boosting channels to the mating pockets of the associated pumping gear to thereby improve the efficiency of the pump. The oil admitted into and carried in the boosting channels is slung radially outwardly therefrom by centrifugal force into the gear pockets of the mating gear to thereby reduce the tendency of the fluid being pumped to be vaporized in these pockets as the gears disengage on the inlet side of the pump, thus reducing gassification in the pump and wear on the gear pumping teeth.

3,669,578
PUMPING APPARATUS
Frank J. Nameny, 5320 Beacon Hill Road, Minnetonka, Minn. 55343
Filed Sept. 21, 1970, Ser. No. 73,970
Int. Cl. F01c *5/00;* F04c *5/00;* F03c *3/00*
U.S. Cl. 418—45 8 Claims



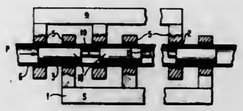
A pump for fluids and gases is disclosed in which the fluid is squeezed through an annular cavity by a rotating pressure plate eccentrically driven by a drive shaft. The annular cavity is formed by bonding a rubber membrane over an annular groove. The pressure plate has an annular toroidal compression member which gyrates about the drive shaft forcing the membrane into the annular cavity. The membrane is protected from frictional forces by a special cavity shape and dual sets of bearings in the pressure plate. Variations include driving a second pump from the other side of the pressure plate.

3,669,579
COMPRESSORS
Alan Carter, Eastham, near Tenbury Wells, England, assignor to The Hydrovane Compressor Company Limited, Redditch Worcestershire, England
Filed July 28, 1970, Ser. No. 58,764
Claims priority, application Great Britain, July 29, 1969, 38,000/69
Int. Cl. F01c *21/04;* F04b *49/00;* F04c *29/02*
U.S. Cl. 418—83 6 Claims



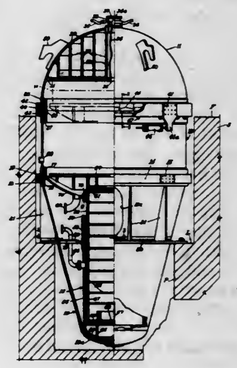
A compressor of the eccentric vane type in which a mixture of compressed air and oil is delivered through a number of ports distributed along the length of the compressor stator into a chamber which affords a sump and a deflecting wall on which the oil is deposited. Thereafter the compressed air passes through a separator which removes the remaining oil from it.

3,669,580
APPARATUS FOR MAINTAINING THE INTERNAL AIR PRESSURE DURING THE PRODUCTION OF SIZED PLASTIC PIPE
Hans Umbach, Stadeln, and Hans Jena, Nuremberg, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Filed Aug. 29, 1969, Ser. No. 854,224
Int. Cl. B29d *23/00*
U.S. Cl. 425—3 12 Claims



A device for maintaining the internal air pressure during the manufacture of a sized synthetic polymer pipe by providing a ferromagnetic sealing stopper disposed in the interior of the pipe and a magnetic field for holding the stopper in a relatively fixed position. To yield sufficient holding force, the sealing stopper has portions of reduced cross-sectional area between portions of expanded cross-sectional area.

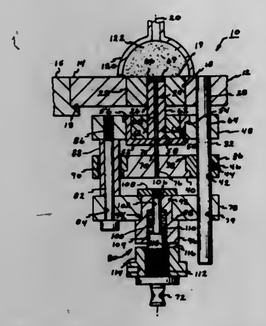
3,669,581
MOLD PRESS FOR TIRE CURING APPARATUS
Robert F. Maurer and Robert D. McVay, Columbus, and Donald L. Hummel, Canton, Ohio, assignors to United McGill Corporation, Columbus, Ohio
Filed Jan. 8, 1971, Ser. No. 105,035
Int. Cl. B29h *5/20*
U.S. Cl. 425—34 9 Claims



A tire curing apparatus of the pot-heater type is provided with a mold-press construction incorporating a conically shaped shell for support of a fluid-ram assembly which results in a substantial reduction in the total weight of the apparatus without a corresponding decrease in the structural strength. The frusto-conically shaped shell and ram assembly are cooperatively configured to provide a

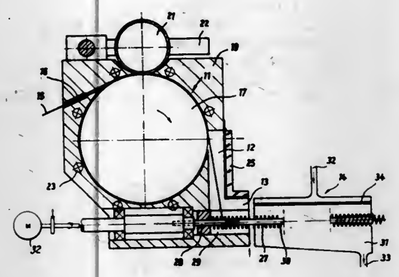
single-point suspension for the ram-assembly which uniformly distributes stress forces throughout the structure and facilitates precise alignment of the ram assembly with the press body.

3,669,582
DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL HAVING DEFLECTION COMPENSATOR
Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.
Filed Jan. 25, 1971, Ser. No. 109,376
Int. Cl. B30b 11/02, 15/22
U.S. Cl. 425—78 16 Claims



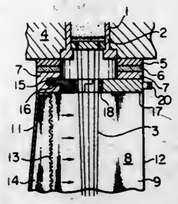
A die and punch assembly for use on a powder compacting press for making articles compacted from a powder and including a deflection compensator which allows the punch to remain engaged with and support the compacted article after the compacting pressure applied to the article is relieved. The assembly comprises a die plate appropriately mounted to the press and includes one or more die cavities, each of which has a punch slidably and snugly disposed therein. The punch is actuated by a punch upper support which, in turn, is slidably carried by a pair of posts extending below the die plate to permit reciprocable movement of the punch within the die cavity. A second punch support slidably carried by the posts is positioned below the punch upper support and operatively connects the punch upper support to an actuating ram which selectively causes reciprocation of the punch within the die cavity. A core rod is provided having one end disposed within a longitudinal bore formed in the punch, while the other end of the core rod is fixedly mounted to a core rod support which, in turn, is fixedly supported between the punch upper and lower supports by the pair of posts. The punch lower support carries the deflection compensator which comprises a bushing fixedly mounted within a centrally disposed bore in the punch lower support and in which the upper end of the actuating ram is slidably mounted for relative reciprocable movement. The actuating ram has an end portion extending through the bushing and carries an axially adjustable enlarged head adapted to engage the upper surface of the punch lower support to move the punch supports and thus the punch downwardly in the die cavity, while an enlarged axially adjustable intermediate portion of the actuating ram is adapted to engage the lower portion of the bushing to impart an upwardly directed force to the punch supports to drive the punch upwardly into the die cavity to compact the powder material into a compacted article. The punch actuating mechanism is provided with a spring loaded lost motion link to bias the punch end into engagement with the compacted article to prevent damage thereto when the punch actuating ram is retracted to relieve the compacting pressure applied to the article during compaction.

3,669,583
APPARATUS FOR MANUFACTURING SPIRALS FROM THREADS OF SYNTHETIC THERMOPLASTICS MATERIAL
Guido Negro, Neuffen, Germany, assignor to Bielomatik Leuze & Co.
Filed Aug. 31, 1970, Ser. No. 68,168
Claims priority, application Germany, Sept. 2, 1969, P 19 44 371.1–16
Int. Cl. B29c 17/00
U.S. Cl. 425—214 10 Claims



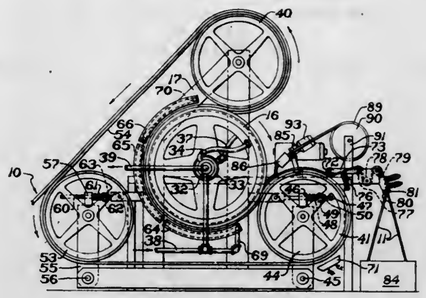
This invention concerns an apparatus for manufacturing a spiral from a thread of synthetic thermoplastics material. The apparatus includes a housing defining a cylindrical chamber having a drum rotatably mounted therein for continuous rotation. As distinct from prior arrangements, the housing is heated and includes a spirally-shaped thread guide groove in the cylindrical surface of the chamber and the drum has a smooth surface.

3,669,584
MELT-SPINNING APPARATUS
Seibi Yamada and Haruki Takizawa, Matsuyama-shi, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Oct. 22, 1969, Ser. No. 868,407
Claims priority, application Japan, Oct. 24, 1968, 43/77,475
Int. Cl. D01d 13/02
U.S. Cl. 425—72 3 Claims



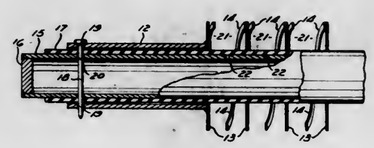
In a melt-spinning apparatus comprising a spinning assembly extruding molten filament-forming polymeric materials into a number of filaments, a spinning chimney provided below the spinning assembly, in which a stream of fluid quenches said filaments, flowing from the back part of the chimney to the front opened part thereof, and a shutter provided between said spinning assembly and spinning chimney, said shutter having an opening through which extruded filaments pass; said shutter is divided into at least two parts within a plane of the shutter in order to facilitate a threading operation at the beginning of the spinning operation and an observation of the spinneret surface during the spinning operation by moving one of said parts.

3,669,585
CONTINUOUS STRIP MOLDING APPARATUS
Carroll P. Krupp, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,553
Int. Cl. B29f 3/00
U.S. Cl. 425—109 3 Claims



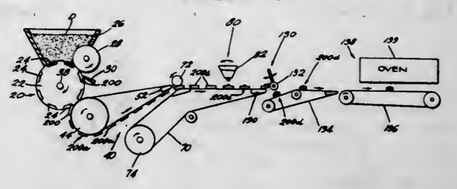
The continuous molding of an elastomeric sealing strip on a tape for a slide fastener in which a preformed strip of elastomeric material is applied to a tape as it is continuously fed into a mold cavity on the periphery of a rotating heated curing drum. The tape and preformed strip are enclosed in the mold cavity by a metal belt wrapped around a portion of the curing drum and driven at the same speed as the drum. The molded elastomeric sealing strip and tape are enclosed in the mold cavity at a molding temperature for a period of time necessary to cure the sealing strip on the tape after which the tape is released and carried away from the curing drum.

3,669,586
APPARATUS FOR MAKING FLEXIBLE TUBING WITH ANNULAR CORRUGATIONS
Vance M. Kramer, Perrysburg, Ohio
(% Crushproof Tubing Co., McComb, Ohio 45858)
Filed June 17, 1970, Ser. No. 46,865
Int. Cl. B29c 17/00
U.S. Cl. 425—109 4 Claims



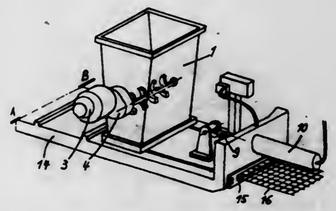
Method and apparatus for making rubber tubing with annular corrugations and uniform wall thickness. The apparatus includes a tubular cylindrical mandrel adapted to receive a sleeve of extruded rubber, and an axially extensible external form adapted to be received over the mandrel and sleeve. The form includes a plurality of axially spaced parallel discs each having a circular opening coaxial with the respective circular openings of the other discs, and a plurality of resilient extensible spring segments, each of which connects together two adjacent discs in a manner to permit extension of the segment to increase the axial spacing between the respective two discs. The mandrel has radial ports so that the sleeve may be expanded by internal pressure to make a preliminary impression in the uncured rubber caused by the edges of the circular openings of the discs.

3,669,587
APPARATUS FOR FILLING MOLDED COOKIES
Charles R. Werner, Grand Rapids, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.
Filed Mar. 16, 1970, Ser. No. 19,966
Int. Cl. A21c 00/00; A23g 3/00
U.S. Cl. 425—112 23 Claims



An apparatus and process for making filled, molded cookies, the apparatus combining a depositing hopper and nozzle, and a folding apparatus, with an embossing die roller. The combination is made possible by inverting means for inverting the embossed patty prior to the depositing of the filling, so that the depositing occurs on the bottom of the cookie patty. The inverting means is preferably a belt adapted to grip the bottom of the patties so as to carry them with the pattern side down and then deposit them on a second belt for the filling and folding operations.

3,669,588
APPARATUS FOR MANUFACTURING CONSTRUCTION ELEMENTS
Fernando Cavalli, Morbio Superiore, and Piero Cretti, Vacallo, Switzerland, assignors to Eros Camponovo, Chiasso, Switzerland
Filed May 19, 1969, Ser. No. 825,744
Claims priority, application Italy, May 20, 1968, 16,711/68; Jan. 15, 1969, 11,546/69
Int. Cl. B29b 7/22
U.S. Cl. 425—113 3 Claims



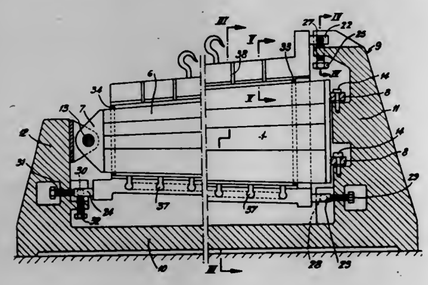
Apparatus for manufacturing construction elements in the form of plates or panels or the like, utilizing cement conglomerate and granules of inert material, comprises a frame carrying a hopper and a reciprocating plunger for compressing material that emerges downwardly from the hopper. The plunger has a downwardly forwardly inclined leading edge, and the resistance of the compressed

material to the plunger forces the whole machine rearwardly over its supporting surface instead of forcing the compressed material forwardly. Reinforcing elements can be introduced into the material through a slot in the plunger.

3,669,589
APPARATUS FOR THE PRODUCTION OF MEMBERS HAVING A SMOOTH SHEATHING AND OF ACCURATE SHAPE, AND THEIR APPLICATIONS TO THE STRUCTURAL ELEMENTS OF SUBMERGED FOILS

Andre Jules Edmond Bordat, Paris, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 31, 1970, Ser. No. 24,200
Claims priority, application France, Apr. 11, 1969, 6911246
Int. Cl. B29c *1/00*
U.S. Cl. 425—116 5 Claims

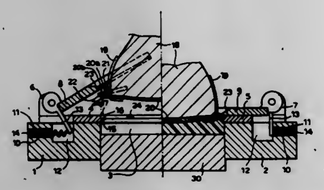


The disclosure is particularly concerned with the production of submerged struts for hydrofoil craft. The struts are produced by sheathing a basic element with plastics. The sheathing is carried out in a mould which has at least one degree of freedom in relation to the structure to be sheathed.

3,669,590
APPARATUS FOR MAKING SHOES

Antonio Nova, Oscar Nova, and Renzo Nova, Legnano, Milan, Italy, assignors to Officine Meccaniche Antonio Nova, Legnano, Milan, Italy

Filed Mar. 30, 1970, Ser. No. 23,658
Claims priority, application Italy, Apr. 11, 1969, 51,395/69
Int. Cl. B29f *1/12*
U.S. Cl. 425—119 1 Claim

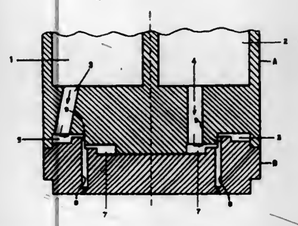


The apparatus is provided with a molding chamber having sidewalls with a ledge formed thereon about the periphery of the chamber. A last having the upper portion of the shoe including an insole with a projecting edge is placed over the chamber such that the projecting edge of the insole rests on the ledge. Hooked pins are provided on the last for holding the insole in proper position prior to placement on the ledge. When the insole is resting on the ledge, a pair of plates are pivoted into engagement with the upper surface of the projecting edge to clamp the insole over the molding chamber. The edges of the clamping plate are provided with notches to provide clearance for the hooked pins so that the pins will not interfere with the clamping operation.

3,669,591
APPARATUS FOR PRODUCING COMPOSITE FIBERS

Enzo Fermi and Francesco Sassanelli, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Mar. 11, 1970, Ser. No. 18,563
Claims priority, application Italy, Mar. 11, 1969, 13,914/69
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 6 Claims

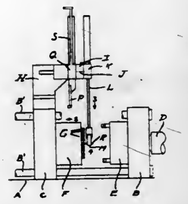


A spinning head for melt spinning of composite filaments comprised of two polymers of equal semi-circular cross-section in which the mating faces of a distribution plate and a spinneret plate form two separate annular cavities each communicating with a different polymer supply contained in the distribution plate. A plurality of extrusion holes in the spinneret plate have their upper end portions of semi-circular cross-section communicating with one of the annular cavities and the remaining portions of circular cross-section communicating with the other annular cavity.

3,669,592
INJECTION MOLDING MACHINES

Manuel S. Miller, Bethel, Vt., assignor to G-W Plastic Engineers, Inc., Bethel, Vt.

Filed Apr. 28, 1970, Ser. No. 32,567
Int. Cl. B29c *7/00*; B29f *1/14*
U.S. Cl. 425—155 4 Claims

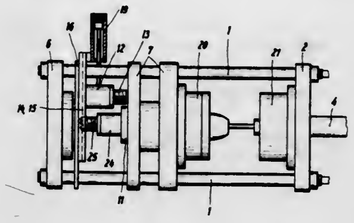


Mechanism is provided for removing the runner and sprue assembly from the mold to a point of disposal apart from the work, in timed relation to the molding cycle, preferably in a unitary combination with a knock-off device carried with such mechanism on a common traversable support, and particularly, but not exclusively, adapted for operation with submarine gated or back gated molds.

3,669,593
MOLD-CLOSING MEANS FOR MOLDING MACHINES

Wilhelm Cyriax, W.R. Neustadterstrasse 81, Kottingbrunn, Austria

Filed Feb. 10, 1970, Ser. No. 10,235
Int. Cl. B29f *1/06*
U.S. Cl. 425—186 10 Claims

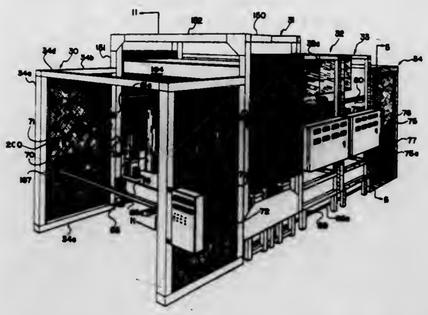


A machine for compression or injection molding has a fluid-operated pressure intensifier inserted between a fixed end plate and a movable platen riding on tie bars between that end plate and a co-operating stationary platen, the pressure intensifier acting through an interposed pressure piece upon closure of the mold formed by two halves carried on these platens. The pressure piece consists of two parts of substantially the same axial length, either or both of which may be extensible, at least one of which is slidably guided for transverse movement out of alignment with the other part preparatorily to an opening of the mold. With the mold open, the two parts lie alongside each other in the space between the end plate and the movable platen.

3,669,594
MODULE THERMOFORMING MACHINE

Gaylord W. Brown, Beaverton, Edward J. Russell, Gladwin, and Charles E. Howe and Bradley A. Schnepp, Beaverton, Mich., assignors to Koehring Company, Milwaukee, Wis.

Filed Apr. 9, 1970, Ser. No. 26,840
Int. Cl. B29c *17/03, 17/04*
U.S. Cl. 425—186 53 Claims

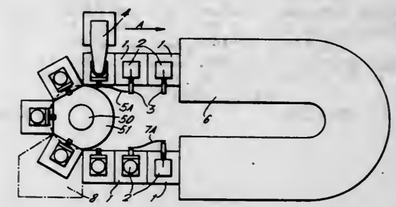


A synthetic plastic sheet thermoforming machine, preferably of modular construction, and incorporating elevator, heating, molding, and Lowerator stations. Sheet carrying carts move through the machine in a circuitous path from a loading station at which unformed sheets are loaded to the carts to an unloading station at which formed sheets are removed from the carts.

3,669,595
MOULDING APPARATUS

Bernd Zippel, Langenhain, and Alfred Schlieckmann, Eschwege, Germany, assignors to Richard Zippel & Co. KG, Eschwege, Germany

Filed Feb. 20, 1970, Ser. No. 12,968
Claims priority, application Germany, Feb. 22, 1969, P 19 09 050.7
Int. Cl. B29c *3/02*
U.S. Cl. 425—188 19 Claims

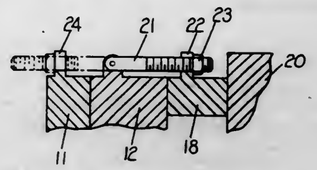


A mould processing arrangement for a multi-component plastics material moulding plant is disclosed. The arrangement comprises a number of moulds mounted on an endless conveyor and each of the moulds is provided with a self-locking mould closure and an associated opening and closing mechanism, which is operated by means of an actuating lever. The conveyor is intermittently driven so as to traverse each of the moulds successively through a mould filling station, a curing station and a mould removal station. A pair of mould closure actuating devices are located adjacent the conveyor. The first of these devices is located down-stream of the filling station and is arranged to engage the actuating levers of successive mould closures so as to close and lock the respective moulds. The second actuating device is located up-stream of the removal station and is arranged to engage the actuating levers so as to open each mould before it reaches the mould removal station.

3,669,596
APPARATUS FOR HOT RUNNER INJECTION MOULDING

Anthony James Savory, Handsworth Wood, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

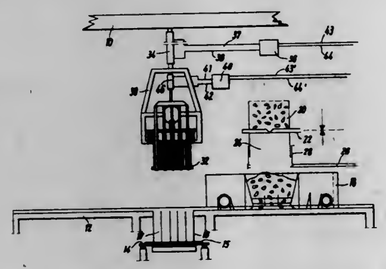
Filed Dec. 14, 1970, Ser. No. 97,968
Claims priority, application Great Britain, Dec. 9, 1969, 59,936/69
Int. Cl. B29c *1/00*
U.S. Cl. 425—192 8 Claims



Apparatus for hot runner injection moulding comprises a fixed die part and a movable die part, the fixed die part and the movable die part defining therebetween a die cavity. An injection nozzle is carried by the fixed die part and a hot runner box having therein a passage communicating with the bore in the injection nozzle so that in use molten synthetic resin flows from a reservoir through the passage and the bore in the injection nozzle into the die cavity. Further the apparatus includes releasable latch means movable between first and second

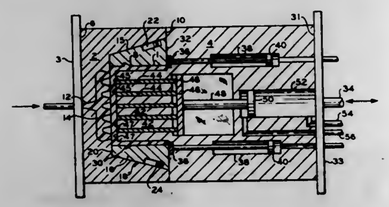
operative positions, such that in the first operative position the latch means secures the fixed die part to the hot runner box and in the second operative position the latch means secures the fixed die part to the movable die part so that the hot runner box can be removed without disturbing the fixed die part.

3,669,597
APPARATUS FOR THE PRODUCTION OF SMALL CONCRETE ELEMENTS
Wolfgang Schneider, Musbardweg 8, and Klaus Schneider, Feldweg 18, both of 2150 Buxtehude, Germany
Filed May 22, 1970, Ser. No. 39,821
Claims priority, application Germany, May 12, 1969, P 19 26 263.6; Dec. 9, 1969, P 19 61 098.1
Int. Cl. B28b 7/00
U.S. Cl. 425—216 12 Claims



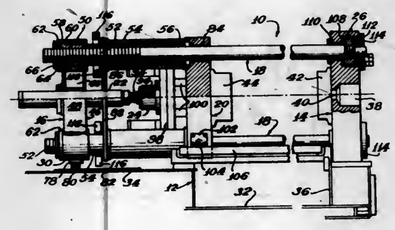
Manufacturing of small concrete elements is improved by compacting the concrete mix in a mould and removing any possible filling surplus during compaction, the surplus being removed in a plurality of steps. A novel apparatus for the production of small concrete elements comprises an upwardly open mould and a press ram which is movable in a vertical direction and the ram plate of which may cover the free upper cross section of the mould said ram plate being provided with means for the removal of a filling surplus from the mould, which means is movable in a vertical direction independently of the ram.

3,669,598
APPARATUS FOR MOLDING AND EJECTING PLASTIC ARTICLES
Alvin S. Tucker, Bartlett, Ill., assignor to Phillips Petroleum Company
Filed Nov. 26, 1969, Ser. No. 880,341
Int. Cl. B29f 1/00, 1/14
U.S. Cl. 425—249 7 Claims



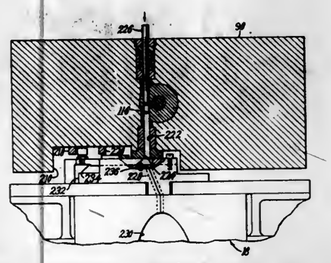
Method and apparatus for molding and ejecting plastic articles having protrusions extending from a base of the article. Movable blades between the core elements assure proper filling of the mold and function to eject the molded articles from the mold core section.

3,669,599
HYDROMECHANICAL CLAMP
Theodore O. Snider, Dayton, Ohio, and Michael D. Teeple, Fountain City, Ind., assignors to National Automatic Tool Company, Inc.
Filed Dec. 8, 1970, Ser. No. 96,056
Int. Cl. B29f 1/00
U.S. Cl. 425—242 10 Claims



An injection molding machine having mold halves which receive pressurized plastic therein. The machine includes a base, a first platen fixed on the base, for holding one of the mold halves, and a back plate mounted on the base and spaced from the said first platen. Tie rods pass between and are mounted to the first platen and the back plate. A second platen is movably carried on the tie rods between the first platen and the back plate and holds the other of the mold halves. Projecting hollow members on the back plate extend toward the moving platen and totally surround the tie rods. Open portions are provided on the second platen for receiving the projecting members when the mold halves are in the open position. Drive means advance the second platen toward the first platen for closing the mold halves. Blocking members are interposed between the projecting members and the moving platen when the mold halves are in the closed position. Load cells are provided on each of the tie rods for clamping the mold halves together during injection of pressurized plastic, the load cells driving the back plate, the projecting members, and the second platen with one mold half thereon into clamping relationship with the first mold half on the fixed platen.

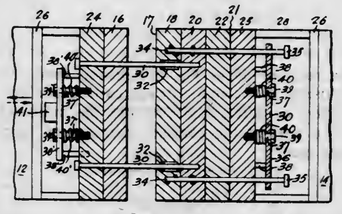
3,669,600
MOLDING MACHINERY
George F. McLean, Jr., Middleton, Mass., assignor to USM Corporation, Flemington, N.J.
Filed Oct. 6, 1969, Ser. No. 863,820
Int. Cl. B29f 1/03
U.S. Cl. 425—245 2 Claims



Machinery for molding articles including a device for metering, mixing and dispensing a measured quantity of multiple component mixture to a plurality of molds. The dispensing apparatus and molds are provided with cooperative elements effective whereby the sprue passage

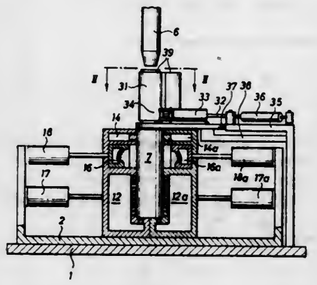
of the dispensing device is automatically self-cleaning after each shot of material.

3,669,601
APPARATUS FOR INJECTION MOLDING
Bruno Lainesse, 1010 Boule Douville, St. Hyacinthe, Quebec, Canada
Filed Sept. 30, 1970, Ser. No. 76,724
Int. Cl. B29f 1/00
U.S. Cl. 425—249 7 Claims



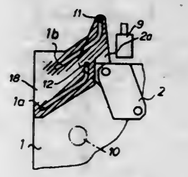
An injection molding machine incorporating at least two pairs of mating molding dies sandwiched between a pair of press platens, the extruder being provided with a reciprocal manifold having nozzles to cooperate with each of the pairs of molds, the manifold being movable to an advanced position for injection and to a retracted position to permit opening of the mold pairs.

3,669,602
APPARATUS FOR FILLING CONTAINERS OF THERMOPLASTIC SYNTHETIC MATERIAL
Gerhard Hansen, 47 Hofener Strasse, D7013 Oeffingen Kreis Waiblingen, Germany
Filed May 12, 1970, Ser. No. 36,549
Claims priority, application Germany, May 13, 1969, P 19 24 338.0
Int. Cl. B29c 5/06; B65b 5/02
U.S. Cl. 425—317 8 Claims



The invention concerns an apparatus for the production, filling and closing of a container made from thermoplastic synthetic material, having a container moulding device and having a filling mandrel adapted to be raised and lowered. The apparatus has a grab device for the reception of pieces, particularly elongate pieces of filling material which is adapted to pivot above the container located in the moulding device and serves to feed the filling material into the container.

3,669,603
DEVICE FOR PRODUCING HOLLOW ARTICLES FROM THERMOPLASTIC SYNTHETIC MATERIAL
Wilhelm Keller, Karlsruhe-Bergwaldsiedlung, and Peter Kallenowski and Peter Schmidt, Ettlingen, Germany, assignors to said Wilhelm Keller and said Peter Kallenowski
Filed Apr. 30, 1970, Ser. No. 33,391
Claims priority, application Germany, Apr. 30, 1969, P 19 22 090.7
Int. Cl. B29d 23/03
U.S. Cl. 425—326 4 Claims



A device for producing hollow articles such as bottles, cans and the like made of thermoplastic material by the blowing process is provided with a mold which is moved from the spray nozzle at a receiving station to an article discharge station. The mold is connected at two spaced points with levers the far ends of which are operatively connected with cam grooves or with cam tracks on the machine frame so that the mold is initially moved substantially vertically away from the spray nozzle and then laterally or inclined toward one side toward the article discharge station.

3,669,604
APPARATUS FOR PROCESSING FLOWABLE PARTICULATE SOLID MATERIAL
Franz P. Nebel, Muhlberg 11, A5132 Geretsberg, Austria
Filed May 19, 1970, Ser. No. 38,688
Claims priority, application Germany, May 23, 1969, P 19 26 371.9
Int. Cl. B29f 3/06
U.S. Cl. 425—379 4 Claims

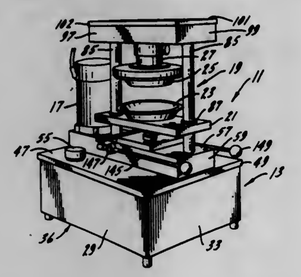


A heatable duct defines a passage of annular cross-section. A rotary piston feeder has an outlet connected to said passage. Said feeder is operable to force said material through said passage. Shaping means are arranged to receive said material from said passage and to shape said material.

3,669,605
HYDRAULIC PRESS
Arthur J. Reilly, 1232 59th St., Downers Grove, Ill. 60515
Continuation of abandoned application Ser. No. 842,651, July 17, 1969. This application Mar. 8, 1971, Ser. No. 122,194
Int. Cl. B30b 11/04; A21c 11/00
U.S. Cl. 425—398 8 Claims

A hydraulically operated pie tart and pastry shell forming press. The hydraulic cylinder, reservoir, pump and hydraulic conduits are located in the base of the press

below the forming area to prevent contamination of the pastry by the hydraulic fluid. Fluid flow to and from the hydraulic cylinder is controlled by a valve which is operated by a pair of levers, both of which must be manipulated for proper cycling of the press. The press has a die support plate which is bearing guided on squared columns



to insure uniform, accurately formed shells. A replenishing circuit provides high speed cycling of the press with a low pressure return stroke for operator safety. Thermostatically operated, electrical heaters are provided in a fixed die head to heat one of the replaceable dies by conduction.

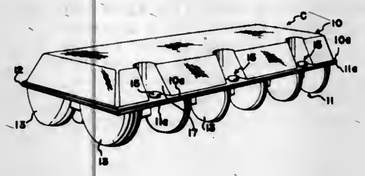
3,669,606

APPARATUS FOR FORMING PROTRUSIONS WITH ENLARGED HEAD PORTIONS IN THERMOPLASTIC SHEET MATERIAL

Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Feb. 20, 1969, Ser. No. 800,844
Int. Cl. B29c 17/03
U.S. Cl. 425—398 **20 Claims**

Methods and apparatus for forming protrusions with enlarged heads in thermoplastic synthetic plastic sheets wherein a male part on one die enters a female part on another die having a stretchable, resilient, bell-shaped liner with a reciprocable bottoming pin therein which is pushed inwardly by the male die part to distort the liner so that the outer portions of the side wall of the liner are collapsed inwardly and form the reduced neck on the protrusion formed in the plastic web by the male and female parts. The side wall of the liner is shaped to form a button-shaped head in the plastic web when the pressure of the descending male die on the sheet assists in moving outer portions of the side wall of the liner inwardly to



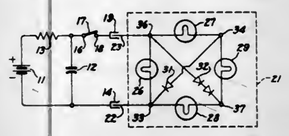
form the reduced neck. The protrusions formed are particularly useful as fasteners for egg cartons and are formed in conventional differential pressure thermoforming machines as a part of the overall operation of forming the egg carton itself.

3,669,607

SIMPLIFIED DIODE CIRCUIT FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS

Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Jan. 7, 1971, Ser. No. 104,653
Int. Cl. F21k 5/02
U.S. Cl. 431—95 **12 Claims**



A simplified diode type of circuit for causing sequential flashing of photoflash lamps from firing pulses of electrical energy. The basic circuit consists of four flash lamps connected in series in a closed electrical loop. Diodes are connected "criss-cross" between diagonally opposite lamp junctions of the series loop, and the circuit is adapted for connection to a source of firing pulses across one of the flash lamps. Circuit modifications are disclosed for different numbers of flash lamps.

CHEMICAL

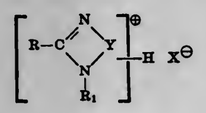
3,669,608

PROCESS FOR COLORING NATURAL AND SYNTHETIC POLYAMIDE FIBERS IN THE PRESENCE OF IMIDAZOLINE COMPOUNDS

Hans Wegmuller, Riehen, Alois Kleemann, Basel, and Rudolf Keller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,111
Claims priority, application Switzerland, Sept. 19, 1968, 14,063/68
Int. Cl. D06p 3/14
U.S. Cl. 8—54 **18 Claims**

Process for the dyeing and printing of natural and synthetic polyamide fibres with a dye liquor which liquor contains an anionic reactive dye, a compound of the formula



wherein

R represents an aliphatic hydrocarbon radical having 11 to 23 carbon atoms in the main chain,

R_1 represents hydrogen, an unsubstituted or substituted lower alkyl group, or an unsubstituted or substituted phenyl group,

Y represents, together with the



group, the radical of a partially saturated diazole or diazine ring, and

X represents the anion of an inorganic or organic acid, and optionally a non-ionogenic and/or anion-active tenside, as well as further auxiliary agents;

premixed dye assistant composition suitable therefore and dye liquor containing the aforesaid compound.

3,669,609

N-METHYLOLACRYLAMIDE TEXTILE FINISH CONTAINING CITRIC ACID OR DICYANDIAMIDE

Robert George Weyker, North Plainfield, William Frederick Baitinger, Jr., Hillsborough Township, Somerset County, and John Gregory de Marco, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,346
Int. Cl. D06m 15/54
U.S. Cl. 8—116.3 **3 Claims**

This invention relates to textile finishes employing N-methylolacrylamide. More particularly, it relates to (1) aqueous solutions of N-methylolacrylamide containing citric acid or dicyandiamide (2) the method of treating cellulose-containing textile materials with the solutions and (3) the textile materials thus treated.

3,669,610

FLAME-RESISTANT WOOL

Mendel Friedman, Lafayette, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Feb. 12, 1970, Ser. No. 11,015
Int. Cl. D06m 3/02, 13/00
U.S. Cl. 8—128 **2 Claims**

The flame resistance of wool fibers and blends of wool fibers is enhanced through reaction with bis-(β-chloroethyl) vinyl phosphonate in the presence of a free radical generating catalyst. The wool fibers may be modified by a reducing agent prior to contact with the phosphonate.

3,669,611

PRODUCTION OF ORNAMENTAL MULTITONE EFFECT ON POLYAMIDE TEXTILE MATERIALS

Shiro Shimauchi, Saburo Yoshida, and Koji Muro, Osaka-fu, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Oct. 3, 1966, Ser. No. 583,922
Claims priority, application Japan, Oct. 11, 1965, 40/62,278; May 16, 1966, 41/31,311; Aug. 22, 1966, 41/55,175
Int. Cl. D06p 1/40, 3/24, 5/00
U.S. Cl. 8—14 **8 Claims**

A method for producing an ornamental multitone effect on a polyamide textile material which comprises padding the surface of said polyamide textile materially locally with a dye rate controlling agent, fixing said dye rate controlling agent on said polyamide fiber, washing the so-treated polyamide fiber so as to form areas having differing rates of dyeing and thereafter dip dyeing said material with anionic dyestuff.

3,669,612

USE OF CYCLIC AMIDINE POLYMERS AS CORROSION INHIBITORS

Robert R. Annand, St. Louis, and Derek Redmore, Ballwin, Mo., and Brian M. Rushton, Williamsville, N.Y., assignors to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application Oct. 22, 1965, Ser. No. 502,636, now Patent No. 3,531,496, dated Sept. 29, 1970. Divided and this application May 15, 1970, Ser. No. 37,857
Int. Cl. C23f 11/00, 11/08
U.S. Cl. 21—2.5 **10 Claims**

The use of cyclic amidine polymers as corrosion inhibitors. These polymers are formed (1) by reacting cyanohydrins with (2) cyclic amidine-forming polyamines to form polyaminonitriles; and by further reacting these polyaminonitriles intermolecularly or with a polyamine under cyclic amidine-forming conditions to form the polymers.

3,669,613

METHOD FOR INHIBITING SULFIDE CRACKING OF METALS WITH A HYDROGEN SULFIDE-ALDEHYDE REACTION PRODUCT

John A. Knox, Bill R. Keeney, and Reginald M. Lassiter, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

No Drawing. Continuation-in-part of application Ser. No. 615,323, Feb. 13, 1967. This application Apr. 27, 1970, Ser. No. 32,356
Int. Cl. C23f 11/16, 11/04
U.S. Cl. 21—2.7 **14 Claims**

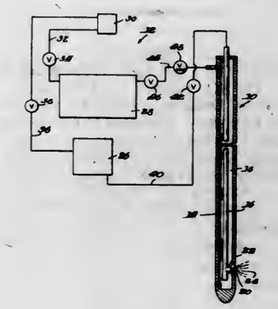
Inhibition of hydrogen sulfide cracking in ferrous metals is gained through the use of the reaction product of an aldehyde and hydrogen sulfide prepared in the presence of an acid wherein the reaction product may be formed in situ, added to a hydrogen sulfide containing environment or coated on a ferrous metal before it is exposed to such an environment.

3,669,614

METHOD FOR DISINTERRING A CASKET

Richard J. Husa, 11255 W. 74th St., La Grange, Ill. 60525, and James A. Stark, 300 Canterberry Lane, Oak Brook, Ill. 60521

Filed Sept. 25, 1970, Ser. No. 75,492
Int. Cl. A61l 9/00
U.S. Cl. 21—2 **1 Claim**



Method for disinterring a casket while minimizing the presence of germs and/or undesirable odors. In carrying out the method, a hole is drilled through the vault and into the casket, and a probe is inserted into the casket through the hole. A liquid in the form of a finely divided mist, and a gas are simultaneously sprayed into the casket, and the casket is then removed from the vault.

The apparatus of the invention comprises a probe having a gas pipe and a liquid delivery pipe within the gas pipe. The gas pipe has an opening in the side adjacent to one end, and the liquid delivery pipe has a nozzle for spraying a mist of liquid through the opening. Means are also provided for delivering a liquid to the nozzle and a gas to the opening.

3,669,615

CORROSION INHIBITING METHOD

William Bruce Murray, 929 Terraine Ave., Long Beach, Calif. 90804

No Drawing. Continuation-in-part of application Ser. No. 829,842, May 5, 1969. This application Sept. 28, 1970, Ser. No. 76,221
Int. Cl. C23f 7/10
U.S. Cl. 21—2.7 **10 Claims**

A liquid corrosion inhibitor and method designed for use by water treatment plants for the control of corrosion

of municipal, industrial, commercial and domestic metal piping systems, wherein, as the inhibitor is economically added to the flowing water supply in minute dosages, it passivates the surface of the metal piping as it deposits a self-controlled film of insoluble zinc phosphate. One of the preferred inhibitors includes zinc, sulfamate, and orthophosphate ions. To be effective, the pH must be controlled to within the range of 5–9.

3,669,616

CORROSION INHIBITING COMPOSITIONS AND METHOD

William Bruce Murray, Long Beach, Calif., and Mearl A. Kise, Portsmouth, and Thomas Edward Kelly, Chesapeake, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

No Drawing. Continuation-in-part of application Ser. No. 76,221, Sept. 28, 1970. This application Sept. 28, 1971, Ser. No. 184,620

Int. Cl. C23f *11/00*

U.S. Cl. 21—2.7 15 Claims

Compositions and method for inhibiting corrosion of ferrous and non-ferrous water pipes by inclusion of a zinc compound and a phosphate compound in the water such that the weight ratio of zinc ion to phosphate ion is substantially 1 to 1. Zinc ion concentration is in the range of less than one to about five parts per million.

3,669,617

PROCESS FOR THE DIRECTIVE REMOVAL OF SO_3 FROM WASTE GAS

Norbert Lowicki, Duisburg-Hamborn, and Hans Teggers, Wesseling, Germany, assignors to Grillo-Werke Aktiengesellschaft, Duisburg-Hamborn, Germany

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,000

Claims priority, application Germany, Dec. 13, 1969, P 19 62 587.7

Int. Cl. B01d *53/16, 53/34*

U.S. Cl. 23—2 S 21 Claims

Process of treating waste gas which contains SO_3 and is at a relatively high temperature, above its dew point, which comprises:

(a) contacting the gas at said elevated temperature with an absorbent comprising (1) an amphoteric component and (2) a basic component, wherein the amphoteric component (1) is at least one member of the group oxides, hydrated oxides and hydroxides of aluminum, zinc, iron and manganese, and basic component (2) is at least one member of the group oxides and hydroxides of alkali metals and alkaline earth metals, for absorption of SO_3 from the gas and thereby lowering the dew point of the gas to a lower dew point;

(b) utilizing at least part of the gas as a heating medium in a heat exchange whereby the gas is cooled to a relatively low temperature but above said lower dew point.

3,669,618

METHOD OF PRODUCING DICALCIUM FERRITE SINTER

Fred Cappel, Neu Isenburg, Germany, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 3, 1969, Ser. No. 803,926

Int. Cl. C01g *49/00*

U.S. Cl. 23—51 R 13 Claims

Method of producing dicalcium ferrite sinter

$(2CaO \cdot Fe_2O_3)$

of improved properties which comprises: preparing an admixture of raw materials containing iron oxide bearing materials, preferably steel mill waste products, such as flue dust, precipitator dust, blast furnace gas scrubber sludge, mill scale, dust from basic oxygen steel production and the like, and calcium oxide bearing materials, such as limestone and/or dolomite, plus a solid carbonaceous fuel, such as coke or coke breeze, as required and in proportions to produce a dicalcium ferrite sinter on igniting and sintering, and adding to said raw materials admixture sintered fines from a previous sintering operation to the extent of about 30–50% and preferably about 30–40% by weight of said raw materials admixture and for purposes of controlling the process, improving strength, storageability and sintering properties, and igniting the resultant admixture and sintering into a uniformity well burned sinter.

3,669,619

PRODUCTION OF DIAMMONIUM HYDROGEN HEXAFLUOROALUMINATE AND ALUMINUM FLUORIDE

Norman W. Meyers, Etobicoke, Ontario, Canada, assignor to Electric Reduction Company of Canada, Ltd., Islington, Ontario, Canada

No Drawing. Filed Jan. 29, 1970, Ser. No. 6,967

Claims priority, application Great Britain, Jan. 30, 1969, 5,236/69

Int. Cl. C01f *7/02*

U.S. Cl. 23—52 11 Claims

Diammonium hydrogen hexafluoroaluminate is formed by reacting an aluminum-containing material with fluosilicic acid at a pH sufficient to inhibit precipitation of aluminum fluoride trihydrate. The F:Al atomic ratio of the resulting solution is increased to at least 5:1 and the solution is reacted with ammonia at a pH below about 5.

3,669,620

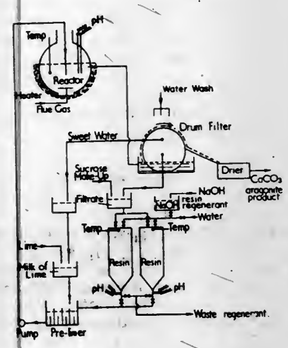
MANUFACTURE OF ARAGONITE

Michael Camm Bennett and Sidney David Gardiner, London, England, assignors to Tate & Lyle Limited, London, England

Filed Sept. 8, 1969, Ser. No. 855,902

Int. Cl. C01f *11/18*

U.S. Cl. 23—66 7 Claims



Calcium carbonate in needle crystal form is made by dissolving lime in aqueous sucrose solution and treating the solution with carbon dioxide, the sucrose being free from crystal poisons. If the sucrose is to be re-used it must be treated e.g. by anion exchange resin to remove crystal poisons.

3,669,621

PROCESS FOR PRODUCING A SUBSTANTIALLY PHOSPHATE ION-FREE AMMONIUM FLUORIDE SOLUTION

Manfred Schulze, Opladen, and Werner Schabacher, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 1, 1970, Ser. No. 51,703

Claims priority, application Germany, Aug. 23, 1969, P 19 42 925.5

Int. Cl. C01c *1/16, 11/24, 33/00*

U.S. Cl. 23—88 4 Claims

Hexafluorosilicic acid solutions are freed of phosphate ions by addition of ferric ion and introduction of ammonia gas to precipitate ferric phosphate. Substantially phosphate ion-free ammonium fluoride solutions are obtained from the hexafluorosilicic acid solutions.

3,669,622

PROCESS FOR THE PREPARATION OF CONDENSED PHOSPHATES

Dietmar Zobel, Wittenberg, Germany, assignor to VEB Stickstoffwerk Piesteritz, Wittenberg Lutherstadt, Germany

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,649

Int. Cl. C01b *25/30, 25/38*

U.S. Cl. 23—107 8 Claims

Condensed phosphates are prepared by heating in the presence of air, at a temperature of 350°–500° C., a mash of orthophosphates containing up to 40% mole of phosphite, keeping the gram atom *Na:P* ratio between 3:2 and 2:1 and adding up to 1% mole of concentrated nitric acid or a nitrate salt. The product is of improved color. The process is preferably conducted by recycling the products.

3,669,623

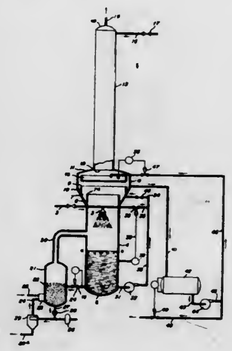
METHOD FOR THE REGENERATION OF HYDROCHLORIC ACID FROM SPENT PICKLE LIQUOR AND LIKE SOLUTIONS

Robert J. Allison, Coraopolis, Paul E. Hatfield, Beaver, and Robert Frumerman, Pittsburgh, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Original application July 19, 1966, Ser. No. 566,310, now Patent No. 3,495,945, dated Feb. 17, 1970. Divided and this application Aug. 25, 1969, Ser. No. 870,697

Int. Cl. C01b *7/08*

U.S. Cl. 23—154 7 Claims



A method for regenerating hydrochloric acid from spent pickle liquors by charging the liquor into a converter where the liquor is contacted by hot combustion gases and water vapor, hydrogen chloride and a metallic oxide are produced. The liquor is dispersed in a closed environment and contacted therein with hot combustion gases and vapors from the converter at a temperature where the water vaporizes to concentrate and preheat the liquor which is then collected in the environment followed by transfer of concentrated preheated liquor to the converter while gases and vapors are withdrawn from the closed environment into an absorption column and contacted with a countercurrent stream of liquid absorbent.

3,669,624

PROCESS FOR PRODUCING HIGH AVERAGE PORE VOLUME SILICA

John L. Warthen, Baltimore, and Thomas H. Cheavens, Glenwood, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed July 9, 1970, Ser. No. 53,645

Int. Cl. C01b *33/00*

U.S. Cl. 23—182 R 10 Claims

The present process produces a high pore volume silica of about 2 to 2.65 cc./g. where substantially all of the pore diameter is narrowly distributed between about 100 A. to 500 A. pore diameter. By the present process, silica is slurried in a weak hydrofluoric acid solution followed by filtration. The wet silica is washed thoroughly with alcohol to remove all water and acid, and dried. The silica then is given a mild thermal treatment. The end product silica has about a 50 percent greater pore volume than an unprocessed silica.

3,669,625

PRODUCTION OF BARIUM HYDROXIDE

Hans-Joachim Rohrborn, Lothringerstrasse 16, Homberg (Lower Rhine), Germany

No Drawing. Continuation-in-part of application Ser. No. 674,671, Oct. 11, 1967. This application Dec. 31, 1970, Ser. No. 103,313

Claims priority, application Germany, Oct. 13, 1966, S 106,476

Int. Cl. C01f *11/10*

U.S. Cl. 23—186 4 Claims

Production of barium hydroxide by oxidation of barium sulfide containing solutions with molecular oxygen containing gases in the presence of an alkali metal hydroxide.

3,669,626

INTERACTION CORRECTION IN CONTINUOUS FLOW ANALYSIS

Ralph E. Thiers, Woodland Hills, and Julius Meyn, Jr., Santa Monica, Calif., assignors to Bio-Science Laboratories, Van Nuys, Calif.

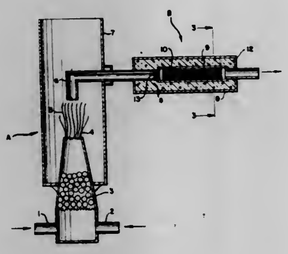
No Drawing. Filed Nov. 4, 1970, Ser. No. 86,971

Int. Cl. G01n *1/18, 13/00*

U.S. Cl. 23—230 A 8 Claims

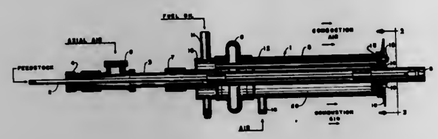
A method for correcting for interaction between successive fluid samples in continuous flow analysis comprises analyzing a series of fluid standards, two of which are identical. The standards are analyzed in any order in which one of the identical standards is preceded by a standard of higher concentrational value and the other is preceded by a standard of lower concentrational value. Analysis of the analytical results by a reiterative estimation procedure provides an accurate estimate of interaction and a calibration curve corrected for interaction. These can be used to provide analytical sample data corrected for interaction.

3,669,627
METHOD AND APPARATUS FOR DETERMINING THE COMPOSITION OF A HYDROCARBON-CONTAINING FUEL MIXTURE
Walter D. Mills, Mold, Wales, assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 5, 1970, Ser. No. 16,786
Claims priority, application Great Britain, Mar. 10, 1969, 12,382/69
Int. Cl. G01n 31/12
U.S. Cl. 23—230 PC 9 Claims



Apparatus and method for determining the composition of a hydrocarbon-containing fuel mixture by oxidizing a sample of the mixture to completion and determining the dielectric constant of the fully oxidized material.

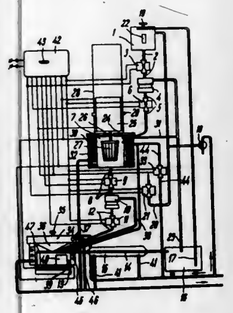
3,669,628
BURNER AND FEEDSTOCK INJECTION ASSEMBLY FOR CARBON BLACK REACTOR
Burton F. Latham, Jr., Houston, and William B. Crull, Dumas, Tex., assignors to Continental Carbon Company, Houston, Tex.
Filed July 31, 1970, Ser. No. 59,961
Int. Cl. C01b 31/00
U.S. Cl. 23—259.5 10 Claims



A burner and feedstock injection assembly for a carbon black reactor having three concentric pipes:

a center pipe for feedstock;
a second pipe, surrounding the center pipe;
a third pipe, surrounding the second pipe;
and a plurality (preferably three) of fuel-oil pipes disdosed within the annulus between the second and third pipes;
the ends of each of these fuel-oil pipes being equipped with a spray nozzle inclined at an angle with respect to the axis of the center pipe. These fuel-oil pipes are for the introduction of combustion fuel into the reactor. preferably, the assembly also includes a substantially cone-shaped flameholder device mounted concentrically about the third pipe at the end thereof, such cone flaring outwardly toward the interior of the reactor, such cone being comprised of a plurality of vanes or louvers each of which is twisted at the outer ends thereof.

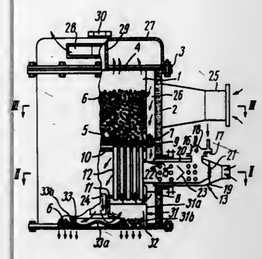
3,669,629
APPARATUS FOR DETERMINING FAT CONCENTRATION IN MATERIALS
Nikolai Parfentievich Paramonov, Ulitsa Marupes 2, kv. 3, Jurmala, U.S.S.R.
Filed Apr. 27, 1970, Ser. No. 32,035
Int. Cl. G01n 33/26
U.S. Cl. 23—259 3 Claims



The present invention relates to apparatuses for determining fat concentration in materials.

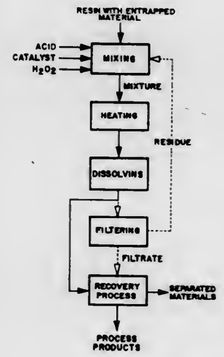
The apparatus comprises an extractor which is fitted with a vibrator to impart vibrations to solvent and material under test contained therein and is connected to solvent-measuring and solution-measuring hoppers at its inlet and outlet, respectively, through controlled valves, and an evaporator with a built-in condenser to separate fat from solvent and condense solvent vapour.

3,669,630
APPARATUS FOR THERMOCATALYTIC NEUTRALIZING OF EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE
Sergei Sergeevich Filatov, Ulitsa Belorechenskaya 36, kv. 4, and Mikhail Maximovich Konorev, Teatralny pereulok 5, kv. 2, both of Sverdlovsk, U.S.S.R.
Filed Feb. 12, 1970, Ser. No. 10,724
Int. Cl. B01j 9/04
U.S. Cl. 23—288 F 3 Claims



Apparatus for thermocatalytic neutralizing of the exhaust gases of an internal combustion engine comprises a separation chamber of a cyclone type, communicating at the upper portion thereof with the exhaust manifold of the associated internal combustion engine and also communicating at the lower portion thereof with the lower portion of a chamber receiving thereinside a supply of a catalyst, the last-mentioned chamber also communicating with ambient atmosphere. The communication between the separation chamber and the catalyst chamber includes a heat exchanger associated with a burner device for heating the exhaust gases by means of indirect heat exchange through tubular conveyers of the heat exchanger. The combustion products of the burner device are neutralized in an auxiliary catalyst chamber. There is no fluid communication between the burner device and the exhaust manifold of the engine, which makes it possible to reduce counter pressure in the exhaust manifold of the engine and improve the stability of the burner device operation.

3,669,631
REMOVAL OF MATERIALS FROM ION EXCHANGE RESINS
Lee A. Dietrich, Bellbrook, John C. Dikeman, West Carrollton, and Kenneth R. Johnson, West Milton, Ohio; said Dietrich and Dikeman assignors to the United States Atomic Energy Commission
Filed Jan. 8, 1970, Ser. No. 1,483
(Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. B01f 1/00; B01j 9/04
U.S. Cl. 23—342 4 Claims



A process for removal of materials from spent ion exchange resin wherein the spent resin is mixed with an acidic solution including a catalyst and hydrogen peroxide, and the mixture is heated to a temperature at which the exothermic reaction of the mixture is initiated and maintained at that temperature until the reaction is completed. The resulting solution may be filtered and the filtrate further processed to recover the desired materials.

3,669,632
METHOD FOR THE PREPARATION OF SPHERICAL PARTICLES
Johannes B. W. Kanij, Zevenaar, and Arend J. Noothout, Oosterbeek, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands
No Drawing. Filed Sept. 27, 1968, Ser. No. 763,390
Int. Cl. C01f 15/00
U.S. Cl. 23—345 10 Claims

A method is disclosed of preparing spherical particles of actinide hydroxide gel, which particles can be converted by thermal treatment into spherical oxide, and if carbon has been incorporated into the gel, carbide particles.

Spherical actinide oxide and carbide particles are needed in nuclear technics.

An actinide hydroxide sol is mixed with a solution of one or more ammonium donors and subsequently gelled by dispersion into a hot liquid nonmiscible with water.

3,669,633
CONTINUOUS PROCESS FOR THE PREPARATION OF PHOSPHONITRILIC CHLORIDE CYCLIC POLYMERS
Sidney Beinfest, Berkeley Heights, Zenon Jacura, North Plainfield, and Phillip Adams, Murray Hill, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,074
Int. Cl. C01b 21/00, 25/00
U.S. Cl. 23—357 7 Claims

In the production of phosphonitrilic chloride cyclic polymers by the reaction of ammonium chloride with PCl_5, substantial improvements are obtained by injection of PCl_3 and Cl_2 into the reaction zone to form the PCl_5; treating phosphonitrilic chloride polymers contained in an inert organic solvent with water to segregate a major portion of the linear polymers to an aqueous phase and a major portion of the cyclic polymers to an organic solvent phase; and incorporating these improvements further into a continuous method.

3,669,634
METAL COMPOSITES
John E. Peters, Chagrin Falls, Ohio, and Fred J. Rollfinke, Bronxville, N.Y., assignors to Chase Brass and Copper Company Incorporated, Cleveland, Ohio
Filed June 18, 1968, Ser. No. 737,984
Int. Cl. B22f 3/16
U.S. Cl. 29—182.1 7 Claims

Powder metal composites and mill products formed thereof are disclosed in which two metal components are admixed in powder form and compacted under conditions which maintain the component metals in substantially unalloyed condition. Rhenium and rhenium-refractory metal mixtures comprise a first component, while metals such as gold, silver and copper having high electrical and thermal conductivity comprise the other component.

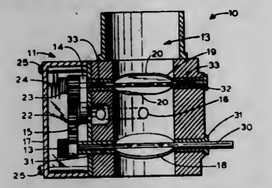
3,669,635
TANTALUM ANODES AND METHOD OF PRODUCING
Wiley M. Baldwin, Winston-Salem, and Raymond Monroe, Jr., Clemmons, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed June 11, 1969, Ser. No. 837,992
Int. Cl. B22f 3/00
U.S. Cl. 29—182 6 Claims

A tantalum anode having a high CV per unit weight is produced by blending tantalum powder and a mixture of tantalum oxide and carbon. The mixture is heated in a vacuum to produce tantalum anodes.

3,669,636
CARBURETOR FUEL-AIR PROPORTIONING MECHANISM
Keith H. Garretson, P.O. Box 111, Mount Pleasant, Iowa 52641, and Owen L. Garretson, P.O. Box 108, Farmington, N. Mex. 87401
Filed Oct. 20, 1969, Ser. No. 867,457
Int. Cl. B01f 3/02; F02m 7/18, 7/22
U.S. Cl. 48—180 P 13 Claims

A gaseous fuel-air proportioning mechanism for carburetors comprising a pair of valves spaced downstream and upstream of a fuel delivering point in the bore of a carburetor with one being the throttle valve and located in proximity to the manifold of the engine and the other being an air metering valve of lesser diameter than the carburetor bore and located upstream of the throttle valve and upstream of the fuel inlet, so that there is a relatively constant pressure drop across the air metering valve and the fuel metering point. The mechanism includes a fuel metering system having a fuel valve with a cam shaped edge operated sequentially with the air metering valve to regulate the quantity of

fuel inducted into the carburetor bore with the fuel metering system being co-ordinated with the throttle



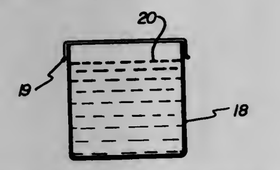
valve and air metering valve so that they are operated sequentially.

3,669,637

ODORANT REPLACEMENT IN GAS STREAMS

Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,906
Int. Cl. C01j 1/28
U.S. Cl. 48—195 **16 Claims**



Odor fading of odorants in gas streams is counteracted by adding odorants from an enclosed container through a permeable membrane over selected time periods. The container is preferably self-destructing after the odorant is exhausted.

3,669,638

METHOD OF PRODUCING BONDED RANDOMLY ORIENTED GLASS FIBER MATS AND BATTS

Robert Wong, Granville, and Homer G. Hill, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 11, 1968, Ser. No. 783,072
The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed
Filed Dec. 11, 1968, Ser. No. 783,072
Int. Cl. C03c 25/02
U.S. Cl. 65—3 **11 Claims**

The method of producing bonded randomly oriented glass fiber mats and batts wherein the binder is applied to the glass fibers of the mats or batts in a gel thickened state. The gel thickened binder can be sprayed into an air stream which carries the glass fibers to a foraminous collection surface. The globules of gel are caught and retained by the fibers gathered on the collection surface so that little binder leaves with the exiting air stream. The improved method reduces air pollution, improves binder transfer efficiencies, and the strength of the finished bonded mat.

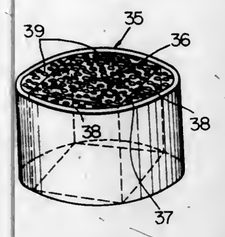
3,669,639

METHOD FOR PRODUCTION OF FUSED ENERGY-CONDUCTING STRUCTURE

Toura Inoue, Nishinomiya-shi, Tetsuya Yamada, Takarazuka-shi, and Seizo Noguchi, Amagasaki-shi, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Oct. 17, 1969, Ser. No. 867,260
Claims priority, application Japan, Oct. 23, 1968, 43/77,179
Int. Cl. C03c 23/20, 19/00
U.S. Cl. 65—4 **9 Claims**

A method for the production of a fused energy-conducting structure, which comprises cementing a plurality of energy-conducting filaments or multifilaments with a heat-sublimable or heat-volatile binder material in a parallel arrangement, heating the resulting bundle of energy-conducting filaments or multifilaments cemented



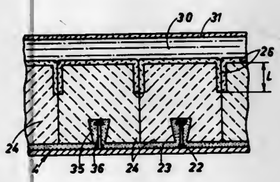
with said binder material thereby to cause sublimation or vaporization of said binder material, and heat-fusing said energy-conducting filaments or multifilaments with one another.

3,669,640

REFRACTORY ELEMENTS FOR A GLASS FLOAT FURNACE WALL

Edgard Brichard, Jumet, and Joseph Declaye, Moustier-sur-Sambre, Belgium, assignors to Glaverbel, Watermael-Boitsfort, Belgium

Filed Oct. 29, 1969, Ser. No. 872,099
Claims priority, application Luxembourg, Oct. 30, 1968, 57,196
Int. Cl. C03b 18/00
U.S. Cl. 65—182 R **19 Claims**



A furnace tank for use in the production or treatment of glass floating on a bath of molten material has at least one wall formed of a refractory element. The element comprises a refractory body having a refractory coating different in composition from the body adhering to at least a portion of that face which is directed toward the interior of the tank. The refractory coating is preferably applied to a face of the body in the flowable state and sets in situ.

3,669,641

PRODUCTION OF COMPLEX NITROPHOSPHATE FERTILISERS

Robert Copin, Sailly-la-Bourse, and Robert Sinn and Charles Bouilly, Bully-les-Mines, France, assignors to Societe Chimiques des Charbonnages, Paris, France

Filed Jan. 28, 1969, Ser. No. 794,700
Claims priority, application France, Feb. 1, 1968, 138,335
Int. Cl. C05b 11/06
U.S. Cl. 71—35 **3 Claims**

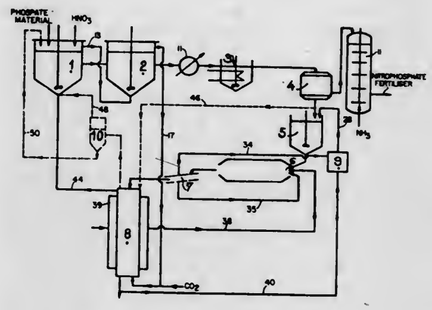
Process for the production of nitrophosphate fertilisers which comprises:

(i) Digesting calcium phosphate with aqueous nitric acid in the presence of recycled nitrogen oxide-containing gas,

(ii) Cooling the solution obtained by digestion to crystallise calcium nitrate tetrahydrate,

(iii) Separating the crystallised calcium nitrate tetrahydrate,

(iv) Processing the mother liquor to form a nitrophosphate fertiliser therefrom,



(v) Thermally decomposing the separated calcium nitrate in the presence of calcium carbonate and of the off-gas from the digestion step (i), said off-gas containing carbon dioxide which has been added thereto, and

(vi) Recycling the nitrogen oxide-containing off-gas from the decomposition step (v) to the digestion step (i).

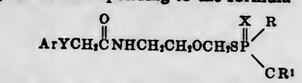
3,669,642

ARYLOXY AND ARYLMERCAPTO - N-METHOXY-ETHYLACETAMIDOMONOTHIO AND DITHIO-PHOSPHATES AND PHOSPHONATES AND THEIR UTILITY AS HERBICIDES

Llewellyn W. Fancher, Orinda, and Reed A. Gray, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Oct. 20, 1967, Ser. No. 676,698, now Patent No. 3,520,956, which is a continuation-in-part of application Ser. No. 463,322, June 11, 1965. Divided and this application Mar. 19, 1970, Ser. No. 24,977
Int. Cl. A01n 9/36
U.S. Cl. 71—87 **6 Claims**

Compounds corresponding to the formula



in which X and Y are, independently, oxygen or sulfur, Ar is phenyl, nuclear chlorinated-phenyl, or naphthyl groups, the chlorination is from 1 to 5 chlorine atoms, inclusive, R is lower alkyl or lower alkoxy and R^1 is lower alkyl. The naphthyl nuclei are bonded through either the α or β nuclear carbon atom. The above compounds are effective herbicides, particularly for the control of grasses and broadleaf plants with both pre-emergence and post-emergence activity.

3,669,643

METHOD FOR THE PREPARATION OF SMALL COBALT PARTICLES

Brian G. Bagley, Watchung, and James Nicholas Carides, Bernardsville, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 5, 1970, Ser. No. 34,680
Int. Cl. H01f 1/20
U.S. Cl. 75—.5 AA **9 Claims**

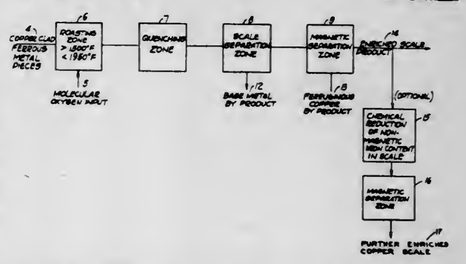
Fine particles of magnetic materials are the basic operational constituents of devices such as permanent magnets and magnetic recording tapes. The use of fine cobalt particles for such devices has been limited by the difficulty of producing such particles with the magnetically more desirable hexagonal crystal structure. The disclosure here contemplates the production of fine particles containing hexagonal metallic cobalt by a simple and potentially economic process involving precipitation from solution by a strong reducing agent. This process can be successfully performed if the solution contains minor quantities of ions of Cr, Pt, As, Ca, Ge and/or Ta in addition to cobalt ions.

3,669,644

RECLAMATION OF COPPER FROM COPPER-CLAD STEEL

Jack Sato, Dyer, Ind., assignor to SCM Corporation, Cleveland, Ohio

Filed Feb. 3, 1971, Ser. No. 112,208
Int. Cl. C22b 7/00
U.S. Cl. 75—.5 B **13 Claims**



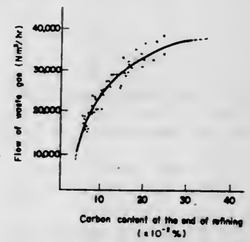
Cuprous powder of desirable quality is produced by roasting pieces of copper-clad ferrous metal such as steel in air between about 1500° F. and about 1950° F. until copper-rich scale is formed containing minor iron content; separating the scale from base metal; magnetically cleaning the separated scale to remove iron content therefrom.

3,669,645

METHOD FOR OPERATING AN OXYGEN TOP-BLOWING CONVERTER

Masashi Oishi, Michihiko Shimada, Yuji Nakayama, Koichiro Naito, and Kazuhiko Okamoto, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

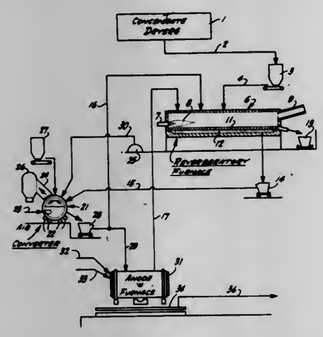
Continuation-in-part of application Ser. No. 640,093, May 22, 1967. This application June 1, 1970, Ser. No. 42,508
Claims priority, application Japan, May 23, 1966, 41/32,830
Int. Cl. C21c 5/32
U.S. Cl. 75—60 **2 Claims**



A method for operating an oxygen top-blowing converter characterized by precisely judging the final carbon content of the steel bath contained in the converter for the manufacture of low-carbon steel by detecting the flow of waste gas generated from the converter at the

final stage of oxygen blowing while keeping conditions of operating the converter at constant ones for the same stage of blowing.

3,669,646
PROCESS FOR AUTOGENOUS SMELTING OF COPPER ORE CONCENTRATES AND CHARGE PRODUCT THEREFOR
John T. Cullom, 628 6th Ave., San Manuel, Ariz. 85631
Filed Nov. 21, 1969, Ser. No. 878,785
Int. Cl. C22b *5/08, 15/00, 15/06*
U.S. Cl. 75—74 21 Claims



Process for smelting copper autogenously, and an ore charge product comprising copper ore concentrate compacted with carbonaceous fuel into nodules suitable for charging directly into a converter furnace for autogenous smelting therein. Finely divided siliceous flux may also be compacted and intimately mixed with the ore concentrate and fuel. Fuel and flux are added to a given or concentrate in accordance with the composition of the concentrate in amounts sufficient to augment the heat value of the sulfur and iron of the ore to insure autogenous smelting and to produce the desired silica-iron ratio in the converter slag.

3,669,647
METHOD OF RECOVERING METALLIC BRASS FROM THE SKIMMING OF A BRASS MELTING FURNACE
Alfred R. Barbour, Pittsburgh, Pa., assignor to Roessing Bronze Company, Mars, Pa.
No Drawing. Continuation of application Ser. No. 661,785, Aug. 21, 1967. This application Dec. 22, 1969, Ser. No. 887,358
Int. Cl. C22b *15/14, 19/30*
U.S. Cl. 75—76 4 Claims

A method of recovering metallic brass from the skimmings of a brass melting furnace, which skimmings may consist of approximately equal parts of metal and metal oxides, comprising heating the skimmings to a temperature somewhat above the melting point of the metal in the presence of a fluxing agent comprising oxide of boron (for example, in anhydrous Rasorite concentrate) and sodium carbonate which causes formation of a slag blanket and reducing the viscosity of the slag blanket by adding metal which remains in the slag blanket and combines with oxygen, significantly increasing the amount of metallic brass which coalesces into droplets which settle from the slag blanket. The added metal may comprise at least one of the metals of the group consisting of calcium, aluminum, silicon, manganese and titanium. In the heating step the components may be present in approximately the following proportions: 25,000 pounds of skimmings, 715 to 1430 pounds of oxide of boron (for example, in 1100 to 2200 pounds of anhydrous Rasorite concentrate), 100 pounds of sodium carbonate and 50 pounds of metal which remains in the slag blanket and combines with oxygen.

3,669,648
PROCESS FOR THE PREPARATION OF HIGH PURITY METALLIC TITANIUM
Shumzo Homma and Minoru Harada, Takaoka-shi, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan
No Drawing. Filed July 25, 1969, Ser. No. 845,026
Claims priority, application Japan, July 7, 1968, 43/53,082
Int. Cl. C22b *53/00*
U.S. Cl. 75—84.5 7 Claims

High purity metallic titanium sponge which has an extremely low hydrogen gas content produced by reducing titanium halides with a metallic alkali metal at a temperature of between 600° C. and 800° C., digesting at over 900° C. for at least one half hour and leaching with an aqueous solution.

3,669,649
PROCESS FOR RECOVERY OF BERYLLIUM
Robert S. Olson and Joseph P. Surls, Jr., Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 514,179, Dec. 16, 1965. This application Jan. 30, 1970, Ser. No. 7,130
Int. Cl. C22b *59/00*
U.S. Cl. 75—101 7 Claims

Beryllium values are separated from other metal values such as ferric iron, aluminum, thorium and rare earth values, by a process comprising heating an aqueous slurry wherein the beryllium values are present initially as solids at a temperature of at least 145° C., for at least 20 minutes. Final hydrogen ion concentration at the end of the heating period is controlled within the range of from about 2 to about 0.0001 normal. After the heating step, solubilized beryllium values are separated from solid residual metal values and other impurities by filtration or other conventional liquid-solid separatory techniques.

3,669,650
PRODUCTION OF COPPER COMPOUNDS AND COPPER METAL POWDER
Benjamin Elstein, 2 Fichman St., and Roman Fein, 8 Frenkel St., both of Ramat-Aviv, Israel
No Drawing. Filed Mar. 26, 1970, Ser. No. 23,004
Claims priority, application Israel, Mar. 27, 1969, 31,921
Int. Cl. C22b *15/08*; C01g *3/04, 3/06*
U.S. Cl. 75—101 4 Claims

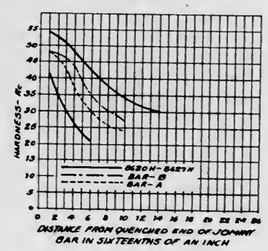
The present invention relates to a process for the production of copper compounds from copper cement, which comprises first at least partially oxidizing the copper cement and afterwards reacting the oxidized copper cement with hydrochloric acid. If desired, the thus obtained cuprous chloride is further reacted so as to convert it into other copper compounds. The reaction may be conducted in such manner that part of the copper cement is converted into high grade copper metal powder.

3,669,651
REDUCTION OF FERRIC IONS IN CYCLIC PROCESS OF LEACHING AND PRECIPITATION OF COPPER
Henry R. Spedden, John A. Appe, and Donald F. Lowe, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,874
Int. Cl. C22b
U.S. Cl. 75—104 3 Claims

Ferric sulfate-sulfuric acid leaching of naturally occurring, copper-bearing materials, such as copper minerals

in mine waste dumps, and recovery of the dissolved copper by precipitation on metallic iron are carried out on a cyclic basis, with reduction of ferric ions prior to the copper precipitation step. The pregnant leach solution is treated with a controlled quantity of a water soluble reductant, such as sulfur dioxide or ammonium-bisulfite, for a sufficient period of time in the presence of activated carbon as a catalyst to minimize the ferric ion content thereof while substantially completely consuming the active ions of the reductant so wasteful consumption of the iron precipitant will be prevented while insuring most effective precipitation of the copper, and so as also to provide nourishment, when ammonium bisulfite is employed as the reductant, of iron-oxidizing bacteria normally present in the leach solution.

3,669,652
CARBURIZING STEELS CONTAINING CHROMIUM
William P. Young, La Grange, and John A. Halgren, Downers Grove, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Apr. 20, 1970, Ser. No. 29,884
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 C 1 Claim



A family of steels having both high hardenability and high impact strength properties that include 0.18%–0.28% carbon, 1.01%–1.17% manganese, 0.15%–0.17% molybdenum, 0.48%–0.60% chromium, and trace amounts of nickel.

3,669,653
FERROUS BASE ALLOY
Arthur T. Cape, Monterey, Calif., assignor to Coast Metals, Inc., Little Ferry, N.J.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,448
Int. Cl. C22c *39/20, 39/50*
U.S. Cl. 75—128 D 5 Claims

A high-carbon ferrous base alloy is described, containing chromium and nickel, and relatively large amounts of vanadium, the alloy, due to its vanadium content, having a high impact resistance, and excellent wear or erosion resistance. The alloy is particularly useful for making castings, such as sand slinger buckets, and the like.

3,669,654
FOAMED METAL
Currie B. Berry, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,814
Int. Cl. B31d *3/00*
U.S. Cl. 75—20 F 13 Claims

Foamed metals having improved cellular structure and strength are produced by melting the metal, thickening the molten metal with a gaseous viscosity increasing agent, thinning the thickened metal to a desired viscosity by holding for a period of time, and foaming the metal. In the thinning step the metal may be held until it solidifies, which furnishes a convenient interval for shipping the prethickened metal to a new location for the foaming step.

3,669,655
OHMIC CONTACTS FOR GALLIUM ARSENIDE SEMICONDUCTORS
Ronald H. Cox, Dallas, and Hans A. Strack, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Original application Dec. 2, 1966, Ser. No. 598,701, now Patent No. 3,544,854, dated Dec. 1, 1970. Divided and this application Dec. 3, 1969, Ser. No. 881,927
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R 2 Claims

Silver-base alloys containing indium and germanium are used as ohmic contacts for gallium arsenide semiconductor devices.

3,669,656
TUNGSTEN BASE WELDING ROD, METHOD FOR MAKING SAME AND NOVEL APPLICATIONS OF SAME
Peter C. Murphy and J. Richard Lawrence, Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.
No Drawing. Filed May 11, 1970, Ser. No. 36,489
Int. Cl. C22c *27/00*
U.S. Cl. 75—176 2 Claims

Tungsten base weld rod alloy contains 40 to 80% by weight tungsten; 5 to 40% nickel and 1 to 25% iron.

3,669,657
COATING COMPOSITIONS AND METHODS AND ARTICLES
Dolor N. Adams, Cleveland Heights, and Donald L. Fauser, Lakewood, Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
No Drawing. Continuation-in-part of applications Ser. No. 640,352, 640,353, 640,354, 640,355, all Feb. 15, 1957. This application Mar. 29, 1969, Ser. No. 18,230
The portion of the term of the patent subsequent to Oct. 7, 1986, has been disclaimed
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 26 Claims

Coating materials are disclosed for imparting desired surface characteristics to a variety of articles. The coating materials are applied from a water solution of the resinous binding agent containing discrete solid particles of water insoluble inorganic material.

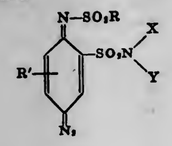
3,669,658
PHOTOSENSITIVE PRINTING PLATE
Teruhiko Youezawa and Kesanao Kobayashi, Odawarashi, and Teruo Kobayashi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed June 11, 1969, Ser. No. 832,493
Int. Cl. G03f *7/02*; G03o *1/52*
U.S. Cl. 96—33 3 Claims

A light-sensitive layer on a photosensitive printing plate which yields a visible image upon exposure to light comprising an o-quinone diazide or an o-naphthoquinone diazide, and a leuco dye.

3,669,659
PREPARATION OF A SINGLE-METAL PRINTING PLATE WITH IMINOQUINONE DIAZIDE INVOLVING DEVELOPMENT AND DECOATING WITH ALKALINE AQUEOUS SOLUTION OF DIFFERENT STRENGTH
Fritz Uhlig, Wiesbaden-Biebrich, and Jurgen Braun, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Filed July 28, 1969, Ser. No. 845,581
Claims priority, application Germany, July 30, 1968, P 17 72 978.1
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 8 Claims

This invention relates to a process for the preparation of a single metal printing plate from a reproduction material comprising a metallic support and a light-sensitive

layer thereon which contains an iminoquinone diazide of the following formula



wherein

R is aryl or substituted aryl,

X is hydrogen or alkyl, or forms a polymethylene imine group with Y and the N atom to which X and Y are attached,

Y is alkyl, aryl, substituted aryl, or part of the aforementioned polymethylene imine group, and

R' is hydrogen, halogen, alkyl or alkoxy,

and a resin which is soluble in an aqueous alkali solution, in which process the reproduction material is image-wise exposed under an original and developed by means of a weakly alkaline, aqueous solution, thereby baring those areas of the support which correspond to the non-transparent areas of the original. After exposure and development, the reproduction material is coated with an alkali-resistant lacquer and then decoated with a solution which is more strongly alkaline than the solution used for development, thereby baring the areas of the support which were under the transparent areas of the original during exposure, while the areas corresponding to the non-transparent areas of the original remain lacquered.

3,669,660

LITHOGRAPHIC PLATE DEVELOPING COMPOSITION AND PROCESS OF USE THEREOF

Eugene Golda, Monsey, and Alfred Taudien, New York, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

No Drawing. Filed May 21, 1970, Ser. No. 39,572
Int. Cl. G03f 7/02
U.S. Cl. 96—33 6 Claims

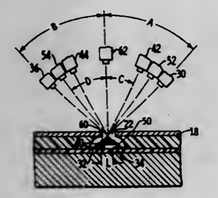
Developing compositions for negative-acting lithographic plates sensitized with substantially water-insoluble diazonium compounds comprising aqueous solutions of water-soluble sulfonic acids or water-soluble salts of sulfonic acids.

3,669,661

METHOD OF PRODUCING THIN FILM TRANSISTORS

Derrick J. Page, Pittsburgh, and Michael C. Driver, Trafford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1970, Ser. No. 17,197
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 8 Claims



This disclosure is concerned with a method of producing a thin film transistor on a substrate by evaporating layers of various materials from sources positioned at various angles to the substrate normal.

3,669,662

CYCLIC POLYISOPRENE PHOTORESIST COMPOSITIONS

Ram K. Agnihotri, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 15, 1970, Ser. No. 80,853
Int. Cl. G03c 1/52
U.S. Cl. 96—75 8 Claims

A light-sensitive photoresist composition comprised of a cyclized polyisoprene polymer and a bis-diazide photoinitiator; and light-sensitive elements coated with such compositions.

3,669,663

PREPARATION OF SILVER HALIDE GRAINS AND PHOTOGRAPHIC EMULSIONS

Charles E. Wheelock, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,274
Int. Cl. G03c 1/02
U.S. Cl. 96—94 12 Claims

Silver halide grains of controlled size are obtained by preparing a soluble silver halide-ammonia complex in water, with or without a carrier, and then depositing solution drops of controlled size into a chilled non-aqueous immiscible fluid. This results in the formation of discrete spheres of silver halide solution, which spheres are subsequently treated to remove the ammonia, and precipitate discrete grains of silver halide having a preselected size. Where a carrier is not present in the original solution, subsequent dispersion of the silver halide grains in a carrier, such as gelatin, forms a photographic emulsion. The practice of this invention is especially useful in producing silver halide grains of substantially uniform size for use in a light-sensitive emulsion having excellent contrast, and sensitivity. Where the silver halide particles are uniformly large the resulting emulsion is also capable of high-speed exposure.

3,669,664

PROCESS OF STRENGTHENING PRESENSITIZED LITHOGRAPHIC PLATE WITH LACQUER EMULSION

Ronald Alfred Charles Adams, St. Mary Cray, Kent, England, assignor to Algraphy Limited, St. Pauls Cray, Kent, England

No Drawing. Filed June 20, 1969, Ser. No. 835,212
Claims priority, application Great Britain, June 21, 1968, 29,820/68
Int. Cl. G03f 7/02
U.S. Cl. 96—33 2 Claims

The image on a planographic printing plate is reinforced by treating the plate with a liquid composition comprising a dispersion in a vehicle liquid of a solution of a photopolymerisable resin having unsaturated double bonds in a solvent therefor. The solution of resin may be obtained by treating an exposed plate having a photopolymerisable resin layer with a solvent to dissolve unexposed photopolymerisable resin on said plate.

3,669,665

PROCESS FOR MAKING RESIST STENCILS FROM PHOTOGRAPHIC STRIPPING FILMS AND FOR USING SAME

Mark A. Falgenbaum, Poughkeepsie, Daniel J. Lasky, Wappingers Falls, and Harold C. Weisel, Pawling, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,317
Int. Cl. G03c 5/00
U.S. Cl. 96—36 10 Claims

The separable layers of a photographic stripping film, consisting of a composite of a layer of sensitive unexposed emulsion (e.g. silver halide) carried upon a permanent support layer (e.g. cellulose nitrate) and stripped from the temporary support layer and smoothly adhered to an object surface with the permanent support layer adjacent the surface. The emulsion layer successively receives image-wise exposure to light in a fast exposure process, photographic development and relief development; the last by an etch-bleach process. The underlying support layer is dissolved image-wise with high-fidelity through the relief stencil in the emulsion layer. Exposed areas of the object surface then receive aqueous based process handling (e.g. etching or plating) through the aqueous resistant composite master stencil formed by the emulsion and support layers.

3,669,666

METHOD FOR INTEGRATED CIRCUIT MASK FABRICATION AND ASSEMBLY USED THEREWITH

David Kleitman, Los Altos Hills, Lewis K. Russell, Livermore, and Alan B. Grebene, Sunnyvale, Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 8, 1969, Ser. No. 882,905
Int. Cl. G03c 5/04
U.S. Cl. 96—41 10 Claims

A method for integrated circuit mask fabrication. After the integrated circuit has been designed, the masks for making the integrated circuits are prepared by preparing a number of negatives and positives from the circuit which has been designed. Each of the negatives or positives is modified by paste-ins, cut-outs, ink-ins or erasures to provide on the negative or the positive the pattern for the particular mask desired. In the method, no critical dimension need be adhered to for modifying the negatives or positives because each negative is automatically related to the other. All critical perimeters or location edges for the circuit are accurately reproduced in accordance with the original from which the negative or positive was prepared. The lines which form the circuit are wide enough so that non-critical hand paste-ins, ink-ins, erasures and the like can be utilized. Each modified negative is converted to a positive. These positives and any converted positives can then be photographed by the use of a conventional reduction and step and repeat processes to provide the actual masks which are utilized in fabricating integrated circuits.

3,669,667

PREVENTING SPEED LOSS IN OXYGEN SENSITIVE PHOTO-RESIST LAYERS

Eugene R. Skarvinko, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,437
Int. Cl. G03c 1/46
U.S. Cl. 96—68 4 Claims

A method for preventing loss of photographic speed of an oxygen sensitive photoresist by providing a layer of inert gas producing material over the standard photoresist. The gas producing material liberates gas during the exposure step thus protecting the resist.

3,669,668

PRESENSITIZED PRINTING PLATE COATED WITH COLORANT

Leonard James Watkinson and Brian Joseph Moore, Yorkshire, England, assignors to W. H. Howson Limited, Seacroft, Leeds, England

No Drawing. Continuation of abandoned application Ser. No. 639,612, May 19, 1967. This application June 4, 1971, Ser. No. 150,234
Claims priority, application Great Britain, May 26, 1966, 23,754/66
Int. Cl. C03c 1/68
U.S. Cl. 96—86 P 8 Claims

A presensitised printing plate, such as a presensitised photolithographic printing plate or a presensitised photo-engravers plate, comprising a plate of, for example, aluminum, zinc, magnesium or copper having thereon a coating of a light-sensitive resin selected from starch cinnamate, cellulose cinnamate, polyvinyl cinnamate, starch furfurylacrylate, cellulose furfurylacrylate and polyvinyl furfurylacrylate resins, and a colorant.

3,669,669

CYCLIC POLYISOPRENE PHOTORESIST COMPOSITIONS

Donald L. Klein, Poughkeepsie, N.Y., Michael W. MacIntyre, South Burlington, Vt., and Lawrence J. Rothman, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,833
Int. Cl. G03c 1/52
U.S. Cl. 96—91 N 5 Claims

A cyclized polyisoprene/aryl bis-azide sensitized negative photoresist for semiconductor device manufacture containing a maximum of 1.3% sensitizer, and characterized by the three parameters

(a) the percentage of uncyclized isoprene (or monomer) units as a function of sensitizer content, represented by the symbol R, where R=percent uncyclized polyisoprene/percent sensitizer.

(b) the ratio of internal to terminal double bonds in a cyclized material as a function of sensitizer represented by the symbol Q, where Q=IR absorbance of internal C=C/IR absorbance terminal C=C/percent sensitizer, and

(c) a combined sensitizer dependent figure of merit function K where K=QRS with the following maximum limits set to the parameters:

$$Q_{max}=0.47,\ R_{max}=13.0,\ \text{and}\ K_{max}=7.94$$

3,669,670

PHOTOGRAPHIC COMPOSITIONS CONTAINING BIS-ISOTHIURONIUM COMPOUNDS AS DEVELOPMENT ACTIVATORS AND IMAGE STABILIZERS

Grant M. Haist and Wilbert J. Humphlett, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,568
Int. Cl. G03c 1/06
U.S. Cl. 96—95 14 Claims

Certain bis-isothiuronium compounds having an intermediate ureylene or ether moiety provide activation of a silver halide developing agent upon heating in the absence of a separate development activator. A photographic element or composition containing the bis-isothiuronium compounds and a silver halide developing agent can contain other addenda suitable in photographic elements and/or compositions. The described bis-isothiouranium compounds can also provide stabilization of a resulting developed image.

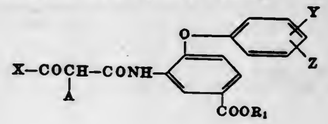
3,669,671

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC EMULSIONS CONTAINING YELLOW COUPLERS

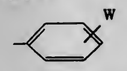
Masakuni Iwama, Isaburo Inoue, Teruo Hanzawa, Kenro Sakamoto, and Takaya Endo, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,751
Int. Cl. G03c 1/40
U.S. Cl. 96—100 7 Claims

New compounds of the general formula



wherein X is $-C(CH_3)_3$ or



W is hydrogen, C_{4-18} acylamino, lower alkoxy, halogen or lower alkyl;

R_1 is an aliphatic hydrocarbon radical having 1–18 carbon atoms; Y and Z are each hydrogen, halogen, lower alkoxy, lower alkyl or $-COOR_2$; A is hydrogen, halogen or $-OCOR_3$;

R_2 and R_3 are each lower alkyl

are found to be useful as yellow-forming color couplers of the protected type in light-sensitive silver halide photographic emulsions. These compounds can be synthesized from readily available starting materials with ease and at cheap cost.

3,669,672

SUPERSENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Keisuke Shiba, Reiichi Oki, and Tadao Shishido, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,837
Claims priority, application Japan, Jan. 10, 1969, 44/1,947
Int. Cl. G03c *1/14*
U.S. Cl. 96—126 **10 Claims**

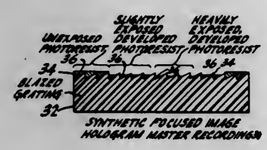
A spectrally sensitized silver halide photographic emulsion, having improved sensitivity in the red-sensitive region, yet no increase in fogging, comprising a combination of a pentamethinecyanine-type dye and an aromatic heterocyclic compound having a thio-keto structure is disclosed.

3,669,673

RECORDING OF A CONTINUOUS TONE FOCUSED IMAGE ON A DIFFRACTION GRATING

Charles Chung Sen Ih, Trenton, and Michael Jay Lurie, East Brunswick, N.J., assignors to RCA Corporation

Filed Oct. 23, 1970, Ser. No. 83,424
Int. Cl. G03c *5/00*
U.S. Cl. 96—38.3 **4 Claims**



A recording medium blank is employed comprising a substrate having a diffraction grating, composed of a plurality of spaced line ridges, on a surface thereof, together with a photoresist disposed on this surface which fills the spaces between adjacent line ridges. This provides a substantially smooth exterior surface of the photoresist which is situated in proximity with the respective tops of the line ridges making up the diffraction grating. By exposing such a recording blank to a focused image of any complex object and then developing the photoresist, a diffraction grating with modulated efficiency is formed, constituting a synthetic focused image hologram; which displays the original focused image when properly viewed. A stamping master, which can be prepared from this modulated grating record, is useful in embossing replications on thermoplastic material, such as vinyl for instance.

3,669,674

COMPOSITION FOR PRODUCING FRIED COATED COMESTIBLES

Sigmund L. Klug, Bronx, N.Y., Gilbert Finkel, South Amboy, N.J., and Monroe B. Sherain, Brooklyn, N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 553,026, May 26, 1966, now Patent No. 3,514,294, dated May 26, 1970. This application Dec. 4, 1969, Ser. No. 882,312
The portion of the term of the patent subsequent to May 26, 1987, has been disclaimed
Int. Cl. A23l *1/00*
U.S. Cl. 99—1 **3 Claims**

A foodstuff is prepared for frying by successively alternately applying to the foodstuff dry powder coatings and batter coatings. Each coating contains 60 to 90 parts starch, 1 to 9 parts leavening, 1 to 15 parts sugar and 1 to 15 parts salt, the batter containing, in addition, 85% to 200% water based on the weight of the dry ingredients. The coatings may contain additives such as dry milk solids. Synergism exists at ratios of 1 to 8 parts sugar to 2 to 12 parts salt, 2 to 12 parts salt to 1 to 4 parts leavening, and 1 to 8 parts sugar to 1 to 4 parts leavening.

3,669,675

FLOWABLE STABILIZER SUSPENSIONS

Aubrey P. Stewart, Jr., and John D. Falk, Corning, Iowa, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 15, 1969, Ser. No. 841,996
Int. Cl. A23l *1/04*
U.S. Cl. 99—1 **8 Claims**

Liquid stabilizer suspensions are prepared by pelletizing a stabilizer powder, coating said pellet with a soluble food material and suspending the coated pellet in a saturated aqueous solution of the same coating material or other food material which inhibits dissolution.

3,669,676

FEED INTAKE LIMITING COMPOSITION FOR CATTLE

Melvin R. Karr, Lubbock, Tex., and Dean E. Hodge, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed July 13, 1970, Ser. No. 54,557
Int. Cl. A23k *1/00*
U.S. Cl. 99—7 **6 Claims**

A composition has been developed which has been found to effectively and efficiently limit protein or feed supplement intake to a prescribed amount in cattle when added to the supplement and which in turn allows self feeding of the supplement. The composition which has been found to effectively limit supplement intake contains materials which also individually contribute to the nutritional balance of the feed supplement comprising a mixture of fish oil, diammonium phosphate, ammonium sulfate and meat meal.

3,669,677

METHOD OF MAKING PROTEINACEOUS SOY COMPOSITION HAVING REDUCED MICRO-ORGANISM COUNT

Louis Sair, Evergreen Park, and Irving Melcer, Park Forest, Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 631,596, Apr. 18, 1967. This application Feb. 18, 1970, Ser. No. 12,461
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **8 Claims**

A method for producing a soy concentrate which has reduced bacterial activity wherein (1) defatted soy bean material is extracted with a liquid extracting medium at the isoelectric pH, (2) the liquid extract having an undesired soluble beany flavor-conferring material is removed and insoluble soy protein material is recovered, (3) subjecting this insoluble material to bactericidal heating at at least about 160° F. at a acid pH or pH in the vicinity of the isoelectric pH to reduce the bacterial activity, (4) raising the pH of the heated soy protein material to 6 to 10.5, and (5) drying the material.

3,669,678

FOOD COMPOSITION PREPARED FROM WHEY AND COMMINUTED SESAME

John H. Kraft, Winnetka, Ill., assignor to John Kraft Sesame Corporation, Paris, Tex.

No Drawing. Continuation-in-part of application Ser. No. 731,290, May 22, 1968. This application Nov. 16, 1970, Ser. No. 90,055
Int. Cl. A23c *21/00*; A23l *1/00*; A21d *13/00*
U.S. Cl. 99—28 **13 Claims**

A composition in liquid, semi-solid, or solid form is prepared from comminuted sesame and whey, which is useful as a food or as an ingredient of foods, especially as a drink or beverage, and in bread, cakes, candy, ice cream, and other bakery products and confections.

3,669,679

GREEN BEAN DECAFFEINATION EMPLOYING FLUORINATED HYDROCARBONS

Hans P. Panzer, Stamford, Conn., Robert S. Yare, New City, N.Y., and Malcolm R. Forbes, Reeds Ferry, N.H., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,778
Int. Cl. A23f *1/10*
U.S. Cl. 99—70 **10 Claims**

Decaffeination of green coffee is achieved by extraction with fluorinated hydrocarbons.

3,669,680

PEROXIDE EXTRACTION OF TEA LEAF

Martin Gurkin, Bardonia, N.Y., and Gary Warner Sanderson and Victor Vernon Studer, Englewood, N.J., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,044
Int. Cl. A23f *3/00*
U.S. Cl. 99—77 **11 Claims**

A process for extracting whole and spent tea leaf using peroxide solutions, including the steps of bringing peroxide into contact with tea leaves in the presence of moisture to extract tea solids removing the leaf residue from the extract and drying the filtrate if desired, to recover the dried tea solids.

3,669,681

SHORTENING COMPOSITION CONTAINING SILICON DIOXIDE AND A BRIDGING AGENT, AND BAKED GOODS CONTAINING SAME

Myron D. Shoaf, Battle Creek, Mich., Frederick M. Ketch, Hemet, Calif., and Thomas S. Wong, Danbury, Conn., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 723,601, Apr. 23, 1968. This application Dec. 9, 1970, Ser. No. 96,649
Int. Cl. A21d *13/00*; A23d *5/00*
U.S. Cl. 99—86 **12 Claims**

The present invention relates to a shortening which is particularly useful in products which are heated prior to consumption. Edible oils are mixed with silicon dioxide and a bridging compound and the result is a shortening that will not weep or run at elevated temperatures, which retains desirable mouth feel characteristics of the untreated oil.

3,669,682

REFRIGERATED DOUGH COMPOSITIONS AND PROCESS FOR PREPARING SAME

Charles William Lutz, Clark, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,923
Int. Cl. A21d *2/02*
U.S. Cl. 99—90 NF **6 Claims**

Inhibiting crystalline growth in acid pyrophosphate-leavened refrigerated dough compositions by adding to the dough mix a polyphosphate having an average chain length of from 4 to 8.

3,669,683

BAKED GOODS

Simon S. Jackel, Westport, Conn., assignor to Wyandotte Chemicals Corporation, Wyandotte, Mich.

No Drawing. Continuation-in-part of application Ser. No. 692,327, Dec. 21, 1967. This application Oct. 2, 1970, Ser. No. 77,741
The portion of the term of the patent subsequent to Oct. 27, 1987, has been disclaimed
Int. Cl. A21d *2/14, 2/16*
U.S. Cl. 99—91 **5 Claims**

A method of improving the dough conditioning of yeast-raised bakery products which comprises mixing with the ingredients of said bakery products a mixture of: (A) a mixture of conjugated polyoxyalkylene compounds corresponding to the formula:

$$HO(C_2H_4O)_a(C_3H_6O)_b(C_2H_4O)_cH$$

wherein b is an integer sufficiently high to provide a molecular weight of at least about 900 for oxypropylene base and wherein $a+c$ is an integer sufficiently high to provide 5 to 90% of the total molecular weight of the compound, and (B) a mixture of mono- and diglycerides.

3,669,684

PROCESS FOR FLAVORING FOODS

Elmer A. Weaver, Main St., Spring Mount, Pa. 19478

No Drawing. Continuation of application Ser. No. 544,853, Apr. 25, 1966. This application June 11, 1969, Ser. No. 845,592
Int. Cl. A23l *1/22, 1/00*
U.S. Cl. 99—100 **4 Claims**

A process of modifying the flavor of a fresh natural food is described which includes the treating of a fresh natural food with an atmosphere containing an odor characteristic which is capable of being absorbed by the food and continuing the treatment while preserving the food in its fresh state until the necessary flavor modification of the food has occurred. By this means, fresh whole eggs, fresh whole fruit and vegetables, and nuts may have their flavors modifyed to suit the taste.

3,669,685

PREPARATION OF FRIED POTATO PRODUCTS

Merle L. Weaver, Martinez, and Earl Hautala, Richmond, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Continuation-in-part of application Ser. No. 49,550, June 24, 1970. This application July 24, 1970, Ser. No. 58,186
Int. Cl. A23l *1/12*
U.S. Cl. 99—103 **7 Claims**

The invention enables the production of fried products of desirable properties from raw stock which exhibits excessive browning tendencies and which would normally

yield fried products of excessively dark color. Typically, pieces of raw potato are immersed for a short time in a liquid refrigerant (such as liquid nitrogen or dichlorodifluoromethane), leached with warm water, and fried in edible oil.

3,669,686
METHOD OF HEAT TEMPERING POTATOES PRIOR TO FURTHER PROCESSING
Thomas J. Schoch, Ithaca, N.Y., and Jerry L. Sloan, Beaverton, Oreg., assignors to Lamb-Weston, Inc., Portland, Oreg.
No Drawing. Filed July 22, 1969, Ser. No. 843,737
Int. Cl. A23l 1/12
U.S. Cl. 99—103 1 Claim

A process of pretreating potatoes prior to further processing in which whole unpeeled potato tubers or peeled potato pieces are heated to an internal temperature of between about 122° F. and 140° F. for a period of between about 3 and 24 hours to increase the association of the starch molecules in the starch granules without gelatinization of the starch. The process produces a firm potato tissue which resists physical breakdown during further processing.

3,669,687
PROCESS OF PREPARING FROZEN PUDDING COMPOSITION
Augustine D. D'Ercole, White Plains, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed May 5, 1969, Ser. No. 822,022
Int. Cl. A23g 5/00; A23l 1/14
U.S. Cl. 99—139 5 Claims

Preparing a frozen pudding by cooking pudding ingredients containing a modified food starch at a temperature of from about 230° to about 260° F., cooling the cooked mix to about 100° F. and freezing.

3,669,688
COMESTIBLE STABILIZER COMPOSITION
Hal J. Thompson, Gretna, La., assignor to DCA Food Industries, Inc., New York, N.Y.
No Drawing. Filed Nov. 5, 1969, Ser. No. 874,365
Int. Cl. A23l 1/04; A23g 3/00
U.S. Cl. 99—139 9 Claims

A stabilizer composition, particularly useful for stabilizing comestible coatings such as sugar glazes, is formed from a major amount of malto-dextrin, and minor amounts of tapioca dextrin and gel-forming substances. The incorporation of such a composition into a glaze comprising sugar and water results in a comestible coating which is non-tacky and is resistant to extremes in ambient atmospheric conditions.

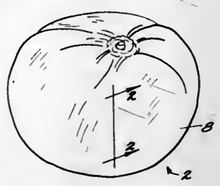
3,669,689
FORTIFICATION OF FOOD OR ALCOHOLIC BEVERAGES WITH COPOLYPEPTIDES
Kazuo Hoshino, Tokyo, and Akio Kanemitsu, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 765,986, Oct. 8, 1968, which is a continuation-in-part of application Ser. No. 384,517, July 22, 1964. This application Aug. 14, 1970, Ser. No. 63,918
Claims priority, application Japan, June 30, 1963, 38/37,803; Aug. 22, 1963, 38/43,773
Int. Cl. A23l 1/26
U.S. Cl. 99—140 R 16 Claims

A food product or alcoholic beverage flavor fortified with ornithine-aspartate copolypeptide or ornithine-aspartic acid copolypeptide. The additive is especially beneficial with food deficient in amino acids, such as rice.

3,669,690
PROCESS FOR RECOVERY OF MEAT ESSENCES
Masahide Nonaka, Moraga, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Jan. 26, 1971, Ser. No. 109,965
Int. Cl. A23l 1/22
U.S. Cl. 99—140 R 10 Claims

Process for recovering volatile flavor essences from meat and meat products, using di-n-butyl phthalate as an extraction or entrapment medium.

3,669,691
PRODUCE COATING
Charles F. De Long, New York, N.Y., and Thomas H. Shepherd, Hopewell, N.J., assignors to National Patent Development Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 872,016, Oct. 29, 1969. This application Jan. 13, 1970, Ser. No. 2,632
Int. Cl. A23b 7/16
U.S. Cl. 99—168 25 Claims





Produce is coated with hydrophilic polymers that permit a reduced rate of water vapor transmission and selective permeability to gas transport. The polymer is either a water insoluble, organic solvent soluble hydrophilic polymer consisting of polymers of a hydroxy lower alkyl acrylate, a hydroxy lower alkyl methacrylate, a hydroxy lower alkoxy lower alkyl acrylate or methacrylate or a water soluble polymer of a hydrophilic hydroxyalkyl acrylate or methacrylate.

3,669,692
WATER AND OXYGEN IMPERMEABLE COMMINUTED MEAT PRODUCT CASING
Albin F. Turbak, Danville, Ill., assignor to Tee-Pak, Inc.
Continuation-in-part of application Ser. No. 833,423, June 16, 1969, which is a continuation-in-part of application Ser. No. 518,116, Jan. 3, 1966. This application June 30, 1969, Ser. No. 865,541
The portion of the term of the patent subsequent to Feb. 2, 1988, has been disclaimed
Int. Cl. A22c 13/00; B32b 15/08
U.S. Cl. 99—176 2 Claims

A casing suitable for the encasing, processing, and storage of products, such as comminuted meat products requiring low oxygen and moisture permeability comprises a base foil member comprising metal foil, the base foil member being coated on opposite sides with a continuous layer of a thermoplastic, at least one layer of which

thermoplastic is heat sealable, and folded and formed into a continuous tube having an adherent, stretch-resistant,

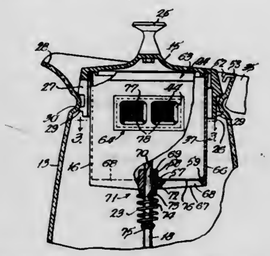


longitudinally extending seam formed by heat sealing the thermoplastic layers at said seam.

3,669,693
GERMANIA-SILICA GLASSES AND METHOD OF COATING
Robert H. Dalton, Corning, and Eugene F. Riebling, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.
No Drawing. Original application June 24, 1968, Ser. No. 739,211, now Patent No. 3,542,572. Divided and this application Mar. 19, 1970, Ser. No. 24,972
Int. Cl. C23f 7/02; H01l 3/00
U.S. Cl. 117—201 8 Claims

This invention relates to glass compositions consisting essentially of GeO_2 and SiO_2 which are especially suitable as protective insulating surface layers on silicon semiconductor devices.

3,669,694
PERCOLATOR COFFEE BASKET AND FILTER ASSEMBLY
Robert R. Nauheimer, La Grange, and Farees Uddin Khaja, Chicago, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed Mar. 30, 1971, Ser. No. 129,408
Int. Cl. A47j 31/08
U.S. Cl. 99—310 6 Claims



A cylindrical unitary brewing basket and filter assembly for electric coffee percolators is formed with a plastic basket and woven mesh filters. The top of the brewing basket is open, and the bottom of the basket has a number of ribs which extend outwardly from the center of the basket in spoke-like fashion. A woven mesh filter is secured against the upper surface of the spoke-like ribs in the interior of the basket. Openings are formed in the upper portion of the side wall of the plastic basket to receive plastic frames which contain overflow openings. Woven mesh filter strips are secured across the inside surface of the overflow openings of each of the frames.

3,669,695
TITANIUM AND/OR ZIRCONIUM NITRIDE BASED ARTICLES OF JEWELRY
Ralph K. Iler, Wilmington, Del., and Alan B. Palmer, Columbia, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 21, 1969, Ser. No. 878,890
Int. Cl. C04b 35/52, 37/00; B22f 3/00
U.S. Cl. 106—43 14 Claims

Fine-grained mixture of 30 to 99 volume percent refractory nitride, 0 to 45 volume percent refractory oxides, borides or carbides, and 0 to 50 volume percent metal are sintered or hot-pressed to form articles of jewelry having low porosity, a golden color, perspiration resistance and a high luster when polished.

3,669,696
OPTICAL GLASS
Ichizo Suzuki, Sagamihara-shi, Hideo Yasui, Tokyo, and Kazuhiko Nanba, Sagamihara-shi, Japan, assignors to Kabushiki Kaisha Ohara Kogaku Garasu Seizosho, Sagamihara-shi, Kanagawa-ken, Japan
Filed July 9, 1969, Ser. No. 840,382
Claims priority, application Japan, Sept. 16, 1968, 43/67,808
Int. Cl. C03c 3/00, 3/14, 3/30
U.S. Cl. 106—47 Q 3 Claims

This invention relates to the optical glass of high refraction and low dispersion having a basic composition in the range of B_2O_3 28–42%, Y_2O_3 2–25%, La_2O_3 5–55%, ThO_2 2–45% of weight ratio. In the attached drawings, FIGS. 1, 2, 3, 4 and 5 are triangular diagrams showing the stable region of glass formation in the composition

$$B_2O_3\text{-}Y_2O_3\text{-}La_2O_3\text{-}ThO_2$$

four component series. FIGS. 6, 7, 8 and 9 are triangular diagrams showing the stable region of glass formation in the composition ratios of the B_2O_3-Y_2O_3-La_2O_3-ThO_2-BaO five component series. FIG. 10 is an *Nd-νd* diagram showing the optical value of some examples in the tables.

3,669,697
DELAY LINE GLASS
Cyril Francis Drake, Harlow, and Robert Walter James Amos, New Barnet, England, assignors to International Standard Electric Corporation, New York, N.Y.
No Drawing. Filed May 28, 1970, Ser. No. 41,570
Int. Cl. C03c 3/04, 3/10
U.S. Cl. 106—53 2 Claims

A silica/alkali-metal oxide glass composition for use in precision ultrasonic delay lines. By adding Fe_2O_3 as a significant constitutent, a relatively high alkali-metal oxide content can be used without degrading acoustic performance resulting in lower temperatures being necessary to produce a homogenous glass.

3,669,698
SEAL GLASSES
William A. Graf, Willoughby, and Jaroslaw Kolut, Parma Heights, Ohio, assignors to General Electric Company
Filed Dec. 29, 1969, Ser. No. 888,371
Int. Cl. C03c 3/04, 3/08, 5/00
U.S. Cl. 106—54 5 Claims

Seal glass compositions directly sealable to tantalum and suitable for use as parts of hermetically sealed tantalum electrolytic capacitors, including an effective amount of chromic oxide.

3,669,699
INORGANIC COATING COMPOSITION
Kazuo Doi, Osaka, Jun Nakajima, Kyoto, Hisamitsu Takahashi, Hirakata, and Hideo Tomokawa, Neyagawa, Japan, assignors to Matsushita Electric Works, Ltd., Oaza Kadoma, Kadoma, Japan
No Drawing. Filed July 28, 1970, Ser. No. 59,032
Claims priority, application Japan, July 31, 1969, 44/61,307
Int. Cl. C09d 1/02; C09j 1/02
U.S. Cl. 106—74 7 Claims

An inorganic coating composition is provided which comprises (1) a weak alkaline aqueous solution of an

alkali metal silicate and (2) at least one condensed phosphate prepared by heating a mixture of (A) a phosphate having an average composition formula:

$$MO \cdot xP_2O_5 \cdot yH_2O$$

wherein M represents a metal selected from the group consisting of Al, Mg, Ca, Cu, Fe, Mn and Zn, the atomic ratio M/P is 0.25–1.0, each of x and y is a real number and (B) a calcinated double oxide of (a) a metal selected from Group II of the Periodic Table or (b) at least one metal selected from transition metals and metals of Group IV of the Periodic Table.

3,669,700

CEMENT COMPOSITION FOR LINING PIPE

Horace J. Beach and Howard J. En Dean, Houston, Frank E. Frawley, Monahans, and Dick Yates, Midland, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,165

Int. Cl. C04b *31/02*

U.S. Cl. 106—98 **6 Claims**

A cement composition for lining steel pipe by centrifugal casting of a slurry of the cement composition comprising sand particles of uniform particle size to avoid gradation of the sand during the centrifugal casting of the lining and portland cement in a concentration adequate to just fill the voids between, and wet the surface of, the sand particles. A small amount of fly ash pozzolan is included in the composition to increase the fluidity of the stiff sludge formed by mixing the cement composition with water used in the casting. After centrifugal casting of the lining in the pipe, the pipe is stored in an undisturbed condition until initial set begins after which the lining is steam cured and water flooded.

3,669,701

LIGHTWEIGHT CEMENTS FOR OIL WELLS

Edwin W. Biederman, Jr., Highstown, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 29, 1970, Ser. No. 85,050

Int. Cl. C04b *7/24, 7/34*

U.S. Cl. 106—120 **4 Claims**

Disclosed herein is a lightweight cement which utilizes small cenospheres primarily consisting of silica-alumina. This material known as float ash is essentially that portion of fly ash that floats on water and has a specific gravity around 0.7. The lightness of float ash and its inherent compressive strengh make it desirable as an ingredient for decreasing the weight and improving the strength of oil well cements.

3,669,702

SILICONE EMULSIONS

Ulrich Rall, Hilden, Rhineland, Herbert Frotscher, Langenfeld, Rhineland, and Manfred Petzold, Dusseldorf-Holthausen, Germany, assignors to Bohme Chemie Gesellschaft mbH, Dusseldorf-Holthausen, Germany

No Drawing. Continuation-in-part of application Ser. No. 687,134, Dec. 1, 1967. This application May 7, 1970, Ser. No. 35,586

Claims priority, application Germany, Dec. 22, 1966, B 90,419

Int. Cl. C08h *3/18*

U.S. Cl. 106—287 **4 Claims**

An aqueous silicone emulsion for treating fibrous materials, containing an oily polysiloxane and as an emulsifying agent a partially-reacted polymeric compound which contains hydrogen atoms attached to aminonitrogen atoms and halohydrin groups, the ratio of said hydrogen atoms to said halohydrin groups being from 1:0.6 to 1:1.5, as well as high-molecular-weight lipophilic radicals and/or polysiloxane radicals.

3,669,703

PROCESS FOR THE TREATMENT OF FLY ASH AND PRODUCT

John T. Pennachetti, St. Catharines, Ontario, and Joseph F. Boux, Burlington, Ontario, Canada, assignors to Enercon International Limited, Hamilton, Ontario, Canada

No Drawing. Original application Dec. 4, 1967, Ser. No. 687,465, now Patent No. 3,533,819, dated Oct. 13, 1970. Divided and this application May 5, 1970, Ser. No. 34,874

Int. Cl. C04b *31/02, 31/10*

U.S. Cl. 106—288 B **3 Claims**

A process for treating fly ash to obtain a multiplicity of valuable products including a quality controlled sintered aggregate product, an iron concentrate product, an improved pozzolan product, and a carbon product which includes the step of air classification of fly ash or a fly ash fraction.

3,669,704

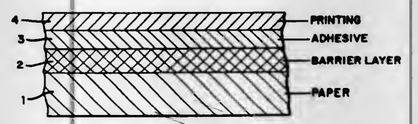
NON-CURLING DECALCOMANIA PAPER COMPRISING A DISCONTINUOUS POLYMER-STARCH PARTICLE BARRIER LAYER

Thomas L. Relling, 200 Walnut St., Dedham, Mass. 02026

Filed Nov. 28, 1969, Ser. No. 880,722

Int. Cl. B41m *3/12*

U.S. Cl. 117—3.6 **11 Claims**



A water releasable decalcomania paper includes a base member supporting several layers, e.g., a non-porous barrier layer, a non-blocking adhesive film top coating and the decalcomania printing or lacquer. The non-porous barrier layer, containing individual particles of starch and a discontinuous polymer phase preventing contact between at least some of the starch particles, prevents passage of water into the base during application of the top coating, the latter forming the adhesive for the decalcomania printing and made up primarily of dextrin. A polyvinyl alcohol or methyl cellulose layer may be deposited on the dextrin, the dextrin being mechanically or chemically broken. The decalcomania paper may be of the simplex or duplex type and may be of the "face-down" or "slide-off" variety.

3,669,705

CORROSION RESISTANT ARTICLES HAVING A ZINC SURFACE AND PROCESS FOR PREPARING THE SAME

James G. Morrison, Coraopolis, Pa., assignor to National Steel Corporation

No Drawing. Filed July 9, 1969, Ser. No. 840,517

Int. Cl. B44d *1/34*; B05b *5/02*; C09d *5/08*

U.S. Cl. 117—17 **25 Claims**

Articles having a zinc surface subject to white rusting are coated with lecithin to improve the corrosion resistance. The invention is especially useful for retarding white rusting of galvanized steel.

3,669,706

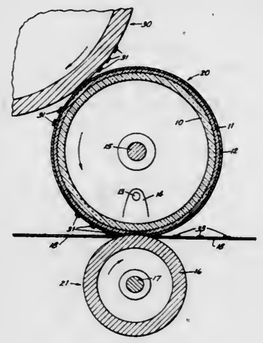
FUSING PROCESS AND DEVICE

James F. Sanders, Hudson, Wis., and Ronald R. Baumgartner, White Bear Lake, and Laszlo D. Farago, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1970, Ser. No. 81,809

Int. Cl. C23c *3/00*

U.S. Cl. 117—21 **11 Claims**



A process and device for fusing powdered thermoplastic marking media images to the surface of a receptor sheet, e.g. in a copying machine. The fuser device has a fuser roll with a radiant energy transmissive drum covered by a radiant energy transmissive resiliently compressible layer which is coated with a radiant energy absorbing outer skin. A stationary source of radiant energy and a reflector therefor are mounted within the fuser roll to provide a band of intense radiation focused upon the skin at a location generally corresponding to the zone of receptor contact.

The process involves the steps of applying a thermoplastic toner powder image to the fuser roll, contacting the powdered image with a receptor surface, and simultaneously focusing intense radiant energy on the radiant energy absorbing layer bearing the contacted image until the powder fuses and adheres to the receptor surface, and separating the receptor from the roll. A powdered image can also be transferred, e.g., from a semiconductive image source, to the surface of the roll by simply passing the roll over the source bearing the powdered image.

3,669,707

FIXING PROCESS

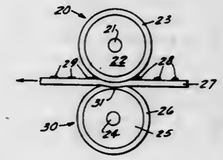
Charles A. Donnelly, South St. Paul, Minn., and James F. Sanders, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 17, 1969, Ser. No. 867,176

Int. Cl. B44d *1/094*

U.S. Cl. 117—21 **6 Claims**

Particulate thermoplastic toner is fixed on a receptor surface by directly contacting the toner with a silicone elastomer surface while the toner is in a fused state responsive to the adhesive nature of the silicone elastomer and to the adhesive nature of the receptor to provide for the substantially complete retention of the toner on the receptor surface in a fixed condition. Preferably, the silicone elastomer is free of high surface energy fillers and, most preferably, is both free of high surface energy fillers and contains low surface energy fillers, such as fluorinated organic polymer materials having a surface



energy not greater than about 50 dynes/cm., blended therein.

3,669,708

PROCESS FOR THE MANUFACTURE OF FLEXIBLE SURGICAL AND ORTHOPEDIC BANDAGE MATERIALS

Willy Ernst Reber, Rennweg 73; and Henry Nigst, Kornhausgasse 2, both of Basel, Switzerland; Josef Haas, Im Meirlacher 71, Binningen, Switzerland; and Hans Batzer, Rainweg 7; and Paul Zuppinger, Bodenweg 12, both of Arlesheim, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 438,732, Mar. 10, 1965. This application Mar. 11, 1970, Ser. No. 18,746

Claims priority, application Switzerland, Mar. 20, 1964, 3,619/64

Int. Cl. A61l *15/00*; B44d *1/092, 1/094*

U.S. Cl. 117—33 **3 Claims**

A process for the manufacture of flexible surgical and orthopedic bandage materials essentially comprising 1,2-epoxy resin impregnated glass fibre fabric having a high filler content and which bandage materials can be shaped and hardened at physiologically acceptable temperature and within surgically acceptable time interval to mechanically stiff surgical and orthopedic permanent supporting dressings, wherein in a first stage a flat structural material which is porous or suitable for use as bandage for patients is impregnated with a liquid, curable 1,2-epoxy resin-curing agent composition and then in a second stage the wet, tacky surface is sprinkled with a sufficient amount of a finely powdered filler, and any excess of filler is removed mechanically, to form a dry-, non-tacky, smooth surface on the resin impregnated flat material. The so-obtained flexible bandage being adapted for conversion into mechanically stiff, hardened surgical and orthopedic permanent supporting dressing on the body of a patient.

3,669,709

METHOD OF MAKING A PHOTOGRAPHIC BASE MATERIAL

Tsuneo Kasugai and Nobuhiko Minagawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 1, 1970, Ser. No. 42,515

Claims priority, application Japan, May 31, 1969, 44/42,801

Int. Cl. B44d *1/44*

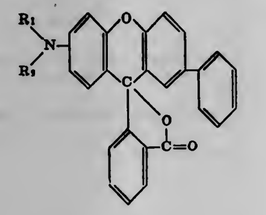
U.S. Cl. 117—34 **10 Claims**

A method of making a photographic base material having suitable adhesive properties with respect to a subsequently-applied photographic light-sensitive emulsion, said method comprising applying to a substrate of polyethylene film or a polyethylene-coated paper a member

selected from the group consisting of a first material having suitable adhesive properties with respect to a subsequently-applied light-sensitive emulsion and a second material having suitable adhesive properties with respect to a subsequently-applied light-sensitive emulsion after being subjected to an electrical discharge treatment to a dry thickness of from 0.5 to 3 microns, drying the resulting coating to a water content of from 5 to 30%, by weight, based on the total weight of the coating and subjecting the resulting coated substrate to a corona discharge treatment.

3,669,710
PRESSURE SENSITIVE COPYING SHEET
Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed May 7, 1970, Ser. No. 35,596
Claims priority, application Japan, May 7, 1969, 44/34,968
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **10 Claims**

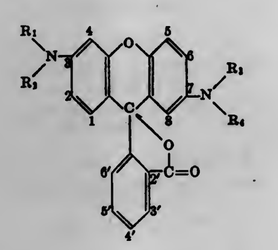
A pressure sensitive copying sheet having as a color former a compound represented by the following formula:



wherein R_1 and R_2 each is an alkyl group having 1 to 5 carbon atoms.

3,669,711
PRESSURE-SENSITIVE COPYING PAPER
Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, and Masataka Kiritani, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed May 22, 1970, Ser. No. 40,481
Claims priority, application Japan, May 23, 1969, 44/40,056
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **7 Claims**

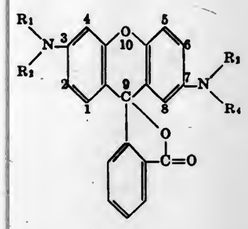
Pressure-sensitive copying papers containing a fluoran derivative, having the following general formula



wherein R_1 and R_2 each represents an alkyl group having from 1 to 5 carbon atoms; wherein R_3 represents a hydrogen atom, an alkyl group having from 1 to 5 carbon atoms, or a benzyl group; and wherein R_4 represents an aryl group are disclosed.

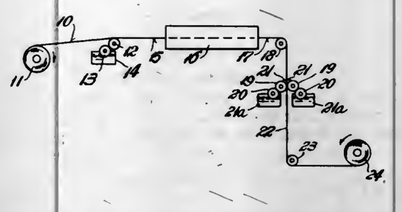
3,669,712
PRESSURE-SENSITIVE COPYING PAPERS
Shiro Kimura, Teruo Kobayashi, and Sadao Ishige, Kanagawa, and Masataka Kiritani, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed June 26, 1970, Ser. No. 50,303
Claims priority, application Japan, June 27, 1969, 44/50,819
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 **3 Claims**

A pressure sensitive copying paper containing a color former having the general formula



wherein R_1 and R_2 each is an alkyl group having from 1 to 5 carbon atoms, wherein R_3 is an acyl group, and wherein R_4 is an aryl group is disclosed.

3,669,713
TRANSFER ELEMENTS AND PROCESS FOR PREPARING SAME
Douglas A. Newman, Glen Cove, and Allan T. Schlotzhauer, Locust Valley, N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.
Continuation-in-part of application Ser. No. 738,496, June 20, 1968. This application Dec. 31, 1969, Ser. No. 889,577
The portion of the term of the patent subsequent to May 6, 1986, has been disclaimed
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.4 **8 Claims**



A pressure-sensitive transfer sheet or ribbon comprising a porous fabric having on the surface thereof a sponge layer of a foamed synthetic thermoplastic resin, said fabric containing a supply of pressure-transferable ink. In use, the ink is exuded through the sponge layer, which is present at the ink-releasing surface, so that the pattern of the filaments of the fabric is not transmitted to the formed images.

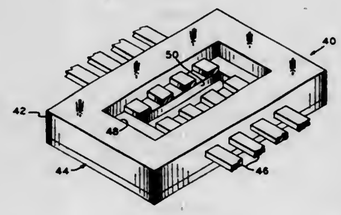
ERRATUM

For Class 117—36.9 see:
Patent No. 3,669,747

3,669,714
PLATING OF POLYSTYRENE
Donald Field Wiley, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.
No Drawing. Filed June 17, 1969, Ser. No. 834,130
Int. Cl. B44d *1/092*; C08f *15/00*; C23b *5/60*
U.S. Cl. 117—47 A **5 Claims**

The brightness of metal plating upon polystyrene molded parts is greatly enhanced by blending a small quantity of less than about 15% of a terpolymer of acrylonitrile, butadiene and styrene with the polystyrene before molding. The polystyrene before blending preferably contains a small quantity of preformed rubber in the polymer.

3,669,715
METHOD OF PREPARING A METAL PART TO BE SEALED IN A GLASS-CERAMIC COMPOSITE
Edward Meyer, Russell, Pa., assignor to Sylvania Electric Products Inc.
Original application Sept. 20, 1968, Ser. No. 761,164. Divided and this application June 17, 1970, Ser. No. 46,883
Int. Cl. B32b *7/00*
U.S. Cl. 117—53 **1 Claim**



Disclosed are techniques for fabricating metal-ceramic articles wherein a hermetic seal is desired between the metal-ceramic jointure. The technique involves utilization of a powdered ceramic containing a binding material which is compressed in a mould around the metal part or parts to be incorporated therein. The green part so formed exhibits superior strength and the article is much easier to handle for subsequent firing. Also disclosed is a glass-ceramic powder composition ideally suited to this process, together with methods for treating the metal parts to insure a hermetic seal.

3,669,716
HIGH ENERGY CURING OF PHOTOPOLYMERIZABLE NONAIR INHIBITED POLYESTER RESIN COATINGS
Alex C. Keyl, Walnut Creek, Calif., and Mary G. Brodie, Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio
No Drawing. Continuation-in-part of application Ser. No. 701,023, Dec. 5, 1967, now Patent No. 3,511,687, which is a continuation-in-part of application Ser. No. 360,359, Apr. 16, 1964. This application May 11, 1970, Ser. No. 36,414
The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed
Int. Cl. B44d *1/50*
U.S. Cl. 117—62 **16 Claims**

Photopolymerizable nonair inhibited polyester resin coatings having a thickness of 1 to 12 mils (0.001 to 0.012 inch), preferably containing a photosensitizer, are cured by subjecting them to light waves within the range of 1850 to 4000 angstroms. The process is useful in forming coatings on metal, wood or other substrate but is especially valuable for producing cured resinous coatings on wood, e.g., plywood panel.

3,669,717
METHOD OF COATING SHAPED ARTICLES OF PLASTICIZED POLYVINYL CHLORIDE
Akira Akamatsu and Kazushi Togo, Kanagawa-ken, and Yoko Kida, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
Filed Sept. 23, 1970, Ser. No. 74,832
Claims priority, application Japan, Sept. 30, 1969, 44/77,921
Int. Cl. B32b *27/30*; B44d *1/14*
U.S. Cl. 117—72 **6 Claims**

The tendency of plasticized PVC surfaces to become tacky because of plasticizer migration is remedied by a coating essentially consisting of poly-γ-alkyl glutamate held to the PVC surface by a primer coating of homopolymers or copolymers of PVC having a low degree of polymerization (500 or less).

3,669,718
SOLVENT RESISTANT ALKENYL AROMATIC RESINOUS SHAPED ARTICLE
Thomas T. Chiu, Midland, Kenneth R. Hock, Gladwin, and Floyd B. Nagle, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Oct. 28, 1969, Ser. No. 871,946
Int. Cl. B32b *27/30*
U.S. Cl. 117—72 **8 Claims**

Polystyrene-type resinous articles are provided with a protective coating of a styrene or vinyl ether maleic anhydride copolymer salt which provides a solvent resistant coating and prevents stress cracking and softening of the styrene-type article.

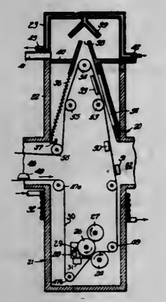
3,669,719
COMPOSITE ARTICLES HAVING METALLIC COATING WITH HIGH TEMPERATURE LUBRICITY
Clinton M. Doede, Hamden, and Eugene E. Combs, Northford, Conn., assignors to Quantum, Inc., Wallingford, Conn.
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,866
Int. Cl. C23c *7/00*
U.S. Cl. 117—93.1 PF **6 Claims**

Metal coatings on non-metallic and metallic substrates, including bearing metal alloy coatings exhibiting lubricity at high temperatures, are prepared by directing a plasma flame at a non-metallic substrate, such as a polyimide substrate or a metal substrate such as titanium, stainless steel, etc. and injecting into one of the gas streams entering the said plasma flame a copper-nickel-indium alloy in solid particulate form and depositing on the said substrate an adherent, dense coating having high temperature surface lubricity.

3,669,720
PRINTING AND COATING METHOD
Robert K. Reuer, Evanston, Ill., assignor to Inca Inks, Inc., Northbrook, Ill.
Original application May 14, 1965, Ser. No. 455,936. Divided and this application June 25, 1969, Ser. No. 850,292
Int. Cl. B44d *1/44*
U.S. Cl. 117—93.31 **5 Claims**

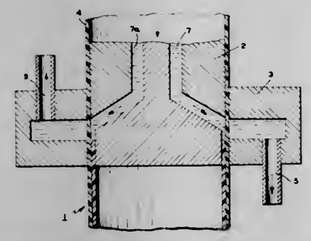
A method for coating web and object surfaces wherein a formulation including a coating component dispersed in a solvent vehicle is deposited onto the web or object surface which is then subjected to ultrasonic irradiation for

facilitating vaporization of the solvent constituent in the formulation and/or polymerization and crosslinking



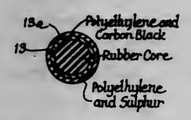
within the coating component while on the web or object surface.

3,669,721
PROCESS FOR THE CONTINUOUS PRODUCTION OF COATED TUBULAR STRUCTURES
Eugen Jager, Bomlitz, Germany, assignor to Wolff Walsrode Aktiengesellschaft, Walsrode, Germany
Filed Feb. 11, 1970, Ser. No. 10,440
Claims priority, application Germany, Feb. 21, 1969, P 19 08 698.7
Int. Cl. B05b *13/06*; B44d *1/10*
U.S. Cl. 117—95 **2 Claims**



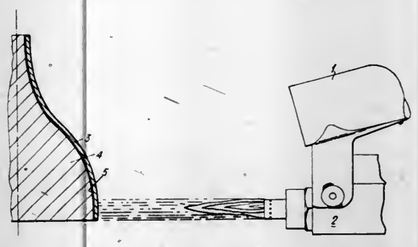
A process for the continuous production of coated tubular structures by simultaneously venting from one side and impregnating with a coating material from the other side, a tubular structure and an apparatus for carrying out the process.

3,669,722
FREE FLOWING PELLETS OF UNCURED ELASTOMERIC MATERIAL
William A. Bishop, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.
Filed June 25, 1969, Ser. No. 836,416
Int. Cl. B32b *25/08*; B44d *5/08*
U.S. Cl. 117—100 C **5 Claims**



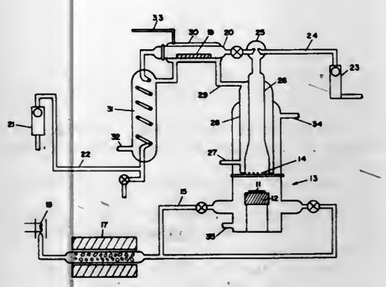
Free flowing pellets of tacky elastomeric material in which the elastomeric material forms a core coated with one or more layers in which the outermost layer is a hard non-tacky layer containing a film forming material.

3,669,723
SPRAY DEPOSITION OF SILICON POWDER STRUCTURES
Norman Lawrence Parr, Shepherds Croft Ridge, Wareham, England, and Robin Lawford Brown, 44 Leybourne Ave., Ensbury Park, Bournemouth, England
Continuation of application Ser. No. 614,855, Feb. 9, 1967. This application Jan. 21, 1970, Ser. No. 4,449
Claims priority, application Great Britain, Feb. 9, 1966, 5,565/66
Int. Cl. B44d *1/097*
U.S. Cl. 117—105.2 **2 Claims**



Spray deposition of silicon powder by projection from a flame gun on to a preheated former, which may be capable of being rotated or reciprocated to facilitate continuous and even deposition of silicon powder on the former. The former may be formed of silicon or silicon nitride, in which case both the former and the silicon compact formed thereon by the projected powder are heated in an atmosphere of nitrogen or ammonia to convert the silicon to silicon nitride. As an alternative, the former is coated with a soluble release agent before spraying and the former and compact formed thereon are immersed in a solvent to dissolve the soluble release agent to release the compact, which is then heated in an atmosphere of nitrogen or ammonia to convert the silicon to silicon nitride.

3,669,724
METHOD OF VAPOR DEPOSITING A TUNGSTEN-TUNGSTEN OXIDE COATING
Warren L. Brand, Sunnyvale, Calif., assignor to Motorola, Inc., Franklin Park, Ill.
Original application Jan. 26, 1968, Ser. No. 700,817. Divided and this application Sept. 28, 1970, Ser. No. 76,333
Int. Cl. C23c *11/08, 11/00, 13/00*
U.S. Cl. 117—106 R **3 Claims**



A tungsten-tungsten oxide electrical resistance film is deposited by passing a gaseous mixture containing oxygen and tungsten hexacarbonyl vapor in contact with a suitable substrate maintained at a temperature sufficiently high to decompose the carbonyl vapor. The sheet resistance of the deposited film can be varied from 50 ohms per square to 5,000 ohms per square by controlling the molar ratio of oxygen to tungsten hexacarbonyl, thereby determining the ratio of tungsten to tungsten oxide in the cermet film. The film is particularly suited for use as a resistor in the fabrication of integrated circuits, and is compatable with diffused active components of semiconductor devices.

3,669,725
FLAMEPROOFING OF POLYESTER-CELLULOSE FIBRE MATERIALS
Hermann Nachbur, Dornach, Joerg Kern, Oberwil, Basel-Land, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba Limited, Basel, Switzerland
No Drawing. Filed Mar. 26, 1970, Ser. No. 24,391
Claims priority, application Switzerland, Mar. 31, 1969, 4,858/69
Int. Cl. C09d *5/18, 3/28*
U.S. Cl. 117—136 **12 Claims**

A process for the flameproofing of mixed fiber materials of polyester and cellulose is provided in which an aqueous preparation is applied to these materials, which contains a reaction product of a nitrogen compound, a phosphonopropionic acid amide, formaldehyde and optionally an alkanol. Afterwards the materials are dried and subjected to a heat treatment. The fiber materials then have a very good permanent flame resistance. Preferred fiber materials are polyester-cotton mixed fabrics.

3,669,726
SYNTHETIC ORGANIC FIBER RESISTANT TO YELLOWING
Edgar Karl Tinder, Powhatan, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 13, 1969, Ser. No. 849,904
Int. Cl. B32b *27/34, 27/14*
U.S. Cl. 117—138.8 N **3 Claims**

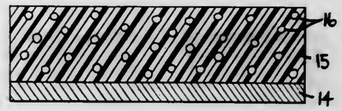
Polyamide and other synthetic polymeric fibers of increased whiteness and reduced tendency to yellow are obtained by coating the same with defined amounts of discrete particles of carbon black of colloidal size.

3,669,727
IMPREGNATION AND LAMINATION RESIN SOLUTIONS, METHODS AND ARTICLES PRODUCED THEREBY
Douglas G. Raymond, Parma Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,930
Int. Cl. B27k *3/34*; B21h *1/34*
U.S. Cl. 117—148 **13 Claims**

New melamine acrylate-polyester resin solutions and impregnation methods suitable for use in impregnating or coating paper, wood, cloth, fabric, asbestos, and other webbed, fibrous or porous base materials are provided. These impregnated base materials are suitable for fusion to a substrate to form laminated composite articles.

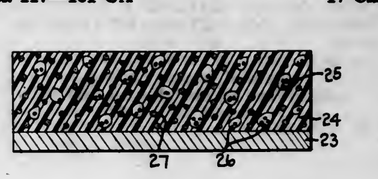
3,669,728
METHOD FOR PROVIDING OPAQUE, MICROCELLULAR, FILM COATINGS ON SUBSTRATES AND THE RESULTANT PRODUCT
Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 741,502, July 1, 1968, and Ser. No. 745,433, July 17, 1968. This application June 22, 1970, Ser. No. 48,199
Int. Cl. C07d *3/48*
U.S. Cl. 117—161 UA **21 Claims**

The disclosed invention relates to films from a novel latex mixture which are non-porous, microcellular and opaque in the absence of an opacifying agent. The preparation of the films of the disclosed invention comprises providing control techniques for entrapping a sufficient amount of a liquid non-solvent for the polymer in the polymer matrix of a latex after the continuous phase removal, so that upon evaporation of the nonsolvent from a coalesced and tack-free polymer matrix, a resulting opaque



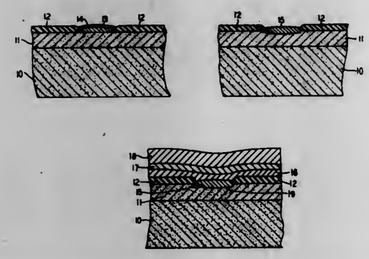
and continuous, non-porous film is produced which will have minute, discrete and substantially closed voids and which is opaque in the absence of an opacifying agent such as pigment. The disclosed invention also relates to opaque films with enhanced optical properties produced by the inclusion of pigments, fluorescent materials and optical brighteners in the opaque films in such a manner as to maximize their effectiveness therein.

3,669,729
METHOD FOR PRODUCING ARTICLES HAVING PIGMENTED COATINGS WITH IMPROVED HIDING ABILITY AND THE RESULTANT PRODUCT
Jerome A. Seiner, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 741,502, July 1, 1968, and Ser. No. 745,433, July 17, 1968. This application June 22, 1970, Ser. No. 48,999
Int. Cl. C09d *3/48*
U.S. Cl. 117—161 UA **17 Claims**



The disclosed invention relates to improved opaque films which are continuous, microcellular and non-porous possessing unusual hiding ability and opacity. The films of this invention are prepared from a novel latex mixture comprising: non-elastomeric polymeric material, water, non-solvent for the polymeric material in a weight ratio of non-solvent to polymer solids of about 0.05 to about 3:1.0 and an opacifying pigment in a weight ratio of pigment to polymer solids of from about 0.1 to about 5:1. The non-solvent is selected such that it has a boiling point range above that of water and having sufficiently low volatility to remain entrapped in the polymeric matrix when the composition has reached a quasi-rigid or tack-free state when applied as a film. Once the film has become tack-free the non-solvent is evaporated so as to leave behind minute, closed cells which enhance the hiding and opacity of the film. The disclosed invention also relates to opaque films with enhanced optical properties produced by the inclusion of colored pigments, dyes, fluorescent materials and optical brighteners in the unusually opacified films in such a manner as to maximize their effectiveness therein.

3,669,730
MODIFYING BARRIER LAYER DEVICES
Martin Paul Lepselter, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Original application Aug. 1, 1968, Ser. No. 749,396. Divided and this application Apr. 24, 1970, Ser. No. 31,730
Int. Cl. H01l 9/00
U.S. Cl. 117—200 4 Claims

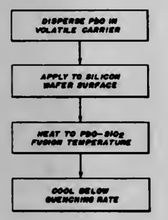


A method is described for producing surface barrier diodes with predetermined barrier heights. At least two metals are mixed in a predetermined proportion and deposited on a silicon substrate. Sufficient heat is applied to cause the metals to react with the substrate, forming a mixed metal silicide region. By varying the proportions of the metals a desired barrier height can be achieved.

ERRATUM

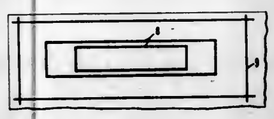
For Class 117—201 see:
Patent No. 3,669,693

3,669,731
SILICON DEVICE HAVING A LEAD-SILICATE THEREON AND METHOD OF FORMING THE SAME
Gerald C. Hsuh, Chester Springs, Pa., assignor to General Electric Company
Filed June 30, 1969, Ser. No. 837,717
Int. Cl. H01l 3/00
U.S. Cl. 117—201 7 Claims



A slurry of an oxide of lead and an organic vehicle is prepared and applied by suitable means to a clean silicon wafer. The organic vehicle is allowed to volatilize. The silicon wafer is then heated in an oxygen atmosphere to a temperature at least above the eutectic of the oxide of lead and silicon dioxide and preferably above the liquidus for that composition, and maintained at that temperature for a short time to form a lead-silicate glass of desired thickness. By cooling the silicon wafer at a controlled rate, the glass removes or getters any impurities which might degrade the performance of any P–N junction therein by diffusion during the process and thereafter protects the silicon wafer from the ambient.

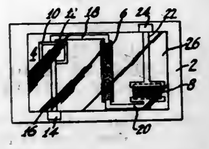
3,669,732
PROCEDURE FOR MAKING SEMICONDUCTOR DEVICES OF SMALL DIMENSIONS
Simon Middelhoek, Adliswil, and Giovanni Sasso, Zurich, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1969, Ser. No. 827,495
Claims priority, application Switzerland, June 28, 1968, 9,711/68
Int. Cl. H01l 7/00
U.S. Cl. 117—212 3 Claims



A method for making a high speed field effect transistor of the planar type with Schottky-barrier or junction contacts, in which all apertures required for production of electrodes in an insulating layer covering the semiconductor body are produced simultaneously.

A field effect transistor in which the gate electrode surrounds the drain electrode in a loop while the source electrode is subdivided and its parts essentially surround the gate electrode. The contact lands of the gate electrode are arranged essentially outside the region of capacitive influence of the source electrode. A semiconductor surface is metallized by depositing metal through a mask aperture smaller than the surface to be metallized followed by heating to cause the metal to wet the surface and spread over the entire surface.

3,669,733
METHOD OF MAKING A THICK-FILM HYBRID CIRCUIT
Trevor Richard Allington, Indianapolis, Ind., assignor to RCA Corporation
Filed Dec. 12, 1969, Ser. No. 884,629
Int. Cl. H01c 7/00, 17/00; B44d 1/18
U.S. Cl. 117—212 3 Claims



A transparent, screen-printable insulation composition for protecting components of a hybrid integrated circuit comprising a transparent synthetic resin, mica flake and resin solvent in such proportions as to be screen-printable. Also, a method of making a hybrid integrated circuit in which passive components are trimmed after the protective coating is applied.

3,669,734
METHOD OF MAKING ELECTRICAL CONNECTIONS TO A GLASS-ENCAPSULATED SEMICONDUCTOR DEVICE
Charles Junior Jacob, Terre Haute, and Gerald Wayne Lawton, Indianapolis, Ind., assignors to RCA Corporation
Filed Aug. 5, 1970, Ser. No. 61,306
Int. Cl. C03c 15/00; B44d 1/14
U.S. Cl. 117—217 7 Claims

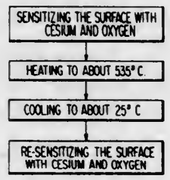
Method of making electrical connections to a glass-encapsulated semiconductor device having aluminum contact pads on a silicon dioxide passivation layer. The

method comprises etching away the glass over the contact pads with a solution that etches rapidly but does not attack the aluminum and which contains a soluble compound of a metal having an electrode potential below aluminum in the electrochemical series. The metal compound is present in high enough concentration to deposit



on the aluminum surface faster than the etchant can remove it. A thicker layer of solder-wettable metal is then electrolessly deposited on the first metal layer and solder bumps may then be formed on the second metal layer. The second metal layer may be composed of the same metal as the first.

3,669,735
METHOD FOR ACTIVATING A SEMICONDUCTOR ELECTRON EMITTER
Dennis Gleadon Fisher, Princeton, N.J., assignor to RCA Corporation
Filed Sept. 4, 1970, Ser. No. 69,537
Int. Cl. H01l 7/32, 7/44
U.S. Cl. 117—224 10 Claims

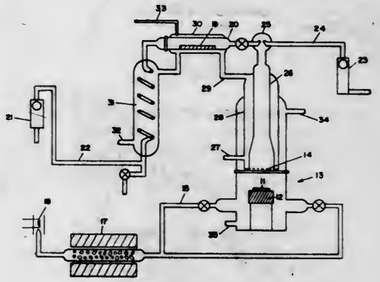


The method for activating a semiconductor to maximize its electron emission, especially photoemission, includes the steps of sensitizing a cleaned semiconductor with at least a strongly electronegative material and a strongly electropositive material, thereafter heating the semiconductor to a temperature of between about 470° C. ±10° C., and 590° C.±10° C., then resensitizing the semiconductor with at least a strongly electropositive material.

3,669,736
TEXTILE MATERIAL HAVING A DURABLE ANTI-STATIC PROPERTY AND THE FIBERS TO BE USED FOR ITS PURPOSE
Shigeru Fujiwara, Kenji Nagae, and Tomomi Okuhashi, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed May 26, 1969, Ser. No. 827,931
Claims priority, application Japan, June 4, 1968, 43/37,735
Int. Cl. C08f 47/12
U.S. Cl. 117—226 5 Claims

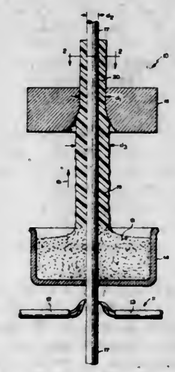
Electrically conductive fibers composed of (1) a substrate which is a fiber of synthetic organic polymer and (2) a coating adhered to said substrate, said coating being of average thickness of 0.5 to 15 microns and comprising a matrix of a hardened resin mixture of an acrylonitrile-butadiene copolymer and a phenolic resin compatible with the copolymer, and finely divided silver and/or carbon dispersed in said matrix. The electrically conductive fibers have a very durable electric conductivity as well as excellent functional properties of normal textile fibers.

3,669,737
VAPOR-PLATED CERMET RESISTOR
Warren L. Brand, 942 Ponderosa, Apt. 36, Sunnyvale, Calif. 94086
Continuation of application Ser. No. 700,817, Jan. 26, 1968. This application Sept. 28, 1970, Ser. No. 76,332
Int. Cl. B44d 1/18; H01c 7/00
U.S. Cl. 117—227 2 Claims



A tungsten-tungsten oxide electrical resistance film is deposited by passing a gaseous mixture containing oxygen and tungsten hexacarbonyl vapor in contact with a suitable substrate maintained at a temperature sufficiently high to decompose the carbonyl vapor. The sheet resistance of the deposited film can be varied from 50 ohms per square to 5,000 ohms per square by controlling the molar ratio of oxygen to tungsten hexacarbonyl, thereby determining the ratio of tungsten to tungsten oxide in the cermet film. The film is particularly suited for use as a resistor in the fabrication of integrated circuits, and is compatible with diffused active components of semiconductor devices.

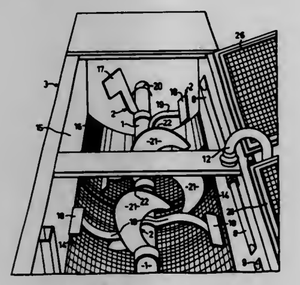
3,669,738
POLYESTER COATED WIRE
Steve G. Cottis, Buffalo, Bernard E. Nowak, Lancaster, and James Economy, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.
Filed May 28, 1969, Ser. No. 828,652
Int. Cl. B44d 1/142, 1/094, 1/097
U.S. Cl. 117—232 11 Claims



A wire insulated with an impervious oxybenzoyl polyester coating which can be produced by drawing the wire having a porous coating through a die.

3,669,739
PROCESS FOR RECOVERY OF STARCH AND GLUTEN BY WASHING A DOUGH OF WHEAT FLOUR

Erik Plaven, Scheelegatan 1, Stockholm K, Sweden
Continuation-in-part of applications Ser. No. 476,128 and Ser. No. 476,129, both July 30, 1965. This application June 15, 1970, Ser. No. 46,469
Claims priority, application Sweden, Aug. 4, 1964, 9,413/64
Int. Cl. C13l 1/02
U.S. Cl. 127—67 8 Claims



A process for recovery of wheat starch and gluten from a dough of wheat flour, as compared with all other flour starches, by simultaneously mechanically treating and spray washing the dough with a starch absorbing liquid, the latter of which is quickly carried away from the recovery region so as to preclude an undue build-up of wash liquid, with the dough being subjected to repeated shredding and cutting actions by the improved disposition and use of improved scrapers, spreading and cutting members revolving with a rotatable shaft extending axially within a perforated semi-circular troughed treatment zone, whereby the gluten network of the dough mix is more efficiently broken down, and the starch is washed therefrom, and the reformed gluten lumps respectively being recovered in different areas for further predetermined treatment or commercial use.

3,669,740
METHOD OF CLEANING POLYAMIDE PRODUCING APPARATUS

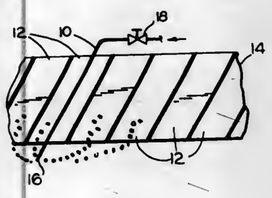
Akira Yamamoto and Keiichi Moriyama, Mihara-shi, Japan, assignors to Teijin Limited, Osaka, Japan
No Drawing. Filed Oct. 24, 1969, Ser. No. 869,361
Claims priority, application Japan, Nov. 5, 1968, 43/81,161
Int. Cl. B08b 9/02
U.S. Cl. 134—22 3 Claims

A method of cleaning polyamide producing apparatus is disclosed, namely, contacting the coating on the apparatus, at a temperature above 200° C., with a composition comprising at least 25 weight percent of one or more organic carboxylic acids having a boiling point above 220° C.

3,669,741
METHOD AND APPARATUS FOR AIR-CLEANING SETTLING TUBE MODULES

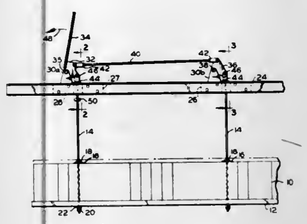
Richard G. Dunnahoe and Gary B. Bondahl, Corvallis, and Paul W. Roth, Salem, Oreg., assignors to Neptune Microfloc, Incorporated, Corvallis, Oreg.
Filed Jan. 28, 1971, Ser. No. 110,398
Int. Cl. B08b 9/00
U.S. Cl. 134—22 R 3 Claims

Settling tube modules are cleaned of deposited material by injecting air below them while they are immersed in the liquid of the settling basin. The air flows upwardly through the modules causing displacement of liquid from and turbulence in the individual tubes thereof, the settling surfaces being scrubbed clean by the high liquid velocities achieved.



3,669,742
METHOD AND APPARATUS FOR CLEANING SETTLING TUBE MODULES

Alfred F. Slechta, Corvallis, Oreg., Gordon L. Culp, Kennewick, Wash., and Richard G. Dunnahoe, Corvallis, Oreg., assignors to Neptune Microfloc, Incorporated, Corvallis, Oreg.
Filed July 30, 1970, Ser. No. 59,425
Int. Cl. B08b 9/00
U.S. Cl. 134—23 2 Claims



Settling tube modules are cleaned of deposited material by reciprocating the module while immersed in the liquid of the settling basin to cause relatively rapid motion of the liquid through the individual settling tubes thereof. Good cleaning is achieved when the edge of the module is reciprocated through an amplitude of about two inches and the velocity of the module in the liquid during the reciprocation attains a value of at least two inches per second.

3,669,743
RECHARGEABLE ELECTROCHEMICAL CELL WITH SOLID ZINC SALT COMPLEX ELECTROLYTE

Frank E. Swindells, Arlington, Va., assignor to Melpar, Inc., Falls Church, Va.
Filed Apr. 14, 1969, Ser. No. 815,717
Int. Cl. H01m 21/00, 35/00
U.S. Cl. 136—6 15 Claims

An electrochemical cell has a zinc electrode and a silver electrode between which is positioned a solid non-hygroscopic electrolyte in the form of a complex compound of a zinc salt with ammine, hydrazine, hydroxylamine, or aniline; such as zinc chloride ammine. A further layer of silver chloride may initially be disposed between the solid complex and the silver electrode, or may subsequently be formed in that location upon charging of the cell. The preferred salts to be converted to the complex are zinc chloride, zinc bromide, and zinc sulfate.

3,669,744
HERMETICALLY SEALED NICKEL-HYDROGEN STORAGE CELL

Boris Ioselevich Tsenter, Nalichnaya ulitsa dom 41, korpus 1, kv. 9; Vyacheslav Mikhailovich Sergeev, Gusinskaya ulitsa 15, kv. 10; and Alexandr Ilich Kloss, Omskaya ulitsa 13, kv. 12, all of Leningrad, U.S.S.R.
Filed Feb. 25, 1971, Ser. No. 118,645
Int. Cl. H01m 29/02
U.S. Cl. 136—28 2 Claims

The present invention relates to chemical sources of electricity, and more specifically to hermetically sealed nickel-hydrogen storage cells.

A hermetically sealed nickel-hydrogen storage cell with positive nickel-oxide electrodes and negative hydrogen electrodes according to the invention is characterized in that the thicknesses of the negative and positive electrodes are in the ratio of from 1:1 to 1:20; the volume of electrolyte and the volume of the pores in said electrodes and said separator are in the ratio from 5:10 to 9:10; and there is 0.5×10^{-3} to 2×10^{-3} cubic metres of gas per kilogram (mass) of nickel hydroxide in the positive nickel-oxide electrode.

3,669,745
ACCUMULATOR ELECTRODE WITH CAPACITY FOR STORING HYDROGEN AND METHOD OF MANUFACTURING SAID ELECTRODE

Klaus Beccu, Onex, Geneva, Switzerland, assignor to Battelle Memorial Institute, International Division, Carouge, Geneva, Switzerland
No Drawing. Continuation of abandoned application Ser. No. 726,234, May 2, 1968. This application Apr. 24, 1970, Ser. No. 29,740
Claims priority, application Switzerland, May 2, 1967, 6,333/67
Int. Cl. H01m 35/02
U.S. Cl. 136—20 2 Claims

An accumulator electrode with capacity for storing hydrogen, having an active component constituting at least 40% by weight of the electrode and consisting of a hydride of a metal belonging to the third, fourth or fifth group of transition elements. The electrode further contains nickel, copper, silver, iron or chrome-nickel steel alloyed with the active component and comprises a metallic supporting structure. A method of manufacturing this electrode, comprises preparing a metal powder containing the active component and said other metal and sintering said powder in hydrogen at 700 to 1000° C.

3,669,746
SEPARATORS FOR SECONDARY ALKALINE BATTERIES HAVING A ZINC-CONTAINING ELECTRODE

John L. Devitt, Denver, and Donald H. McClelland, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.
Filed Aug. 3, 1970, Ser. No. 62,225
Int. Cl. H01m 43/02, 3/00
U.S. Cl. 136—30 16 Claims

A sealed or resealably safety-valved alkaline zinc electrode-containing battery cell is disclosed employing a multi-layer separator material which is composed of:

(1) A first layer in close engagement with the zinc electrode, microscopically homogeneous, non-reticulated, highly absorbing and retentive of electrolyte, and providing a uniformly wetted interface with the zinc electrode substantially lacking occluded voids;

(2) A second layer, contiguous to the opposite polarity electrode, which is composed of the same material as the first layer, or of a more porous, reticulated and less-retentive material than the first layer; and optionally,

(3) A third layer, interposed between the first and second layers, of a semi-permeable membranous layer. The net effect of this multi-layer separator is to provide a variance in separator material characteristics normally to and transversely between the electrodes.

3,669,747
HEAT-SENSITIVE COPY-SHEET

Geoffrey C. Nicholson, St. Paul, and Donald J. Newman, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed July 10, 1970, Ser. No. 54,003
Int. Cl. B41m 5/18
U.S. Cl. 117—36.9 8 Claims

An integral heat-sensitive copy-sheet contains a protonatable chromogenous dye-forming color progenitor and a cocrystal adduct of an organic amine and volatilizable organic acid.

3,669,748
THERMAL BATTERY

William N. McCullough, Joplin, Mo., and Edwin E. Spracklen, deceased, late of Joplin, Mo., by Dorothy H. Spracklen, legal representative, Joplin, Mo.; said McCullough assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Continuation of application Ser. No. 763,483, Sept. 16, 1968. This application June 8, 1970, Ser. No. 48,797
Int. Cl. H01m 21/14, 17/06
U.S. Cl. 136—83 T 2 Claims

A thermal battery having a plurality of stacked electro-chemical couples each including a pair of positive and negative electrodes between which is sandwiched a solid electrolyte liquifiable when sufficiently heated to provide substantially instantaneous battery activation, and a plurality of insulating rings each associated with a different pair of electrodes and enclosing the peripheral edge of only one of the electrodes of the associated pair for preventing alloys which form by chemical interaction of the electrolyte and one or more of the electrodes from bridging and thereby short-circuiting the electrode pair. In a preferred thermal battery, the insulating ring of each couple also encloses the peripheral edge of the electrolyte, preventing the electrolyte, when liquified, from leaving the space between the electrodes and thereby increasing the battery internal resistance and decreasing its output voltage.

3,669,749
METHOD OF OPERATING ELECTROCHEMICAL CELLS WITH INCREASED CURRENT DENSITY AND OXYGEN EFFICIENCY

Robert J. Allen, Saugus, and Henry G. Petrow, Cambridge, Mass., assignors to Prototech Company, Cambridge, Mass.
No Drawing. Filed Mar. 20, 1968, Ser. No. 719,292
Int. Cl. H01m 27/00
U.S. Cl. 136—86 R 4 Claims

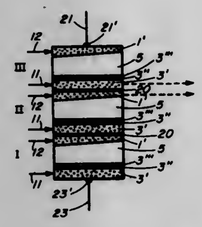
This disclosure is primarily concerned with the discovery of the improvement in the current density and oxygen efficiency of alkali media fuel cells and the like effected by the introduction into the cathode region thereof of a source of oxidizable boron.

3,669,750
FUEL CELL SYSTEM

Walter Juda, Lexington, Mass., assignor to Prototech Incorporated, Cambridge, Mass.
Continuation of application Ser. No. 260,457, Feb. 25, 1963. This application Dec. 24, 1968, Ser. No. 788,687
Int. Cl. H01m 27/00
U.S. Cl. 136—86 8 Claims

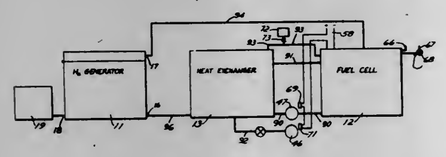
Stacked fuel cells in which successive anode and cathode electrodes are porous supports juxtaposed with a thin im-

pervious conductive layer. Each anode support is provided with a thin hydrogen-permeable layer at the side thereof facing the electrolyte. Hydrogen-containing fuel is reformed in situ by providing reformation catalysts



internally of the anode supports within the pores thereof. Fuel and oxidant are applied to one end of the anode and cathode electrodes, and vents are provided at the opposite end. Venting is assisted by electrode tapering or tilting.

3,669,751
ELECTRIC BATTERY COMPRISING A FUEL CELL HYDROGEN GENERATOR AND HEAT EXCHANGER
Peter D. Richman, 164 Leach Ave., Park Ridge, N.J. 07656
Filed Mar. 15, 1967, Ser. No. 623,465
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 C **22 Claims**

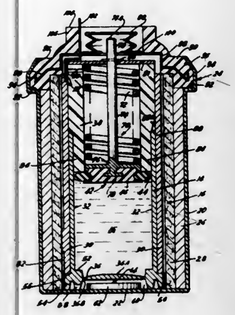


An electric battery of very high capacity per pound. The preferred embodiment is a self-balancing system having a hydrogen-oxygen fuel cell, a circulating KOH electrolyte and a hydrogen generator in which an Si-Al mixture is reacted with the electrolyte to produce hydrogen and an insoluble aluminum silicate, thus taking up the water generated in the fuel cell. In the fuel cell the electrodes preferably have a hydrophobic surface on the gas side and a hydrophilic bubble barrier on the electrolyte side.

3,669,752
METHOD OF OPERATING FUEL CELL
Robert L. Novack, Hanover, Mass., David M. Moulton, Knoxville, Tenn., and Walter Juda, Lexington, Mass., assignors to Prototech Company, a division of Bolt Beranek and Newman Inc., Cambridge, Mass.
Original application Apr. 4, 1966, Ser. No. 539,768, now Patent No. 3,471,334, dated Oct. 7, 1969. Divided and this application Aug. 4, 1969, Ser. No. 847,033
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **5 Claims**

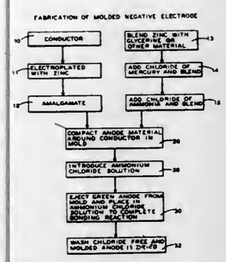
Electrolytic cell operation in which the electrolyte is agitated near one of a pair of electrodes and a barrier is interposed between the electrodes and is physically combined with structure of one of the electrodes. The cell may have an alkali-metal hydroxide electrolyte maintained at a temperature of at least 300 degrees C. to render the electrolyte molten and anhydrous. Peroxide and superoxide may function as the electrochemical oxidant of the cell.

3,669,753
RESERVE CELL, SPRING-CONTROLLED
Gordon E. Kaye, Irvington, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 22, 1970, Ser. No. 74,394
Int. Cl. H01m *21/10*
U.S. Cl. 136—114 **8 Claims**



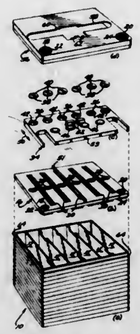
A reserve type cell with a charge volume of electrolyte held confined in a closed cylinder with a frangible end wall closure and a front piston closure operable by a spring held compressed until cell activation is desired, at which time the spring is released to hydrostatically press the fluid electrolyte to fracture the bottom frangible end and to express the electrolyte to operating cell space surrounding the electrolyte cylinder and the actuating spring.

3,669,754
PROCESS OF MAKING A MOLDED NEGATIVE ELECTRODE
Robert E. Ralston, Spring Valley, and Yung Ling Ko, Tarrytown, N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed June 13, 1969, Ser. No. 832,899
Int. Cl. H01m *13/08*
U.S. Cl. 136—126 **3 Claims**



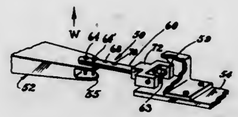
A base or support of conducting metal provided with a zinc surface, alloyed or electroplated, is amalgam alloyed with mercury, and has bonded to said amalgam a porous body of zinc particles individually amalgam covered with mercury and bonded to each by mutual common layers of amalgam, and said mercury amalgam serving also to bond the porous body to said conducting base.

3,669,755
BATTERY CLOSURE DEVICE
Donald W. Hughes, Jr., 3908 S. Rambla Orienta, Malibu, Calif. 90265
Filed Nov. 9, 1970, Ser. No. 88,049
Int. Cl. H01m *1/06*
U.S. Cl. 136—170 **10 Claims**



This invention relates to apparatus for simultaneously opening or closing all of the cell openings of a multi-cell storage battery. The closure device takes the form of a slider unit that may occupy either of two positions; one of the positions exposing all of the cell openings for servicing, and the other of said positions sealing all of the cell openings, except for venting purposes.

3,669,756
VEHICLE COUPLING WEIGHING DEVICE
Richard S. Bradley, Fairmont, Minn., assignor to Art's-Way Manufacturing Company Incorporated, Armstrong, Iowa
Original application July 2, 1969, Ser. No. 838,438. Divided and this application Oct. 29, 1971, Ser. No. 193,929
Int. Cl. G01g *19/08*
U.S. Cl. 177—136 **12 Claims**



An electromechanical weight-measuring system for weighing successive and cumulative loads deposited in a load-receiving medium employs a plurality of elastic deformable elements supporting the receiving medium at a plurality of predetermined load points. The elastic deformable elements are each positioned intermediately of a load point and a related ground-engaging supporting unit and each has affixed thereto an electrical strain gage medium interconnected in a circuit for amplifying and indicating changes in the weight imposed upon the receiving medium. The invention of this divisional application employs, in addition to a plurality of ground-engaging support means interconnected by the elastic elements with the receiving medium, a second ground-engaging supporting unit having an above ground support connection element together with a weight-responsive coupling device interconnecting said last-mentioned support connection element with one of the crucial load points of the receiving medium, said coupling device comprising a substantially horizontal, elastic weight-bendable member having one of its end portions connected to said last-mentioned support connection element and having another end connected and affixed to partially support said receiving medium. One of said connections of said deformable coupling elements is mounted for oscillation on a substantially horizontal axis extending longitudinally thereof. Electrical strain gage means is mounted on said deformable elastic member and is interconnected with the electrical circuitry of the strain gages of said other units to interpose as a factor in measurement of overall load weight that proportion of weight superimposed on said coupling.

3,669,757
METHOD OF MAKING AND USING DICED SINGLE CRYSTAL IMPURITY SOURCE
Morris Kaufmann, Los Angeles, Calif., and Bernard R. Shultz, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 23, 1970, Ser. No. 21,798
Int. Cl. B01j *17/36*
U.S. Cl. 148—1.6 **8 Claims**

A method for producing homogenous dilute dopant material for use in growing semiconductor device crystals of desired resistivity from a melt which includes the dilute dopant material. The method comprises providing the dilute dopant material in single crystal alloy form, measuring the resistivity of the crystal along its length, cutting a portion of the crystal having resistivities within a desired range, slicing said portion, polishing, dicing and cleaning the slices, and weighing out the required amount of diced dopant material as needed for the growth of a semiconductor device crystal of desired resistivity from a melt which includes the diced dopant material.

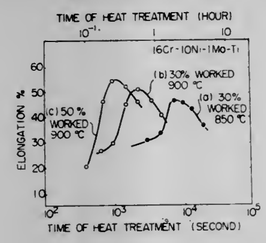
3,669,758
PROCESS FOR REMOVING CONTAMINANTS FROM ZIRCONIUM SURFACES
Charles R. Konecny, San Jose, Calif., assignor to General Electric Company
No Drawing. Filed Mar. 20, 1968, Ser. No. 714,441
Int. Cl. C23c *3/00*; C23f *5/02*
U.S. Cl. 148—6.14 **12 Claims**

A process for removing residual contaminants, such as fluorides remaining after acid etching, from zirconium alloy surfaces. This process is especially useful in the fabrication of fuel rods for nuclear reactors in which fuel material is encased in zirconium alloy tubes. In a preferred embodiment, the surface is treated with sodium hydroxide at elevated temperature, rinsed with water and, if desired, preoxidized.

3,669,759
THERMOMECHANICAL TREATMENT FOR IMPROVING DUCTILITY OF CARBIDE-STABILIZED AUSTENITE STAINLESS STEEL
Tatsuo Kondo and Hajime Nakajima, Takai-Mura, and Ryukichi Nagasaki, Mito-shi, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Filed Sept. 24, 1969, Ser. No. 860,683
Claims priority, application Japan, Sept. 27, 1968, 43/69,496
Int. Cl. C21d *1/00*
U.S. Cl. 148—12.3 **11 Claims**

An austenite stainless steel having superior ductility at high temperatures is obtained by subjecting the carbide-

stabilized austenite stainless steel to solution heat treatment, cold-working said steel more than 15%, and an-

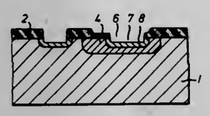


nealing it at a temperature between 850° C. and 950° C. for less than four hours.

3,669,760
METHODS OF PRODUCING DIFFUSION REGIONS IN SEMICONDUCTOR BODIES

Hans-Martin Rein, Heilbronn-Bockingen, and Peter Conze, Massenbach, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Oct. 19, 1970, Ser. No. 81,692
Claims priority, application Germany, Oct. 18, 1969, P 19 52 632.0
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 5 Claims

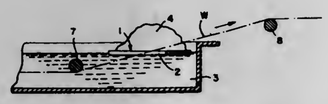


A method of producing a diffusion region in a semiconductor body in which the semiconductor body is covered with an insulating layer, a diffusion window in the insulating layer and a recess in the semiconductor are produced in one operation by ion bombardment and a diffusion region is diffused into the semiconductor body through a wall of the recess.

3,669,761
PATENTING OF STEEL WIRES WITH LEAD

Kurt-Jurgen Schulze and Joachim Jung, Oberbruch, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed July 8, 1970, Ser. No. 53,115
Claims priority, application Germany, July 19, 1969, P 19 36 909.6
Int. Cl. C21d 9/64, 1/56
U.S. Cl. 148—15 5 Claims



Apparatus and method for substantially reducing the entrainment of lead in the patenting of steel wires using a molten lead bath wherein a thin slotted plate is floated on the surface of the bath with the emerging wires passing through the slots thereof and a layer of a granulated amorphous carbon is deposited on top of the plate to cover said slots.

3,669,762
METHOD FOR HEAT-TREATING OF HOT ROLLED RODS

Keinosuke Takeo, Suita, Kazuo Kosugi, Ikeda, and Tadaoki Kamise, Amagasaki, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

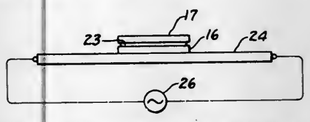
Filed Sept. 18, 1969, Ser. No. 859,122
Int. Cl. C21d 9/52, 9/64, 1/60
U.S. Cl. 148—18 9 Claims

Heat treatment of hot rolled wire rod to provide a microstructure of improved ductility and cold working properties to permit the rod to be drawn without further heat treatment by immersing the wire rod, while the hot rolled rod is at a temperature level above the temperature at which allotropic transformation of the austenite commences, into a heated water bath of sufficient temperature level to permit the generation of a steam envelope and film uniformly around and on the surface of the rod to control the rate of cooling of the wire rod. A surface activating agent may be added to the water bath to control the stability and period of maintenance of the steam film on the surface of the wire rod. The heated wire rod to be treated is continuously fed by a coiler down into a container within which the water bath is disposed, the coiler causing the wire rod to form into a concentric coiled bundle.

3,669,763
TRAVELING SOLVENT METHOD OF GROWING SILICON CARBIDE CRYSTALS AND JUNCTIONS UTILIZING YTTRIUM AS THE SOLVENT

Ronald J. Perusek, Chardon, Ohio, assignor to General Electric Company

Filed Sept. 22, 1970, Ser. No. 74,265
Int. Cl. H01l 7/42; B01j 17/02, 17/20
U.S. Cl. 148—171 7 Claims



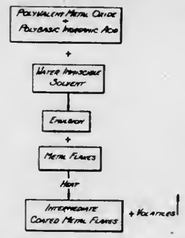
A "sandwich" is formed, comprising a layer of yttrium metal positioned between and in contact with two wafers of silicon carbide. The sandwich is heated, preferably in a specific sequence of temperature and time, so that one of the wafers is hotter than the other and the yttrium melts, whereby silicon carbide at the hotter interface dissolves in the yttrium, and this solvent zone travels through the hotter wafer and causes growth of a silicon carbide crystal on the cooler wafer. By using p-type and n-type wafers together and by introducing certain impurities into the yttrium, an abrupt p-n junction can be formed.

3,669,764
PROCESS FOR COATING METAL FLAKES

Carleton R. Bradshaw, 681 Lowell Ave., Central Islip, N.Y. 11722, and Hal-Curtis Felsher, 144 Bounty Lane, Jericho, N.Y. 11753

Division of application Ser. No. 832,543, May 12, 1969, which is a continuation-in-part of application Ser. No. 633,341, Mar. 29, 1967, which is a continuation-in-part of application Ser. No. 532,493, Jan. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 133,324, Aug. 23, 1961. This application Aug. 3, 1970, Ser. No. 67,646
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 R 21 Claims

Metal flakes, particularly flakes of copper or copper alloys, are admixed with water-in-oil emulsions wherein the aqueous phase is a solution of a polyvalent metal acid phosphate salt such as zinc and/or aluminum acid phosphate, and the emulsion is evaporated off to provide the flakes with an oxidation resistant metal acid phosphate coating. On treatment of the coated flakes, either in the original admixture or after separation from the emulsion, with a polyvalent metal compound, such as calcium oxide,



there is produced an oxidation- and water-resistant coating. The resulting product may be treated with additional stabilizing materials, such as vinyl stabilizers or chelating agents.

3,669,765
PROCESS FOR COATING METAL FLAKES

Carleton R. Bradshaw, 681 Lowell Ave., Central Islip, N.Y. 11722, and Hal-Curtis Felsher, 114 Bounty Lane, Jericho, N.Y. 11753

Continuation-in-part of application Ser. No. 633,341, Mar. 29, 1967, which is a continuation-in-part of application Ser. No. 532,493, Jan. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 133,324, Aug. 23, 1961. This application May 12, 1969, Ser. No. 832,543
Int. Cl. C23f 7/08
U.S. Cl. 148—6.16 6 Claims

Metal flakes, particularly flakes of copper or copper alloys, are admixed with water-in-oil emulsions wherein the aqueous phase is a solution of a polyvalent metal acid phosphate salt such as zinc and/or aluminum acid phosphate, and the emulsion is evaporated off to provide the flakes with an oxidation resistant metal acid phosphate coating. On treatment of the coated flakes, either in the original admixture or after separation from the emulsion, with a polyvalent metal compound, such as calcium oxide, there is produced an oxidation- and water-resistant coating. The resulting product may be treated with additional stabilizing materials, such as vinyl stabilizers or chelating agents.

3,669,766
FORMATION OF COATING ON COPPER CONTAINING MATERIALS

Mitsunosuke Fukawa, 20–21, 1-chome, Matsugaoka, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan; and Haruo Oishi, 21–7, 5-chome, Nakano-ku; Kichitaro Saruya, 7–14, 2-chome, Minami-cho, Tanashi-shi; and Akira Nagai, 17, 2-chome, Fukuro-machi, Kita-ku, all of Tokyo, Japan; and Yoshitaro Nagai, 13–3, 1-chome, Nishikamata, Ota-ku, Japan

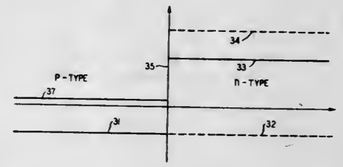
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,929
Int. Cl. C23f 7/00
U.S. Cl. 148—6.24 1 Claim

A method of industrially forming verdigris on a surface of an article of copper or an alloy thereof within a short period, which resembles that naturally formed, so as to prevent the surface from corrosion and to give a decorative and artistic appearance, by treating such a surface with a solution containing ammonium sulphate and mercuric chloride or further treating with an ethyl nitrate solution.

3,669,767
DOPING PROFILE FOR GaP DIODES IMPROVED ELECTROLUMINESCENT EFFICIENCY

William H. Hackett, Jr., and Donald L. Scharfetter, Morristown, and Lawrence J. Varnerin, Jr., Watchung, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Aug. 21, 1969, Ser. No. 851,987
Int. Cl. H01l 7/46; H05b 33/00
U.S. Cl. 148—171 2 Claims

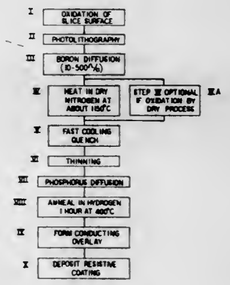


The diffusion of relatively mobile acceptor dopant atoms away from the epitaxially-grown p-n junction of a gallium phosphide electroluminescent device during the epitaxial growth process causes the degradation of electroluminescent efficiency. This diffusion can be prevented by the inclusion of the mobile acceptor dopant as a minor dopant in the n-region in essentially the same concentration as is present as the major dopant in the p-region.

3,669,768
FABRICATION PROCESS FOR LIGHT SENSITIVE SILICON DIODE ARRAY TARGET

William E. Beadle, Sinking Spring, Kenneth E. Benson, Allentown, James R. Mathews, Reading, and Louis H. Von Ohlsen, Jr., Greensfields, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 4, 1969, Ser. No. 882,235
Int. Cl. H01l 7/44
U.S. Cl. 148—187 2 Claims



In the fabrication of silicon diode array targets for video camera tubes the initial PN junction diode diffusion heat treatments using a boron source, produces a P type sheet resistance in the range of 10 to 500 ohms per square. Values below this range produce a boron rich glass which is difficult to remove without producing

defects. Values above this range do not produce sufficient boron rich glass to be effective in gettering certain impurities. This diffusion is followed by treatment at a temperature comparable to the diffusion temperature, for an appreciable period in a nitrogen atmosphere to minimize the occurrence of certain defects. The heat treatment of the semiconductor slice may, alternatively, terminate with a rapid cooling or quenching step.

Following the second impurity diffusion into the light sensitive face of the target an annealing treatment is performed for about one hour at a relatively low temperature in a reducing atmosphere, typically hydrogen, to minimize dark current.

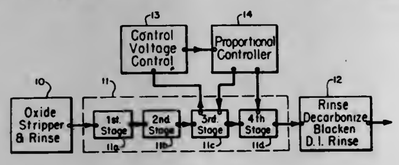
3,669,769
METHOD FOR MINIMIZING AUTODOPING IN EPITAXIAL DEPOSITION
Angelo V. Badami, Wappingers Falls, N.Y., Ekkehard Ebert, Sindelfingen, Germany, Bernard M. Kemlage, Hopewell Junction, N.Y., Karl E. Kroell, Stuttgart-Rohr, Germany, and H. Bernhard Pogge, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,399
Int. Cl. H01l 7/36; C23c 13/00
U.S. Cl. 148—175 **8 Claims**

Autodoping is minimized during the growth of an epitaxial layer on a semiconductor substrate by using a gaseous reaction mixture that deposits the initial capping layer at a relatively slow deposition rate. The reaction mixture contains a relatively minor portion of a semiconductor compound along with the carrier gas. Subsequently, a second gaseous reaction mixture containing a greater portion of a compound of a semiconductor material is used to complete the deposition of the epitaxial layer. This is done merely to reduce the total growth cycle.

3,669,770
METHOD OF MAKING ABRASION-RESISTANT METAL-COATED GLASS PHOTOMASKS
Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation
No Drawing. Filed Feb. 8, 1971, Ser. No. 113,767
Int. Cl. C23f 17/00; H05k 3/06
U.S. Cl. 156—3 **2 Claims**

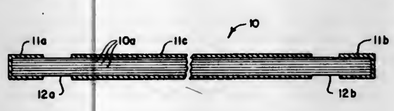
Method of making a large-area metal-coated glass article of the type which must resist abrasion, comprising forming a relatively thick pattern of metal on a transparent glass substrate by an electroless deposition of nickel-phosphorus on the substrate and hardening the nickel-phosphorus layer by heat treatment at temperatures not higher than about 250° C.

3,669,771
PROCESS OF ETCHING A SHADOW MASK
Martin L. Lerner, River Forest, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Jan. 28, 1970, Ser. No. 6,619
Int. Cl. C23f 1/02
U.S. Cl. 156—8 **9 Claims**



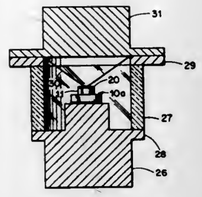
A shadow mask for a color television tube, having a pattern of apertures dimensioned as required for screening, is further etched after the screening process to attain a hole size larger than the phosphor deposits of the screen. The re-etching occurs in several stages and a densitometer associated with one such stage measures the hole size and derives a voltage used to control the etching time so that the apertures of the re-etched mask are precisely controlled to a desired size.

3,669,772
METHOD FOR PRODUCING FLEXIBLE IMAGE TRANSPORTING FIBER OPTIC CONDUIT
Richard R. Strack, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed July 2, 1970, Ser. No. 51,977
Int. Cl. C03c 15/00; G02b 5/16
U.S. Cl. 156—15 **7 Claims**



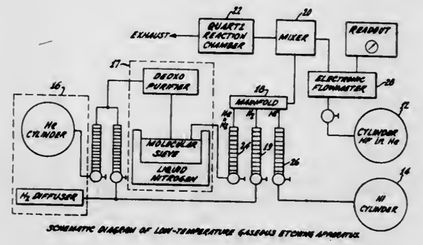
A process for essentially completely eliminating acid soluble cladding from an optical fiber bundle. An acid soluble clad coherent optical fiber bundle is coated with an acid resistant coating except for an area adjacent each end, and the resulting exposed areas are acid leached to remove all the acid soluble glass therefrom, leaving a flexible area adjacent each end. The fibers in these areas are fused together holding the fibers in coherency. The ends of the bundle are removed from about the middle of the fused sections, and the acid resistant coating removed. The acid leachable cladding is then leached from the remainder of the bundle, leaving a flexible, image transporting bundle having fused coherent opposite ends.

3,669,773
METHOD OF PRODUCING SEMICONDUCTOR DEVICES
Clifford A. Levi, Billerica, Mass., assignor to Alpha Industries, Inc., Newton, Mass.
Filed Feb. 24, 1970, Ser. No. 13,710
Int. Cl. H01l 5/00
U.S. Cl. 156—17 **7 Claims**



In manufacturing silicon mesa diodes, the method of forming metal contacts on the upper surfaces of the mesas by applying a layer of conductive material over the entire surface of the wafer including the upper surfaces of the mesas and the silicon oxide coating on the remainder of the wafer. The wafer is positioned with the mesas downward and placed in contact with a thin layer of an uncured epoxy resin so as to cause resin to adhere only on the conductive material overlying the upper surfaces of the mesas. After curing the resin, the wafer is subjected to an etching solution to dissolve the conductive material except the contacts to the upper surfaces of the mesas which are protected by the cured epoxy resin.

3,669,774
LOW TEMPERATURE SILICON ETCH
John Pickett Dismukes, Princeton, N.J., assignor to RCA Corporation
Filed Nov. 20, 1969, Ser. No. 878,320
Int. Cl. H01l 7/50, 7/54
U.S. Cl. 156—17 **3 Claims**



SCHEMATIC DIAGRAM OF LOW-TEMPERATURE GASEOUS ETCHING APPARATUS

A mechanically polished silicon wafer is etched to remove surface damaged material and give a smooth surface by etching at a temperature of from about 800 to 1050° C. in a gas mixture consisting of a carrier gas of H_2, He or a mixture thereof, a small concentration of a gas reactive with SiO_2 such as HF, ClF_3 or BrF_5 and a small concentration of a gas reactive silicon such as HBr, HI, HCl, Cl_2, Br_2, or I_2.

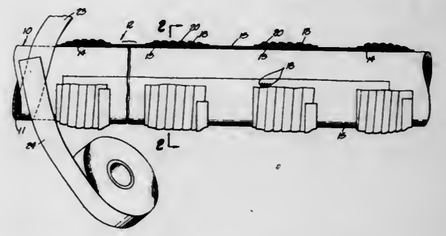
3,669,775
REMOVAL OF BORON AND PHOSPHOROUS-CONTAINING GLASSES FROM SILICON SURFACES
Roy A. Porter, Whitehall, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,827
Int. Cl. H01l 7/50
U.S. Cl. 156—17 **10 Claims**

Boron and phosphorous-doped glasses which are formed on silicon surfaces during electronic device manufacture may be chemically removed by a method including the steps of treatment with a solution of a suitable chelating agent having a pH of at least 9.0 at room temperature and a temperature of at least 85° C., followed by treatment with an oxidizing agent, followed by repeated treatment with the chelating agent solution.

3,669,776
NOVEL NICKEL ETCH PROCESS
Frederick Walter Eppensteiner, Southfield, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,824
Int. Cl. C23g 1/15
U.S. Cl. 156—18 **13 Claims**

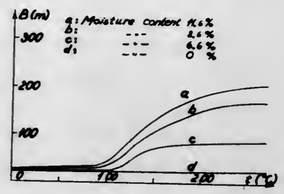
A method is provided for imparting decorative, light diffusing and/or non-reflective etching to nickel surfaces which includes immersing objects having clean nickel surfaces in a solution having a pH within the range of 9–12 and containing a nickel oxidant, ethylenediamine and a source of sulfate ion, for a period of time sufficient to form crystals on the nickel surfaces, withdrawing the objects with the crystal formation thereon from the solution, removing any remaining solution from the nickel surfaces, and immersing the objects in a crystal solvent to dissolve the crystals, and removing the objects with the etched nickel surfaces thereon, the pattern of the etching being substantially the same as the original crystal formation thereon. Further, solutions are provided for imparting the decorative, light diffusing and/or non-reflective etch and objects having disposed thereon decorative, light diffusing and/or non-reflective etched nickel surfaces.

3,669,777
METHOD OF PROTECTING METAL-CLAD CABLES FROM ATTACK BY STRAY CURRENTS
George W. Gillemot, Venice, Calif., assignor to Walter A. Plummer, Sherman Oaks, Calif.
Filed June 23, 1969, Ser. No. 835,366
Int. Cl. H01b 13/26
U.S. Cl. 156—54 **5 Claims**



A method of maintaining a sheathed cable in service by providing it with a protective enclosure of insulating material effective to isolate the cable from attack by stray currents while safeguarding the cable from loss of its pressurizing gas charge.

3,669,778
METHOD FOR THE PRODUCTION OF FIBROUS SHEET MATERIALS
Torben Borup Rasmussen, Abyhoj, Denmark, assignor to Karl Kristian Kobs Kroyer, Aarhus-Viby, Denmark
Filed Feb. 3, 1970, Ser. No. 8,180
Claims priority, application Great Britain, Feb. 4, 1969, 5,943/69
Int. Cl. B29j 5/04
U.S. Cl. 156—62.2 **4 Claims**

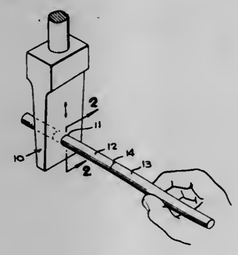


In the production of fibrous sheet materials by an air-laying process adjusting the moisture content of the fibrous layer at a value of at least 6% by weight and embossing said fibrous layer at a temperature of above 100° C.

3,669,779
PRODUCTION OF PILE FABRICS
David E. Gordon, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Dec. 30, 1970, Ser. No. 102,809
Int. Cl. D05c 15/00; B32b 5/00
U.S. Cl. 156—72 **3 Claims**

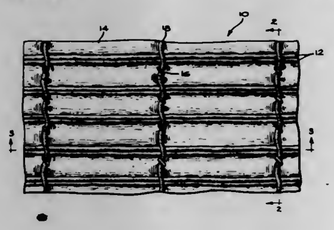
Method of back-coating pile carpet containing pile yarns bound by embedment in a relatively impervious polymer layer comprising the steps of perforating the impervious layer to permit passage of gases therethrough, and applying a heat bondable polymeric back-coating to the perforated carpet.

3,669,780
METHOD FOR REMOTELY SEALING PLASTICS USING ULTRASONIC ENERGY
Howard Deans, Secane, and Thomas B. Sager, Plymouth Valley, Pa., assignors to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Continuation-in-part of application Ser. No. 540,335, Apr. 5, 1966. This application Aug. 1, 1969, Ser. No. 866,047
Int. Cl. B29c 27/08; B32b 31/16
U.S. Cl. 156—73 7 Claims



A method and means for remotely sealing plastics wherein an undriven member of two members is clamped or held in relation to a member being ultrasonically energized, and whereby fusion of plastic joints takes place, the tool not being in contact with the joints.

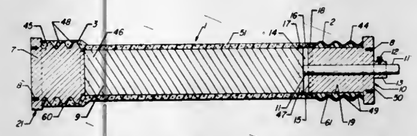
3,669,781
METHOD OF MAKING FABRIC WITH A FILLER OF GREATER AREA THAN THE FABRIC
Charles A. Lee and Warren E. Furbeck, Knoxville, Tenn., assignors to Appleton Wire Works Corporation, Appleton, Wis.
Original application Apr. 29, 1966, Ser. No. 546,460, now Patent No. 3,559,810. Divided and this application Mar. 30, 1970, Ser. No. 29,324
Int. Cl. B32b 31/26
U.S. Cl. 156—84 7 Claims



A puckered fabric is formed by stretching a plurality of rack filaments lying in parallel relationship with one another, depositing a stabilized non-woven web of filler material, sewing or stitching cross filaments over said filler and to the rack filaments and then shrinking the rack or cross filaments in at least one direction.

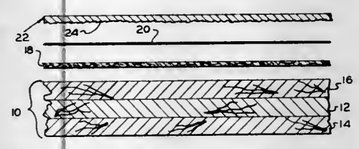
3,669,782
METHOD FOR COMPENSATING FOR RESIN SHRINKAGE IN THE PRODUCTION OF A FILAMENT WOUND ARTICLE
Jack Lowrie McLarty, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed May 25, 1970, Ser. No. 40,180
Int. Cl. B32b 1/08
U.S. Cl. 156—84 8 Claims

An improved method of producing a filament wound article utilizing a mandrel of unique construction. This invention is useful in producing filament wound articles on mandrels having opposing winding surfaces having components normal to the axis of the mandrel. Such articles include pressure vessels, pipe having threads



wound in at both ends, pipe having overhanging collars at both ends, or pipe threaded at one end with an overhanging collar at the other end.

3,669,783
METHOD OF FORMING A PANEL WITH A ROUGH TEXTURED, PRINTED SURFACE
Robert G. Wheeler, Corvallis, Oreg., assignor to Wood Processes, Oregon Ltd., Corvallis, Oreg.
Filed Nov. 13, 1969, Ser. No. 876,486
Int. Cl. B32b 33/00
U.S. Cl. 156—90 12 Claims

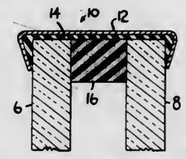


A preformed panel is provided with a textured, printed surface by first adhering a spongy compressible fiber web, having a substantially uniform thickness and a high moisture content, to a surface of said panel. A decorative pattern sheet is then secured over the web, and the resultant assembly is compressed by means of a textured metal surface caul plate having its textured surface disposed adjacent the decorative pattern sheet. The assembly is maintained under heat and pressure conditions for a sufficient time for substantially drying the web and producing bonding of the assembly, which retains the impression of the caul plate.

3,669,784
PROCESS FOR PREPARING A SOFT AND TENACIOUS NONWOVEN FABRIC
Tadashi Yokota, Kyoto, and Taizo Asai, Otsu, Japan, assignors to Nippon Cloth Industry Co., Ltd., Ukyo-ku, Kyoto, Japan
No Drawing. Filed Jan. 30, 1970, Ser. No. 8,097
Int. Cl. B32b 35/00
U.S. Cl. 156—148 15 Claims

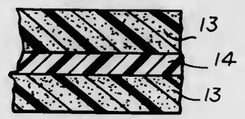
A process for preparing a nonwoven fabric comprising forming a uniform mat of fibers from ½ to 5 inches in length and from 0.5 to 10 in denier, needle-punching said mat from 600 to 6000 times per square inch by means of a needle loom provided with felting needles of from number 30 to number 46 to thereby form a fiber sheet having a weight of at least 150 g./m.² and an apparent density of at least 0.15, impregnating said sheet with a bonding agent liquid comprising an anionic latex of a high molecular weight elastic material, a nonionic surface active agent having a HLB of at least 11 and a cloud point of from 30 to 85° C., and, as an indispensable component, if there is no protecting effect of said surface active agent, an ionizable organic or inorganic metallic salt to coagulate said latex, wherein the content of said high molecular weight elastic material is at least 10% by weight of the total weight of said bonding agent liquid, wherein the content of said nonionic surface active agent is from 5 to 30 parts by weight, per 100 parts by weight of said high molecular weight elastic material, and wherein the amount of said metallic salt is sufficient to coagulate said high molecular weight material, so as to deposit from 20 to 50 parts by weight of said high molecular weight material per 100 parts by weight of fiber component; elevating the temperature of said impregnated bonding agent liquid to a temperature above its coagulation temperature to thereby coagulate substantially all of said high molecular weight material without migration in the direction of the sheet thickness.

3,669,785
METHOD FOR FABRICATING A MULTIPLE GLAZED UNIT
George H. Bowser, New Kensington, Vernon A. Shoop, Springdale, Stanley J. Pyzewski and Renato J. Mazzoni, Tarentum, and John P. Bologna, Leechburg, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 26, 1970, Ser. No. 22,762
Int. Cl. C03c 27/10
U.S. Cl. 156—109 1 Claim



A method for fabricating multiple glazed units from a composite element composed of an elongated strip of mastic sealant material having a flexible carrier tape adhered to one surface and a resilient spacer-dehydrator element adhered to the opposite surface. The composite element, described above, is assembled and suitably packaged for use, shipment or storage. Thereafter, a segment of said element is removed from the package, inserted between opposed, marginal edge portions of a pair of spaced glass sheets and sealed by said mastic to produce a finished unit.

3,669,786
METHOD OF LAMINATING PLASTIC FOAM
Francis C. Moore, 3935 Arthington Blvd., Indianapolis, Ind. 46226
Continuation-in-part of application Ser. No. 583,469, Sept. 30, 1966. This application Feb. 19, 1970, Ser. No. 12,708
Int. Cl. B29c 17/03
U.S. Cl. 156—163 11 Claims



Laminating a plastic foam to a surface-treated polyolefin film by heating the film to a temperature approximating or slightly exceeding its disorientation temperature and thereafter contacting the film and foam.

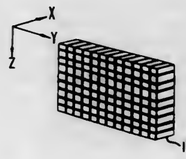
3,669,787
FLEXIBLE DEFORMABLE SELF-SUPPORTING GLASS FRIT SEALING TAPE
Lew Wallace Cornell, Mound Village, Minn., assignor to Minnesota Mining and Manufacturing Company
Filed Aug. 8, 1968, Ser. No. 751,088
Int. Cl. C09j 7/02
U.S. Cl. 161—167 4 Claims

Sheet material formed from glass frit bonded with a minor amount of heat-depolymerizable rubbery polymer, preferably coated on one or both surfaces with a small amount of similarly depolymerizable pressure-sensitive adhesive, can be used to join glass or other inorganic substrates. When subjected to heat, the rubber depolymerizes and volatilizes and the frit thereafter fuses, resulting in a strong nonporous inorganic seal. One use for the product is in the formation of color TV picture tubes.

3,669,788
BULKED NONWOVENS
William T. Allman, Jr., Ashland, Va., and Charles W. Joseph, Rock Hill and Ralph G. Higgins, Jr., Spartanburg, S.C., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 558,177, Mar. 15, 1966, which is a division of application Ser. No. 266,123, Feb. 20, 1963, which in turn is a division of application Ser. No. 778,248, Dec. 4, 1958, now Patent No. 3,100,328, dated Aug. 13, 1963. This application Oct. 10, 1969, Ser. No. 870,385
Int. Cl. D04h 3/16
U.S. Cl. 156—167 4 Claims

A process which comprises extruding a solution of a lower alkanoic acid ester of cellulose to form filaments, moving the filaments about while in a mutually adhesive condition to cause them to become randomly directed and bonded to one another at spaced points, collecting them in a form of a bonded non-woven web and contacting the non-woven web with steam to thereby improve the physical properties of the web, i.e., covering power, resilience, insulation, strength, density and hand.

3,669,789
METHOD OF MAKING PLASTIC FIBER-OPTICAL PLATES
Mikio Utsugi and Takahiro Ohta, Minami-ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-machi, Kanagawa, Japan
Filed Mar. 23, 1970, Ser. No. 21,741
Claims priority, application Japan, Mar. 22, 1969, 44/21,779
Int. Cl. B29d 11/00; B32b 31/00
U.S. Cl. 156—182 1 Claim



A method of making plastic fiber-optical plates by laminating a number of transparent plastic sheets using layers of an adhesive having a low refractive index, slicing the resulting laminated block to form thin sheets and laminating the thin sheets using layers of an adhesive having a low Refractive Index is disclosed.

3,669,790
PROCESS FOR MAKING NON-WOVEN FABRICS
Hollis H. Bascom and John J. Greci, Livermore, Calif., assignors to Orcon Corporation, Livermore, Calif.
Filed Oct. 31, 1966, Ser. No. 590,910
Int. Cl. B31c 13/00
U.S. Cl. 156—162 14 Claims

1. A method of making non-woven fabrics of the kind in which longitudinally extending warp strands are bonded to transversely extending fill strands, said method comprising,

guiding a plurality of warp strands longitudinally over a support,

winding a fill strand about the warp strands and the support to pull the fill strand into engagement under tension with the warp strands supported by the support while applying a binder to bond the warp and fill strands together and thereby make a non-woven fabric,

interposing a conveyor belt between the support and the fabric formed by the bonded warp and fill strands,

and transporting the non-woven fabric along the support by positive drive of the belt and frictional contact of the fabric on the belt to eliminate fabric distortion resulting from direct drive of the fabric.

3,669,791

GAS RELEASE FROM CELLULOSE CASING BY MULTIPLE PERFORATIONS

Douglas J. Bridgeford, Champaign, Ill., assignor to Tee-Pak, Inc., Chicago, Ill.

Original application Dec. 13, 1967, Ser. No. 690,161. Divided and this application Dec. 11, 1970, Ser. No. 97,215

Int. Cl. B29c *19/00*

U.S. Cl. 156—244 **7 Claims**

A method of venting fluids from antificial tubular casings made by the viscose process comprises perforating multiple small holes in a discrete area of the cellulose xanthate casing during regeneration thereof. The holes are subsequently patched by application of a solid film patch, such as regenertaed cellulose film, onto the gel casing with a water-activated adhesive, such as alpha-cyanomethyl acrylate monomer.

3,669,792

PROCESS FOR PRODUCTION OF VAPOR PERMEABLE SHEET-LIKE MATERIALS

Kousuke Mitsukawa and Hiroshi Hattori, Shiga, Toyohiko Hikoda, Kyoto, and Yoshinori Masubuchi, Shiga, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,475

Claims priority, application Japan, Oct. 13, 1967, 42/65,611

Int. Cl. B32b *7/04*; B44d *1/44*

U.S. Cl. 156—249 **11 Claims**

A process for producing vapor permeable sheet-like materials which comprises coating a solution of a film-forming polymeric material on a support material, and applying a gas stream at a flow rate of from 1 meter per second to 50 meters per second on the coated surface, until a dense gelated layer forms on the surface when the coated material is thereafter subjected to a coagulating step. The vapor permeable sheet-like material is finally coagulated.

3,669,793

CONTINUOUS TRANSFER PROCESS FOR COATING RIGID ELONGATE WORK

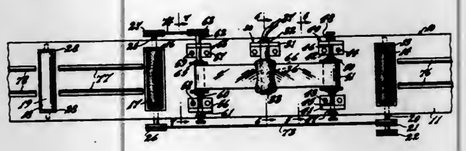
Raymond T. Billings, 318 Mount Pleasant Ave., Ambler, Pa. 19002

Continuation of application Ser. No. 740,011, Apr. 22, 1968, which is a division of application Ser. No. 280,035, May 13, 1963. This application May 7, 1970, Ser. No. 37,386

Int. Cl. B44c *1/16*

U.S. Cl. 156—238 **7 Claims**

This invention pertains to a method for coating relatively rigid elongate work and comprises the steps of feeding a film containing a heat releasable coating material from a feed roll through a coating station while drivingly advancing a relatively rigid elongate workpiece along a flat surface through the coating station where the heat releasable coating material is supplied to the work by heating and pressing a roller having a resiliently yieldable heat conducting external surface against the film and the workpiece. The film from which the heat releasable coating has been removed is thereupon taken up upon a roller. The steps of feeding, coating, advancing and removing are all synchronized to provide a continuous operation.



3,669,794

EXTRUSION COATING OF A HEAT FUSIBLE FOAM SHEET

Conrad F. Mazur, Chippewa Falls, Wis., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 15, 1969, Ser. No. 791,393

Int. Cl. B29c *19/00*

U.S. Cl. 156—244 **15 Claims**

A process for continuously coating a polystyrene foam sheet with a resinous polymeric material comprising: (1) melting said resinous polymeric material, (2) extruding said resinous polymeric material through a flat film die, (3) contacting the molten resinous polymeric material with the heat fusible foam sheet and, (4) compressing the sheet and resinous material to form a laminate product.

3,669,795

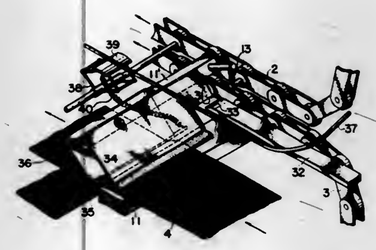
METHOD FOR MAKING A LAMINATED BODY OF PLIABLE THIN LAYER MATERIALS

Masahide Yazawa and Haruhisa Tani, Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Mar. 9, 1970, Ser. No. 17,577

Int. Cl. B32b *31/00, 31/10*; B65c *5/00*

U.S. Cl. 156—265 **7 Claims**



Method for making a laminated body of pliable thin layer materials obtained wholly or mainly from a uniaxially stretched film piled in lengthwise and crosswise directions which comprises at least one cycle of steps of

(1) supplying a pliable thin layer material obtained wholly or mainly from uniaxially stretched film continuously from the crosswise direction as a weft above another pliable thin layer material running continuously in the lengthwise direction as a warp,

(2) nipping the end of the weft by a pair of holders one from upward and the other from downward at the feeding side of the weft,

(3) moving the nipped weft by a distance substantially equal to the width of the warp in crosswise direction,

(4) cutting the weft into pieces one after another so as to make the length of each piece substantially equal to the width of the warp above the selvage of the warp at the feeding side,

(5) freeing the nipped end of the weft above the other selvage of the warp to allow the cut pieces to fall on the warp, one after another, intermittently to form a piled layer without leaving gaps between each successive weft.

3,669,796

ADHERING RESINS TO SUBSTRATES, ESPECIALLY METAL, BY RADIATION

Roger P. Hall, Mayfield Heights, and Ivor Pratt, Strongville, Ohio, and Richard A. Young, Buffalo Grove, Ill., assignors to SCM Corporation, New York, N.Y.

No Drawing. Filed Oct. 3, 1968, Ser. No. 764,959

Int. Cl. B29c *27/04*

U.S. Cl. 156—272 **16 Claims**

A process for coating by radiation a substrate, and especially one having a metallic surface, with a substantially catalyst-free system containing a polymerizable organic unsaturated resin susceptible to free-radical catalysis; and the resulting product. In one form, a film of the resin is superimposed upon the substrate while a facing side of either the resinous film or substrate is contacted at any time prior to such radiation with an organic substituted, radiation-responsive silane, or derivative thereof such as a siloxane or polysiloxane of the silane. Thereafter, the film and substrate are subjected to the high energy radiation to adhere one to the other.

The process is also adapted for coating articles with normally air-inhibited, thermosetting resins by a two-step process, wherein the resin film is first passed through one treating zone effective to impart mass integrity and thereby define a sheet, and the sheet together with the silane and the substrate is then passed through another treating zone effective substantially to complete the cure of the resin and simultaneously adhere the sheet to the substrate, at least one of the treating zones comprising exposure to high energy radiation.

3,669,797

METHOD OF MANUFACTURING COMPOSITE BODIES OF METALS AND POLYOLEFINS

Yoshiaki Fukazawa, Yoshitaka Iwata, and Shigeharu Sakurai, Tokyo-to, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed July 1, 1969, Ser. No. 838,204

Claims priority, application Japan, July 6, 1968, 43/47,424; June 3, 1969, 44/43,362

Int. Cl. C09j *5/04*

U.S. Cl. 156—316 **13 Claims**

In the manufacture of composite bodies of metals and polyolefins, a binder is used essentially consisting of a member selected from the group consisting of maleic acid-vinyl acetate copolymer, acrylic acid-vinyl acetate copolymer, esterified maleic acid-vinyl acetate copolymers and esterified maleic acid-styrene copolymers and the composite bodies are pressed at a temperature higher than the melting point of polyolefins.

3,669,798

PRESSURE SENSITIVE COHESION

James D. Brown and Carl A. Uraneck, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,783

Int. Cl. C09j *5/00, 3/26*

U.S. Cl. 156—334 **16 Claims**

Surfaces are bonded together with an adhesive formulation which is an unsaturated polymer of a cyclic monoolefin and a tackifier, e.g., an ester of a partially hydrogenated rosin.

3,669,799

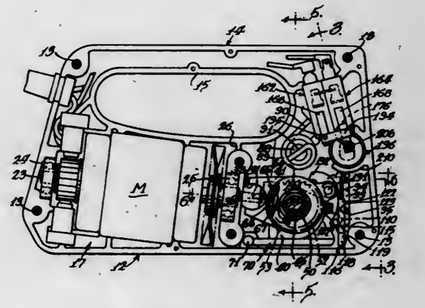
ELECTRICALLY CONTROLLED HAND TOOL FOR FRICTION-FUSING NON-METALLIC STRAP

Ilmar J. Vilcins, Northbrook, and Robert J. Frey, Mount Prospect, Ill., assignors to Signode Corporation

Filed June 16, 1970, Ser. No. 46,727

Int. Cl. B32b *31/20*

U.S. Cl. 156—359 **9 Claims**



A tool for friction-fusing overlapping strap portions including an electric motor for oscillating a rocker member, with the rocker member being connected to an output member for initially intermittently rotating a strap gripping member in a first direction to withdraw one strap portion, and further including a lever for sensing tension in said one strap portion for converting the intermittent rotary motion of the output member into oscilalting movement, whereby one strap portion is moved relative to the other strap portion to effect interface melting therebetween. The shaft of the electric motor has an eccentric portion integral therewith and a sleeve is slidably mounted thereon and received within a cavity in the rocker member. The cavity in the rocker member is generally semicircularly shaped, and the sleeve has arcuate upper and lower portions that are seated within the cavity. A ratchet and pawl mechanism is provided for converting the intermittent rotary motion of the output member into oscillating movement, and actuation of the ratchet and pawl mechanism is controlled by the tension sensing lever which has a pawl latching portion formed integrally therewith that releases the pawl when a predetermined amount of tension is drawn in one strap portion.

3,669,800

APPARATUS FOR FABRICATING SANITARY NAPKINS

Graves T. Gore, Ware Shoals, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Feb. 5, 1970, Ser. No. 8,780

Int. Cl. B32b *31/06*; A61f *13/18*

U.S. Cl. 156—383 **14 Claims**

An apparatus for fabricating sanitary napkins having an elongate wrapper-enclosed pad and wrapper tabs extending longitudinally from opposed ends of the wrapper-enclosed pads including means for feeding a continuous web of pad material, means for cutting the pad material into individual pads, conveyor means for successively receiving, spacing and advancing the individual pads, means for feeding a continuous web of wrapper material and for successively receiving and positioning the pads on the wrapper material, means for folding opposite edge portions of the wrapper material in overlapping relation around the pads, means for applying adhesive between

the overlapping portions of the wrapper material for securing the edge portions to each other, and cutting means



for cutting the connecting wrapper tab portions intermediate successive wrapper-enclosed pads to complete the formation of the individual sanitary napkins.

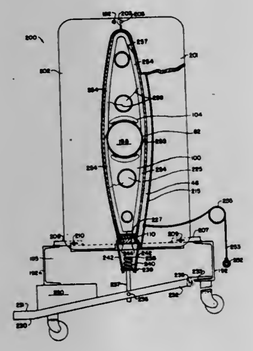
3,669,801
AIRPLANE TOOLING

Richard L. Jarvis, North Olmstead, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 21, 1970, Ser. No. 48,607

Int. Cl. B32b *31/14;* **B27d** *3/00*

U.S. Cl. 156—383 **2 Claims**



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints, of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

3,669,802
APPARATUS FOR MANUFACTURING A MULTI-PLY TUBE SECTION CONSISTING OF AT LEAST TWO WEBS OF PLASTICS MATERIAL SHEETING AND INTENDED FOR USE IN THE MANUFACTURING OF BAGS

Richard Feldkamper, Lengerich, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Mar. 24, 1969, Ser. No. 809,841

Claims priority, application Germany, Mar. 25, 1968, W 41,937; Aug. 16, 1968, P 17 86 095.6

Int. Cl. B32b *1/00*

U.S. Cl. 156—387 **10 Claims**

An imprint is to be provided on one of the sheeting surfaces defining an interface between the plies. One of the webs of plastics material sheeting is subjected to a known surface-activating treatment on one surface so that the same is adapted to be printed upon. Said surface is provided with the desired imprint, which is subsequently thermally dried and cooled thereafter. The other sheeting web or webs is or are heat-treated to cause it or them to assume a condition which corresponds as closely as possible to the condition of the printed sheeting web, and is also subjected to a surface-activating treatment. The sheeting webs are then superimposed with laterally offset edges and so that their activated surfaces contact each other and the printed surface of the printed sheeting is covered by an adjacent, unprinted sheeting web. The sheeting webs which are thus superimposed are bonded together by the action of pressure heat. The resulting multi-ply sheeting web having offset edges is formed into a tubing in known manner in that the edges of each sheeting ply are joined by an adhered or heat-sealed, longitudinal seam.

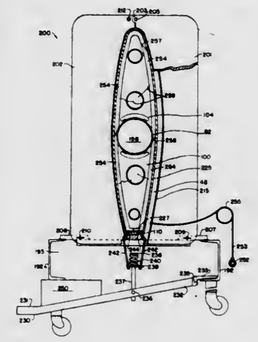
3,669,803
AIRPLANE TOOLING

Richard L. Jarvis, North Olmsted, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 20, 1970, Ser. No. 39,003

Int. Cl. B32b *31/02*

U.S. Cl. 156—477 **9 Claims**



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

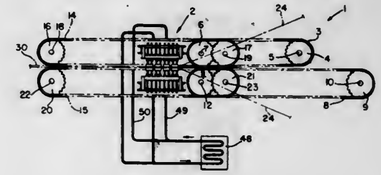
3,669,804
APPARATUS FOR BONDING CONTINUOUS FLEXIBLE STRANDS COATED WITH A THERMOPLASTIC ADHESIVE TO THE SURFACE OF MOVING VENEER STRIPS

Victor H. Clausen, Bellevue, and Arnold Zweig, Olympia, Wash., assignors to Simpson Timber Company, Seattle, Wash.

Filed May 11, 1970, Ser. No. 35,978

Int. Cl. B32b *31/20, 31/10*

U.S. Cl. 156—544 **5 Claims**



Continuous, flexible strands having a thermoplastic adhesive applied thereto are continuously bonded to crowded together strips of random width wood veneer by means of multiple, independently mounted shoe members in pressure contact with the surface of the veneer, the shoes being of a length to follow undulations which occur in veneer sliced from a log with a rotary lathe. The first of the shoes contacting the adhesive coated strands is heated to keep the thermoplastic adhesive on the strands in a flowable state as they pass under and are pressed against the surface of the veneer strips. The remainder of the shoes are cooled with a cooling medium to cool the adhesive on the strands sufficiently to bond the strands to the veneer surface.

3,669,805
DEVICE FOR FOLDING ONTO, AND JOINING WITH, ONE ANOTHER TWO SIDE EDGE PORTIONS OF A HEAT SEALING FOIL

Sverre Engvoll, Spanga, Sweden, assignor to Arenco Aktiebolag, Stockholm-Vallingby, Sweden

Filed Nov. 19, 1969, Ser. No. 877,920

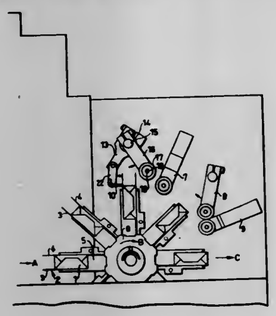
Claims priority, application Sweden, Nov. 22, 1968, 15,971/68

Int. Cl. B65c *9/36;* **B32b** *31/20*

U.S. Cl. 156—567 **2 Claims**

An apparatus for folding over and joining together the opposite flaps of a heat sealable foil wrapped around three sides of a cigarette pack. At the folding and sealing station a first shoe is moved across the fourth side of

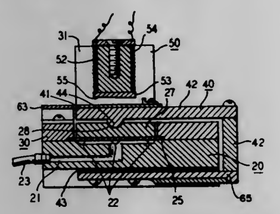
the pack to fold down the first flap. As this shoe is retracted a freely rotatable heated cylindrical roller is pivotally swept across the fourth side from the opposite direction, simultaneously folding the second flap over the first one and heat sealing the two flaps together.



3,669,806
BONDING PRESS HAVING IMPROVED SUPPORT BASE STRUCTURE

Robert Holbrook Cushman, Huntingdon Valley, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,588
Int. Cl. B32b *31/00*; B02c *11/08*
U.S. Cl. 156—580 6 Claims



A bonding press is disclosed which comprises a ram, a support base to carry components to be bonded, a platten which moves the support base towards the ram, a diaphragm which moves the platten in response to applications of fluid pressure and a cantilever mounted beam having its free end attached to the support base.

3,669,807
AIRPLANE TOOLING

Richard L. Jarvis, North Olmstead, and Walter Kully, Akron, Ohio, assignors to American Aviation Corporation, Cleveland, Ohio

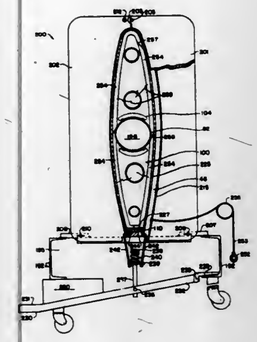
Original application Nov. 20, 1968, Ser. No. 777,362. Divided and this application May 21, 1970, Ser. No. 39,478
Int. Cl. B32b *31/14, 3/04*
U.S. Cl. 156—581 2 Claims

Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper aft fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes a means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.



A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

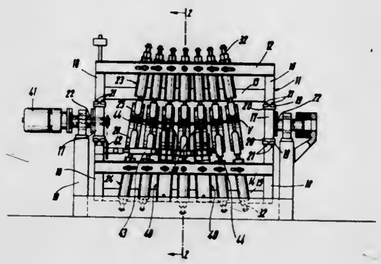
The invention provides, in the second stage in the creation of the bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure in supplied by means of a fluid pressure expansible means and manifold system connected thereto.

In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

3,669,808
ROLLING APPARATUS FOR THE ROLLING TOGETHER OF CURVED GLASS SHEETS WITH INTERPOSED PLASTICS SHEETS TO FORM A LAMINATE

Kurt Klotzbach, Wittener Strasse 3, Dusseldorf-Rath, Germany, and Johann Herzog, Stockumer Kirschstrasse 1, Dusseldorf-Nord, Germany

Filed July 21, 1970, Ser. No. 56,781
Claims priority, application Germany, July 23, 1969, G 69 29 022.8
Int. Cl. B30b *3/04*; B32b *31/00*
U.S. Cl. 156—582 15 Claims

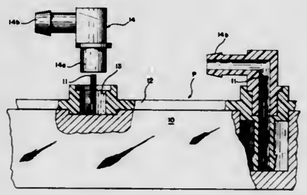


Apparatus for rolling together superimposed curved sheets to form a curved laminate comprises a pivoted frame in which are mounted two opposed groups of pressure roller units. Each unit comprises pressure rollers carried on a guide rod slidably and rotatably mounted in a hollow housing which contains a spring biassing the guide rod to one end of the housing. The housings of the pressure roller units are individually adjustable in position on the housing so that the apparatus can be set so that the combined roller gap defined between the opposed groups of pressure rollers, has any desired curvature.

3,669,809
APPARATUS AND METHODS FOR FRICTION WELDING PLASTIC PARTS WHICH REQUIRE A PARTICULAR RELATIVE ANGULAR ORIENTATION

Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company

Filed Aug. 13, 1969, Ser. No. 849,732
Int. Cl. B30b *3/02*; B32b *31/22*
U.S. Cl. 156—582 16 Claims

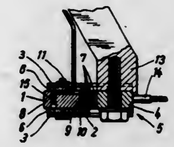


Friction welding machinery and methods wherein axially aligned part holders hold synthetic plastic parts which are to be friction welded together. The part holders are relatively rotated and a speed sensor, in the form of radially expansible and contractable stop fingers, operates under the influence of centrifugal force to indicate when the relative speed of the parts is such that friction welding is occurring and traps a stop located in a predetermined position such that one of the part holders is stopped in a predetermined angular position relative to the other. The trap fingers are carried by the holder for the part which requires location and the stop may be carried by the other holder or mounted on the frame of the machine.

3,669,810
HEAT SEAL TOOL

Klaus Domke, Stuttgart-Wellimdorf, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Mar. 13, 1970, Ser. No. 19,402
Claims priority, application Germany, Mar. 15, 1969, P 19 13 294.6
Int. Cl. B29c *19/02*; B32b *31/20*
U.S. Cl. 156—583 5 Claims

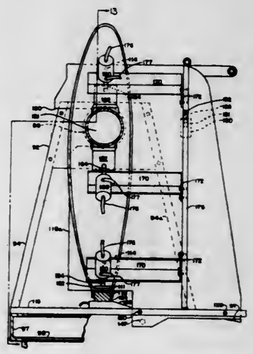


Heat seal tool for making seams on foils of thermoplastic material in which the heat conductor is formed as a band and arranged opposite to the work surface of the seal bracket with a thin insulating layer disposed therebetween; and elastic bias arranged against the band for uniform contact of the latter against the seal bracket.

3,669,811
AIRPLANE TOOLING

Richard L. Jarvis, 24258 Gessner Road, North Olmstead, Ohio 44070, and Walter Kully, 2290 Tripplet Blvd., Akron, Ohio 44312

Original application Nov. 20, 1968, Ser. No. 777,362, now Patent No. 3,616,075, dated Oct. 26, 1971. Divided and this application May 21, 1970, Ser. No. 48,606
Int. Cl. B30b *3/04, 15/34*
U.S. Cl. 156—583 6 Claims



Briefly, the invention relates to jigs for placing aircraft component parts in assembled relationship and providing

the pressure to bond them into a stressed skin construction.

A generic concept to the invention is the use of selectively actuated pressure applying surfaces over the areas to be bonded while the parts are held in their proper relative locations.

One portion of the invention relates to the bonding of an upper after fuselage section comprising flanged bulkhead sections and stringers and a stressed skin thereover in a single-stage jig having fluid expansible diaphragm over each of the areas to be joined, the fluid expansible diaphragms being in one-half of a jig which is pinned together to hold each of the bulkhead stringer and skin components in proper relation while providing a reaction force upon the application of the bonding pressure by means of the introduction of pressure into the diaphragms.

A second portion of the invention relates to the construction of a skeleton of a wing having a main tubular spar and a trailing edge spar with flanged ribs of stamped metal, the jig including supports for the ribs and spars, individual resistance heating means for applying heat and pressure at each of the joints of the wing skeleton. The second-stage jig for bonding the skin to the wing skeleton includes means for tensioning the skin over the skeleton as well as fluid pressure expansible means to provide the bonding pressure in all areas where the skin is bonded to the ribs and spars. The ribs of the wings have flanges into which transitory reinforcing means closely fit to prevent deflection of the flanges under the bonding pressure applied thereto, a transitory reinforcing means being segmented such that they may be pulled out through cutouts in the ribs of the wings after the bonding operation is completed.

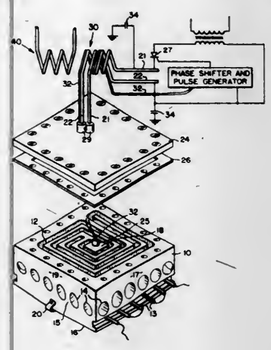
A further portion of the invention relates to bonding of a plurality of ribs and a torque tube of an aircraft control element in assembled relation by means of a liquid epoxy resin in a tube cradle and rib clamping jig which maintains the parallel relationship of the ribs at a fixed angular and lateral position with respect to the tube.

The invention provides, in the second stage in the creation of a bonded aircraft control element, a jig which has pivoted contoured arms to clampingly engage the skin in areas in register over the ribs and trailing edge such that the areas to be bonded receive the proper bonding pressure. This pressure is supplied by means of a fluid pressure expansible means and manifold system connected thereto.

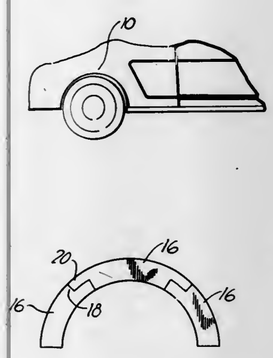
In addition to the air frame, wing and control element jigs, the invention includes a jig for bonding a frame member for an airplane cutout to the periphery of the cutout which is a transitory self-supporting jig having opposing members which may be moved into and out of clamping engagement with the margin of the skin defining the cutout by means of screw means connecting the two opposing members. The opposing pressure applying surfaces of the two members include at least one fluid pressure expansible means for application of the proper bonding pressure and a brief description.

3,669,812
SUBSTRATE SUPPORT MODULE
Frieder H. Enzslin, Rochester, N.Y., assignor to The Bendix Corporation, Rochester, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,321
Int. Cl. F25b *29/00*
U.S. Cl. 165—26 **7 Claims**

A substrate support for controlling the temperature of a substrate during outgassing, deposition, sputter etching and bias sputtering, and after deposition. This support comprises a block of thermal conducting material having heating means at one side and cooling means at the opposite side. The material cross section of the block is reduced by a series of holes drilled from two directions into the block at 90° to one another so that a great number of equal size columns equidistantly spaced connect the heated and cooled sides of the block. This permits heating and cooling of a substrate within a very few minutes.



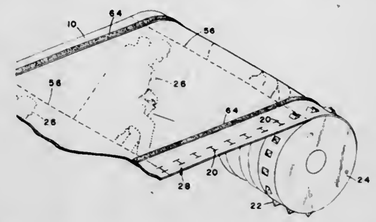
3,669,813
AUTO BODY SECTIONAL SHAPING FORMS
Alfred Andrea, 15 French Terrace, Watertown, Mass. 02172
Filed Mar. 31, 1970, Ser. No. 24,301
Int. Cl. B32b *3/14*
U.S. Cl. 161—37 **4 Claims**



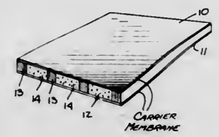
Preshaped, interlocking sectional forms constructed of rigid plastic can be used to mold plastic used for repairing damage to automobile bodies.

3,669,814
PRE-PRINTED INSERTS AND FEED MEANS THEREFOR
Hans G. Faltin, York, Pa., assignor to Advance Enterprises, Inc., York, Pa.
Filed Feb. 27, 1970, Ser. No. 15,058
Int. Cl. B32b *3/10*
U.S. Cl. 161—37 **6 Claims**

Inserts to be attached by adhesive to a carrying piece such as a rapidly moving printed web for newspapers, magazines, etc., the inserts being pre-printed and provided with feeding means comprising a plurality of self-closing or disappearing holes engageable by pin-type feed wheels of feeding mechanism and formed by incisions made in the strip of said inserts so as to form flaps which are temporarily bent from the plane of the inserts but which are restored to the plane upon affixing the inserts to the printed web.



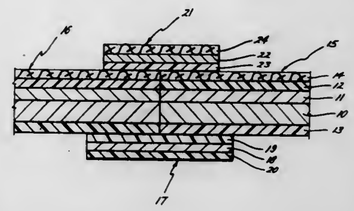
3,669,815
STRUCTURAL LIGHT-WEIGHT PANEL FOR CRYOGENIC AND ELEVATED TEMPERATURE APPLICATIONS
Ramesh R. Desai, Teaneck, and George D. Dohn, Park Ridge, N.J., assignors to Balsa Development Corporation, Northvale, N.J.
Filed Feb. 10, 1971, Ser. No. 114,201
Int. Cl. B32b *2/14*; B65d *25/18*
U.S. Cl. 161—37 **9 Claims**



A structural light-weight panel of high strength, having thermal insulation properties that render the panel particularly suitable for cryogenic and elevated temperature applications. The panel is constituted by a composite core bonded to a carrier membrane or laminated to facing skins, the core including at least one layer formed by a series of balsa beams in spaced parallel relation, the spacing between the beams being filled with slabs of foam plastic material whose K-factor is similar to that of balsa, whereby the overall thermal insulating characteristics of the composite core are effectively equivalent to that of a homogeneous core composed entirely of foam plastic material, whereas the structural characteristics of the composite core are far superior thereto.

3,669,816
LINING FOR CRYOGENIC TANK
Ernest L. Smith, Shreveport, La., Arthur R. Duffy, Worthington, Ohio, and Eugene S. Lyman, Northfield, Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn.
Continuation-in-part of application Ser. No. 862,788, Oct. 1, 1969. This application Oct. 1, 1969, Ser. No. 862,864
Int. Cl. B32b *15/08, 1/02*; B65d *87/34*
U.S. Cl. 161—38 **3 Claims**

This invention relates to a lining for use in cryogenic tanks wherein sheets of laminate material comprising multiple layers of woven polyethylene terephthalate fibers, aluminum, and stress-oriented polyethylene terephthalate films, are joined by tapes of laminate material comprising layers of like materials to form a lining which is substantially impermeable to liquids and gases at cryogenic temperatures.



3,669,817
REVERSIBLE FLOORING
James G. McDevitt, 117 N. Adelaide, Fenton, Mich. 48430
Filed Mar. 16, 1970, Ser. No. 19,915
Int. Cl. B60r *27/00*
U.S. Cl. 161—44 **11 Claims**



A flooring for use within an automobile or the like consisting of a carpet material bonded to a fiberboard material, the two bonded materials being cut to a rectilinear shape, and being adapted to be disposed in a horizontal position on the permanent floor of a vehicle without interfering with the side wall structure of the vehicle. The bonded materials form a flooring which may be selectively reversed from one surface to the other depending upon its required use within the automobile.

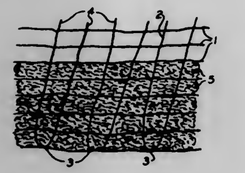
3,669,818
TEXTILE PRODUCT AND PROCESS
Daniel C. Stark, La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed June 15, 1970, Ser. No. 46,005
Int. Cl. D03d *27/00, 27/08*
U.S. Cl. 161—63 **15 Claims**

A printed textile fabric, and a process of producing the same, wherein a pile fabric having a patterned surface construction is printed with a design superimposed on the patterned surface of the fabric out of registry therewith to provide a product particularly adapted for use in carpets, towels, upholstery, and the like.

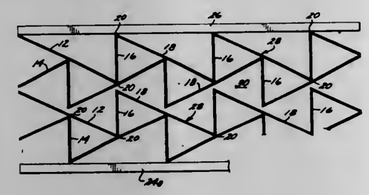
3,669,819
CARPET MATERIAL
Dieter Bischoff, Hohensachsen, Germany, assignor to Carl Freudenberg, Weinheim-Bergstrasse, Germany
Filed Apr. 20, 1970, Ser. No. 29,931
Claims priority, application Switzerland, May 7, 1969, 7,042/69
Int. Cl. D04h *11/00*
U.S. Cl. 161—66 **5 Claims**

Carpet consisting essentially of a needled non-woven fleece having a floorside and a tread side, substantially horizontally extending fibers forming the body of the fleece, and, securing the fibers of the body of the fleece together, generally vertically extending needled fibers having looped sections on the floor side of the fleece and free fiber ends adjacent the tread side thereof, the floor side and

the tread side being distinguished from each other in that the floor side harbors said looped sections and is impregnated with a binder securing fibers of the fleece together and forming a backing for the carpet, while the tread side is substantially free of binder and has said fiber ends disposed therein and adjacent thereto.



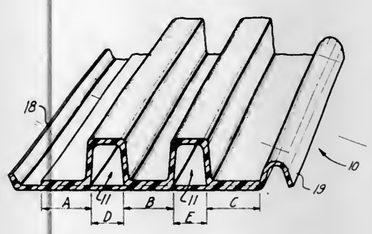
3,669,820
CELLULAR STRUCTURE
Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.
Continuation-in-part of application Ser. No. 865,087, Oct. 9, 1969. This application June 19, 1970, Ser. No. 47,710
Int. Cl. B32b *3/12, 3/28*
U.S. Cl. 161—68 **12 Claims**



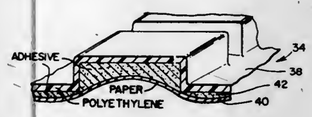
A cellular, honeycomb-like structure comprised of a plurality of elements in stacked or juxtaposed relation, and each having a pattern of corrugations. At least every other element is characterized by a plurality of pairs of sections of dissimilar length which each define a corrugation. The corrugations of adjacent elements internest to define closed, generally triangular cells. It is characteristic of the structure that the peaks or nodes of the corrugations of each element engage upon the internode portions or slopes of the corrugations of the adjacent element. During assembly this enables relative movement between the elements until internesting is achieved. It is also characteristic of the structure that each cell is defined by one complete internodal section and portions of a pair of internodal sections of two adjoining elements. Various configurations of the structure for various purposes are disclosed.

3,669,821
FIBER-REINFORCED PLASTIC STRUCTURAL MEMBER
Merle F. Sharp, Delmont, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Aug. 2, 1968, Ser. No. 749,887
Int. Cl. B32b *1/00*
U.S. Cl. 161—127 **3 Claims**

Fiber-reinforced plastic structural members are fabricated with at least one lengthwise cell. The members are made from two component elements, each having contiguous surfaces in the assembly which surfaces become coalesced in the integral structural member. One of the components is formed, partially gelled, and before complete gellation, is engaged with the other component which is at that time ungelled. With the two components thus assembled, the overall member is cured to produce a unitary structural member having at least one lengthwise cell. The process is especially useful in producing components for operating louvers.

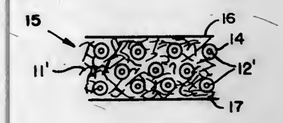


3,669,822
FILM-TISSUE PAPER ADHESIVE LAMINATES
Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio
Continuation-in-part of application Ser. No. 780,075, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 695,710, Jan. 4, 1968. This application Jan. 11, 1971, Ser. No. 105,480
Int. Cl. B32b *3/28*
U.S. Cl. 161—130 **5 Claims**



The invention disclosed is an adhesively bound laminate formed of a thin thermoplastic film pre-embossed throughout substantially the entire surface area, and having at least one tissue paper layer adhesively bound thereto by means of an aqueous-base adhesive composition.

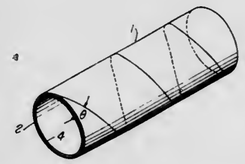
3,669,823
NON-WOVEN WEB
Dennis E. Wood, Penfield, N.Y., assignor to Curlator Corporation, East Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,373
Int. Cl. B32b *3/18;* **D04h** *5/00*
U.S. Cl. 161—141 **8 Claims**



This web comprises fibers arranged in random fashion lengthwise, widthwise, and depthwise of the web and

incorporating therein continuous elements, such as filaments, which are foam-coated and which bond adjacent fibers in the regions of crossing of the fibers and the foam-coated elements, thereby bonding the web into an integral structure. The continuous elements may be arranged as weft or as warp elements of the web, or may be arranged as both weft and warp elements, or in random fashion.

3,669,824
RECOVERABLE ARTICLE
Robert L. Hess, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Aug. 25, 1969, Ser. No. 852,830
Int. Cl. B32b *7/02, 7/10*
U.S. Cl. 161—166 **11 Claims**



The present invention relates to a heat-recoverable article particularly adapted for use as a covering on wires, cables and the like. More particularly, the invention relates to a helical heat-recoverable tape, having an outer wall of heat-recoverable material and an inner wall which comprises a material which is fusible at the temperature at which the tape recovers so that when the tape is placed around an article and heated to cause recovery, the fusible inner surface will flow to cause a good seal between the tape and article.

ERRATUM

For Class 161—167 see:
Patent No. 3,669,787

3,669,825
ADHERING RESINS TO SUBSTRATES, ESPECIALLY METAL, BY RADIATION
Roger P. Hall, Mayfield Heights, Ohio, assignor to SCM Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 682,140, Nov. 13, 1967, and Ser. No. 737,576, June 17, 1968. This application Oct. 3, 1968, Ser. No. 764,932
Int. Cl. B32b *31/28;* **C09j** *3/14*
U.S. Cl. 161—188 **19 Claims**

A process for bonding by radiation a substrate, and especially one having a metallic surface, with a substantially catalyst-free system containing a polymerizable organic unsaturated resin susceptible to free-radical catalysis; and the resulting product. In one form, a film of the resin is superimposed upon the substrate while a facing side of either the resinous film or substrate is contacted at any time prior to such radiation with an organic substituted, radiation-responsive ester of a metal acid, such as titanic acid or zirconic acid. Thereafter, the film and substrate are subjected to the high energy radiation to adhere one to the other. In another form, normally air-inhibited, thermosetting resins are bonded to substrates by a two-step process, wherein the resin film is first passed through one treating zone effective to impart mass integrity and thereby define a sheet, and the sheet together with the metal ester and the substrate is then passed through another treating zone effective substantially to complete the cure of the resin and simultaneously adhere the sheet to the substrate, at least one of the treating zones comprising exposure to high energy radiation.

3,669,826
LAMINATED STRUCTURES
Ronald E. Davey, Solihull, Charles N. Tomlinson, Sutton Coldfield, and Alan White, Wythall, England, assignors to Triplex Safety Glass Company Limited, London, England
No Drawing. Filed May 19, 1969, Ser. No. 825,975
Claims priority, application Great Britain, May 24, 1968, 25,070/68
Int. Cl. B32b *15/08, 17/10*
U.S. Cl. 161—196 **7 Claims**

In a process for increasing the adhesion at the interface between a synthetic plastics material and a thin transparent material deposited upon a vitreous material surface in a laminated structure, the transparent material is selected from an electro-conductive metal film and an electro-conductive film covered by a film of metal oxide, and, prior to lamination, is treated with a solution of a potassium salt electrolyte, washed and dried.

3,669,827
SOLVENT RESISTANT POLYETHYLENE CONTAINERS
John McNaughton Kolyer, Morris Township, Morris County, and Albert Andrew Kveglis, Clifton, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed May 21, 1970, Ser. No. 39,511
Int. Cl. B29c *5/04;* **B32b** *27/08, 27/34*
U.S. Cl. 161—227 **5 Claims**

A method of preparing hollow polyethylene containers having a nylon liner by rotational casting whereby the polyethylene is rotationally molded; a copolymer of ethylene and an alkyl acrylate or methacrylate or a vinyl ester is added; molding is continued to bond a layer of the copolymer to the polyethylene; a catalysed and promoted lactam solution is added; and casting continued under anionic polymerization conditions for the lactam to form an inner nylon layer bonded to the copolymer. The process forms hollow polyethylene containers having a firmly bonded nylon liner which is resistant to solvents.

3,669,828
METHOD FOR PREPARING COLORED RUBBER LAMINATES
Teruyoshi Usamoto, Higashiosaka, Masao Yokota, Ibaraki, and Tamotu Kondo, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
No Drawing. Filed June 11, 1969, Ser. No. 832,887
Claims priority, application Japan, June 21, 1968, 43/43,268
Int. Cl. B32b *27/20;* **C09j** *5/00*
U.S. Cl. 161—252 **6 Claims**

A colored rubber is prepared by sticking together vulcanized and semi-vulcanized rubbers containing an ethylene-propylene rubber and an inorganic filler into which a coloring and cross-linking agent has been blended, and vulcanizing the resulting assembly.

3,669,829

PAPER AND PAPER-LIKE FIBROUS STRUCTURES FROM MIXTURES OF NATURAL, ARTIFICIAL AND SYNTHETIC FIBERS

Cornelio Caldo; Ezio Danielli, both of Terni; Italo Incollingo, Milan, and Francesco Protospataro, Terni, all of Italy, assignors to Montecatine Edison S.p.A., Milan, Italy

Filed Feb. 2, 1970, Ser. No. 8,047
Claims priority, application Italy, Feb. 4, 1969, 12383 A/69
Int. Cl. D21f 11/00; D21h 5/12
U.S. Cl. 162—146 9 Claims

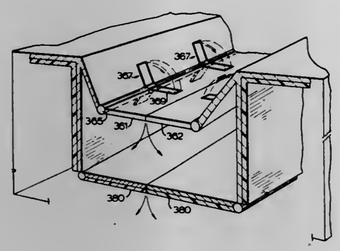
There are disclosed paper and paper-like fibrous structures comprising natural or artificial cellulose fibers and synthetic fibers which are fibers of a propylene polymer, such as polypropylene consisting essentially of isotactic polypropylene made up of isotactic macromolecules, and having a melt index of from 0.5 to 50, said propylene polymer fibers having a length not exceeding 20 mm and a count not greater than, and preferably lower than, 2.5 dtex. The fibrous structures may also comprise a polymeric binding agent, which can be a basic condensation polymer or copolymer of epichlorhydrin with at least one member selected from the group consisting of primary and secondary aliphatic amines, aromatic amines and heterocyclic amines.

3,669,830

BROKE RECEIVER CHAMBER FOR THE DRYER SECTION OF A PAPERMAKING MACHINE

Stanley C. Williams, Pointe Claire, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada

Filed Dec. 22, 1969, Ser. No. 887,075
Claims priority, application Canada, Dec. 27, 1968, 038731
Int. Cl. D21f 1/66
U.S. Cl. 162—264 4 Claims



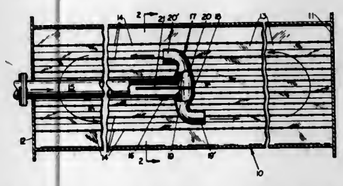
A broke receiver chamber located beneath the dryer section of a papermaking machine which includes an upper door assembly which provides access to the chamber for the broke, a lower door which allows removal of the broke from the chamber, and either seals or an upper door operating system which precludes passage of air upwardly from the chamber into the dryer section. The upper door assembly may comprise a first set of doors and a second set of doors therebeneath with an air lock inbetween, the upper door operating system including a motor and a first door actuator connected to the first set of doors and a second door actuator connected to the second set of doors and an interlock within a controller to prevent simultaneous opening of the first and second doors.

3,669,831

DISCHARGING NOZZLE ASSEMBLY FOR PRODUCING EQUALIZED DISTRIBUTION OF PRESSURIZED FLUID IN AN ELONGATED DRYING CHAMBER

Joseph H. Dupasquier, 5855 N.W. Skyline Drive, West Linn, Oreg.

Filed Aug. 13, 1970, Ser. No. 63,368
Int. Cl. D21f 5/18
U.S. Cl. 162—290 2 Claims



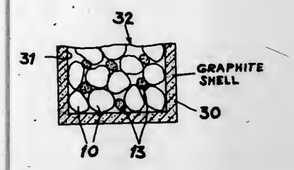
A pipe for delivering steam under pressure to the longitudinal center of the elongated steam chamber terminates in a discharging nozzle assembly comprising two identical but oppositely positioned nozzles located in a plane parallel to the longitudinal center line of the chamber and discharging in opposite directions respectively. A baffle or divider plate, extending along the axial line in the end of the pipe and at the entrance to the nozzles and extending perpendicular to the plane of the nozzles, equalizes the flow through the nozzles, causing an even circulation throughout the length of the chamber.

3,669,832

COATED-PARTICLE FUEL AND FERTILE ELEMENT FOR NUCLEAR REACTORS AND METHOD OF OPERATING SAME

Alfred Boettcher, Hangstrasse 11, 51 Aachen, Germany

Filed Jan. 15, 1968, Ser. No. 698,009
Claims priority, application Germany, Jan. 17, 1967, K 61180
Int. Cl. G21c 3/06
U.S. Cl. 176—68 6 Claims



A fuel element for nuclear reactors which comprises coated fuel and breeder particles in which coated particles containing the fuel have diameters of at most half the diameters of coated particles containing the fertile material, the coated particles being embedded in a graphite shell or received in a vacuum-tight metal shell; the different particle sizes of the coated particles containing the fuel and fertile material mechanical discrimination between them.

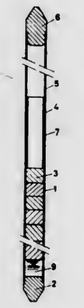
3,669,833

NUCLEAR FUEL

Paul De Boeck, Mol; Bernard Marteel, Middelkerke, and Jozef Schrijvers, Dessel, all of Belgium, assignors to Belgonucleaire, S.A., Bruxelles, Belgium

Filed Sept. 30, 1968, Ser. No. 763,761
Claims priority, application Belgium, Sept. 29, 1967, 49,002
Int. Cl. G21c 3/18
U.S. Cl. 176—68 4 Claims

A fuel rod which contains a stack of fuel pellets held in position in a lower cladding tube by an inner tube, secured inside the lower cladding tube above the fuel pellets, the inner tube engaging both the upper fuel pellet in the stack and an upper tube.

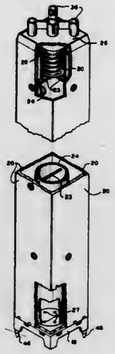


3,669,834

CORE PLUG FOR NUCLEAR REACTOR AND METHOD OF OPERATING REACTOR

Ralph H. Klumb, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 29, 1968, Ser. No. 771,443
Int. Cl. E21b 21/04
U.S. Cl. 176—87 7 Claims



A core plug for replacing a fuel assembly of a reactor with the plug being devoid of nuclear fuel and having a high flow resistance such as to permit only sufficient coolant flow through it for adequately cooling the plug. In the operation of the reactor, should a fuel assembly within the central region of the core become defective, this defective assembly will be removed and there will be a reshuffling of the fuel assemblies so as to produce an open assembly space at the outermost core region. There will then be placed in this space a core plug having the aforementioned flow characteristics.

ERRATUM

For Class 177—136 see:
Patent No. 3,669,756

3,669,835

PROCESS FOR PREPARING VITAMIN B_2-GLUCOSIDE

Yukio Suzuki, Kurashiki, Japan, assignor to Hayashibara Company, Okayama-shi, Okayama, Japan

Filed Apr. 14, 1970, Ser. No. 28,511
Int. Cl. C12d 5/04
U.S. Cl. 195—28 R 6 Claims

The present invention relates to a process for preparing vitamin B_2-glucoside starting from a oligosaccharide having a glucoside linkage, such as maltose, liquefied starch or sucrose and the like, as the raw material using the microbial cell or the enzyme contained therein (trans glucosidase) of the species of *Mucor*.

3,669,836

METHOD FOR THE PRODUCTION OF COENZYME A

Yoshio Nakao, Iberaki; Mitsuzo Kuno, Suita; Saburo Yamatodani, Minoo; Fumihiko Tanaka, Suita, and Tsutomu Nojiri, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 14, 1967, Ser. No. 630,803
Claims priority, application Japan, Apr. 16, 1966, 41/24234
Int. Cl. C12d 13/06
U.S. Cl. 195—28 N 15 Claims

Coenzyme A is produced in a good yield by incubating hydrocarbons-assimilating microorganisms belonging to the genera Corynebacterium, Brevibacterium, Pseudomonas or Arthrobacter in a culture medium comprising a carbon source consisting mainly of hydrocarbons containing not less than 10 percent (volume/volume) of normal paraffins of nine to 23 carbon atoms, and recovering coenzyme A accumulated in the culture broth.

3,669,837

PROCESS FOR PRODUCING 3-(3,4-DIMETHOXYPHENYL)L-ALANINE BY RESOLUTION

Robert F. Parcell, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Mar. 30, 1970, Ser. No. 24,013
Int. Cl. C12d 13/00
U.S. Cl. 195—29 1 Claim

N-acetyl-3-(3,4-dimethoxyphenyl)alanine is converted by the enzymatic action of an acylase from *Aspergillus oryzae* to 3-(3,4-dimethoxyphenyl)-L-alanine, leaving as an unreacted byproduct N-acetyl-3-(3,4-dimethoxyphenyl)-D-alanine. The process is preferably carried out in the presence of ammonia to adjust the pH to the desired value within the range of 6.0 to 9.0, and in the presence of cobaltous ions in a concentration of 10^{-4} to 5×10^{-2} M. 3-(3,4-Dimethoxyphenyl)-L-alanine is converted to 3-(3,4-dihydroxyphenyl)-L-alanine by cleavage of the ether groups.

3,669,838

METHOD OF MAKING ANTIBIOTICS CONTAINING THE AMINOCYCLITOL SUBUNIT

Wayne Thomas Shier; Kenneth L. Rinehart, Jr., and David Gottlieb, all of Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation-in-part of application Ser. No. 842,712, July 17, 1969. This application Mar. 17, 1970, Ser. No. 20,433
Int. Cl. C12d 9/00
U.S. Cl. 195—29 12 Claims

The method of making an antibiotic containing an aminocyclitol subunit. A microorganism mutant, incapable of biosynthesizing the aminocyclitol molecule but which molecule the unmutated microorganism biosynthesizes in the formation of an antibiotic when cultivated in a nutrient medium having no added aminocyclitol, is grown in the presence of an added aminocyclitol until substantial antibiotic activity is imparted to a culture medium, and the antibiotic is separated from the medium.

Streptomyces fradiae ATCC 21401 mutant grown in the presence of added streptamine gives hybrimycins A1 and A2,

and when grown in the presence of 2-epistreptamine gives hybrimycins B1 and B2.

Streptomyces rimosus forma *paromomycinus* ATCC 21485 mutant grown in the presence of added streptamine gives hybrimycins C1 and C2.

The hybrimycins have antibiotic activity.

3,669,839

STIMULATORY EFFECT OF ORGANIC ACIDS IN CITRIC ACID FERMENTATION

John H. Fried, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,623
Int. Cl. C12d *1/04*
U.S. Cl. 195—37 3 Claims

A process for producing citric acid with certain Candida strains by aerobically fermenting an aqueous carbohydrate-containing nutrient medium in the presence of an added aliphatic tricarboxylic acid such as n-hexadecylcitric acid or trans-aconitic acid.

3,669,840

GLUCONIC ACID PRODUCTION

Herbert J. Hatcher, Bloomington, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Nov. 25, 1969, Ser. No. 879,807
Int. Cl. C12d *1/02*
U.S. Cl. 195—36 R 7 Claims

Gluconic acid is produced by a fermentation process in which an inoculum of the fungus Aspergillus niger is transferred to a first production medium containing a source of glucose at a time when the glucose oxidase activity of the inoculum is increasing at its maximum rate. The fungus mycelium can be separated from the production medium at harvest time and reused in successive production media without the need for added nutrients until such time as nutrients are needed to revive the glucose oxidase activity.

3,669,841

ATTACHMENT OF ENZYMES TO SILICEOUS MATERIALS

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 11, 1970, Ser. No. 10,654
Int. Cl. C12k *1/00*; C07g *7/02*
U.S. Cl. 195—63 21 Claims

Enzymes are attached to siliceous materials by silation of the siliceous material to introduce functional groups which are then linked to an enzyme by means of crosslinking agents. The products are enzymatically active heavy-duty composites in which the enzyme is covalently attached via the crosslinking agent and an organosilane to the siliceous material.

3,669,842

PURIFICATION OF L-ASPARAGINASE

Masao Tanaka; Tetuo Oka; Tatsuro Fujio, all of Machida-shi, and Kazuo Mochizuki, Shizuoka-ken, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 21, 1969, Ser. No. 826,665
Claims priority, application Japan, May 24, 1968, 43/34748
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 A 13 Claims

The present disclosure is directed to a process for purifying an enzyme preparation of L-asparaginase obtained from an L-asparaginase-producing microorganism belonging to the genus Serratia, wherein said microorganism produces together with the L-asparaginase, factors which inactivate the enzymatic activity of L-asparaginase; the improvement which comprises separating the inactivating factors from L-asparaginase during some stage of the purification process by salting out said factors with the addition of an inorganic salt and recovering purified L-asparaginase having an effective anti-tumor activity.

3,669,843

PROCESS FOR THE PRODUCTION OF URICASE

Knud Aunstrup, and Jorn Leo Mahler, both of Farum, Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen, Denmark

Filed Aug. 15, 1969, Ser. No. 858,907
Claims priority, application Great Britain, Aug. 19, 1968, 39,537/68
Int. Cl. C07g *7/028*; C12d *13/10*
U.S. Cl. 195—66 R 5 Claims

Production of the enzyme uricase by aerobic cultivation of a strain of Bacillus fastidiosus or a variant thereof.

3,669,844

METHOD OF PRODUCING PROTEASE BY MICROORGANISM

Kunimori Niwa, 2-160, Kannon, Kawasaki-shi; Hiroshiro Shibai, 10-2-204, Tsujido-danchi, Fujisawa-shi; Masahiro Yasunaga, 5, Zenbu-cho, Hodogoya-Ku, Yokohama-shi; Yoshio Hirose, 1155, Nakamaruko, Kawasaki-shi; Teruo Shiro, 2-2-28, Matsunami, Chigasaki-shi, all of Kanagawa-ken, Japan

Filed Sept. 23, 1970, Ser. No. 74,831
Claims priority, application Japan, Oct. 3, 1969, 44/79033
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R 5 Claims

Certain microorganisms of Bacillus, Candida and Rhodotorula produce protease when cultured on a medium containing an organic acid as the predominant source of carbon.

3,669,845

METHOD FOR THE PREPARATION OF PENTITOL FROM PENTOSE BY USING BACTERIA

Tomio Imai, Tokyo; Mutsuo Shimamura, Saitama; Juichi Yoshitake, Saitama, and Hitoshi Ohiwa, Saitama, all of Japan, assignors to Godo Shusei Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,158
Claims priority, application Japan, Mar. 4, 1969, 44/15860
Int. Cl. C12d *13/00*
U.S. Cl. 195—43 6 Claims

Method for the preparation of xylitol, ribitol and anobitol by converting xylose, ribose and arabinose into the pentitol by the action of a strain of Corynebacterium, No. 208 or variation of said strain or strains belonging to Corynebacterium on a culture medium comprising a carbon source, a nitrogen source, inorganic salts and thiamine or a thiamine-containing source. The pentose is added to the culture medium at an optimal point of time during cultivation thereby to convert the pentose into the pentitol and permit recovery of said pentitol.

3,669,846

PROCESS FOR OBTAINING AND PRESERVING STABLE BACTERIAL VARIANTS

Yvonne Thuillier, Paris, France, assignor to Albert Rolland S.A., Paris, France

Filed Mar. 23, 1970, Ser. No. 21,765
Claims priority, application Great Britain, Mar. 25, 1969, 15,672/69
Int. Cl. C12k *3/00*
U.S. Cl. 195—96 10 Claims

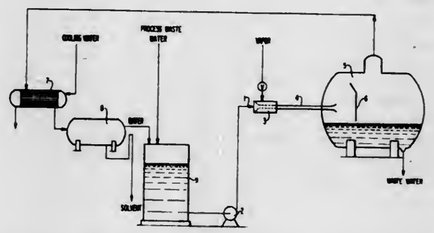
The invention provides a process for obtaining and preserving stable bacterial variants arising from pathogenic or non-pathogenic bacteria, the said process comprising subjecting the bacteria, in an acellular medium, at the moment of scissiparity, to the action of an inducing agent, especially plasmolysis by osmotic shock, so as to do away with the cell wall, and culturing the variants obtained on an osmotically equilibrated acellular nutrient medium. The bacterial variants so obtained can be used for the preparation of vaccines and of reagents for sero-diagnostics and the identification of germs of atypical illnesses.

3,669,847

PROCESS FOR SEPARATING STEAM-VOLATILE ORGANIC SOLVENTS FROM INDUSTRIAL PROCESS WASTE WATERS

Ernst Feder, Niederkassel; Kurt Deseiners, Ranzel, and Gunther Czehovsky, Niederkassel, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed July 24, 1969, Ser. No. 844,250
Claims priority, application Germany, July 26, 1968, P 17 92 147.0
Int. Cl. B01d *3/06*
U.S. Cl. 203—14 6 Claims



Steam-volatile organic solvents are removed from process waste waters by intimately mixing the process waste waters with steam to form an azeotropic steam mixture, withdrawing the azeotropic steam mixture from the resultant mixture of steam and water, and condensing said azeotropic steam mixture. The major amount of process waste water, thus freed of solvent content, is discharged as general sewage. An apparatus designed to conduct said process is also described.

3,669,848

PURIFYING PROPYLENE GLYCOL MONOESTERS USING VACUUM DISTILLATION

Paul Seiden, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 19, 1969, Ser. No. 886,772
Int. Cl. B01d *3/10*
U.S. Cl. 203—94 10 Claims

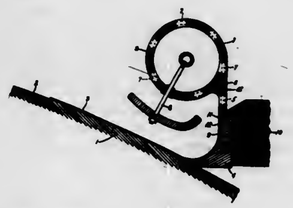
A method of purifying propylene glycol monoester emulsifiers utilizing non-molecular vacuum distillation.

3,669,849

COMPLEXLY SHAPED ARTICLES FORMED BY DEPOSITION PROCESSES

Ferenc J. Schmidt, Ardmore, Pa., assignor to General Electric Company

Original application Dec. 27, 1966, Ser. No. 604,799, now Patent No. 3,515,662. Divided and this application Oct. 16, 1969, Ser. No. 871,008
Int. Cl. C23b *7/00*, *7/06*, *5/48*
U.S. Cl. 204—11 2 Claims



Perforations in the recessed area of a surface mold are provided to produce smooth, even, relatively stress-free deposition on the recessed area. Fusible fillets may also be used to form rigid bridges over parts of the recessed area. A specific product is an integrally formed, rigidly supported, relatively stress-free electroplated mirror.

3,669,850

METHOD FOR THE PRODUCTION OF ABRASIVE BRUSHING ELEMENTS

Cedo Draca, 2165 Barnes Street, St. Laurent, Montreal 388, Quebec, Canada

Filed July 18, 1969, Ser. No. 843,090
Int. Cl. C23b *7/00*, *5/48*
U.S. Cl. 204—16 17 Claims



An abrasive brushing element such as a wire bristle, a strip or a plate having the tip and a substantial portion thereof clad with a layer of a metal such as nickel, wherein is bound a layer or more of very fine abrasive powder, such as tungsten carbide. The article is produce by crushing a material of high hardness to a very fine particle size and imparting an electrostatic charge at the surface thereof. The fine particles are then caused to electrostatically adhere at the tip and along a substantial portion of the brushing element while metal plating, preferably with nickel at least that portion of the brushing element.

3,669,851

METHOD OF ELECTRODEPOSITING ONTO STAINLESS STEEL

Bruce J. Garvey, Cleveland, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed Sept. 8, 1970, Ser. No. 70,558
Int. Cl. C23b *5/56*, *5/50*; B01d *45/12*
U.S. Cl. 204—25 4 Claims

A process by which a metal may be plated on a stainless steel metal substrate whereby the final electro-plated composite possesses greatly improved adherence. Said process involves the electrodeposition of a chromium strike layer on the stainless steel base metal which is then followed by a nickel strike layer prior to plating of said metal. The chromium strike layer may be deposited from any standard chromium electrodeposition plating baths. The nickel strike layer may be deposited from a "Woods strike" nickel electroplating bath which can be either bromide or chloride. The bromide type is preferred and the composition and operating conditions of said bath comprise:

$NiBr_2$	100–800 g./l.
HBr	0.2–20% by weight
Current Density	5–200 a.s.f.
Bath temperature	60–115° F.

3,669,852

ELECTROPLATING GOLD

Earl D. Winters, Quakertown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1969, Ser. No. 868,777
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 2 Claims

The removal of dissolved oxygen prior to and during plating from certain electroplating baths such as citrate and phosphate buffered gold cyanide plating baths, by introducing nitrogen gas or a chemical reducing agent such as hydrazine or sulfite ions into the bath, results both in in-

creased plating efficiencies of up to 98 percent and decreased thickness variation of the plated deposit, over the normally encountered current density range.

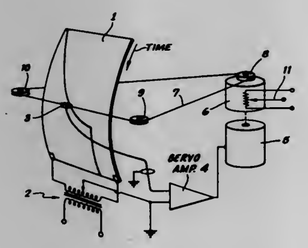
3,669,853
COUMARIN-CARRIER ADDITION AGENT FOR NICKEL BATHS
Sidney C. Beach, Cleveland, Ohio, assignor to Chemetron Corporation, Chicago, Ill.
Filed July 15, 1969, Ser. No. 842,027
Int. Cl. C23b 5/08, 5/46; B01k 3/00
U.S. Cl. 204—49 10 Claims

An improved coumarin addition agent is disclosed for use in nickel electrodeposition baths, wherein the coumarin is adsorbed on a bath-insoluble, friable, porous carrier material to produce a composition adapted to be placed in the filter commonly employed in plating baths.

3,669,854
ZINC ELECTROPLATING ELECTROLYTE AND PROCESS
Edward P. Harbulak, Allen Park, Mich., assignor to M & T Chemicals Inc., New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,734
Int. Cl. C23b 5/10, 5/46
U.S. Cl. 204—55 R 14 Claims

In accordance with certain of its aspects this invention relates to a process of producing bright zinc electrodeposits which comprises passing current from an anode to a metal cathode through an aqueous bath composition containing at least one zinc compound providing zinc ions for electroplating zinc, a bath-soluble polyether, and at least one non-aromatic α, β- unsaturated carbonyl compound for a time period sufficient to deposit a bright zinc electrodeposit upon said cathode.

3,669,855
CONTROL OF INTEGRAL COLOR ANODIZING PROCESS
Richard L. Smith, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Jan. 28, 1970, Ser. No. 6,516
Int. Cl. C23b 9/02; B01k 3/00
U.S. Cl. 204—58 4 Claims

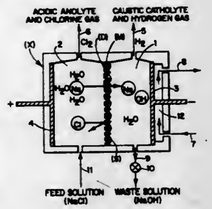


A process for controlling an integral color anodizing process to minimize the effect of variations in electrolyte bath composition, temperature and the like upon the color of the anodic oxide coatings comprising developing a voltage-time relationship to obtain a desired color and controlling the anodizing process in accordance with the developed voltage-time relationship.

3,669,856
PROCESS FOR THE PRODUCTION OF COLORED PROTECTIVE COATINGS ON ARTICLES OF ALUMINUM OR ALUMINUM ALLOYS
Ove Christopher Gedde, Gaupefaret 24, 1713 Gralum, Norway
Filed June 23, 1969, Ser. No. 835,668
Claims priority, application Norway, June 21, 1968, 2459/68
Int. Cl. C23b 9/02; B01k 1/00
U.S. Cl. 204—58 7 Claims

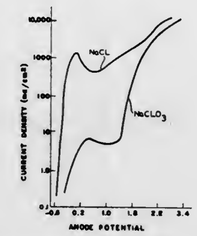
A process is applied for the production of colored, protective coatings on articles of aluminum or aluminum alloys by passing an alternating current between a previously anodically oxidized aluminum article and a counter-electrode immersed in an acid aqueous bath containing salts of metals capable of coloring the aluminum oxide layer, the alternating voltage supplied being modulated as to its amplitude and/or frequency so as to make it asymmetrical thereby to control the color tone on the aluminum article. The asymmetrical voltage may be produced, for example, by supplying two or more alternating voltages of different amplitude, frequency and/or phase, or by using a direct voltage superimposed on the alternating voltage.

3,669,857
ELECTROLYTIC CHLORINATION AND PH CONTROL OF WATER
Thomas A. Kirkham, Lexington; John W. Arnold, Wilmington, and Anthony J. Giuffrida, North Andover, all of Mass., assignors to Ionics Incorporated, Watertown, Mass.
Filed July 30, 1970, Ser. No. 59,636
Int. Cl. C02b 1/82; B01k 3/10
U.S. Cl. 204—151 6 Claims



A swimming pool water sterilizer and the method involved in the operation are disclosed employing a two electrode compartment electrolytic cell with said compartments being separated by a cation selective membrane. A concentrated alkali metal chloride salt solution is fed to the anode compartment wherein on application of a decomposition voltage there is formed therein essentially chlorine gas and hypochlorous acid. The migration of water from the anode compartment to the cathode compartment as a result of the solvation of the alkali metal ions (Na^+) which passes to the cathode compartment through the cation membrane allows the formation of a caustic solution and hydrogen gas within the cathode compartment. The effluents resulting from both compartments are fed into the recirculated pool water for sterilization. The pH of said water can be controlled by discharging to waste any excess basic catholyte at predetermined intervals at pre-set periods of time.

3,669,858
ELECTROCHEMICAL MACHINING
Mitchell A. La Boda, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation of application Ser. No. 664,770, Aug. 31, 1967, which is a continuation-in-part of application Ser. No. 446,389, Apr. 7, 1965. This application May 21, 1970, Ser. No. 37,494
Int. Cl. B23p 1/00
U.S. Cl. 204—143 M 4 Claims



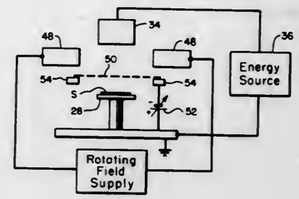
An electrochemical machining electrolyte which forms a specific electrochemical erosion inhibiting film, which film is susceptible to removal by the application of high current densities and potentials thereto. The principal ingredient of the preferred electrolyte for forming this specific film is at least one salt selected from the group consisting of sodium chlorate, potassium chlorate, sodium perchlorate and potassium perchlorate. pH modifiers such as sodium hydroxide, sodium carbonate, sodium borate and the like may be added. pHs between about 6.7 and 11 are the most effective.

3,669,859
PROCESS AND COMPOSITIONS FOR PROTECTING IMAGES WITH RESIN FILMS
Stewart H. Merrill, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 29, 1969, Ser. No. 854,314
Int. Cl. G03g 13/22; B01k 5/02
U.S. Cl. 204—181 8 Claims

Novel process and compositions are provided for forming protective coatings. The compositions feature a graft copolymer suspension in an electrically insulating carrier vehicle. The copolymer is comprised of a linear backbone chain formed of an unsaturated polymer soluble in the carrier vehicle, having grafted thereto pendant side chains substantially all of which are insoluble in the carrier vehicle. A developed image-bearing member which is contiguous with an electrically conductive backing is placed in close proximity to an electrode and a bias potential is applied between the electrode and the conductive backing. While this potential is being applied, the copolymer suspension is applied to the image-bearing surface of the member to deposit a uniform resin layer.

3,669,860
METHOD AND APPARATUS FOR APPLYING A FILM TO A SUBSTRATE SURFACE BY DIODE SPUTTERING
Terence J. Knowles, Oak Park, and Daniel A. Eaton, Chicago, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.
Filed Apr. 1, 1970, Ser. No. 24,571
Int. Cl. C23c 15/00
U.S. Cl. 204—192 10 Claims

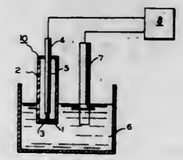
Diode sputtering apparatus deposits a film on a substrate surface while protecting the substrate against overheating and other adverse effects due to electron bombardment. A magnetic field, transverse to an electric field between the cathode and substrate surface, is rotated about the cathode-substrate axis to deflect electrons submitted from the cathode into paths clear of the substrate surface. Further advantages in uniformity and increased rate of depositions are achieved.



3,669,861
R. F. DISCHARGE CLEANING TO IMPROVE ADHESION
John H. Cash, Jr., and Joe P. Keene, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 28, 1967, Ser. No. 663,707
Int. Cl. C23c 15/00
U.S. Cl. 204—192 3 Claims

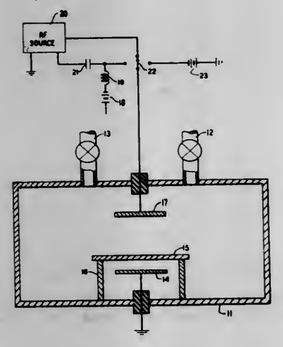
A method of cleaning a semiconductor substrate in an inert gas atmosphere by use of R. F. energy is disclosed. The field of R. F. energy is controlled by a magnetic field which is perpendicular to the electric field of the R. F. .energy. Preferably, the R. F. energy is at a frequency of 13.560 MHz with a power of approximately 500 watts.

3,669,862
DEVICE FOR MEASURING AN ACTIVITY OF CUPRIC IONS
Hiroshi Hirata, and Masanao Arai, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 13, 1970, Ser. No. 27,476
Claims priority, application Japan, Apr. 20, 1969, 44/30419; 44/30420
Int. Cl. G01n 27/46
U.S. Cl. 204—195 M 5 Claims



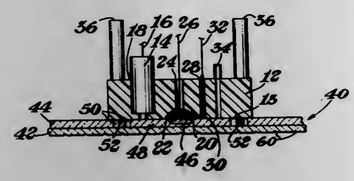
A device for measuring an activity of cupric ions comprises a selective electrode and a reference electrode immersed in a solution containing cupric ions, said selective electrode including a cuprous sulfide sintered plate having a lead connected to one surface thereof, whereby only another surface contacts with said solution.

3,669,863
TECHNIQUE FOR THE PREPARATION OF IRON OXIDE FILMS BY CATHODIC SPUTTERING
Frank Groom Peters, Nutley; William Robert Sinclair, Miles, and Vincent Sullivan, Summit, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 28, 1970, Ser. No. 101,478
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 6 Claims



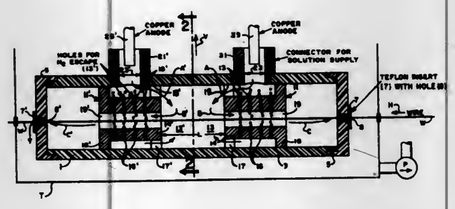
A technique for the preparation of iron oxide films designed for use as photomasks for thin film and semiconductor processing involves sputtering iron in a carbon monoxide ambient containing carbon dioxide upon a substrate member.

3,669,864
POLAROGRAPHIC ELECTRODE APPARATUS AND METHOD
Robert R. Fike, 5012 LeMans Drive, Indianapolis, Ind.
Filed Sept. 2, 1969, Ser. No. 854,660
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R 5 Claims



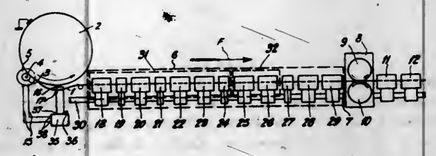
A polarographic electrode assembly comprising a confined working electrode is described. The electrode assembly is adapted to fit against a portion of a thin layer chromatogram to form a polarographic cell in which the electrodes of the electrode assembly are all in contact with an isolated zone of the thin layer containing a spot of substance to be assayed. A method of using the polarographic electrode assembly to assay materials separated by thin layer chromatography without elution of the spots containing the substance is also described.

3,669,865
APPARATUS FOR UNIFORMLY PLATING A CONTINUOUS CYLINDRICAL SUBSTRATE
Peter P. Semlenko, Roslindale, and Emil Toledo, Brighton, both of Mass., assignors to Honeywell, Inc., Minneapolis, Minn.
Original application Jan. 3, 1966, Ser. No. 518,184, now Patent No. 3,506,546. Divided and this application Jan. 22, 1970, Ser. No. 10,689
Int. Cl. B01k *3/00*
U.S. Cl. 204—206 3 Claims



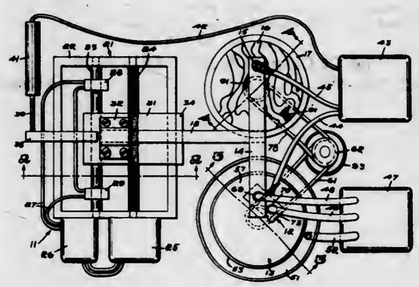
Apparatus for electroplating copper onto a wire substrate at very high speeds and continuously, and associated copper electrolytes and plating methods. An essentially hollow cylinder is provided as a plating cell through which the wire can be advanced and along which recirculated electrolytes can be passed. Recirculation inlets are provided to communicate with the central passage and are arranged to ionize the fluid uniformly and inject it into the passage so as to be distributed uniformly about the passing wire and to be directed symmetrically and radially against the wire and then diverted symmetrically and with agitation along the wire toward an exit port. Novel associated electroplating methods and electrolytes, such as copper cyanide and copper sulfate, are also described. The result is to plate copper very quickly, yet uniformly, onto the wire to provide a substrate of controlled surface configuration for subsequent plating of thin magnetic films.

3,669,866
APPARATUS FOR OBTAINING WIRES FOR MAGNETIC MEMORIES
Rene Fernand Victor Girard, Grenoble, and Jacques Le Guillerm, Avrille, both of France, assignors to Societe Industrielle Honeywell Bull, Paris, France
Filed Apr. 1, 1970, Ser. No. 24,635
Claims priority, application France, Apr. 3, 1969, 6910210
Int. Cl. C23b *5/68*, *5/58*
U.S. Cl. 204—207 11 Claims



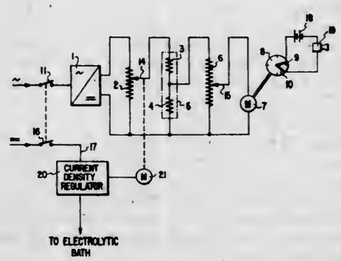
An apparatus for the continuous fabrication and testing of a wire having a conductive core covered with a thin magnetic film, wherein the conductive core is pulled with substantially zero tension through apparatus in which a magnetic film is deposited on the core and treated, and wherein the completed wire is then pushed through apparatus in which its physical properties are measured.

3,669,867
OPTICAL SURFACE GENERATING APPARATUS
Iwao P. Adachi, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed Apr. 15, 1968, Ser. No. 721,471
Int. Cl. B23p *1/02*; C23b *5/76*; E05d *15/22*
U.S. Cl. 204—224 14 Claims



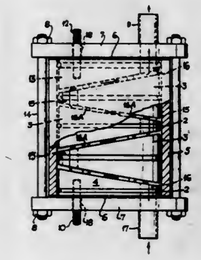
A surface generating system wherein a polishing electrode comprising a continuous stream of electrolyte is used to selectively polish an optical blank. During movement over the blank's surface, the electrode is selectively energized by a sensor element synchronously moving over a guide retaining information regarding contour errors on the surface blank.

3,669,868
LAYER THICKNESS INDICATING DEVICE FOR ELECTROLYTICALLY DEPOSITED MATERIALS
Hans-Wilhelm Lieber, and Rolf Kramer, both of Berlin, Germany, assignors to Fernsteuergerate Kurt Oelsch KG, Charlottenburg, Germany
Filed July 30, 1970, Ser. No. 59,472
Claims priority, application Germany, Aug. 1, 1969, P 19 39 125.4
Int. Cl. B01k *3/00*
U.S. Cl. 204—228 10 Claims



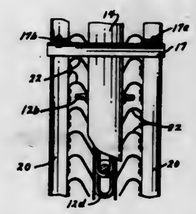
A device for indicating the thickness of a layer of material deposited in an electrolytic bath. In the device, the output signal from a constant voltage source is fed to a voltage proportioning circuit wherein the input voltage is proportioned according to the current density and efficiency of the electrolytic bath and for the deposition equivalent and the specific weight of the particular material to be deposited in the electrolytic bath. The thus proportioned voltage signal is then integrated with respect to time and an indication of the integrated value provided as a continuous measure of the thickness of the layer of material being deposited in the electrolytic bath.

3,669,869
ELECTROLYTIC CELLS
Derek Arthur Burton, Basingstoke, England, assignor to A. Johnson & Company (London) Limited, London, England
Filed Oct. 1, 1969, Ser. No. 862,861
Claims priority, application Great Britain, Oct. 1, 1968, 46,628/68
Int. Cl. B01k *3/04*
U.S. Cl. 204—268 7 Claims



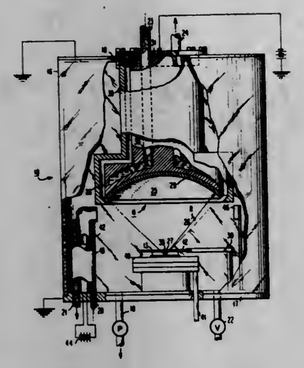
An electrolytic cell with spaced-apart electrodes in a row so constructed that the inter-electrode spaces are in series so that the electrolyte flows through them in succession. Preferably the electrodes are at least 1 centimeter thick and the inter-electrode spaces communicate with one another only by way of holes through the electrodes. The electrodes may be wedge-shaped.

3,669,870
ELECTROCOATING EQUIPMENT
Charles C. Boost, Oakland City; William S. Mitchell, and David M. Horton, both of Evansville, all of Ind., assignors to George Koch Sons, Inc., Evansville, Ind.
Filed Oct. 6, 1969, Ser. No. 864,066
Int. Cl. C23b *13/00*; B01k *5/02*
U.S. Cl. 204—297 11 Claims



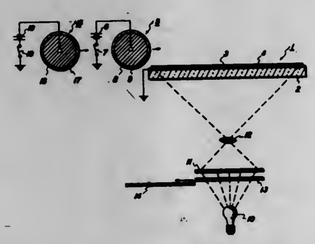
A hanger assembly for electrocoating equipment characterized by the use of a series of resilient metal bus springs or wipers, at ground electrical potential, in various wiping arrangements for achieving less system resistance, and, therefore, improved operating results.

3,669,871
SPUTTERING APPARATUS HAVING A CONCAVE SOURCE CATHODE
Jarl A. Ehngren, and Robert R. R. Rodito, both of Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 10, 1969, Ser. No. 856,762
Int. Cl. C23c 15/00
U.S. Cl. 204—298 2 Claims



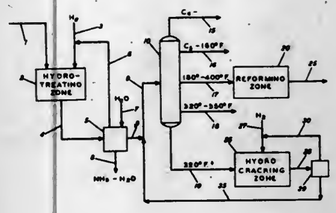
Sputtering apparatus in which the sputtering cathode is concave to produce a focusing effect on dislodged particles and concentrate the particles toward a point. The substrate being coated is movably mounted to construct the desired coating configuration. A modification is to orient single crystal bits on the cathode surface to further enhance preferential directional emission during sputtering.

3,669,872
IMAGING SYSTEM
Vsevolod Tulagin, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Original application Oct. 17, 1967, Ser. No. 675,892. Divided and this application Jan. 29, 1970, Ser. No. 12,532
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—299 3 Claims



A method of selectively producing positive or negative photoelectrophoretic copies is described. A suspension of photosensitive particles sensitive to a first range of wavelengths is placed between two electrodes, one of which is transparent and the other of which has a surface sensitive to a second range of wavelengths. When a field is imposed across the suspension and an image is projected through the transparent electrode using radiation in only one of said first and second ranges, a positive or negative image is formed on a given electrode, depending on whether the electrode or the suspension is sensitive to the radiation used.

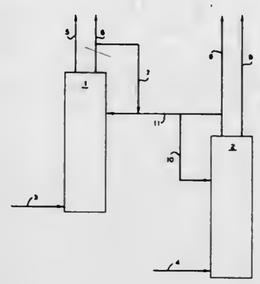
3,669,873
HYDROFINING-HYDROCRACKING PROCESS
Joseph Jaffe, Berkeley, and James R. Kittrell, Palos Verdes Estates, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of application Ser. No. 760,626, Sept. 18, 1968, now abandoned. This application Mar. 31, 1970, Ser. No. 24,317
Int. Cl. C10g 13/06, 23/02; C01b 33/28
U.S. Cl. 208—59 3 Claims



A hydrofining-hydrocracking process which comprises contacting a hydrocarbon feed containing more than 50 parts per million of organic nitrogen and substantial amounts of materials boiling above 200° F., said feed being selected from the group consisting of petroleum distillates, solvent-deasphalted petroleum residua, shale oils and coal tar distillates, in a reaction zone with hydrogen and a catalyst, at hydrofining-hydrocracking conditions including a temperature in the range 400° to 950° F., a pressure in the range 800 to 3,500 psig, a liquid hourly space velocity in the range 0.1 to 5.0, and a total hydrogen supply rate of 200 to 20,000 SCF of hydrogen per barrel of feedstock, removing ammonia from the effluent from said reaction zone, and recovering hydrofined and hydrocracked products from said reaction zone, said catalyst comprising:

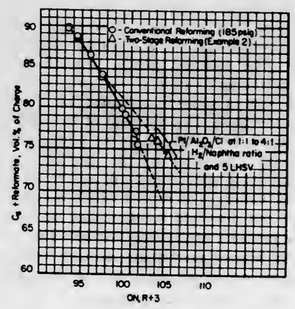
A. A gel matrix comprising:
a. at least 15 weight percent silica,
b. alumina, in an amount providing an alumina-to-silica weight ratio of 15/85 to 80/20,
c. Nickel or cobalt, or the combination thereof, in the form of metal, oxide, sulfide or any combination thereof, in an amount of 1 to 10 weight percent, based on said matrix, calculated as metal,
d. Molybdenum or tungsten, or the combination thereof, in the form of metal, oxide, sulfide or any combination thereof, in an amount of 5 to 25 weight percent, based on said matrix, calculated as metal;
B. A crystalline zeolitic molecular sieve:
a. containing less than 5 weight percent sodium,
b. containing ions selected from Mn, rare earths of atomic numbers 58 to 71, and alkaline earths Mg, Ca, Sr and Ba,
c. being substantially free of any catalytic loading metals,
d. being in particulate form and being dispersed throughout said matrix by cogelation of said matrix around said sieve;

3,669,874
METHOD OF INCREASING CATALYST ACTIVITY IN SOUR CRUDE CATALYTIC REFORMERS
William G. Roark, Sweeny, Tex., assignor to Phillips Petroleum Company
Filed Oct. 19, 1970, Ser. No. 81,833
Int. Cl. C10g 35/00, 39/00
U.S. Cl. 208—79 5 Claims



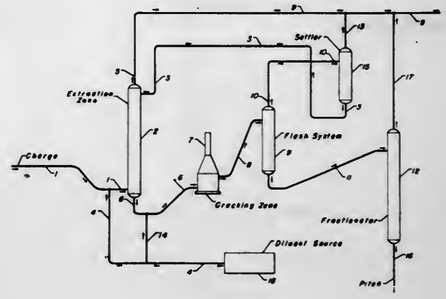
A method of operating at least two catalytic reformers which produce recycle streams of different sulfur content in which a portion of the lower sulfur content stream is recycled to the unit producing the higher sulfur content recycle steam to reduce the sulfur content of the stream recycled to the latter reformer.

3,669,875
TWO-STAGE REFORMING PROCESS
Charles J. Plank, Woodbury; Pharez G. Waldo, Wenonah, and Harry G. Doherty, Pitman, all of N.J., assignors to Mobil Oil Corporation
Filed Oct. 13, 1969, Ser. No. 865,810
Int. Cl. C10g 35/08, 39/00
U.S. Cl. 208—65 6 Claims



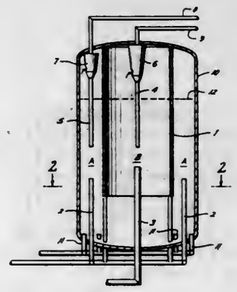
A naphtha hydrocarbon fraction is reformed in a plurality of catalytic reforming zones under conditions which are particularly selective for effecting naphthene dehydrogenation in a first stage and paraffin cyclization to form aromatics in a second stage so that below about 5 weight percent of naphthenes remain in the paraffin-rich charge passed to the second stage operated at a space velocity greater than 3 LHSV and maintained at a pressure below about 100 psig.

3,669,876
HF EXTRACTION AND ASPHALTENE CRACKING PROCESS
Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 18, 1970, Ser. No. 99,386
Int. Cl. C10g 17/04, 11/00
U.S. Cl. 208—87 6 Claims



A hydrocarbonaceous black oil is subjected to HF extraction for the separation of hetero compounds and highly condensed aromatics from a less soluble raffinate. The extract phase, after separation of the raffinate, but containing HF, is subjected to cracking conditions, and preferably in the presence of a hydrogen donor. The effluent is separated to recover the HF which is recycled to the extraction zone.

3,669,877
MULTI-CHAMBER FLUIDIZED BED CATALYTIC REACTOR
Heinz G. Friedrich, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.
Filed Feb. 5, 1970, Ser. No. 8,834
Int. Cl. B01j 9/20, 11/04; C10g 13/18
U.S. Cl. 208—164 3 Claims

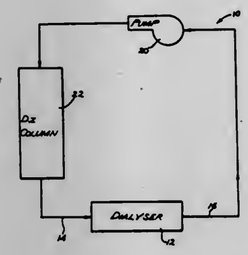


A fluidized bed reactor, vertically divided into two or more upper compartments or chambers which are connected to each other by a lower mixing chamber, provides a fluidized bed system wherein the fluidized catalyst can be used in one of the upper chambers and then by random movement pass into the lower mixing chamber hence into another upper chamber where it can be regenerated. This compact system requires a minimum of equipment and gives a maximum of operating efficiency.

3,669,878
TREATMENT OF DIALYSATE SOLUTION FOR REMOVAL OF UREA

Laurence B. Marantz, Sherman Oaks, and Michael A. Greenbaum, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary, Department of Health, Education and Welfare

Continuation of application Ser. No. 780,417, Dec. 2, 1968, now abandoned. This application Nov. 25, 1970, Ser. No. 92,864
Int. Cl. B01d 13/00
U.S. Cl. 210—22 15 Claims

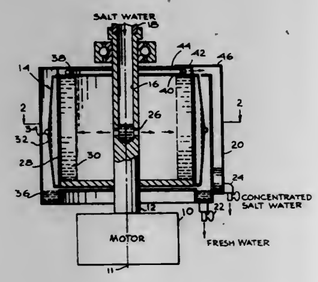


A treatment of dialysate solution which circulates past the membrane of an artificial kidney for removal of urea, which solution employs a combination of urease to break down urea to ammonium carbonate, and zirconium phosphate in the solution as a structure for the removal of ammonium ions.

3,669,879
FLUID SEPARATION APPARATUS AND METHOD

Lester P. Berriman, Arcadia, Calif., assignor to Dresser Industries, Inc., Santa Ana, Calif.

Continuation-in-part of application Ser. No. 652,920, July 12, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 885,099
Int. Cl. B01d 31/00, 13/00
U.S. Cl. 210—23 20 Claims

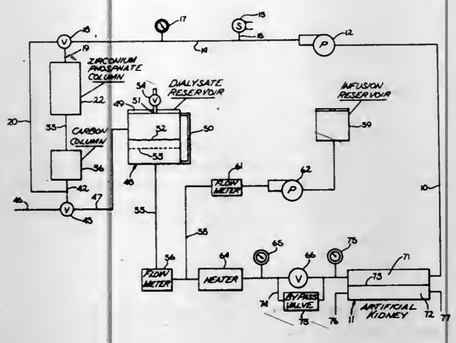


A separation process of the reverse osmosis type useful for generating fresh water by forcing salt water against a semipermeable membrance that allows only pure water to pass, which uses centrifugal forces created by rotating basket to build up a pressure head of water supplied to the basket to force water through the membrance. The pure water can be expelled by a nozzle in a direction to help rotate the basket. The membrance can be in the form of a spiral or layers extending perpendicular to the axis, to increase the membrane area within a basket of given size. The membranes can extend radially with respect to the axis of rotation, and supply and removal conduits can be positioned to continually flow water in an outward radial direction to prevent the build-up of polarization layers on the membrane surfaces.

3,669,880
RECIRCULATION DIALYSATE SYSTEM FOR USE WITH AN ARTIFICIAL KIDNEY MACHINE

Laurence B. Marantz, Sherman Oaks, and Michael A. Greenbaum, Los Angeles, both of Calif., assignors to CCI Aerospace Corporation, Van Nuys, Calif.

Filed June 30, 1969, Ser. No. 837,714
Int. Cl. B01d 13/00; C02b 1/56, 1/42
U.S. Cl. 210—22 11 Claims



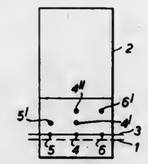
A recirculating dialysate system for use with an artificial kidney in which the total volume of dialysate solution is controlled. After leaving the artificial kidney, the urea in the solution is removed in a zirconium phosphate column containing urease and the other waste products are removed in a carbon column containing activated carbon and hydrated zirconium oxide. The solution passes through the dialysate reservoir (or container) where it was originally introduced and where the level of solution indicates the amount of fluid removed from the body. Downstream of the dialysate reservoir, the solution is reconstituted by the addition of magnesium and calcium (removed in the zirconium phosphate column) so that these substances will not be removed from the blood in the kidney. The rate at which water passes from the blood into the dialysate solution can be controlled by controlling the pressure of the dialysate solution on the dialysate side of the kidney membrane, so that sufficient water can be removed to arrive at water balance in the patient.

3,669,881
THIN LAYER CHROMATOGRAPHIC METHOD

Erika Cremer, Innsbruck, Austria, and Thaddaus Kraus, Vaduz, Liechtenstein, assignors to Balzers Patent-und Beteilig ungs-Aktiengesellschaft

Filed Sept. 2, 1969, Ser. No. 854,456
Int. Cl. B01d 17/06
U.S. Cl. 210—31 13 Claims

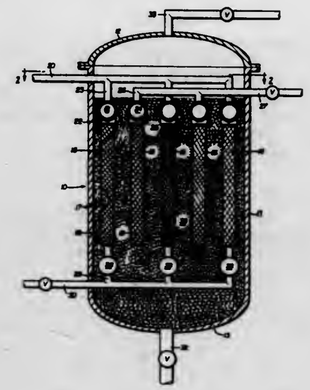
A method for the chromatographic separation of substances, wherein the improvement comprises the steps dipping or wetting one edge of the surface of a non-porous solid constituting the stationary phase into or by a liquid constituting the mobile phase, and making said liquid rise by spreading on said surface as a continuous liquid film.



3,669,882
METHOD OF AND APPARATUS FOR FILTERING

Gene Hirs, Birmingham, Mich., assignor to Hydromation Engineering Company, Livonia, Mich.

Filed Oct. 6, 1969, Ser. No. 863,920
Int. Cl. B01d 23/10, 39/06
U.S. Cl. 210—33 6 Claims



finic solvent, a solid film-forming fixing agent, a solid dispersant, a solid charge director, and a submicron solid electroscopic pigment material. The fixing agent and the dispersant are dissolved in the solvent. The charge director is carried by the solvent being either dispersed or dissolved therein. The pigment material is insoluble in the solvent and is dispersed therein. The solvent evaporates at least as fast as kerosene and slower than hexane; it has a K.B. number less than 35, a dielectric constant less than 3½, a flash point of at least 100° F, and a room temperature viscosity of between 0.5 and 2.5 centipoises. The solvent is non-toxic, practically odorless, highly resistant, and non-polar; it evaporates rapidly slightly below the char point of paper. The film-forming fixing agent is non-tacky and forms a tough film; it has a good solvent release and it forms, upon evaporation of the solvent, a coherent film that binds the pigment material in place, and bonds well to an electrostatographic surface.

3,669,887

PIEZOELECTRIC CERAMIC COMPOSITIONS

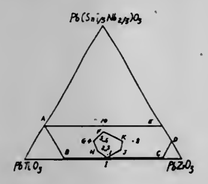
Masamitsu Nishida, Osaka-shi, Osaka-fu, and Hiromu Ouchi, Toyonaka-shi, Osaka-fu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed July 30, 1969, Ser. No. 846,037

Claims priority, application Japan, Aug. 8, 1968, 43/56898. The portion of the term of the patent subsequent to Sept. 15, 1987, has been disclaimed.

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **7 Claims**



Piezoelectric ceramic compositions having very high mechanical quality factors and electromechanical coupling coefficients and high stabilities in resonant frequency and mechanical quality factor over a wide temperature range comprising the solid solutions defined by the lines connecting points A, B, C, D and E and the lines connecting points F, G, H, I, J and K of the diagram of FIG. 2 and further containing from 0.1 to 5 percent of MnO_2.

3,669,888

ELECTRICAL INSULATING MATERIALS BASED ON OLEFIN POLYMERS

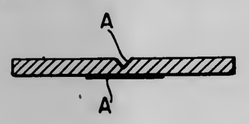
Franz Wuerstlin; Franz Feichtmayr, both of Ludwigshafen, and Heinz Ellingfeld, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 11, 1969, Ser. No. 832,107

Claims priority, application Germany, June 14, 1968, P 17 65 583.3

Int. Cl. C08f *45/60*; H01b *3/18*

U.S. Cl. 252—63.2 **3 Claims**



Electrical insulating materials based on olefin polymers and containing agents for increasing their electric strength. The electrical insulating materials according to the invention contain anilines bearing special substituents as the agents for increasing electric strength.

3,669,889

GRANULAR CERAMIC HEAT CARRIER AND METHOD FOR MANUFACTURE THEREOF

Diomid Ilich Juzvuk, Sverdlovskoi oblasti, ul. Gagarina 4, kv. 4, and Valentin Vasilievich Saparov, Sverdlovskoi oblasti, ul. Gagarina, 4, kv. 2, both of Bogdanovich Sverdlovskoi oblast, U.S.S.R.

Filed Dec. 20, 1968, Ser. No. 785,764

Int. Cl. C04b *35/10*; C09k *3/02*

U.S. Cl. 252—71 **10 Claims**

A granular ceramic heat carrier for use in conjunction with chemical processes, the granules of which heat carrier contain the oxides of aluminum, silicon, chromium and iron, and a method of manufacturing said granular ceramic heat carrier comprising preparing a mix from alumina, fire clay and chrome are powders and a binder.

3,669,890

BUILDERS FOR SYNTHETIC DETERGENT COMPOSITIONS BASED ON CARBOXYETHYL DERIVATIVES OF POLYALCOHOLS

Martin M. Tessler, Edison, and Morton W. Rutenberg, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 119,011

Int. Cl. C11d *7/26*

U.S. Cl. 252—89 **3 Claims**

Builders for use in synthetic detergent compositions are described; said builders comprising compounds of the class of carboxyethyl ethers of selected polyalcohols and their salts.

3,669,891

CHEMICAL COMPOSITIONS

John Malcolm Greenwood, Arlington, Mass., and David Howard Stokes, Llanllwch, Carmarthen, Wales, assignors to Lever Brothers Company, New York, N.Y.

Filed May 27, 1970, Ser. No. 41,105

Claims priority, application Great Britain, May 30, 1969, 27,463/69

Int. Cl. C11d *17/00*

U.S. Cl. 252—90 **10 Claims**

Cleansing compositions adapted to emit visible light during use, and which are thereby capable of conveying useful information to the user, are disclosed.

3,669,892

AEROSOL SPRAY CLEANER-POLISH

Roger L. Abler, White Bear Lake, and David L. Strand, Maplewood, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1969, Ser. No. 795,081

Int. Cl. C11d *17/00*

U.S. Cl. 252—90 **4 Claims**

An aerosol spray cleaner-polish composition having improved gloss and rebuff characteristics which provides a dry readily visible non-plugging foam. At least about 18 parts by weight of certain compatible detergents per 100 parts of non-volatile solids are included in aerosol floor cleaning and polishing compositions of the type comprising aqueous styrene and/or acrylic film forming polymer emulsions.

3,669,893

INHIBITING AGENTS, WASHING COMPOSITIONS AND SOLUTIONS CONTAINING THE SAME, AND PROCESSES FOR USING THE SAME

Fredric B. Clarke, Watertown, Mass., and John W. Lyons, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of application Ser. No. 746,320, July 22, 1968, now abandoned. This application Feb. 5, 1971, Ser. No. 113,032

Int. Cl. C11d *7/06*

U.S. Cl. 252—156 **2 Claims**

This invention relates to novel methods for washing rigid materials such as glass bottles with a novel washing solution containing a novel inhibiting agent, which effects a synergistic inhibiting action, consisting of a combination of (1) a gluconate material such as sodium gluconate, (2) an aminophosphonate such as amino tri(methylene phosphonic acid) and (3) an alkylidene diphosphonic acid such as 1-hydroxy, 1-ethylidene diphosphonic acid.

3,669,894

PREPARATION OF HIGH TEST CALCIUM HYPOCHLORITE

John P. Faust, Hamden, Conn., assignor to Olin Corporation

Filed Sept. 2, 1970, Ser. No. 69,130

Int. Cl. C01b *11/06*

U.S. Cl. 252—187 **3 Claims**

Calcium hypochlorite compositions, suitable for bleaching and sanitation uses, are provided which have lowered rates of propagation of decomposition when heated. These novel compositions contain 75 to 82 percent of calcium hypochlorite and 6 to 12 percent of water, balance usual diluents of calcium hypochlorite including calcium chloride, carbonate, hydroxide and sodium chloride.

3,669,895

SODIUM HYDROSULFITE STABILIZATION COMPOSITION

Shiri Shastri, Oakville, Ontario, Canada, assignor to Virginia Chemicals Inc., Portsmouth, Va.

Filed Aug. 31, 1970, Ser. No. 68,537

Int. Cl. C01b *17/98*; D21c *9/10*

U.S. Cl. 252—188 **11 Claims**

The present discovery entails a new means for stabilizing mixtures, containing primarily sodium dithionite, from spontaneous decomposition and "ignition" by the action of water. Specifically, the invention comprises stabilization of sodium hydrosulfite against spontaneous decomposition in the presence of water, using effective quantities of additives, which still in no way lessen the bleaching activity that would be developed by an equivalent quantity of sodium hydrosulfite. The stabilizing agents consist of oxalic acid and a water soluble inorganic carbonate. This mixture can be further improved as to stabilization and bleaching effect by the addition of borax ($Na_2B_4O_7 \cdot 10\ H_2O$). The bleaching effect may be improved by adding a water soluble inorganic sulfite.

3,669,896

INORGANIC WHITE PIGMENTS CONTAINING OPTICAL BRIGHTENERS AND PROCESS FOR THEIR MANUFACTURE

Erich Preisinger, Riehen, Switzerland, and Dieter Ging, Huesingen, Germany, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Dec. 2, 1969, Ser. No. 881,627

Claims priority, application Switzerland, Dec. 5, 1968, 18198/68

Int. Cl. C09k *1/02*; C09c *3/00*

U.S. Cl. 252—301.3 W **8 Claims**

The invention concerns a process for the manufacture of inorganic white pigments containing optical brighteners, characterized in that, in an aqueous suspension of an inorganic white pigment which contains a dispersion of at least one optical brightener which is sparingly soluble in water, dispersed by means of non-ionic surface-active agents, property-improving auxiliary substances for such pigments are precipitated or adsorbed on these pigments in a manner which is in itself known by admixing the property-improving auxiliary or admixing the components for the formation of such a property-improving auxiliary if several components for its formation are necessary, and the pigments treated in such manner are separated from the aqueous phase, washed and dried. The invention provides a valuable method for homogeneously distributing optical brightening agents in combination with white pigments in plastics.

3,669,897

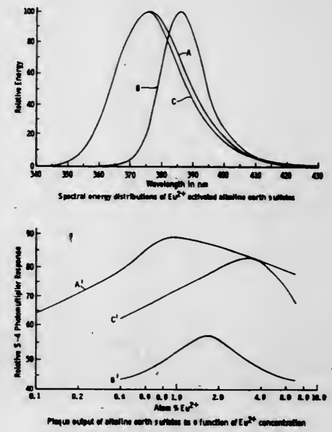
DIVALENT EUROPIUM ACTIVATED ALKALINE EARTH METAL SULFATES AND METHOD OF PREPARATION

Anselm Wachtel, Parlin, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1969, Ser. No. 876,765

Int. Cl. C09k *1/22*; C01f *11/46*

U.S. Cl. 252—301.4 S **4 Claims**



Divalent europium activated alkaline earth metal sulfates wherein the metal is at least one of calcium, barium, or strontium, and europium is present in atom percent of the alkaline-earth metal of from about 0.4 to 7. The compositions emit very efficiently in the near-ultraviolet upon short wavelength ultraviolet excitation. A preferred mode of preparing the compositions is set forth whereby the composition is precipitated from solution.

3,669,898

FOAM PROTECTION OF PLANT LIFE

James W. Butler, Stittsville, Ontario, Canada, assignor to Laurentian Concentrates Limited, Ontario, Canada

Filed Feb. 7, 1969, Ser. No. 797,689

Claims priority, application Canada, Dec. 12, 1968, 037,610

Int. Cl. A01g *13/00*

U.S. Cl. 252—307 **17 Claims**

There is described a foam concentrate from which foams to be used to protect vegetation, for example from frost can be produced. The concentrate comprises a neutralized protein hydrolysate stabilized with specified proportions of iron and lignosulfonate. A method of protecting vegetation using the above foams is also described.

3,669,899

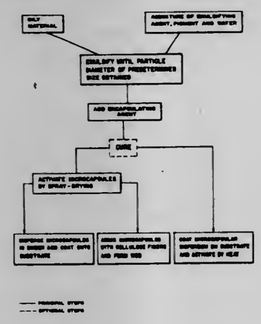
MICROCAPSULAR OPACIFIER SYSTEM

Anthony E. Vasiliades, Deerfield; Edward F. Neumann, Lake Forest, and Shrenik Shroff, Chicago, all of Ill., assignors to U. S. Plywood-Champion Papers Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 786,337, Dec. 23, 1968, now Patent No. 3,585,149. This application Apr. 29, 1969, Ser. No. 820,267

Int. Cl. B01j 13/02; B44d 1/02; C09d 5/00

U.S. Cl. 252—316 42 Claims



Opacifiers comprising air-containing microcapsules having an average particle diameter of predetermined size with pigment particles incorporated in the microcapsular structure provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules, which contain the pigment particles in their structure, at temperatures sufficient to expel the liquid and provide air in the microcapsules. The microcapsular opacifiers have an average particle diameter below about 2 microns.

3,669,900

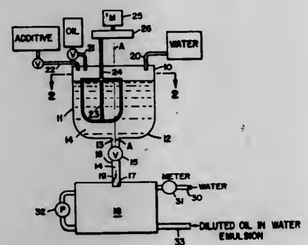
METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF OIL-IN-WATER EMULSIONS

Lowell O. Cummings, San Anselmo, Calif., assignor to Pacific Vegetable Oil Corporation, San Francisco, Calif.

Filed May 2, 1969, Ser. No. 821,235

Int. Cl. B01d ; B01f 9/08, 7/00

U.S. Cl. 252—359 C 5 Claims



A system and device for producing an oil-in-water emulsion of high water-insoluble liquid content, e.g., containing 70 percent to about 95 percent of such liquid or oil. An initial receptacle receives streams of oil, water, and emulsifying agent, while beater means subdivides the oil component and forms such oil-in-water emulsion. An exit portion or chamber and an aperture therein are connected by a conduit to a second or dilution receptable, wherein predetermined amounts of dilution water are introduced and thoroughly admixed with the emulsion. The continuous process for forming such an emulsion includes effecting with the beater a thin, continuous water phase around very small particles of oil, continuously withdrawing a primary thick emulsion to a dilution zone, and continuously diluting it to a desired water or dilution liquid content.

3,669,901

CORROSION INHIBITOR COMPOSITION CONTAINING ZINC, SULFAMATE, AND PHOSPHATE IONS

William Bruce Murray, 929 Terraine Avenue, Long Beach, Calif.

Original application Sept. 8, 1970, Ser. No. 76,221, now abandoned , Continuation-in-part of application Ser. No. 892,842, May 5, 1969, now abandoned. Divided and this application Oct. 22, 1970, Ser. No. 83,203

Int. Cl. C23f 11/16, 11/18

U.S. Cl. 252—387 9 Claims

A liquid corrosion inhibitor and method designed for use by water treatment plants for the control of corrosion of municipal, industrial, commercial and domestic metal piping systems, wherein, as the inhibitor is economically added to the flowing water supply in minute dosages, it passivates the surface of the metal piping as it deposits a self-controlled film of insoluble zinc phosphate. One of the preferred inhibitors is "zinc-sulfamate-orthophosphate." To be effective, the pH must be controlled to within the range of 5–9.

3,669,902

DICYCLOHEXYLTHIOUREA CORROSION INHIBITOR COMPOSITION

Robert Eugene Hirner, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sept. 22, 1970, Ser. No. 74,491

Int. Cl. C23f 11/16; C23g 1/06

U.S. Cl. 252—391 2 Claims

Dicyclohexylthiourea can be provided in a liquid composition ready for addition to an acid bath as a corrosion inhibitor. The highly insoluble dicyclohexylthiourea is compounded for this purpose with dimethylacetamide and a specific wetting agent.

3,669,903

CATALYTIC CRACKING PROCESS

Jean M. Bourguet, and Francis D. Hart, both of Le Vesinet, France, assignors to Mobil Oil Corporation (formerly Socony Mobil Oil Company, Inc.)

Continuation of application Ser. No. 471,785, June 24, 1965, now abandoned, and 262,258, Mar. 1, 1963, now abandoned, and 62,870, Oct. 17, 1960, now Patent No. 3,193,493. This application June 16, 1966, Ser. No. 557,910. The portion of the term of the patent subsequent to July 7, 1981, has been disclaimed.

Int. Cl. B01j 11/40

U.S. Cl. 252—455 2 Claims

Hydrocarbon conversion catalysts comprising crystalline aluminosilicates containing rare earths and other metals from Groups IB through VIII of the Periodic Table, and having a low alkali metal content. They are useful in hydrocarbon conversion processes such as cracking, hydrocracking hydrodesulfurization, alkylation, dehydrogination, and hydrogenation.

3,669,904

PARTICLES FEATURING GAMMA ALUMINA

Edward B. Cornelius, Swarthmore, Pa., and David W. Koester, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

Filed May 28, 1970, Ser. No. 41,632

Int. Cl. B01j 11/06, 11/08, 11/32

U.S. Cl. 252—465 3 Claims

A propensity to form gummy mixtures with water is a troublesome characteristic of a technical grade of boehmite, said power comprising a total ignition loss of about 25 percent, a volatile alcohol content corresponding to less than 1 percent carbon, minor amounts of amorphous alumina and a major amount of alpha mono hydrate. A portion of the technical boehmite is mildly calcined at 400°–500° C. for at least 15 minutes to provide a dehydrated alumina powder, which then mixed with a significantly larger amount of the uncalcined technical grade of boehmite, can be mixed with water for providing a plastic mixture suitable for shaping into catalyst particles. The catalyst particles are calcined above about 600° C. for more than 1 hour in the presence of steam to form attrition resistant particles of gamma alumina having the pore size distribution desirable in certain types of catalysts.

3,669,905

ELECTRICAL CONDUCTORS

Ian Leitch McDougall, and Michael Charles Lock, both of Sutton Coldfield, England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed May 6, 1970, Ser. No. 35,277

Claims priority, application Great Britain, May 13, 1969, 24,270/69; Sept. 26, 1969, 47,555/69

Int. Cl. H01b 1/02

U.S. Cl. 252—512 10 Claims

An electrical conductor comprising at least one core having superconducting properties and embedded in a matrix of a plastic material, said core comprising at least one superconductor filament having a maximum thickness of five microns, preferably one micron. Also methods of manufacture of such a conductor.

3,669,906

CATALYST FOR PURIFICATION OF EXHAUST GASES FROM MOTOR VEHICLES AND INDUSTRIAL PLANTS

Edgar Koberstein, Alzenau, and Eduard Lakatos, Hurth-Hermulheim, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt Vormats Roessler, Frankfurt (Main), Germany

Continuation-in-part of application Ser. No. 581,163, Sept. 22, 1966, now abandoned. This application Aug. 19, 1970, Ser. No. 64,957

Claims priority, application Germany Sept. 24, 1965, D 48276

Int. Cl. B01j 11/06, 11/22

U.S. Cl. 252—465 19 Claims

There is provided a catalyst for the purification of exhaust gases from industrial processes and motor vehicles by combustion of oxidizable impurities contained therein to carbon dioxide and water and removal of nitrogen oxide at elevated temperatures in contact with air consisting essentially of a calcined mixture of eta and gamma aluminum oxide and heavy metal oxide compounds the element chromium and at least one other heavy metal selected from the group consisting of nickel or copper with nickel, the quantity of such heavy metal oxide compounds being 55 to 90 weight percent, the molar proportion of the chromium to the other heavy metal being between about 1:0.5 and 1:2.5 calculated as oxides and the majority of the particles of the heavy metal oxide compounds being of a size of from 0.5 to 5 μ, whereby the heavy metal oxide compounds have been formed by precipitating chromium from a solution of ammonium bichromate with a soluble salt of said other heavy metal or metals, and whereby said calcining of said mixture having been done at 400°–800° C., preferably in an oxygen-containing atmosphere.

3,669,907

SEMICONDUCTIVE ELEMENTS

Tadao Kohashi, Yokohama, and Kazunobu Tanaka, Kawasaki-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

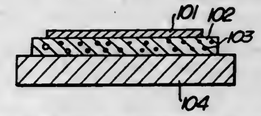
Filed Dec. 1, 1967, Ser. No. 687,229

Claims priority, application Japan, Dec. 7, 1966, 41/80696

Int. Cl. H01b 1/06; C03c 17/00

U.S. Cl. 252—518 4 Claims

Semiconductive elements having a specific resistivity of the semiconductor range (that is, 10^3 to 10^8 ohm-cm) which have an ohmic resistance even in an considerably high electric field and are highly durable in adverse physical and atmospheric conditions, which are manufactured by heating a mixture of powder of vitreous binding material and powder of semiconductive metal oxide dispersed in the former



powder. Further, the dielectric strength and the uniformity of resistivity of said semiconductive elements can be improved by adding, to the mixture, powder of an oxide whose conductivity is much higher than that of said semiconductive metal oxide.

3,669,908

ALKADIENYL PYRIDINES AND PYRAZINES AS PERFUMES

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,787

Int. Cl. C11b 9/00

U.S. Cl. 252—522 3 Claims

Novel alkadienyl substituted pyridines and pyrazines, perfume and fragrance compositions containing such substituted pyridines and pyrazines and processes for producing same.

3,669,909

CATALYST FOR PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS

Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Original application Aug. 28, 1967, Ser. No. 663,557, which is a continuation-in-part of application Ser. No. 483,862, Aug. 30, 1965, now Patent No. 3,401,198. Divided and this application Feb. 27, 1970, Ser. No. 18,397. The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed.

Int. Cl. B01j 11/82

U.S. Cl. 252—435 1 Claim

Unsaturated acids and aldehydes, as acrylic acid and acrolein, are prepared together in excellent yields by the oxidation of an olefin as propylene in the presence of a catalyst containing a IIA metal molybdate, as strontium molybdate, tellurium oxide and phosphorus pentoxide.

3,669,910

MANUFACTURE OF FOAMS

Geoffrey English, and Brian Arthur Mountfield, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 732,033, May 27, 1968, now abandoned. This application Feb. 22, 1971, Ser. No. 117,797

Int. Cl. C08j 1/18

U.S. Cl. 260—2.5 N 17 Claims

Manufacture of rigid polyamide foams by producing a foam of molten polyamide in presence of a non-ionic surface active agent, especially an alkylene oxide condensate with an alkanol, alkylamine or alkylphenol containing 10 to 20 carbon atoms, and then cooling below the melting point to solidify the polyamide.

3,669,911

PROCESS AND COMPOSITIONS FOR MAKING POROUS LOW DENSITY THERMOSET RESINS FROM WATER-IN-RESIN EMULSIONS

Daniel J. Najvar, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 26, 1969, Ser. No. 861,460

Int. Cl. C08g 53/08; C08f 47/08

U.S. Cl. 260—2.5 N 30 Claims

The difficulty in readily removing water from cured water-in-thermosettable resin emulsions has been overcome by ad-

ding to the emulsion from about 0.005 to 10 parts per 100 parts of emulsion of a polyalkylene oxide block copolymer, nonionic surfactant wherein the hydrophobe portion of the nonionic surfactant has a molecular weight of at least about 1,000. Dewatering of the cured emulsion may be readily effected even at ambient temperatures and at elevated temperatures without cracking or damage to the porous thermoset resin.

3,669,912

METHOD OF MAKING DEEP OCEAN BUOYANT MATERIAL

Ray F. Hinton, Davidsonville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 409,032, Dec. 4, 1964, now abandoned. This application May 24, 1968, Ser. No. 747,052

Int. Cl. C08j 1/14; B01j 13/02

U.S. Cl. 260—2.5 B 3 Claims



A buoyant, nonabsorbent, high-strength, low-density, bulk filler material which can be readily mixed and cast for use in the displacement of sea water at great ocean depths. The material of varying pellet-size is formed by dropping epoxy resin into a bed of microspheres under ambient conditions. The droplets absorb the microspheres thereby forming uncured pellets, the size of which is controlled by the size of the droplet. They are then cured for several hours at an elevated temperature.

3,669,913

SOLUTION COMPOSITIONS OF SILOXANE-OXYALKYLENE COPOLYMERS AND AMINE CATALYSTS AND USE FOR MANUFACTURE OF POLYURETHANE FOAM

Edward Lewis Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 842,751, May 5, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 131,765, Apr. 6, 1971; said 842,751, May 5, 1969, which is a division of application Ser. No. 573,133, Aug. 12, 1966, now Patent No. 3,505,377, dated Apr. 7, 1970. This application Nov. 23, 1970, Ser. No. 92,145

Int. Cl. C08g 22/46, 31/32; C09k 3/00

U.S. Cl. 260—2.5 AH 16 Claims

A solution composition, particularly useful for the manufacture of flexible polyether urethane foam, is provided comprising water, a hydrolytically stable siloxane-oxyalkylene block copolymer, an amine polyurethane-foaming catalyst and a water soluble, silicon-free organic surfactant which is capable of raising the cloud point of the solution. Suitable organic surfactants include those having the general formula, $C_9H_{19}C_6H_4(OC_2H_4)_eOH$, wherein e represents any number from about 9 to about 20 inclusive. The compositions may also contain water soluble organic solvents. The presence of the organic surfactant serves to protect the solution from physical separation when subjected to adverse temperature conditions which may be encountered during shipment or storage. A process for the manufacture of polyurethane foam is also provided in which the foam-forming reaction mixture comprises a polyether polyol, a polyisocyanate and the aforesaid solution composition.

3,669,914

PROCESS FOR PREPARING VINYLIDENE CHLORIDE POLYMERS

Owen L. Stafford, Midland, and Robert K. Tarzwell, Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of application Ser. No. 813,343, Apr. 3, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 620,217, Mar. 1, 1967, which is a continuation-in-part of application Ser. No. 329,992, Dec. 12, 1963, now abandoned. This application Aug. 13, 1970, Ser. No. 63,656

Int. Cl. C08f 1/13, 3/28

U.S. Cl. 260—17 R 3 Claims

This invention is concerned with a process for polymerizing vinylidene chloride monomer in a modified emulsion polymerization system to produce readily isolatable, particulate, high density polymer at a rate significantly faster than achieved by conventional suspension type polymerization. The process utilizes an oil phase of vinylidene chloride monomer dispersed in an aqueous phase containing certain water-soluble, free-radical polymerization catalyst, cellulose ethers, wetting agents and coagulants.

3,669,915

FLOCCULANTS FROM STARCH GRAFT COPOLYMERS

Duane A. Jones, Minneapolis, Minn.; George F. Fanta, and Robert C. Burr, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed Sept. 8, 1970, Ser. No. 70,491

Int. Cl. B03d 3/06; C08f 1/08, 29/00

U.S. Cl. 260—17.4 GC 10 Claims

Highly active flocculants for removing siliceous wastes and other finely divided solid suspensions from water are produced from starch by graft copolymerization with a cationic monomer having quaternary ammonium substituents.

3,669,916

SOLUTION OF A GRAFT COPOLYMER OF CELLULOSE

Osakazu Nakao; Saburo Nakagawa; Juichi Hirose; Shigeyuki Yamazaki; Takashi Amano; Toshio Nakamura, and Hiroyuki Yamamoto, all of Shizuoka Prefecture, Japan, assignors to Tomoegawa Paper Manufacturing Company Limited, Chuo-ku, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,452

Int. Cl. C08c 21/32

U.S. Cl. 260—17.4 GC 1 Claim

The present invention is directed to a solution of a graft copolymer of cellulose comprising a polar organic solvent or a mixed solvent containing a polar or organic solvent, nitrogen dioxide and a graft copolymer of cellulose. Such solution is capable of dissolving cellulose and various kinds of polymers.

3,669,917

COPOLYAMIDE FIBERS OF REDUCED STICKINESS CONTAINING A NORMAL PARAFFIN

Satoshi Ando; Yusaku Tanaka, both of Osaka; Minoru Kojima, and Kyoichi Fujimura, both of Osaka-fu, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan and Snia Viscosa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 601,756, Dec. 14, 1966, now abandoned. This application July 27, 1970, Ser. No. 58,457

Claims priority, application Japan, Dec. 23, 1966, 40/79725

Int. Cl. C08g 20/38

U.S. Cl. 260—78 R 4 Claims

A copolyamide fiber of reduced stickiness which consists essentially of a fibers forming copolyamide consisting of 70 – 95 percent by weight of polycaproamide polyhexamethylene adipamide and 30 – 5 percent by weight of at least one of comonomers copolymerizable therewith and from 0.01 to 5 percent by weight, based on the copolyamide, of at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} wherein n is an integer of from 14 to 70, dispersed homogeneously throughout said copolyamide.

3,669,918

BITUMINOUS COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT ETHYLENE/PROPYLENE COPOLYMER

Charles F. Raley, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 18, 1969, Ser. No. 834,543

Int. Cl. C08f 45/52; C09d 3/60

U.S. Cl. 260—28.5 6 Claims

Bituminous compositions having improved impact strength at both high and low temperatures comprise asphalt and an ethylene/propylene copolymer having a molecular weight from about 50,000 to about 100,000.

3,669,919

POLYACRYLONITRILE PROCESS

Antony E. Champ, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed June 16, 1969, Ser. No. 833,540

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 AN 6 Claims

An improved method of producing a polyacrylonitrile extrusion solution particularly suited for the production of shaped articles, especially fibers, which eliminates several process steps previously associated with the polymerization of the acrylic polymer and the subsequent formation of the extrusion solution. The method is particularly applicable to high acrylic polymers such as those containing more than about 85 percent acrylonitrile wherein the polymers are formed by aqueous suspension polymerization methods. The wet acrylic polymer produced is directly used in an extrusion process by solvating the polymer with a lower alkyl nitrile, such as acetonitrile, to form the extrusion solution. The solvation is accomplished by adjusting the polymer water content to about 1 to 40 percent by weight of the polymer, adding sufficient acetonitrile to provide a polymer-solvent mixture of 20 to 70 percent of polymer solids by weight and subsequently heating the mixture under at least autogeneous pressure to above the atmospheric boiling point of the solvent to form a homogeneous polymer solution.

3,669,920

CARBON FIBER-REINFORCED POLYURETHANE COMPOSITES

Geoffrey Arthur Haggis, Manchester; Michael Edward Benet Jones, and Michael Horace Knight, both of Runcorn, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 23, 1970, Ser. No. 22,065

Claims priority, application Great Britain, Mar. 27, 1969, 16,048/69

Int. Cl. C08g 51/10

U.S. Cl. 260—37 N 6 Claims

Fiber reinforced synthetic resin composites suitable for use e.g. in aerofoil blades for compressors, turbines and the like in which the fibers are carbonized fibers and the resin is the product of curing an isocyanate terminated prepolymer obtained by a reacting a polyisocyanate with a polyol at least one of which contains a cyclic group in a chain between two functional (i.e. hydroxyl or isocyanate) groups, and has a heat distortion temperature of at least 50° C., and the fibers form from 20 to 75 percent by weight of the composite.

3,669,921

COPOLYESTER MELT ADHESIVE

Joseph W. Droke; James E. Hataway, and Nicholas C. Russin, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 845,554, July 28, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 725,938, May 1, 1968, now abandoned. This application Feb. 8, 1971, Ser. No. 113,595

Int. Cl. C08k 1/02

U.S. Cl. 260—40 R 21 Claims

Copolyesters useful as melt adhesives in the bonding of fabrics, metal, glass, wood, rubber, plastic sheets and other products to produce a bond which will resist the action of heat, steam, dry cleaning solvents and the like, said copolyester being derived from (1) terephthalic acid, (2) adipic acid, (3) ethylene glycol, and (4) 1,4-butanediol or derivatives of these four components. These copolyesters are advantageously improved by the incorporation therein of specific amounts of either sodium stearate or titanium dioxide.

3,669,922

PROCESS FOR THE PREPARATION OF COLORED POLYMER POWDERS OF CONTROLLED CHARGE AND PRINTING CHARACTERISTICS

Raymond C. Bartsch, and Frank Lerman, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed May 21, 1970, Ser. No. 39,513

Int. Cl. C08f 1/86; G03g 9/02

U.S. Cl. 260—41 R 18 Claims

A process is provided for preparing colored polymer powders with controlled charge and printing characteristics when used as toners in electrostatic printing. The process comprises a controlled heating, melting, and dispersion of a polymer in the presence of water and surfactant. The polymer contains a coloring agent and a specially selected charge-directing agent, such as a nigrosine dye or a metal powder. Colored powders can thus be obtained composed of spherical particles which have exceptionally fine printing characteristics, when used as toners in electrostatic printing processes, and which have controlled average size and size distribution.

3,669,923

SELF-EXTINGUISHING THERMOPLASTIC MOLDING COMPOSITIONS

Hans Hintz, Ludwigshafen(Rhine), Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Continuation of application Ser. No. 643,821, June 6, 1967, now abandoned. This application Oct. 26, 1970, Ser. No. 84,178

Claims priority, application Germany, June 23, 1966, P 16 69 652.9

Int. Cl. C08f 45/14, 45/62

U.S. Cl. 260—41 C 10 Claims

Thermoplastic molding compositions containing a styrene polymer and, as flame retardants, an organic chlorine compound, an organic bromine compound and an iron complex of a nitrosonaphthol dye.

3,669,924

STABILIZED POLYVINYL NITRATE AND PROCESS

Eduard Daume, and Jurg Breitenmoser, both of Zurich, Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 11, 1969, Ser. No. 857,234

Claims priority, application Switzerland, Sept. 19, 1968, 14042/68

Int. Cl. C08f 1/92

U.S. Cl. 260—45.9 R 12 Claims

A novel stabilized polyvinylnitrate and a process for the

production thereof including the precipitation of the compound from organic solutions containing same.

3,669,925
THERMALLY STABLE DYEABLE POLYESTERS HAVING IMPROVED DYED LIGHTFASTNESS
Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 824,092, May 13, 1969, and a continuation-in-part of 789,528, Jan. 7, 1969, now abandoned, and a continuation-in-part of 873,333, Nov. 13, 1969. This application Apr. 28, 1970, Ser. No. 32,676. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed.
Int. Cl. C08g 17/08
U.S. Cl. 260—45.95 9 Claims

Modified polyester filaments having over conventional polyester filaments, improved inherent thermal stability in the presence of oxygen and inherent disperse dye uptake, without the significant loss in dye lightfastness typical of such modified filaments, are produced from terephthalic acid; glycols; small amounts of mixtures of compounds having a typical general formula: R-O[G-O]$_x$—H, where R is an alkyl group containing an average of from about 8–20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, butylene and isomers thereof, and mixtures of the above; and x has an average value of from 8–20, and is about equal to or greater than R; small amounts of manganous ion; and small amounts of a hindered phenol preferably selected from the group consisting of 4, 4'-butylidenebis (6-t-butyl-m-cresol) and 2, 2'-butylidenebis (6-t-butyl-m-cresol). Polyfunctional chain-branching agents in amounts up to about 0.7 mole percent, based on the weight of the dicarboxylic acid or ester-forming derivative thereof, may be added, whereby the polymer, with the chain terminators described above, can be polymerized to higher molecular weights by ordinary polymerization techniques.

3,669,926
STABILIZING PLASTIC WITH BORATED DIHYDROXYDIPHENYL SULFIDE
Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Continuation-in-part of application Ser. No. 462,754, June 9, 1965. This application June 21, 1967, Ser. No. 647,643
Int. Cl. C08f 45/58
U.S. Cl. 260—45.95 11 Claims

Stabilizing plastic by incorporating therein a minor but stabilizing concentration of borated dihydroxydiphenyl sulfide.

3,669,927
POLYCONDENSING BIS(HYDROXYALKYL) THEREPHTHALATES IN THE PRESENCE OF SMALL AMOUNTS OF A GERMANIUM COMPOUND AND A STERICALLY HINDERED BISPHENOL OR TRISPHENOL
Iwao Terasaki; Yoshio Kimura; Toshio Okamoto; Tsukasa Shima; Mitsuo Kohno, and Kazuyuki Kitamura, all of Nobeokashi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan
Filed Jan. 5, 1970, Ser. No. 823
Claims priority, application Japan, Jan. 27, 1969, 44/5276; Mar. 13, 1969, 44/18843
Int. Cl. C08g 33/10
U.S. Cl. 260—47 C 4 Claims

Producing of polyesters by using a germanium compound as a polycondensation catalyst, the improvement comprising effecting the polycondensation of the glycol esters obtained from aromatic dicarboxylic acids and glycols or ester-forming derivatives thereof in the presence of 0.001 to 3 percent by weight of at least one compound selected from sterically hindered bisphenols and sterically hindered trisphenols. By this method a stabilizee operation is secured and the resultant products are superior in evenness and whiteness and can be evenly and beautifully dyed.

3,669,928
PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYBENZOXAZINONES
Gunter Lorenz; Manfred Gallus; Wolfgang Giessler, and Gunther Nischk, all of Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 26, 1970, Ser. No. 50,322
Claims priority, application Germany, July 1, 1969, P 19 33 212.8
Int. Cl. C08g 20/20, 30/02
U.S. Cl. 260—47 CP 8 Claims

Improvement in the production of high molecular weight polybenzoxazinones from bis-anthranilic acid derivatives and dicarboxylic acid dihalides followed by ring closure of the polyamidocarboxylic acid obtained, wherein ring closure is effected by a liquid or dissolved dehydrating agent in an organic solvent.

3,669,929
METHOD OF PREPARING AROMATIC RESINS AND PRODUCTS THEREOF
Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation-in-part of application Ser. No. 665,261, Sept. 5, 1967, now abandoned. This application Jan. 7, 1971, Ser. No. 104,818. The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed.
Int. Cl. C08g 33/00
U.S. Cl. 260—47 R 7 Claims

Improved lacquer, varnish, and plastic compositions utilizing aromatic polyphenylene polymers having a mean molecular weight of not over 1,000 ± 500, reacted with a curing agent, as a polymethylol aromatic compound in the presence of a polymerization catalyst, prepared in solution in a low boiling solvent of about 50° to 120° C.

3,669,930
THERMALLY STABLE THERMOSETTING RESIN
Tomohiko Asahara; Naoya Yoda, both of Kamakura-shi, and Muneyoshi Minami, Otsu-shi, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Nov. 5, 1969, Ser. No. 874,407
Claims priority, application Japan, Nov. 5, 1968, 43/80337; Dec. 13, 1968, 43/90910
Int. Cl. C08g 20/20
U.S. Cl. 260—47 CZ 1 Claim

The present invention provides a thermosetting resin excellent in thermal stability, mechanical properties and electrical properties which is obtained by reacting dimaleimide with an amide in molten state.

3,669,931
POLYETHYLENE TEREPHTHALATE FILMS CONTAINING HYDRATED ALUMINUM SILICATE FOR LESS SHRINKAGE AND ABRASION
Darrell D. Annis, Taylors; Keith D. Dodson, Greenville, and Paul M. Sykes, Taylors, all of S.C., assignors to Celanese Corporation, New York, N.Y.
Filed July 7, 1970, Ser. No. 53,025
Int. Cl. B32b 27/20, 27/36; D01f 7/06
U.S. Cl. 260—75 R 6 Claims

A polyethylene terephthalate film is produced having improved abrasion resistance and low shrinkage properties by the dispersing in the film of hydrated aluminum silicate. The improved film has a coefficient of friction in the range of 0.3 to about 1.0 and the hydrated silica ranges from 0.01 percent to about 0.5 percent by weight of the polymer and has a particle size from about 300 to 1000 millimicrons. The film has an intrinsic viscosity of 0.2 to about 1.0 and after biaxially stretching is heated at 215° C. – 235° C. for a period of time to complete crystallization.

3,669,932
ACCELERATION OF SULFUR VULCANIZATION OF POLYURETHANES
Jean-Marie Mansoubre, Clermont Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont Ferrand, France
Filed Oct. 15, 1970, Ser. No. 81,155
Claims priority, application France, Oct. 27, 1969, 6936837
Int. Cl. C08g 22/34
U.S. Cl. 260—75 NC 8 Claims

The sulfur vulcanization of sulfur-vulcanizable unsaturated polyurethanes can be accelerated by using as an accelerator an organic compound having at least one alkenyl radical attached to a nitrogen atom, the accelerator being attached to the sulfur-vulcanizable polyurethane molecule itself and/or being an ingredient of a sulfur-vulcanizable polyurethane mixture or recipe.

3,669,933
THERMALLY STABLE DYEABLE POLYESTER FIBERS HAVING INHERENT OIL STAIN RELEASE PROPERTIES
Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 789,528, Jan. 7, 1969, now abandoned, and a continuation-in-part of 824,092, May 13, 1969, and a continuation-in-part of 874,638, Nov. 6, 1969. This application Apr. 28, 1970, Ser. No. 32,675. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed
Int. Cl. C08g 17/08
U.S. Cl. 260—77 11 Claims

Thermally stable fiber-forming polyesters having inherent oil-stain release properties and inherent disperse dye uptake are produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H; where R is an alkyl group containing an average of about 8–20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value at least equal to or greater than 9, no greater than about 20, and about equal to or greater than R.

3,669,934
IMPROVED ELASTOMERIC FIBERS
Martin Eden Epstein, Warren Township, Somerset County; Arnold Joseph Rosenthal, Morris, and Joseph Germano Santangelo, Union, all of N.J., assignors to Celanese Corporation of America, New York, N.Y.
Original application May 26, 1964, Ser. No. 370,371, now Patent No. 3,536,803. Divided and this application Mar. 9, 1970, Ser. No. 22,732
Int. Cl. D01f 7/06; D02j 1/12
U.S. Cl. 260—77.5 SP 2 Claims

Improved elastomeric fibers are disclosed and claimed which are comprised of alternating hard and soft segments, i.e., polyesterurethane copolymers, wherein the fibers are improved in properties, particularly permanent set. The fibers of this invention have utility in conventional textile uses.

3,669,935
THERMALLY STABLE POLYESTER FIBERS HAVING INHERENT OIL-STAIN RELEASE PROPERTIES
Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 789,528, Jan. 7, 1969, now abandoned, Continuation-in-part of application Ser. No. 824,092, May 13, 1969. This application Nov. 6, 1969, Ser. No. 874,638. The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed
Int. Cl. C08g 17/08
U.S. Cl. 260—77 11 Claims

Thermally stable fiber-forming polyesters having inherent oil-stain release properties are produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: R—O[G—O]$_x$—H, where R is an alkyl group containing an average of at least eight carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value at least equal to or greater than 9, and no greater than about 20.

3,669,936
POLYDIMERCAPTO-S-TRIAZINES
Franz Regenass Oristalstrasse 45, Liestal; Peter Christoph Schlumbom, Dornliweg 1, Therwil, and Hansjorg Heller, Vorderbergweg 1a, Riehen, all of Switzerland
Filed Aug. 22, 1969, Ser. No. 852,452
Claims priority, application Switzerland, Aug. 30, 1968, 13088/68
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5 AQ 9 Claims

Polydimercapto-s-triazines and crosslinked polydimercapto-s-triazines are useful as lacquers and adhesives. An embodiment is a copolymer of 2-[Bis-(2-ethylhexyl)-amino]-4,6-dimercapto-s-triazine and 2-(N-n-butyl-N-β-hydroxyethylamino)-4,6-dimercapto-s-triazine crosslinked with hexamethylene diisocyanate.

3,669,937
PROCESS FOR THE PRODUCTION OF POLYIMIDES
Wilfried Zecher, Cologne-Stammaheim, and Rudolf Merten, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 26, 1969, Ser. No. 810,787
Claims priority, application Germany, Apr. 5, 1968, P 17 70 137.0
Int. Cl. C08g 22/02
U.S. Cl. 260—77.5 R 5 Claims

Process for the production of polyimides by reaction of a urea and a cyclic dicarboxylic acid anhydride containing at least one additional functional group capable of condensation or addition.

3,669,938
REMOVAL OF VOLATILES FROM POLYAMIDES
Raghunath V. Date, Woodbridge, and George R. Furness, Dunellen, both of N.J., assignors to Celanese Corporation, New York, N.Y.
Filed Mar. 17, 1970, Ser. No. 20,393
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 2 Claims

An improved method for facilitating removal of volatile materials from polyamides to be used in molding operations, without effecting the polyamide's relative viscosity or impairing its physical properties, is presented wherein the polyamide forming monomer is polymerized in the presence of small quantities of 1,4 diaminocyclohexane adipate.

3,669,939
CONDENSATION POLYMERS
Alan Stuart Baker, Slough, and Derek John Walbridge, Beaconsfield, both of England, assignors to Imperial Chemical Industries Limited, London, England
Filed July 6, 1970, Ser. No. 52,692
Claims priority, application Great Britain, June 16, 1970, 29,125/70
Int. Cl. C08g 17/02
U.S. Cl. 260—78 A 3 Claims

Polymers are prepared by condensing a polyhydroxy monocarboxylic acid of formula (OH)$_n$R—COOH, wherein n

is an integer from two to six and R is a hydrocarbon radical containing up to 22 carbon atoms to which the hydroxyl groups are attached and optionally interrupted by or containing a hetero atom, with other condensable species which exclude those containing more than one carboxyl group or a group equivalent to more than one carboxyl group. The polymer per se or when attached to another moiety are useful in coating compositions.

3,669,940
TWO-STEP BULK POLYMERIZATION OF PIVALOLACTONE

Paul J. A. Desgurse, and Harm P. Rogaar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 864,990
Claims priority, application Netherlands, Mar. 10, 1969, 6903704
Int. Cl. C08g 17/017
U.S. Cl. 260—78.3 R 6 Claims

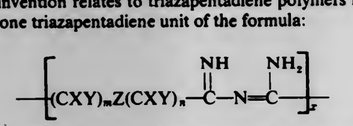
Between 50 and 85 per cent of a beta-lactone such as pivalolactone is bulk polymerized in an initial reactor at a maximum temperature of 300° C. The polymerization is then continued in at least one subsequent reactor. Preferably, the reactors are gear pumps.

3,669,941
POLYTRIAZAPENTADIENE POLYMERS

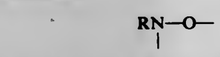
Edwin Dorfman, Grand Island; William E. Emerson, both of Grand Island; Claude T. Bean, Jr., Niagara Falls, and Russell L. K. Carr, Grand Island, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 533,418, Mar. 11, 1966, now Patent No. 3,489,727. This application Sept. 23, 1969, Ser. No. 860,413. The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed.
Int. Cl. C08g 33/06
U.S. Cl. 260—78.4 N 18 Claims

This invention relates to triazapentadiene polymers having at least one triazapentadiene unit of the formula:



wherein each X is selected from chlorine and fluorine, each Y is selected from halogen and perhalo lower alkyl, *m* and *n* are positive integers greater than zero, *x* is from 3 to 1 million, $-(CXY)_mZ(CXY)_n-$ is a divalent polyhalo organic radical where the sum of *m* plus *n* plus the number of equivalent units in Z is at least 4 and Z is at least one member of the group of perhalo lower alkylene, perhalo lower alkylidene, omegahydroperhalo lower alkylidene, keto, oxy, thio, sulfoxide, sulfone,



wherein R is selected from perhalo lower alkyl and omegahydroperhalo lower alkyl, polyperfluorooxyalkylene where each alkylene unit has from two to ten carbon atoms and the units are from 2 to 35 in number, poly(perfluoroalkylene dioxy) where each alkylene unit has from two to ten carbon atoms and the units are from 2 to 35 in number, perfluoroalkylene dioxy, perhalo lower alkylamino, perhalocyclopentylene, perhalocyclohexylene, perhalopyridinediyl, perhalopyrazolidinediyl, perhalopyranylene, perhalopiperidylene, perhalophenylene, perhalonaphthalenediyl, perhalodicalinylene, oxadiazolylene, triazolylene, triazinylene, and aryl perhalo lower alkylene wherein substituents on the said aryl group are selected from hydrogen, lower alkenyl, chloro, fluoro, lower alkoxy, nitro, nitroso, cyano, and alkoxy carbonyl; and terminal groups individually selected from the group consisting of nitrile, amidine, $-(CXY)_mZ(CXY)_nCN$, alkyl imidates, thioalkyl esters, thioaryl esters, thiolalkyl esters, thiolaromatic esters, alkyl, omegahydroperhaloalkyl, perhaloalkyl, perhaloalkene, perhaloalkyne, aryl, lower alkyl ester, aryl ester, carbourea, and perhalo lower alkyl amidine.

3,669,942
COPOLYMERS OF VINYL ESTERS OF BRANCHED ACIDS

William J. Van Westrenen; Pieter De Carpentier, both of Delft, and Willem H. M. Nieuwenhuis, Amsterdam, all of Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed June 30, 1970, Ser. No. 51,326
Claims priority, application Great Britain, July 3, 1969, 33,543/69
Int. Cl. C08f 15/40
U.S. Cl. 260—78.5 R 11 Claims

Copolymers of (a) a vinyl ester of an alpha-branched, saturated, aliphatic monocarboxylic acid of five–20 carbon atoms, (b) an alpha,beta-ethylenically unsaturated carboxylic acid of three to five carbon atoms, (c) a monovinylaromatic compound of eight to nine carbon atoms, (d) a 2-hydroxyalkylester or an amide of an alpha,beta-ethylenically unsaturated carboxylic acid and, optionally, (e) a C_1–C_4 alkyl ester of acrylic or methacrylic acid and their preparation are described. These special copolymers are especially suitable in water-thinnable compositions, particularly in electrodepositable compositions to produce pore-free coatings or films.

3,669,943
PROCESS FOR PRODUCING CONJUGATED DIOLEFIN POLYMER WITH REDUCED COLD FLOW

Koei Komatsu, Yokohama; Ekaro Okuya, Yokkaichi; Katsuyoshi Tomioka, Yokohama; Masato Sakai, Yokkaichi; Shigeki Hayashi, Yokkaichi; Hidetoshi Yasunaga, Yokkaichi, and Akira Kogure, Tokyo, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Chuo-ku, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,619
Claims priority, application Japan, May 31, 1969, 44/41719
Int. Cl. C08d 1/32; C08f 19/08, 1/28
U.S. Cl. 260—80.7 13 Claims

A process for producing a homopolymer or copolymer of a conjugated diolefin by polymerizing a conjugated diolefin alone or copolymerizing a conjugated diolefin with a vinyl aromatic hydrocarbon in the presence of a lithium-type initiator in a hydrocarbon solvent, characterized in that the quantity of said initiator required for the polymerization is divided into two portions, A and B, in a molar ratio of A : B = 1 : 3 to 15, and said portion A is added at the outset to initiate the polymerization, and when the conversion to polymer has reached 20 to 60 percent by weight said portion B is added to the polymerization system to carry out the polymerization until it is substantially completed. The polymer obtained by the present process retains the desirable properties which a conventional conjugated diolefin polymer has, and is, in addition, characterized by reduced cold flow.

3,669,944
PROCESS FOR PRODUCING CHLOROPRENE COPOLYMER

Toshio Sakomura; Akihiko Shimizu; Takayuki Kino, and Atsushi Kita, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Nanyo-cho, Tsuno-gun, Yamaguchi, Japan

Filed Aug. 14, 1970, Ser. No. 63,943
Claims priority, application Japan, Aug. 14, 1969, 44/64306
Int. Cl. C08d 1/09, 3/14, 3/02
U.S. Cl. 260—82.1 6 Claims

A process for producing a chloroprene copolymer which comprises copolymerizing chloroprene with acrylonitrile as at least one component and another monomer which can be easily copolymerized with chloroprene in the presence of a halogenated aliphatic hydrocarbon having at least one bromine bond, with a free radical initiator.

3,669,945
PROCESS FOR PRODUCING A HOMOPOLYMER OR COPOLYMER OF ETHYLENE WITH NOVEL CATALYST

Kohei Nakaguchi, Kobe; Tomozumi Nishikida, Itami-shi; Shohachi Kawasumi; Kenichi Maemoto, both of Takatsuki-shi; Takezo Sano, Ibaraki-shi; Yoshikazu Fujii, Takatsuki-shi; Koichi Harada, Ibaraki-shi, and Keijyu Ueda, Nihama-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Mar. 6, 1967, Ser. No. 620,615
Claims priority, application Japan, Mar. 8, 1966, 41/14524
Int. Cl. C08f 15/04
U.S. Cl. 260—85.3 R 18 Claims

A process for the homopolymerization and copolymerization of ethylene using a catalyst composed of (1) a substance obtained by treating with an alcohol a reaction product of a vanadium compound and a phosphoric acid or its derivative, or a mixture thereof and (2) an organo-aluminum compound having the composition formula, R_nAlX_{3-n} wherein R is a hydrocarbon group having one to eight carbon atoms; X is a group selected from halogen, alkoxy group and hydrogen; and *n* is a positive number not more than 3.

3,669,946
METHOD FOR PREPARING POLYVINYL CHLORIDE BY SUSPENSION POLYMERIZATION

Shunichi Koyanagi; Shigenobu Tajima, both of Naoetsu; Toshihide Shimizu, Okata-Machi, Nakakubiki-gun, and Kazuhiko Kurimoto, Nakakubiki-gun, all of Japan, assignors to Shinetsu Chemical Company

Filed Aug. 31, 1970, Ser. No. 68,585
Int. Cl. C08f 3/30, 1/11, 1/88
U.S. Cl. 260—87.5 R 17 Claims

Vinyl chloride or a mixture of vinyl monomers containing vinyl chloride in the ratio of at least 50 percent of the mixture is subjected in a polymerization vessel to suspension polymerization in an aqueous medium containing a suspending agent and an oil-soluble catalyst. The inner walls as well as the stirring blades and/or the condenser with which the vessel is equipped, are coated with a polar organic compound, dye, and/or pigment. The amount of polymer scale deposited on the inner walls of the vessel is reduced.

3,669,947
PROCESS FOR THE PRODUCTION OF ALPHA-METHYLSTYRENE POLYMER

Henry Kahn, Arlington Heights, and Takeo Hokama, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 2, 1970, Ser. No. 8,030
Int. Cl. C08f 7/04, 1/08
U.S. Cl. 260—93.5 S 8 Claims

A process for the production of alpha-methylstyrene polymer which comprises continuously polymerizing alpha-methylstyrene dissolved in an inert organic reaction medium at a concentration of from about 5 to about 20 weight percent which has been precooled to a temperature between about 0 and about −50° C in the presence of water and a Friedel-Crafts halide at atmospheric pressure and substantially adiabatic conditions.

3,669,948
METHOD FOR PRODUCING POLY α-OLEFINS

Shiro Konotsune; Atsuyuki Kachi; Takao Tonoike, and Kinya Mori, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sept. 4, 1970, Ser. No. 69,919
Int. Cl. C08f 1/56, 3/10
U.S. Cl. 260—93.7 10 Claims

Polypropylene or copolymer of propylene with another α-olefin is produced by polymerizing propylene or propylene together with another α-olefin, at a temperature below 80° C, in the presence of a three component catalyst system consisting of $TiCl_3$ or $TiCl_3 \cdot 1/3AlCl_3$, a trialkylaluminum or dialkylaluminum halide, and polyethyleneglycol dialkylether or polyethylenethioglycol dialkylthioether, and substantially in the absence of any solvent, whereby a number of advantages can be obtained such as not only the exemption from usual drawbacks of solvent polymerization, for example, solvent loss, increase of cost necessary for solvent recovery, etc.; but also the fact that the product can be used directly to molding without removing amorphous polypropylene (APP); increase in polymerization rate; no formation of appreciable atactic polymer is the copolymerization of propylene; higher bulk density of the product; easy removal of catalyst; etc.

3,669,949
PROCESS FOR PRODUCING A CIS-1,4 DIOLEFIN

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed July 28, 1969, Ser. No. 845,496
Int. Cl. C07c 3/10, 11/12
U.S. Cl. 260—680B 21 Claims

A solid phase catalyst composition comprising a complex of iron or cobalt, a Group V–A electron donor ligand, and a non-protonic Lewis acid and reducing agent on a solid, acidic silica-based support. Exemplary is a complex comprising ferric acetylacetonate, bis(diphenylphosphino)ethane, and triethylaluminum on a solid, acidic silica-based support. Use of such catalysts in the copolymerization of monoolefin hydrocarbons with diolefin hydrocarbons is disclosed.

3,669,950
DIPYRAZOLO[3,4-B:3,4D]-PYRIDIN-3-ONES

Hans Hoehn, Tegernheim, and Ernest Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,179
Int. Cl. C07d 31/44
U.S. Cl. 260—295.5 T 12 Claims

New dipyrazolo[3,4—*b*:3′,4′-d]pyridin-3-ones and their salts are useful as central nervous system depressants. This type of compound also increases the intracellular concentration of adenosine-3′,5′-cyclic monophosphate.

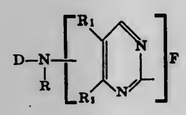
3,669,951

REACTIVE AZO DYESTUFFS CONTAINING A-FLUOROPYIMIDINYL GROUP

Hans-Samuel Bien, Burscheid, and Erich Klauke, Odenthal-Hahnenberg, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 1, 1967, Ser. No. 664,943
Claims priority, application Germany, Sept. 10, 1966, F 50181; Mar. 25, 1967, F 51942
Int. Cl. C09b 45/14, 62/24; D06p 1/38
U.S. Cl. 260—146 D 24 Claims

Reactive dyestuffs of the formula



in which D is the residue of an organic dyestuff, R is hydrogen or a lower alkyl, R_1 is hydrogen or a substituent, R_2 is hydrogen, halogen, substituted or unsubstituted alkyl, alkenyl, aralkyl or aryl radical, carboxylic acid ester radical, carboxylic acid amide radical, alkyl-sulphone, or arylsulphone; and F is fluoro; and process for the preparation of such dyestuffs. These dyestuffs are particularly useful in dyeing materials containing hydroxyl groups and nitrogen, e.g. regenerated cellulose, wool, silk, synthetic polyamide, and polyurethane which dyeings possess excellent fastness to wet processing and good fastness to washing, milling and potting on wool.

3,669,952

9-DIHYDROMEGALALOSAMINE AND ESTERS THEREOF AND METHODS FOR THEIR MANUFACTURE

Alan K. Mallams, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed Oct. 13, 1969, Ser. No. 865,956
Int. Cl. C07c 47/18
U.S. Cl. 260—210 AB 7 Claims

9-Dihydromegalalosamine and ester derivatives thereof and their pharmaceutically acceptable acid addition salts are novel macrolides exhibiting antibiotic activity.

9-Dihydromegalalosamine and ester derivatives thereof are prepared by treating megalalosamine and ester derivatives thereof with an alkali metal borohydride in an inert solvent. 9-Dihydromegalalosamine 2',4''-diacylates, 9-dihydromegalalosamine 3,9,2',4''-tetraacylates and 9-dihydromegalalosamine 3,9,12,2',4''-pentaacylates are prepared by treating 9-dihydromegalalosamine in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid. 9-Dihydromegalalosamine 3,9-diacylates and 9-dihydromegalalosamine 3,9,12-triacylates are prepared by subjecting a 9-dihydromegalalosamine 3,9,2',4''-tetraacylate and a 9-dihydromegalalosamine 3,9,12,2',4''pentaacylate, respectively to mild hydrolysis.

3,669,953

MEGALALOSAMINE AND ESTERS THEREOF AND METHODS FOR THEIR MANUFACTURE

Alan K. Mallams, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed Oct. 13, 1969, Ser. No. 865,957
Int. Cl. C07c 47/18
U.S. Cl. 260—210 AB 14 Claims

Megalalosamine and ester derivatives thereof and their pharmaceutically acceptable acid addition salts are novel macrolides exhibiting antibiotic activity.

Megalalosamine is prepared by treating one of megalomicin A, megalomicin B, megalomicin C_1 and megalomicin C_2, or mixtures thereof with aqueous acid. Megalalosamine 2',4''-diacylates and megalalosamine 3,2',4''-triacylates are prepared by treating megalalosamine in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid or a hydrocarbon sulfonic acid. Megalalosamine 3-monoacylates are prepared by subjecting a megalalosamine 3,2',4''-triacylate to mild hydrolysis. Mixed 3,2',4''-triacylate esters of megalalosamine are prepared by treating one of megalalosamine, a 3-monoacylate thereof, or a 2',4''-diacylate thereof in a basic medium with an acylating reagent of a hydrocarbon carboxylic acid or a hydrocarbon sulfonic acid. 3-Tetrahydropyranyl-2',4''-diacyl-megalalosamines are prepared by treating a megalalosamine 2',4''-diacylate with dihydropyran in the presence of acid.

3,669,954

PROCESS FOR PRODUCING SEMIPERMEABLE MEMBRANES

Otto S. Schaeffler, Arcadia, Calif., assignor to The United States of America as represented by the Secretary of the Interior

Filed May 4, 1970, Ser. No. 34,578
Int. Cl. C08b 3/22; B01d 13/00; B29h 7/20
U.S. Cl. 260—230 R 3 Claims

Semipermeable membranes having improved reverse osmosis properties are prepared by crosslinking cellulose acetate methacrylate membranes in an aqueous persulfate-bisulfite redox system. The resulting membranes exhibit superior long-term reverse osmosis properties and find particular utility in desalination of water.

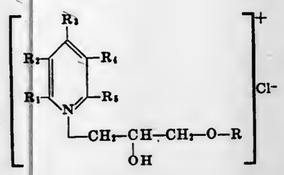
3,669,955

QUATERNARY PYRIDINIUM SALT-STARCH ETHER DERIVATIVES

Glenn Arden Hull, Oak Park, Ill., assignor to CPC International Inc.

Filed Dec. 26, 1968, Ser. No. 787,259
Int. Cl. C08b 19/01
U.S. Cl. 260—233.3 R 3 Claims

A quaternary pyridinium salt-polyol ether product represented by the formula:



where R_1, R_2, R_3, R_4 and R_5 are hydrogen or methyl and R is starch.

3,669,956

4-SUBSTITUTEDAMINO-PHENYLACETIC ACIDS AND DERIVATIVES THEREOF

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Shorre; J. W. Hermann Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to E. Merck A. G., Darmstadt, Germany

Filed July 22, 1968, Ser. No. 746,326
Claims priority, application Germany, July 22, 1967, M 74881; Jan. 8, 1968, M 76850; Feb. 23, 1968, M 77363; Mar. 1, 1968, M 77429
Int. Cl. C07d 41/04
U.S. Cl. 260—239 BF 144 Claims

As a group of extraordinarily active anti-inflammatory agents, 4-aminophenyl acetic acids substituted at the nitrogen and phenyl positions, and derivatives thereof, e.g., 3-chloro-4-piperidino-α-methyl acetic acid, 3-methyl-4-piperidino-α-methyl acetic acid, and 4-piperidino-naphthyl acetic acids.

3,669,957

PROCESS FOR THE PREPARATION OF SODIUM AMPICILLIN

Charles A. Robinson, 1402 Carroll Brown Way, and Arthur C. Adams, 255 Elmwood Avenue, both of West Chester, Pa., assignor to American Home Products Corporation, New York, New York

Continuation of application Ser. No. 699,776, Jan. 23, 1968. This application Apr. 24, 1970, Ser. No. 29,750
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 7 Claims

A process for producing sodium ampicillin in crystalline form by first preparing the soluble diethylamine salt of ampicillin by the reaction of anhydrous ampicillin with diethylamine in methylene chloride, adding thereto a methylene chloride solution of sodium 2-ethylhexanoate, and then obtaining high yields of high purity sodium ampicillin in crystalline form by adding acetonitrile to the mixture.

3,669,958

6-[N-(SUBSTITUTED-IMIDOYL)-AMINOACETAMIDO]PENCILLANIC ACIDS

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,997
Int. Cl. C07d 99/14, 99/24
U.S. Cl. 260—239.1 12 Claims

6-[N-(substituted-imidoyl)aminoacetamido]penicillanic acids and their salts are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and certain Gram-negative bacteria, most particularly those caused by the Proteus genus. 6-[N-(Phenylacetimidoyl)-aminoacetamido]penicillanic acid, a preferred embodiment of the invention, is prepared by Raney nickel hydrogenation (50 p.s.i., R.T.) of an aqueous solution of sodium 6-(3-benzyl-1,2,4-oxadiazole-5-one-4-acetamido)penicillanate which is prepared in turn by reaction of 6-aminopenicillanic acid with 3-benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.

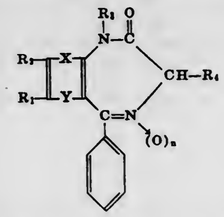
3,669,959

THIENO-DIAZEPIN-ONES

Otto Hromatka, and Dieter Binder, both of Vienna, Austria, assignors to Invag Aktiengesellschaft, Zurich, Switzerland

Filed Dec. 10, 1969, Ser. No. 884,020
Claims priority, application Austria, Dec. 10, 1968, A 12016/68; Feb. 5, 1969, A 1132/69
Int. Cl. C07d 53/02, 63/18
U.S. Cl. 260—239.3 B 19 Claims

Thieno-diazepine derivatives of the formula



wherein one of the symbols X and Y is a direct carbon-to-carbon linkage and the other is a —S— group; n is O or 1; R_1 is hydrogen, lower alkyl, aryl or trifluoromethyl; R_2 is hydrogen, lower alkyl, aryl, trifluoromethyl, halogen, nitro, lower alkoxy or NR_8R_9 in which R_8 and R_9 are independently selected from the group consisting of halogen, lower alkyl and acyl; R_3 is hydrogen, lower alkyl and when n is 0, R_4 is a lower alkanoyloxy or hydroxy group; the symbols R_5 and R_6 being lower alkyl or acyl or one of them being hydrogen and the other acyl when n is 1 or when R_4 is a lower alkanoyloxy or hydroxy group and the acid addition salts thereof are useful as muscle relaxants and/or sedatives (tranquilizers).

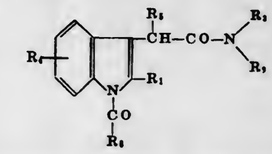
3,669,960

NOVEL AMIDES OF 3-INDOLYLACETIC ACID

Tadashi Okamoto, Ashiya-shi; Tsuyoshi Kobayashi, Minoo-shi, and Hisao Yamamoto, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

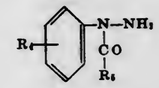
Filed Aug. 18, 1969, Ser. No. 851,063
Claims priority, application Japan, Sept. 10, 1968, 43/65457; 43/65458
Int. Cl. C07d 26/56
U.S. Cl. 260—240 J 1 Claim

Novel 3- indolylacetamide derivatives, and salts thereof, useful for antiinflammatory agents, which are represented by the formula,

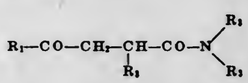


wherein

R_1 and R_6 independently signify hydrogen, methyl or ethyl; R_2 signifies C_1–C_4 alkyl, dialkylaminoalkyl, aralkyl, cycloalkyl, cycloalkylalkyl, carboalkoxyalkyl, carbobenzyloxyalkyl, hydroxyalkyl or heterocyclic ring; R_3 signifies hydrogen or alkyl, R_2 and R_6 being conjugated to form a heterocylic ring; R_4 signifies alkoxy, alkyl or halogen; and R_5 signifies styryl or methylenedioxyphenyl. These derivatives are produced by reacting a corresponding 3- indolylacetic acid with a corresponding amine derivative or reacting an N^1-acylphenyl hydrazine derivative of the formula,



or its salt or its hydrazone derivative with a keto amide derivative of the formula,



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above.

3,669,961

PROCESS FOR THE PREPARATION OF HYDROXYBENZYL ESTERS OF CYANURIC ACID

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,376
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 20 Claims

Hydroxybenzyl-substituted isocyanurates are prepared by the condensation reaction of a phenol with cyanuric acid or a

partial ester of cyanuric acid and formaldehyde. The hydroxybenzyl-substituted isocyanurates and particularly 3,5-dialkyl-4-hydroxybenzyl isocyanurates and useful stabilizers for a wide variety of organic materials including olefin homopolymers and copolymers.

3,669,962

PROCESS FOR THE PREPARATION OF HYDROXYBENZYL-SUBSTITUTED ISOCYANURATES

Peter D. Smith, Cleveland, and George Kletecka, Fairview Park, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,377
Int. Cl. C07d *55/38*
U.S. Cl. 260—248 NS **17 Claims**

Hydroxybenzyl-substituted isocyanurates are prepared by the reaction of a phenol with cyanuric acid or a partial ester of cyanuric acid and formaldehyde in an alcoholic reaction medium. The hydroxybenzyl-substituted isocyanurates and particularly 3,5-dialkyl-4-hydroxybenzyl isocyanurates are useful stabilizers for a wide variety of organic materials including olefin homopolymers and copolymers.

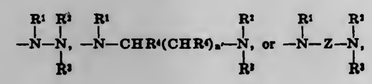
3,669,963

SUBSTITUTED AMINO-S-TRIAZINES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Walter J. Monacelli, Cleveland, Ohio, a part interest

Original application May 15, 1967, Ser. No. 638,654. Divided and this application Jan. 2, 1970, Ser. No. 5,399
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.6 **7 Claims**

Triazine compounds are disclosed which are derivatives of symmetrical triazine having two radical of the structure



there being at least one metal coordinating group of the structure $-CHR^4COOM$, wherein M, Z, R^2, R_3 and R^4 are as defined hereinafter. These compounds are useful for coordinating with and removing metals from solutions or for preparing resins capable of removing metals from solutions.

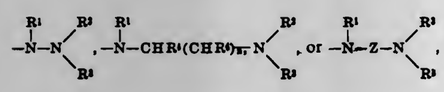
3,669,964

SUBSTITUTED AMINO-S-TRIAZINES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Walter J. Monacelli, Cleveland, Ohio, a part interest

Original application May 15, 1967, Ser. No. 638,654. Divided and this application Jan. 2, 1970, Ser. No. 5,391
Int. Cl. C07d *55/18*
U.S. Cl. 260—249.8 **6 Claims**

Triazine compounds are disclosed which are derivatives of symmetrical triazine having one radical of the structure



there being at least one metal coordinating group of the structure $-CHR^4COOM$, wherein M, Z, R^2, R^3 and R^4 are as defined hereinafter. These compounds are useful for coordinating with and removing metals from solutions or for preparing resins capable of removing metals from solutions.

3,669,965

1-LOWER ALKYL OR ALKYLENE SUBSTITUTED-6,7-METHYLENEDIOXY-4(1H)-OXOCINNOLINE-3-CARBOXYLIC ACIDS AND METHODS FOR MAKING AND USING SAME

William A. White, Fountaintown, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 796,546, Feb. 4, 1969, abandoned.
Filed Dec. 29, 1969, Ser. No. 888,880
Int. Cl. 260 *340.5*; C07d *51/08*
U.S. Cl. 260—250 A **19 Claims**

1-Lower alkyl or alkenyl substituted-6,7-methylenedioxy-4(1H)-oxocinnoline-3-carboxylic acids, active against Gram-negative bacteria and Mycoplasma organisms and methods for the preparation and use thereof.

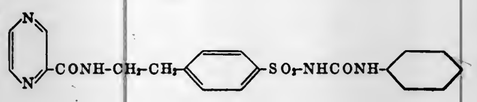
3,669,966

PYRAZINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Vittorio Ambrogi, Bresso, and Willy Logemann, Milan, both of Italy, assignors to Carlo Erba S.p.A., Milan, Italy

Filed Mar. 24, 1970, Ser. No. 22,389
Claims priority, application Italy, June 18, 1969, 18301 A/69; Mar. 26, 1969, 14581 A/69
Int. Cl. C07d *99/24*
U.S. Cl. 260—250 R **15 Claims**

Pyrazine derivatives wherein a pyrazine ring is introduced into benzenesulphonyl-urea compounds, typified by the compound



are disclosed. These compounds have hypoglycemic properties and are useful in the treatment of diabetic conditions.

3,669,967

PHARMACOLOGICALLY ACTIVE QUINAZOLINONE COMPOUND, ITS USE IN PHARMACOLOGICAL PREPARATIONS AND PROCESS FOR ITS PREPARATION

Karl-Heniz Boltze, Bensberg-Kippekausen, and Dietrich Lorenz, Kleinhurden, Post B. Bensburg, both of Germany, assignors to Troponwerke Dinklage & Co., Berliner Strasse, Cologne-Mulheim, Germany

Filed July 15, 1970, Ser. No. 55,247
Claims priority, application Germany, July 18, 1969, P 19 36 588.9
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 Q **2 Claims**

2-Methyl-3- N-[3-(4-phenylpiperazinyl-(1))-2-hydroxypropyl-(1)]-anilino quinazolinone-(4) and its non-toxic acid addition salts which have a strong cataleptic activity.

3,669,968

TRIALKOXY QUINAZOLINES

Hans-Jurgen E. Hess, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed May 21, 1970, Ser. No. 39,541
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.5 R **15 Claims**

A series of novel 2-substituted-4-amino-6,7,8-trialkoxyquinazolines have been prepared, including their acid addition salts. These compounds are useful in therapy as potent antihypertensive agents. Methods for their preparation are described in detail, including various synthetic routes leading to the required novel intermediates.

3,669,969

BENZIMIDAZO [2,1-B] QUINALOZIN-12-(6H)ONES

William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 24, 1969, Ser. No. 879,579
Int. Cl. C07d *57/12*
U.S. Cl. 260—256.4 F **6 Claims**

Benzimidazo [2,1-b]quinazolin- 12(6H)ones, immunosuppressives and agents for treatment of auto-immune diseases, are prepared via (1) reacting a 2-chlorobenzimidazole with an anthranilic acid or ester; (2) reacting a 2-aminobenzimidazole with an anthranilic acid or ester in the presence of trifluoroacetic acid or (3) reacting a 2-methylmercaptobenzimidazole with an anthraniloyl halide hydrohalide.

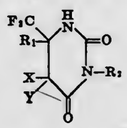
3,669,970

3,5,6-SUBSTITUTED-6-(TRIFLUOROMETHYL)-HYDROURACILS

Albert William Lutz, Montgomery Township, and Richard William Feeny, Hightstown, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 804,708, Mar. 5, 1969, now abandoned. This application Mar. 17, 1970, Ser. No. 20,382
Int. Cl. C07d *51/30*
U.S. Cl. 260—260 **11 Claims**

Herbicidal 3,5,6-substituted-6-(trifluoromethyl)-hydrouracils are provided having the formula:



wherein:
X is halogen or lower alkyl;
Y is halogen;
R_1 is halogen, hydroxy, alkoxy or haloalkoxy; and
R_2 is hydrogen, alkyl, substituted alkyl, phenyl, cyclohexyl cyclopentyl, substituted phenyl, or alkenyl.

3,669,971

N-(SUBSTITUTED-POLYHYDROCYCLOALKANO[B]QUINOLINES CARBOXAMIDES

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer Inc., Fort Washington, Pa.

Filed Dec. 27, 1968, Ser. No. 787,613
Int. Cl. C07d *39/00, 51/70, 37/02*
U.S. Cl. 260—286 R **4 Claims**

The compounds of this invention are useful in the treatment of mammals for auricular tachycardia. They are effective, potent anti-arrythmic agents with a wide safety margin between effective doses and toxic doses. For example, one of the compounds of this invention is approximately equipotent to quinidine sulfate, with an equally long or longer duration of action, but is only one-half as toxic as quinidine sulfate.

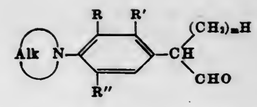
3,669,972

P-AMINOARYLALKANAL DERIVATIVES

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Schorre; Jan Willem Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of application Ser. No. 746,326, July 22, 1968, and 845,076, July 25, 1969. This application Jan. 7, 1970, Ser. No. 1,310
Claims priority, application Germany, Jan. 7, 1969, P 19 00 585.7
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.73 **16 Claims**

p-Aminoarylaklanals of the formula



and the corresponding aldehydic functional derivatives thereof, wherein R and R' are H or, collectively, —CH CH—CH CH—; R'' is halogen, NO_2; CH_3, C_2H_5, CF_3, CH_3S, C_2H_5S or, when R and R' collectively are —CH CH—CH CH—, H; *m* is 0–2; and Alk is alkylene, have antiphlogistic, analgesic, antipyretic and other valuable pharmacological activities.

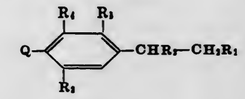
3,669,973

ANTIPHLOGISTIC P-AMINOARYLALKANOL DERIVATIES

Joachim Borck; Johann Dahm; Volker Koppe; Josef Kramer; Gustav Schoree; Jan Willem Herman Hovy, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Continuation-in-part of application Ser. No. 746,326, July 22, 1968. This application July 25, 1969, Ser. No. 845,076
Claims priority, application Germany, July 27, 1967, M 74 881; Jan. 8, 1968, M 76 850; Feb. 23, 1968, M 77 363; Mar. 1, 1968, M 77 429; Aug. 1, 1968, P 17 95 036.6
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.73 **31 Claims**

As antiphlogistic agents having activities as 1-perhydroazepinyl; as indomethacin and much lower acute toxicities, there are provided compounds of the formula



wherein
R_1 represents a free, esterified or etherified OH-group;
R_2 represents H, CH_3 or C_2H_5;
R_3 represents H, F, Hal, NO_2, NH_2, CH_3, C_2H_5, CH_3S or C_2H_5S;
R_4 and R_5 represent H or, together, $-CH\,CH-CH\,CH$;
Q is pyrrolidino, piperidino or homopiperidino, 1-perhydroazepinyl; and
Hal represents Cl, Br or I;
With the provision that when R_4 and R_5 represent H, R_6 does not represent H, as well as the acid addition salts and quaternary ammonium salts thereof.

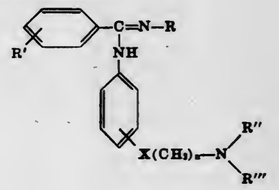
3,669,974

N,N1-DISUBSTITUTED BENZAMIDINES

Bill Elpern, White Plains, and James R. Shroff, Bronx, both of N.Y., assignors to USV Pharmaceutical Corporation

Continuation-in-part of application Ser. No. 845,030, July 25 1969, now abandoned. This application Mar. 25, 1971, Ser. No. 128,125
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.79 **7 Claims**

Compounds of the formula



wherein R is lower alkyl, cycloalkyl, phenyl, naphthyl, pyridyl, or substituted phenyl, R′ is hydrogen, lower alkyl, lower alkoxy, or halogen,



is dialkylamino or a heterocyclic ring, *n* is an integer from 2–4, and X is oxygen or sulfur, possess hypoglycemic activity.

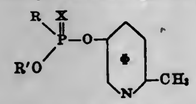
3,669,975

CERTAIN 6-METHYL-3-PYRIDYL PHOSPHATES, CORRESPONDING THIO PHOSPHATES AND DERIVATIVES THEREOF

Daniel Demosay, Villeurbanne; Daniel Pillon, and Jacques Ducret, both of Lyon, all of France, assignors to Pechiney-Progil, Lyon, France

Filed Aug. 11, 1969, Ser. No. 849,139
Claims priority, application Great Britain, Aug. 9, 1968, 38,130/68
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 K **13 Claims**

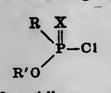
An insecticidal composition having the formula:



(1)

and a process for preparing it are described.

The process consists of reacting a halide salt having the formula



with hydroxy-4 methyl-2 pyridine.

In practical use the composition is diluted with acetone. It is active against a large variety of insects and mites.

3,669,976

2-HYDROXY-AND 2-MERCAPTO-5-THIAZOLINYL-2′-PYRIDINES

Kurt Gubler; Urs Meyer, both of Riehen, and Hans Ulrich Brechbühler, Basel, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Original application Sept. 25, 1968, Ser. No. 762,653, now Patent No. 3,535,325, dated Jan. 8, 1971. Divided and this application June 23, 1970, Ser. No. 53,417
Claims priority, application Switzerland, Sept. 29, 1967, 13636/67
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 D **1 Claim**

Pyridyl-(2)-phosphates and phosphorothicates are disclosed which have in 5-position at the pyridine nucleus a thiazolinyl-(2) grouping and which are insecticidal and acaricidal agents useful in the control of insects and Acarinae, and more particularly of cattle ticks. Compositions containing these novel compounds, methods for controlling insects and Acarinae therewith, and novel 2-hydroxy- and 2-mercapto-5-thiazolinyl-(2′)-pyridines useful as intermediates in their production are also described.

3,669,977

NOVEL CYCLIC COMPOSITIONS

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Original application June 8, 1967, Ser. No. 644,546, now Patent No. 3,512,922, dated May 19, 1970. Divided and this application Feb. 24, 1970, Ser. No. 16,996
Int. Cl. C07d *91/68*
U.S. Cl. 260—301 **4 Claims**

This invention concerns the preparation of novel cyclic N,N′-substituted sulfamide derivatives and to their application to hydroxyl-containing polymeric substrates as modifying agents.

3,669,978

PROCESS FOR THE PRODUCTION OF SEMI-SYNTHETIC PENICILLIN INTERMEDIATE

Robert P. Deist, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,567
Int. Cl. C07d *99/10, 99/16*
U.S. Cl. 260—301 **6 Claims**

A novel process for the preparation of an intermediate mixture which is useful in the production of penicillanic acid derivatives is described. The main component of the intermediate mixture is 2-[(6-amino-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3,2,0 hept-2-yl) carbonyl]-1, 2-benzisothiazol-3(2H)-one-1,1-dioxide hydrochloride.

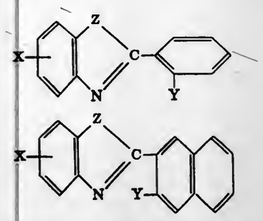
3,669,979

NOVEL PROCESS FOR THE PRODUCTION OF 2-BENZOTHIAZOLYL-PHENOL AND DERIVATIVES THEREOF EMPLOYING PHOSPHORUS TRICHLORIDE AS A CATALYST

Harlan B. Freyermuth, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 14, 1967, Ser. No. 690,376
Int. Cl. C07d *91/44, 85/48, 49/38*
U.S. Cl. 260—304 **6 Claims**

A method of preparing heterocyclic derivatives selected from the formulae:



wherein X is selected from hydrogen, lower alkyl, lower alkoxy, and halogen; Y is selected from hydroxy and X; Z is selected from nitrogen, oxygen, and sulfur by reacting an o-aminobenzenethiol, o-aminophenol, or o- aminoaniline and substituted derivatives thereof with an ortho-substituted benzoic acid or 2-substituted naphtholic acid in the presence of a catalyst comprising phosphorus trichloride. The compounds produced by the process of the present invention are useful as stabilizers in various organic media, e.g., organic plastics, oils, etc. and as intermediates in the production of dyestuffs and fluorescent compounds.

3,669,980

2-AMIDO-6-AMINO PENICILLANIC ACIDS AND RELATED COMPOUNDS

Richard Bogash, Philadelphia; Milton Wolf, West Chester, and John H. Sellstedt, King of Prussia, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 22, 1969, Ser. No. 843,783
Claims priority, application Great Britain, Sept. 17, 1968, 44,184/68
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—304 **6 Claims**

This invention concerns 2-amido-6-aminopenicillanic acids, 2-amido-6-haloimidopenicillins, 2-amido-6-alkoxyimidopenicillins, 2-amido-7-amino-cephalosporanic acids, 2-amido-7-haloimido-cephalosporins and 2-amido-7-alkoxyimido-cephalosporins which are useful as intermediates in the preparation of synthetic penicillins and cephalosporins having potent antibiotic activity. Further, it relates to a process for the preparation of these intermediates from penicillins and cephalosporins. Still further, it concerns the preparation of 6-aminopenicillanic acid and 7-aminocephalosporanic acid by the respective hydrolysis of 2-amido-6-aminopenicillanic acids and 2-amido-7-aminocephalosporanic acids.

3,669,981

S-CHLOROMETHYL COMPOUNDS OF 2-MERCAPTOBENZOTHIAZOLES, 2-MERCAPTOBENZOXAZOLES, AND 2-MERCAPTOBENZIMIDAZOLES

John D. Pera, and Fred W. Raths, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Oct. 30, 1969, Ser. No. 872,732
Int. Cl. C07d *91/44, 85/48, 49/38*
U.S. Cl. 260—306 **10 Claims**

S-chloromethyl compounds of 2-mercaptobenzothiazoles, 2- mercaptobenzoxazoles, and 2- mercaptobenzimidazoles prepared by reacting a metal salt of 2-mercaptobenzothiazole, 2- mercaptobenzoxazole, 2- mercaptobenzimidazoles, or substituted compounds thereof with bromochloromethane in an aqueous system in the presence of a surfactant are useful as intermediates.

3,669,982

METHOD FOR PREPARING 1,3,4-THIADIAZOLE-2-YLUREAS

Tony Cebalo, Allentown, and John Alderman, Alburtis, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 5, 1970, Ser. No. 830
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **15 Claims**

Certain 2-alkylamino-1,3,4-thiadiazole compounds are reacted with phosgene in the presence of boron trifluoride, the reaction product of which is subsequently reacted with a secondary amine to provide fully substituted 1,3,4-thiadiazol-2-ylurea compounds.

3,669,983

PYRAZOLOTHIAZEPINES AND ISOXAZOLOTHIAZEPINES

Leo Ralph Swett, and James Daniel Ratajczyk, both of Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of application Ser. No. 750,430, Aug. 1, 1968, now abandoned. This application Aug. 20, 1970, Ser. No. 65,698
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H **11 Claims**

7,8-Dihydro-4-oxopyrazolo[3,4-d] [1,3]thiazepines which may be substituted in the 1-, 3-, 5-, 7- and/or 8- position and the corresponding isoxazolo[5,4-d] [1,3]thiazepines which may be substituted in the 3-, 5-, 7- and/or 8- position are prepared by converting a 5-aminopyrazole which may be substituted in the 1- and/or 3-positions or a 5-aminoisoxazole which may be substituted in the 3-position into a Schiff base and subsequent condensation of the Schiff base with thioglycolic acid or a substituted thioglycolic acid. The new compounds are useful anti-inflammatories.

3,669,984

PROCESS FOR THE PREPARATION OF 4-METHYL-5-ALKOXY-OXAZOLES

Sidney Frank Schaeren, Benken, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 12, 1970, Ser. No. 19,110
Claims priority, application Switzerland, Mar. 25, 1969, 4464/69
Int. Cl. C07d *85/44*
U.S. Cl. 260—307 R **6 Claims**

A process for the preparation of 4-methyl-5-alkoxy-oxazoles from 5-alkoxy-4-oxazolylacetic acids, which products are useful as intermediates for the preparation of pyridoxine. The starting materials are heated at a temperature of 100°–150°C. in the presence of a dienophile (A-HC=CH-B, wherein A and B are trans and each is an electron-withdrawing group) until evolution of CO_2 ceases.

3,669,985

1,3,2-OXAZABORINIDES AND METHOD FOR PREPARING THE SAME

Thurairajah Padmanathan, Highland Park, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Original application May 27, 1968, Ser. No. 732,045. Divided and this application Oct. 21, 1970, Ser. No. 82,820
Int. Cl. C07d *27/44*
U.S. Cl. 260—310 A **1 Claim**

Condensed difluoro or diacetoxy 1,3,2-oxazaborinides are prepared by treating (a) a condensation product of a naphthostyril with an active ketomethylene compound, such as barbituric acid or its N,N-dialkyl derivatives, an indandione, an oxindole or a pyrazolone, (b) a condensation product of an o-hydroxybenzaldehyde with an aromatic amine, or (c) an ortho-(benz-azol-2yl)-naphthol or phenol, the azole being oxazole, thiazole or imidazole, with either (1) boron trifluoride dissolved in ether, or (2) orthoboric acid, benzeneboronic acid or esters thereof, in acetic acid in the presence of acetic anhydride, at reflux. The difluoro and diacetoxy-1,3,2-oxazaborinides are characterized by affinity for polyesters when applied by disperse dyeing methods and fluoresce on the fiber. Similar effects are obtained on nylon and acetate and to some extent on modified polyacrylonitrile.

3,669,986

SUBSTITUTED DISPIROPENTADECANES

Herschel D. Porter, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 702,820, Feb. 5, 1968, now Patent No. 3,534,054. This application Feb. 27, 1970, Ser. No. 15,265
Int. Cl. C07d *27/08, 31/44*
U.S. Cl. 260—326.5 D **4 Claims**

Novel substituted dispiropentadecanes having activity as central nervous system depressants, vasodilators, anti-inflammatory agents in animals, and as soil fungicides.

3,669,987

SALTS OF INDOLE DERIVATIVES AND A PROCESS FOR PREPARING THE SAME

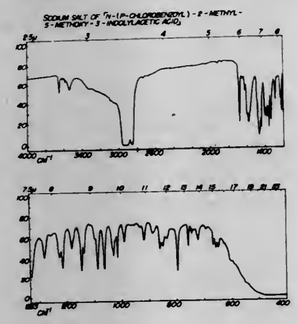
Nobuyasu Sato, Itami-shi; Toshio Nakamura, and Hiroshi Takenaka, both of Ibaragi-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Apr. 9, 1968, Ser. No. 719,939
Claims priority, application Japan, Apr. 11, 1967, 42/23337
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 A **4 Claims**

Alkali metal salts or organic amine molecular compounds of such 1-acyl-3-indolylaliphatic acid derivatives as 1-(p-chlorobenzoyl)-2-methyl-5-methoxy-3-indolylacetic acid, 1-cinnamoyl-2-methyl-5-methoxy-3-indolylacetic acid or 1-nicotinoyl-2-methyl-5-methoxy-3-indolylacetic acid are prepared by dissolving about 1 mole of said 1-acyl-3-indolylaliphatic acid derivative in acetone or methanol, reacting in the presence of a small amount of water the resultant solution with about 0.5 mole of alkali metal carbonate, or about 1 mole of alkali metal bicarbonate or with about 1 mole of an organic amine and distilling off acetone or methanol and water from the reaction mixture to yield the alkali metal salt or organic amine molecular compound.

Alkaline earth metal or aluminum salt or said 1-acyl-3-indolylaliphatic acid derivative is prepared by reacting a soluble salt of alkaline earth metal or aluminum with an aqueous

solution containing said alkali metal salt of 1-acyl-3-indolylaliphatic acid derivative. These alkali metal salts or or-



ganic amine molecular compounds are enable to make solid injections for anti-inflammatory drugs.

3,669,988

METHOD OF ISOLATING AND PURIFYING SULPHONEPHTHALEIN DERIVATIVES OF IMINODIACETIC ACID AND ITS SALTS

Antonin Emr, and Rudolf Pribil, both of Praque, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praque, Czechoslovakia

Filed Oct. 22, 1968, Ser. No. 769,703
Claims priority, application Czechoslovakia, Oct. 25, 1967, 7549-67
Int. Cl. C07d 89/06
U.S. Cl. 260—327 S 4 Claims

Object of the invention is isolation and purification of sulphonephthalein derivatives of iminodiacetic acid, prepared in the known manner by condensing sulphonephthaleins having free 3 and 3′ positions, with formaldehyde and iminodiacetic acid. The method consists in precipitating aqueous solutions of alkali metal salts of said derivatives as insoluble salts with bivalent cations selected from the group consisting of barium, calcium and strontium, isolating the precipitate in pure condition by washing, dissolving the precipitate in an acid, precipitating said bivalent cations, separately the filtrate, adding alkali metal cations to the resulting liquid and isolating the sulphonophtha'ein derivative of iminodiacetic acid in the form of its alkali metal salt by adding a water-miscible non-solvent such as ethanol and separating, washing and drying the precipitate.

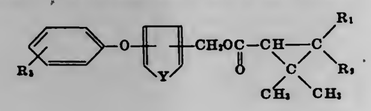
3,669,989

CYCLOPROPANECARBOXYLIC ACID ESTERS

Nobushige Itaya, Minoo-shi; Katsuzo Kamoshita, Toyonaka-shi; Toshio Mizutani, Hirakata-shi; Shigeyoshi Kitamura, Toyonaka-shi; Shinji Nakai; Nobuyuki Kameda, both of Takarazuka-shi; Keimei Fujimoto, Kyoto, and Yositosi Okuno, Toyonaka-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 26, 1969, Ser. No. 827,903
Claims priority, application Japan, June 13, 1968, 43/41107; 43/41108
Int. Cl. C07d 63/12, 5/16
U.S. Cl. 260—332.2 R 7 Claims

Novel phenyloxy-furylmethyl or -thenyl 2,2-dimethyl 3-substituted cyclopropane carboxylate of the formula:



wherein R_1 is a hydrogen atom or methyl group; R_2 is methyl, 2-methyl-1-propenyl, 2-methoxycarbonyl-1-propenyl, phenyl or 3,4-methylenedioxyphenyl group when R_1 is a hydrogen atom, or methyl group when R_1 is methyl group; R_3 is a hydrogen or a halogen atom or methyl group; and Y is an oxygen or a sulfur atom; which carboxylate is useful as an insecticide and is prepared by the esterification of the reactive derivatives of the carboxylic acid with the furylmethyl or thenyl compounds.

3,669,990

HETEROCYCLIC ORGANO-ALUMINUM COMPOUNDS AND THEIR PREPARATION

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,740
Int. Cl. C07d 15/10
U.S. Cl. 260—340.6 21 Claims

Organoaluminum compounds possessing an alumina-2-oxacyclo-oct-4-ene moiety having a vinylic substituent in the seven position are described. These are prepared by reacting an oxacyclopent-3-ene with a nonionic organoaluminum compound possessing an aluminacyclopent-3-ene moiety, preferably in the presence of a stable Lewis Base. The compound possessing the aluminacyclopent-3-ene moiety may be used in preformed condition or it may be formed in situ during the course of a one-step reaction. The compounds possessing the 7-vinylic alumina-2-oxacyclooct-4-ene moiety yield novel alkadienols on hydrolysis.

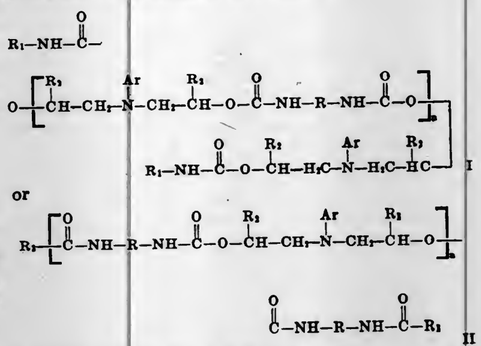
3,669,991

N-ARYL-SUBSTITUTED DIALKANOLAMINO-POLYURETHANES

Erich Elmers, Krefeld, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, F 52853

Continuation-in-part of application Ser. No. 735,511, June 10, 1968, now abandoned. This application Sept. 25, 1970, Ser. No. 75,714
Claims priority, application Germany, July 4, 1967, F 52 853
Int. Cl. C08g 41/04, 22/06
U.S. Cl. 260—34.2 9 Claims

The invention relates to N-aryl-substituted dialkanolamino-polyurethane compounds containing alkyl or aryl terminal groups and corresponding to the formula



I

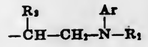
or

II

in which Ar denotes aryl, R is alkylene or arylene, R_1 is alkyl, allyl methoxymethyl or aryl, R_2 is H or $-CH_3$, R_3 is $-O-R_4$ or $-S-R_4$ or



R_4 is alkyl or



R_5 is H or alkyl or aryl, R_6 is alkyl or aryl, n is 1 to about 10, preferably 1 to about 5, and a process for their production.

3,669,992

PREPARATION OF AMINOTETRAHYDROPYRANS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 18, 1968, Ser. No. 722,193
Int. Cl. C07d 7/04
U.S. Cl. 260—345.1 8 Claims

Aminotetrahydropyrans are prepared by reacting halotetrahydropyrans with ammonia or certain primary or secondary amines in the presence of water and an alcohol generally within a temperature range of from 100° to 500° C. These aminotetrahydropyrans and useful as spasmolytic antihistamine drugs.

3,669,993

HIGH TEMPERATURE BIS(EPOXYALKYL) CARBORANE ADHESIVES

Robert L. Barnes, Clifton, and Daniel Grafstein, Morristown, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Sept. 25, 1968, Ser. No. 762,614
Int. Cl. C07d 109/02, 107/02
U.S. Cl. 260—348 R 6 Claims

The process of providing an adhesive junction between two workpieces having opposing smooth surfaces comprising the steps of mixing material selected from the group consisting of bis(epoxybutyl)carborane, bis(epoxypentyl)carborane, and bis(epoxyhexyl)carborane, with a curing agent selected from the group consisting of boron trifluoride ethylamine and 4,4′-diaminodiphenylsulfone, applying said mixture to the opposing surfaces, joining the surfaces and allowing the workpieces with the mixture therebetween to harden under heat and pressure.

3,669,994

ANTHRAQUINONE DYESTUFFS

Edwin Dennis Harvey, Manchester, and Frank Lodge, Huddersfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 724,632, Apr. 4, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 436,381, Mar. 1, 1965, now abandoned. This application Jan. 6, 1970, Ser. No. 1,047
Claims priority, application Great Britain, Mar. 25, 1964, 12,680/64
Int. Cl. C09b 1/50, 1/54
U.S. Cl. 260—380 3 Claims

Mixtures of disperse anthraquinone dyestuffs which are obtained by reacting a leuco derivative of a 1:5-dihydroxy-4:8-di(amino, hydroxy or alkylamino) -2-(hydroxyaryl or alkoxyaryl)anthraquinone with an aldehyde, and the use of the said mixtures for coloring synthetic textile materials.

3,669,995

POLY(ORGANOTIN) MERCAPTIDE POLYMERS AND RESINS STABILIZED THEREWITH

Joseph Fath, and Donald L. Deardorff, both of Barrington, R.I., assignors to Teknor Apex Company

Original application July 26, 1966, Ser. No. 568,061, now Patent No. 3,518,223. Divided and this application Oct. 30, 1969, Ser. No. 870,786
Int. Cl. C08f 45/62
U.S. Cl. 260—399 12 Claims

Poly(organotin) mercaptide condensation polymers useful as stabilizer for vinyl resins are prepared by reacting an organotin compound with a polyfunctional polymercapto ester derived from a polyhydric alcohol containing more than two hydroxyl groups, which is esterified with a mercapto acid so as to leave one hydroxyl group unesterified, and the latter is esterified with an aliphatic or aromatic monocarboxylic acid.

3,669,996

11-HALO-10-OYO-3,7,11-TRIALKYL-2-ALKENOIC AND 2,6-ALKADIENOIC ACIDS AND ESTERS THEREOF

John B. Siddall, 975 California Avenue, Palo Alto, Calif., and Jean Pierre Calame, Brandholzstrasse 1, 8117, Fallanden, Switzerland

Division of application Ser. No. 23,512, Mar. 27, 1970, which is a continuation-in-part of application Ser. No. 666,461, Sept. 8, 1967, now abandoned. This application July 2, 1970, Ser. No. 52,137
Int. Cl. C07c 69/66; A01n 9/24
U.S. Cl. 260—408 13 Claims

Hydrocarbon carboxylic acids, esters, alcohols, ethers, amides and dialkyl phosphonates with a carbon atom chain length of from 12 to 17 carbon atoms substituted at C–6 and/or C–10 with ketal groups, and which are substituted at C–3, C–7 and C–11 with (lower)alkyl or (lower)alkylidene groups optionally saturated or unsaturated between C–2,3 and/or C–5, 6 or C–6,7 or C–7,8 and/or C–9,10 or C–10,11 or C–11,12, or optionally substituted with fused groupings at C–2,3 and/or c–6,7 or C–10,11 and optionally substituted at each of positions C–2,3,6,7,10 and 11, are arthropod maturation inhibitors.

3,669,997

10-OXO-11-ALKYLIDENE-337-DIALKYL-2,6-ALKADIENOIC ACIDS AND ESTERS THEREOF

Jean Pierre Calame, Fallanden, Switzerland, and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 666,461, Sept. 8, 1967, now abandoned. This application Mar. 27, 1970, Ser. No. 23,512
Int. Cl. C07c 69/66; A01n 9/24
U.S. Cl. 260—410.9 R 8 Claims

Hydrocarbon carboxylic acids, esters, alcohols, ethers, amides and dialkyl phosphonates with a carbon atom chain length of from 12 to 17 carbon atoms substituted at C–6 and/or C–10 with keto groups, and which are substituted at C–3, C–7 and C–11 with (lower) alkyl or (lower) alkylidene groups optionally saturated or unsaturated between C–2,3 and/or C–5,6 or C–6,7 or C–7,8 and/or C–9,10 or C–10,11 or C–11,12, or optionally substituted with fused groupings at C–2,3 and/or C–6,7 or C–10,11, and optionally substituted at each of positions C–2,3,6,7,10 and 11, are arthropod maturation inhibitors.

3,669,998

CHLORO-NITRO SUBSTITUTED PHENYL ESTERS OF ALIPHATIC ACIDS

Takashi Munekata, and Eizaburo Uchida, both of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 19, 1967, Ser. No. 647,195
Claims priority, application Japan, June 21, 1966, 41/40254; Mar. 14, 1967, 42/16017; May 17, 1967, 42/31333
Int. Cl. C07c 69/24, 69/62
U.S. Cl. 260—410.5 12 Claims

There are disclosed herein chloro-nitrophenyl esters of aliphatic acids having fungicidal activity.

3,669,999

STORAGE STABILITY OF TETRAKIS NICKEL COMPOUNDS

Ralph Levine, Freehold, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,325
Int. Cl. C07f 75/04
U.S. Cl. 260—439 R 6 Claims

The storage stability of tetrakis nickel compounds, such as tetrakis (triorganophosphite) nickel compounds, can be increased by storing said compounds under a protective blanket selected from alcohols and aliphatic hydrocarbons.

3,670,000
PROCESS OF PRODUCING DIFFICULTY SOLUBLE METAL GLUCONATES
Otto Zeiss, Schwetzingen, Germany, assignor to Joh. A. Benckiser GmbH, Chemische Fabrik, Ludwigshafen/Rhine, Germany
Filed June 19, 1970, Ser. No. 47,724
Int. Cl. C07j *15/02*; C07c *59/10*
U.S. Cl. 260—439 R 8 Claims
Difficulty soluble metal gluconates are obtained by passing a monovalent metal gluconate solution through a cation exchange material charged with the metal ion corresponding to the metal ion of the difficulty soluble metal gluconate.

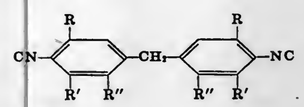
3,670,001
ORGANOALUMINUM HALIDES AND THEIR PREPARATION
Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed July 2, 1970, Ser. No. 52,077
Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 41 Claims
Organoaluminum halides in which the aluminum atom carries a substituted allylcarbinyl group or a substituted cyclopropylcarbinyl group are formed by reacting an aluminacyclopent-3-ene moiety with a primary aliphatic monohalide. The resultant organoaluminum halides are versatile intermediates. Hydrolysis yields substituted 1-alkenes and ring substituted methylcyclopropanes, respectively. Novel classes of substituted cyclopropanes are producible in this manner.

3,670,002
OXIDATION OF THIOLS TO THIOLSULFONATES AND SULFONIC ACIDS
Ming Nan Sheng, Cherry Hill, N.J., and John G. Zajacek, Strafford, Pa., assignors to Atlantic Richfield Company, New York, N.Y.
Continuation-in-part of application Ser. No. 703,907, Feb. 8, 1968, now abandoned. This application Feb. 20, 1970, Ser. No. 13,180
Int. Cl. C07c *143/00*
U.S. Cl. 260—453 R 10 Claims
Method for the oxidation of thiols to produce thiolsulfonates or sulfonic acids using an organic hydroperoxide as the oxidizing agent and a molybdenum-containing catalyst.

3,670,003
PREPARATION OF PHENYLENE DIISOCYANATE BY THERMAL DECOMPOSITION OF CORRESPONDING DINITRILE SULFITE
Alvin E. Trevillyan, Glenwood, and Ivars Vecbastiks, Park Forest, both of Ill., assignors to Atlantic Richfield Company, New York, N.Y.
Filed June 12, 1969, Ser. No. 832,857
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P 16 Claims
A solvent system employed in the preparation of phenylene diisocyanates in high yields and purity from phenylene di(nitrile sulfites) wherein the nitrile sulfite groups are either meta or para to each other, is disclosed. The solvents employed are paraffinic hydrocarbons often having about 4 to 16 carbon atoms. Solvent recycle is advantageously employed in the decomposition of, for instance, benzene-1,4-di(nitrile) sulfite) to improve product yield without decreasing purity.

3,670,004
THIOCYANO SUBSTITUTED ACRYLATES AND PROPIONATES AND THEIR USE AS PESTICIDES
Stanley J. Buckman; John D. Buckman; John D. Pera, and Fred W. Raths, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.
Filed Jan. 7, 1969, Ser. No. 789,620
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 13 Claims
The new compounds 2-thiocyanoacrylates, 2-thiocyano-2,3-dibromopropionates, and 2-thiocyano-2,3-dichloropropionates, which are useful as pesticides, and methods of preparing the same are described.

3,670,005
DIPHENYLMETHANE POLYISONITRILES
Ivar Ugi, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of application Ser. No. 588,656, Sept. 26, 1966, now abandoned, which is a continuation of application Ser. No. 264,707, Mar. 12, 1963, now abandoned. This application Mar. 11, 1970, Ser. No. 17,999
Int. Cl. C07c *119/02*
U.S. Cl. 260—465 G 7 Claims
A symetrical polyisonitrile of the formula



wherein R is hydrogen or alkyl containing one to three carbon atoms inclusive
R′ is hydrogen, alkyl containing one to three carbon atoms inclusive or chloro
R″ is hydrogen or —NC.

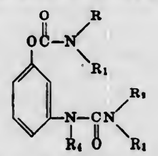
3,670,006
AMMOXIDATION OF SATURATED HYDROCARBONS
Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 17, 1969, Ser. No. 877,468
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 5 Claims
Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing antimony, uranium and tungsten.

3,670,007
AMINOMALONITRILE AND METHOD OF PREPARATION THEREOF
James P. Ferris, Troy, N.Y., assignor to The Salk Institute for Biological Studies, San Diego, Calif.
Continuation-in-part of application Ser. No. 506,415, Nov. 4, 1965, now abandoned. This application Nov. 21, 1967, Ser. No. 684,649
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.5 10 Claims
The chemical aminomalononitrile and methods for making it comprising reacting oximinomalononitrile or phenazomalononitrile with approximately stoichiometric amounts of one of the group consisting of unoxidized aluminum, zinc and sodium dithionite. Formation of aminomalononitrile using zinc must take place in an acid solution. In each case, the reaction mixture is externally cooled until the initial exothermic reaction is substantially complete. Preferably, the aminomalononitrile so formed is isolated as a salt such as the hydrochloride, hydrobromide and toluenesulfonate.

3,670,008
AMMOXIDATION OF SATURATED HYDROCARBONS
Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 801,789, Feb. 24, 1969, now abandoned. This application Dec. 21, 1970, Ser. No. 100,482
Int. Cl. C07c *121/32*
U.S. Cl. 260—465.3 4 Claims
Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing iron and bismuth.

3,670,009
AMMOXIDATION OF SATURATED HYDROCARBONS
Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
Continuation-in-part of application Ser. No. 788,084, Dec. 30, 1968, now abandoned. This application Dec. 21, 1970, Ser. No. 100,548
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 4 Claims
Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing the oxides of molybdenum, boron and tin.

3,670,010
TRIFLUOROMETHYL ACYLATED UREA CARBAMATES
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Filed May 6, 1969, Ser. No. 822,316
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 4 Claims
Acylated urea carbamate compounds having the formula



in which R_1 and R_3 are independently selected from an alkyl radical of from 1 to about 8 carbon atoms, inclusive, cyclohexyl, lower alkenyl of from about 3 to about 4 carbon atoms, inclusive, phenyl and substituted phenyl in which the substituents are lower alkyl, lower alkoxy, nitro and halogen; R and R_2 are independently selected from hydrogen, alkyl of from 1 to about 8 carbon atoms, inclusive, cyclohexyl, lower alkenyl of from about 3 to about 4 carbon atoms, inclusive, and trifluoroacetyl; provided that at least one of R or R_2 is trifluoroacetyl; and R_4 is selected from hydrogen, methyl or when only one of R or R_2 is trifluoroacetyl then R_4 can be trifluoroacetyl. These compounds are prepared by the reaction of an appropriate carbamoyloxyphenyl urea and trifluoroacetic anhydride. The compounds are useful as herbicides.

3,670,011
ACETOACETATE OF 2-HYDROXYMETHYL-5-NORBORNENE
Anthony Gifford Moody, and Robert Owen Symcox, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Original application Aug. 28, 1967, Ser. No. 663,546, now Patent No. 3,520,843, dated July 21, 1970. Divided and this application Mar. 27, 1970, Ser. No. 22,688
Claims priority, application Great Britain, Sept. 5, 1966, 39,583/66
Int. Cl. C07c *69/72*
U.S. Cl. 260—483 1 Claim
1. The acetoacetate of 2-hydroxymethyl-5-norbornene.

3,670,012
PROCESS FOR PRODUCING ACRYLIC ESTER
Shichiro Shoda; Nobuo Ito, and Toshiro Mild, all of Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan
Filed May 27, 1969, Ser. No. 828,115
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 AC 8 Claims
A process for producing acrylic ester, which comprises reacting with each other in liquid phase acetylene, carbon monoxide, nickel carbonyl, an acid and an alcohol, characterized in that the concentration of nickel carbonyl in the reaction liquid is 10 to 40 percent by weight and that the reaction is 10° to 30° C.

In accordance with the present process, it has been found that the amount of propionic ester produced by side reaction becomes conspicuously small.

3,670,013
SYNTHESIS OF PARTIAL ESTERS OF CERTAIN POLY(NEOPENTYL POLYOLS) AND ALIPHATIC MONOCARBOXYLIC ACIDS
Raymond T. Leibfried, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Oct. 16, 1969, Ser. No. 867,087
Int. Cl. C07c *67/00*
U.S. Cl. 260—488 J 6 Claims
Disclosed is a process for partially esterifying certain neopentyl polyol material with certain aliphatic monocarboxylic acid material, and for condensing the resulting partial esters. The partial esterification and condensation are carried out substantially simultaneously in a reaction zone in a temperature range in which (1) substantially all of the water formed in the esterification and condensation reactions evaporates from the reaction mixture as it is formed, and (2) aliphatic monocarboxylic acid material evaporates to blanket the reaction mixture with aliphatic monocarboxylic acid vapor with sufficient heat to minimize condensation and return of water vapor in the reaction zone above the reaction mixture to the reaction mixture.

3,670,014
PROCESS FOR THE MANUFACTURE OF ALLYL ESTERS OF CARBOXYLIC ACIDS
Hans Fernholz, Flachbach/Taunus; Hans-Joachim Schmidt, Frankfurt am Main, and Friedrich Wunder, Florsheim am Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
Filed July 16, 1969, Ser. No. 842,329
Claims priority, application Germany, July 19, 1968, P 17 68 984.8; Nov. 2, 1968, P 18 06 761.3
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A 7 Claims
Preparation of allyl esters of carboxylic acids in the gaseous phase by reacting propylene, oxygen and carboxylic acids at elevated temperatures in the presence of a catalyst consisting of an inert carrier and a salt of a noble metal of the 8th group of the periodic system and 0.01 to 20 per cent by weight of bismuth.

3,670,015
ETHANECARBONYL-1,2-DIPHOSPHONIC ACID, WATER-SOLUBLE SALTS THEREOF AND PROCESS FOR PREPARATION
James B. Prentice, Ripley, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 23, 1968, Ser. No. 786,428
Int. Cl. C07f *9/38*; C11d *3/36*
U.S. Cl. 260—502.4 P 9 Claims
A process for preparing ethane carbonyl-1,2-diphosphonates which comprises reacting 2-haloethane-1-

hydroxy-1,1-diphosphonic acid with at least 3 equivalents of a base having a pK_b up to about 10. This process yields a salt of ethane carbonyl-1,2-diphosphonic acid which can be converted to the free acid.

3,670,016

PROCESS FOR PREPARING ACRYLIC OR METHACRYLIC ACID

Jacob Ackermann, Goria Minore; Roberto Croce, Erba, and Riccardo Reguzzoni, Busto Arsizio, all of Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed June 16, 1969, Ser. No. 833,749
Claims priority, application Italy, June 24, 1968, 18117 A/68
Int. Cl. C07c *57/04*
U.S. Cl. 260—526 N 13 Claims

Preparing acrylic or methacrylic acid by mixing a polyoxymethylene methyl or ethyl diester with a carboxylic acid corresponding to that present in ester form in the diester, the mixture is vaporized at 180° to 400°C, and the vapors passed at 180° to 450°C over a catalyst, namely an aluminum or magnesium silicate or the like or an oxide, hydroxide or carbonate of a metal of group *Ia* or *IIa*, or boron or aluminum.

3,670,017

PRODUCTION OF UNSATURATED ALIPHATIC ACIDS

William John Ball, Capel, and Edward James Gasson, Kingswood, both of England, assignors to The Distillers Company Limited, Edinburgh, Scotland

Continuation of application Ser. No. 596,086, Nov. 22, 1966, now abandoned. This application Jan. 12, 1971, Ser. No. 105,952
Claims priority, application Great Britain, Dec. 16, 1965, 53,552/65
Int. Cl. C07c *51/32*
U.S. Cl. 260—530 N 7 Claims

This invention has to do with a process for preparing (meth)acrylic acid by reacting (meth)acrolein and molecular oxygen in the vapor phase at elevated temperature in the presence of a catalyst composition consisting essentially of antimony, molybdenum, vanadium, cobalt and oxygen.

3,670,018

(ARYLOXYARYL) ARYLPHOSPHORUS COMPOUNDS

Ira B. Johns, Marblehead, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Original application May 28, 1965, Ser. No. 459,931, now Patent No. 3,576,861. Divided and this application June 19, 1970, Ser. No. 59,802
Int. Cl. C07f *9/50*
U.S. Cl. 260—545 P 4 Claims

Cyano (aryloxyaryl) arylphosphines, and cyano(aryloxyaryl) arylphosphine sulfides have been prepared.

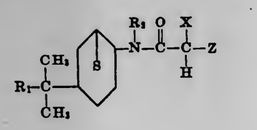
3,670,019

CERTAIN N-DIHALOACETYLCYCLOHEXYLAMINES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 20, 1967, Ser. No. 634,131
Int. Cl. C07c *103/12*
U.S. Cl. 260—561 HL 9 Claims

N-Dihaloacetylcyclohexylamines of the formula:



wherein

R_1 is hydrogen or alkyl,
R_2 is hydrogen or alkyl,
X is halogen, and
Z is halogen. Typical is N-dichloroacetyl-4-t-butylcyclohexylamine useful for repelling animals.

3,670,020

CATALYTIC CONVERSION OF NITRILES TO AMIDES

Leslie D. Moore, La Grange, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of application Ser. No. 551,197, May 19, 1966, now abandoned. This application July 10, 1969, Ser. No. 840,818
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N 8 Claims

A method of producing amides by reacting nitriles with water in the presence of certain basic catalysts. It is specifically directed to producing acrylamide from acrylonitrile.

3,670,021

CATALYZED HYDROLYSIS OF NITRILES TO AMIDES

Richard W. Goetz, and Irving L. Mador, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 14, 1967, Ser. No. 690,431
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 R 12 Claims

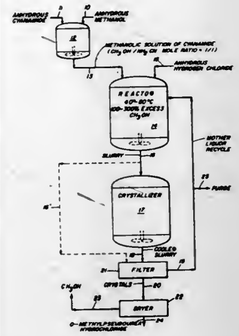
Process for the hydrolysis of organic nitriles to form the corresponding amides by a reaction catalyzed by the presence of Group VIII or IIB metal-containing compounds or complexes at a pH range of from about 6.0 to 12.5, and preferably in the presence of a catalyst coordinating compound.

3,670,022

CONTINUOUS HIGH TEMPERATURE PROCESS FOR O-METHYLPSEUDOUREA HYDROCHLORIDE

Frederic Charles Schaefer, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 26, 1969, Ser. No. 880,311
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 E 10 Claims



Anhydrous methanol, cyanamide, and hydrogen chloride are brought into contact in the presence of from about 100 percent to 300 percent excess methanol at temperatures ranging from 40°–80° C. Reaction proceeds rapidly to produce crystals of O-methylpseudourea hydrochloride which are conveniently separated and recovered from the mother liquor. The rapidity of the reaction and the formation of the product as crystals make the process particularly advantageous for preparing O-methylpseudourea hydrochloride on a continuous basis.

3,670,023

POLYFUNCTIONAL CARBONYL NITRIDE OXIDES

David S. Breslow, Madelyn Gardens, Del., assignor to Hercules Incorporated, Wilmington, Del.

Original application Oct. 4, 1966, Ser. No. 584,113, now Patent No. 3,504,017. Divided and this application May 13, 1969, Ser. No. 839,123
Int. Cl. C07c *131/08*
U.S. Cl. 260—566 A 9 Claims

This invention relates to polyfunctional carbonylnitrile N-oxides and their carbonyl hydroximoyl halide and carbonyl nitrolic acid precursors as new compositions of matter.

3,670,024

PROCESS FOR THE PRODUCTION OF 4,4'-DIAMINODIARYL ALKANES

Heinrich Krimm, Krefeld-Bockum; Artur Botta, and Hermann Schnell, both of Krefeld-Verdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of application Ser. No. 485,123, Sept. 3, 1965, now abandoned, and 747,014, July 17, 1968, now abandoned. This application June 24, 1969, Ser. No. 838,045
Int. Cl. C07c *87/50*
U.S. Cl. 260—570 D 5 Claims

Production of 4,4'-diaminodiaryl-alkanes by reacting a ketone and a salt of an aromatic amine at normal pressure, under anhydrous conditions and in a melt of the amine, said diaryl alkanes being useful for the production of plastics, the preparation of polyamides and as hardeners for epoxy resins.

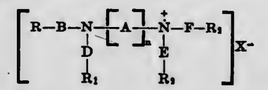
3,670,025

N,N,N',N'-TETRAKIS-(P-DI ACYCLIC HYDROCARBYL-AMINO-PHENYL)-P-ARYLENEDIAMINE

Peter Vincent Susi, Middlesex, and Norma Ann Weston, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Original application Jan. 5, 1967, Ser. No. 607,390, now Patent No. 3,484,467, dated Dec. 16, 1969, which is a continuation-in-part of application Ser. No. 333,728, Dec. 26, 1963, now abandoned, which is a continuation-in-part of application Ser. No. 281,056, May 16, 1963, now abandoned. Divided and this application Dec. 6, 1968, Ser. No. 781,973
Int. Cl. C07c *87/50*, *87/64*
U.S. Cl. 260—576 5 Claims

Diaryl-(N,N-diarylaminoaryl)aminium salts represented by the formula:



wherein A, B, D, E and F represent bivalent benzene or bivalent naphthalene radicals; n is 1 or 2; R, R_1, R_2 and R_3 represent hydrogen, alkyl, alkoxy, alkenyl, aralkyl, aryl, alkaryl, acyl or



radicals, said R_4 and R_5 in turn representing hydrogen, alkyl, alkenyl, aralkyl, aryl, alkaryl or acyl radicals; said A, B, D, E and F and R through R_5 which are other than hydrogen being either unsubstituted or substituted with inert groups such as lower alkyl, lower alkoxy, hydroxy, cyano, carboxy, sulfo, halogen and the like; and X^- represents an anion; are useful as infrared absorbers. Illustrative species of the aminium salts are (1) bis(p-diethylaminophenyl)[N,N-bis(p-diethylaminophenyl)-p-aminophenyl]aminium hexafluoroarsenate, (2) bis(p-ethylaminophenyl)[N,N-bis(p-ethylaminophenyl)-p-amino-phenyl]aminium hexafluoroarsenate, (3) bis(p-diethylaminophenyl)[N,N-bis(p-diethylaminophenyl)-4'-aminobiphenylyl]aminium hexafluoroarsenate and (4) bis(4-[bis(2-hydroxyethyl)amino]phenyl)-[N,N-bis(4-[bis(2-hydroxyethyl)amino]phenyl)-4-aminophenyl]aminium hexafluoroantimonate. The salts are made by reacting the appropriate N,N,N',N'-tetrakis(p-dialkylaminophenyl)-p-phenylenediamine with an appropriate silver salt. For example, salt (1) above is made by reacting N,N,N',N'-tetrakis(p-diethylaminophenyl)-p-phenylenediamine with silver hexafluoroarsenate in a solvent, such as dimethylformamide or acetone, and cooling the reaction mixture to precipitate the product salt. The intermediate N,N,N',N'-tetrakis(p-dialkylaminophenyl)-p-phenylenediamine compounds are formed, for example, by reacting p-nitrohalobenzene with p-phenylenediamine to form N,N,N',N'-tetrakis(p-nitrophenyl)-p-phenylenediamine, followed by reduction of the nitro groups to amino groups by hydrogenation in the presence of a catalyst, such as palladium on charcoal, and alkylation of the amino groups with an alkylating agent, such as an alkyl halide. The aminium salts, which absorb broadly in the near-infrared region, may be incorporated into various materials to increase the infrared absorption thereof. A preferred use is the incorporation of the salts into plastics from which optical lenses for sunglasses, welders' goggles and the like are made, such lenses affording protection to the eye against infrared radiation.

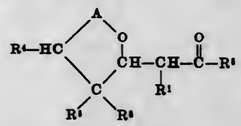
3,670,026

UNSATURATED HYDROXY KETONES

Hans Dietmar Lamparsky, Dubendorf, and Roman Marbet, Rieben, both of Switzerland, assignors to Givaudan Corporation, Delawanna, N.J.

Original application Dec. 7, 1965, Ser. No. 512,216, now Patent No. 3,470,209. Divided and this application Sept. 26, 1968, Ser. No. 794,811
Claims priority, application Switzerland, Dec. 11, 1964, 15996/64
Int. Cl. C07c *49/82*, *49/24*
U.S. Cl. 260—592 11 Claims

Processes and intemediates for novel ketones useful in perfumery on account of their desirable olfactory properties which ketones have the formula:



3,670,027

DETERGENT COMPOSITIONS

Hill M. Priestley, North Bergen, and James H. Wilson, Demarest, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Original application Aug. 25, 1969, Ser. No. 869,985, which is a continuation of application Ser. No. 647,333, June 20, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 365,487, May 6, 1964, now abandoned, which is a continuation-in-part of application Ser. No 725,505, Apr. 1, 1958, now abandoned, and 60,546, Oct. 5, 1960, now abandoned. Divided and this application Aug. 19, 1970, Ser. No. 65,359
Int. Cl. C07c *49/76*
U.S. Cl. 260—593 R 1 Claim

Novel sulfoxides having the general formula



wherein X is O when R is a monovalent radical selected from the group consisting of glyceryl, acetonyl, 2-chloroethyl, 2-iodoethyl, 2-mercaptomethyl ethyl, 2-methoxyethyl, 2-ethoxy-ethyl, and 2-allyloxyethyl, and X is an integer from 1 to 2 when R is methyl. These sulfoxides are useful as suds-stabilizing additives.

As intermediates for the preparation of sulfoxides that are useful as suds-stabilizing additives, there are also disclosed the compound dodecyloxyethoxyethyl chloride and sulfides having the general formula

$$C_{12}H_{25}(OCH_2CH_2)_x-S-R$$

wherein X is O when R is the monovalent acetonyl radical, and X is an integer from 1 to 2 when R is the methyl radical.

3,670,028

PRODUCTION OF 2-METHYL-2-HEPTEN-6-ONE

Herbert Mueller, Frankenthal/Upper Palatinate; Harald Koehl, and Horst Pommer, both of Ludwigshafen/Rhine, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Sept. 20, 1968, Ser. No. 761,328
Int. Cl. C07c 49/20
U.S. Cl. 260—593 **9 Claims**

The production of 2-methyl-1-hepten-6-ones (important for organic syntheses of perfumes and carotenoids) by isomerization of 2-methyl-1-hepten-6-one by means of finelly divided palladium or compounds of divalent palladium as isomerization catalysts.

3,670,029

PREPARATION OF UNSATURATED ETHERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

Filed Mar. 19, 1969, Ser. No. 808,672
Int. Cl. C07c 41/06, 41/10
U.S. Cl. 260—612 D **13 Claims**

Unsaturated ethers are prepared through the reaction of C_4 to C_6 aliphatic conjugated diolefins with a monohydroxy alcohol in the presence of a catalyst system based upon zero valent nickel. The preferred catalyst system is made up of a zero valent nickel material, a phosphine or isonitrile activator and further, if desired, an inorganic or organic base cocatalyst. The reaction is conducted at moderate temperature and pressure conditions. The unsaturated ethers can be catalytically hydrogenated to useful ether solvent media.

3,670,030

ALKYLATION OF PHENOLIC COMPOUND

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 20, 1970, Ser. No. 13,196
Int. Cl. C07c 37/14
U.S. Cl. 260—613 D **9 Claims**

Water in a controlled concentration is added in the alkylation of a phenolic compound with an olefin in contact with alumina catalyst. This serves to prolong the activity of the catalyst to effect the alkylation reaction and particularly ortho-alkylation.

3,670,031

BENZOHYDROQUINONES

Urs Gloor, Therwil; Rudolf Ruegg, Bottmingen, and Ulrich Schwieter, Reinach, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Original application Feb. 14, 1963, Ser. No. 258,609, now Patent No. 3,517,070, dated June 23, 1970, which is a division of application Ser. No. 831,027, Aug. 3, 1959, now Patent No. 3,118,914, dated Jan. 21, 1964. Divided and this application Mar. 19, 1970, Ser. No. 21,176
Claims priority, application Switzerland, Aug. 7, 1958, 62670/58; Aug. 28, 1958, 63369/58; Nov. 4, 1958, 65910/58
Int. Cl. C07c 43/22
U.S. Cl. 260—613 D **1 Claim**

This invention relates to 2,3-dimethoxy-5-methyl-6-geranyl-geranyl-1,4-benzohydroquinones which is an intermediate in the preparation of the corresponding chromanols. This benzohydroquinone and its corresponding chromanols are useful as antioxidants for foodstuffs, feedstuffs, vitamin preparations and the like.

3,670,032

PREPARATION OF UNSATURATED ALCOHOLS AND ETHERS

Michael G. Romanelli, New York, N.Y., assignor to Esso Research and Engineering Company

Filed Mar. 19, 1969, Ser. No. 808,673
Int. Cl. C07c 41/06, 41/10
U.S. Cl. 260—614 AA **8 Claims**

Unsaturated alcohols and ethers are prepared through the reaction of C_4 to C_6 aliphatic conjugated diolefins with water, a lower alkanol or mixtures thereof in the presence of a zero valent palladium based catalyst system. The preferred catalyst is tetrakis(triphenyl-phosphine)palladium alone or in combination with a basic material such as a quaternary ammonium hydroxide. Where one of the coreactants is water, the reaction is conducted in the presence of a solvent. The unsaturated alcohol and ether products can be catalytically hydrogenated to plasticizer alcohols and ether solvent media.

3,670,033

PROCESS FOR THE PREPARATION OF 2,6-DIALKYLPHENOLS

Shin-Ichi Izawa; Katsuyuki Nakamura, both of Tokyo, and Yoshiyuki Mizoguchi, Iruma-gun, all of Japan, assignors to Asahikasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1969, Ser. No. 818,776
Claims priority, application Japan, May 2, 1968, 43/83622; May 11, 1968, 43/83618
Int. Cl. C07c 37/12
U.S. Cl. 260—621 R **6 Claims**

This invention discloses a process for the preparation of 2,6-dialkylphenols which comprises reacting cyclohexanone with either formaldehyde or acetaldehyde in the vapor phase at a temperature of from 150° to 850° C. in the presence of a particular catalyst.

As a catalyst, a compound of metals of Group Ia of the Periodic Table of the Elements is employed in this invention, and a compound of metals of Group IVa and Va of the Periodic Table of the Elements may be employed, as a promotor, together with the above mentioned catalyst for the purpose of increasing the yield and selectivity of the product.

In contrast with the conventional methods, the present process can be economically and simply carried out to produce 2,6-dialkylphenol in high yield with a great industrial advantage.

3,670,034

PROCESS FOR AROMATIC SUBSTITUTION

Robert E. Robinson, Columbia, S.C., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 631,917, Apr. 19, 1967, now abandoned, Continuation-in-part of application Ser. No. 282,559, May 23, 1963, now abandoned, Continuation-in-part of application Ser. No. 282,594, May 23, 1963, now abandoned, Continuation-in-part of application Ser. No. 282,595, May 23, 1963, now abandoned. This Application Mar. 21, 1969, Ser. No. 809,379. The portion of the term of the patent subsequent to May, 11, 1988, has been disclaimed.
Int. Cl. C07c 39/24, 25/04
U.S. Cl. 260—623 H **10 Claims**

Substituted aromatic derivatives are prepared by reacting an aromatic compound with a group VIII platinum metal salt wherein the substituent introduced is derived from the anion portion of said group VIII platinum metal salt and said salt is regenerated in situ, in the presence of a source of the anion being introduced into the aromatic compound other than said salt, by oxidation with oxygen or a multivalent transition metal ion which is in its highest valence state.

3,670,035

PREPARATION OF POLYHYDRIC ALCOHOLS FROM CARBOHYDRATES

Robert J. Capik, and Leon W. Wright, both of Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Original application Mar. 7, 1968, Ser. No. 711,212, now Patent No. 3,538,019, dated Nov. 3, 1970. Divided and this application Jan. 7, 1970, Ser. No. 6,011
Int. Cl. C07c 31/26
U.S. Cl. 260—635 C **7 Claims**

Metalic nickel and finely divided nickel phosphate supported on an inert carrier wherein the total nickel is from 12 to 450° % by weight, based on total weight of catalyst, the phosphate (PO_4) content is from 0.60 to 23 percent by weight, based on the total weight of catalyst, and the ratio of total nickel to phosphorus is greater than 2.84.

3,670,036

STABILIZED METHYLENE CHLORIDE FOR HIGH TEMPERATURE APPLICATIONS

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 2, 1970, Ser. No. 8,037
Int. Cl. C07c 17/42, 17/40
U.S. Cl. 260—652.5 R **10 Claims**

Methylene chloride stabilized with 1–10 percent by weight of a nitroalkane, 0.1 to 5 percent by weight of an alkylene oxide and 0–10 percent of a dialkoxyalkane has been found to be especially good for high temperature applications even in continuous or intermittent contact with a reactive metal such as aluminum.

3,670,037

CATALYST SYSTEM

John J. Dugan, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Feb. 19, 1969, Ser. No. 800,713
Int. Cl. C07c 21/06
U.S. Cl. 260—656 R **6 Claims**

An improved catalyst system for selectively preparing monohalogenated olefins, e.g. vinyl chloride, wherein a mixture containing an olefin, hydrogen halide and source of oxygen is reacted with a catalyst system containing a palladium halide, e.g., palladium chloride; a ferric halide, e.g. ferric chloride and an alkali metal halide wherein the alkali metal is selected from the group consisting of sodium and potassium, e.g. sodium chloride. The reaction is conducted at a temperature in the range of between 350° and 650°. The halide moiety of the catalysts employed are identical and correspond to the halogenated hydrocarbon produced. Monohalogenated olefins such as vinyl chloride are important and valuable commercial products, particularly as precursors for polymeric materials.

3,670,038

CHEMICAL PROCESS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 802,267, Feb. 25, 1969, now Patent No. 3,597,487, dated Aug. 8, 1971. This application Nov. 9, 1970, Ser. No. 88,170
Int. Cl. C07j 3/02
U.S. Cl. 260—665 R **10 Claims**

Dialkylmagnesium compounds undergo a smooth, uncatalyzed chain growth reaction with ethylene or other normally gaseous monoolefins provided the reaction is conducted in a single phase liquid reaction system. Aromatic hydrocarbons or weakly basic ethers are employed as the solvents. The dialkylmagnesium reactants used are those which are completely dissolved in the solvent under the chain growth conditions being used. The process often involves less undesirable side reactions than a comparable chain growth reaction involving an organoaluminum compound.

3,670,039

FRACTIONATION OF C_{12} BICYCLIC AROMATIC HYDROCARBONS BY TETRAHALOPHTHALIC ANHYDRIDE COMPLEX FORMATION

Ronald I. Davis, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,949
Int. Cl. C07c 7/00
U.S. Cl. 260—674 N **6 Claims**

Mixtures of C_{12} bicyclic aromatic hydrocarbons containing dimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by dissolving a tetrahalophthalic anhydride in such a mixture at an elevated temperature, followed by subsequent cooling, a solid complex of certain hydrocarbons and the anhydride is formed. Separation of the solid complex from the cooled mixture and its subsequent decomposition results in a product that is substantially richer in those dimethylnaphthalenes which are preferentially complexed. Upon further processing, these dimethylnaphthalenes have utility in the production of dyes.

3,670,040

FRACTIONATION OF C_{13} BICYCLIC AROMATIC HYDROCARBONS DI OR TRIANHYDRIDE COMPLEX FORMATION

Ronald I. Davis, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed May 1, 1970, Ser. No. 33,950
Int. Cl. C07c 7/00
U.S. Cl. 260—674 N **8 Claims**

Mixtures of C_{13} bicyclic aromatic hydrocarbons containing trimethylnaphthalenes are difficult to fractionate by conventional techniques such as distillation or crystallization. However, by contacting such mixtures with the dianhydride of 1,2,4,5-benzenetetracarboxylic acid, the dianhydride of 1,2,3,4-benezenetetracarboxylic acid or the trianhydride of 1,2,3,4,5,6-benzenehexacarboxylic acid, a solid complex of certain hydrocarbons and the polyanhydride is formed. Separation of the solid complex and its subsequent decomposition results in a complexate that is substantially richer in those trimethylnaphthalenes which are preferentially complexed. These trimethylnaphthalenes can be demethylated to dimethylnaphthalenes which have utility in the production of dyes.

3,670,041
HYDROGENATION PROCESS

William G. Juhl, Seabrook, and Roland Libers, Dickinson, both of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed June 10, 1970, Ser. No. 45,216
Int. Cl. C07c 7/00; C10g 31/14
U.S. Cl. 260—674 H 13 Claims

An improved method for the selective hydrogenation of olefinic unsaturated impurities present in an aromatic hydrocarbon feed which comprises contacting the aromatic hydrocarbon feed with a suitable selective hydrogenation catalyst and hydrogen under hydrogenation conditions until the activity of the catalyst is diminished, subsequently rejuvenating the catalyst with hydrogen and a hydrocarbon liquid at elevated temperatures and thereafter contacting the regenerated catalyst with additional quantities of the aromatic hydrocarbon feed.

3,670,042
MODIFIED OXIDATIVE DEHYDROGENATION CATALYSTS

Louis J. Croce, Seabrook, Tex.; Laimonis Bajars, Princeton, and Malgonis Gabliks, Highland Park, both of N.J., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of application Ser. No. 459,878, May 28, 1965. This application Sept. 16, 1969, Ser. No. 858,543
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E 23 Claims

Oxidative dehydrogenation of organic compounds with catalyst comprising a metal ferrite with a Periodic Table Group IIIB metal or metal compound as a catalyst modifier. For example, butene is oxidatively dehydrogenated to butadiene-1,3 with a catalyst comprising manganese ferrite modified with a minor amount of cerium oxide.

3,670,043
OLEFIN CONVERSION PROCESS USING COMPLEXES OF TI, ZR AND HF WITH ORGANOALUMINUM AS OLEFIN REACTION CATALYSTS

Donald H. Kubicek, and Ernest A. Zuech, both of c/o Phillips Petroleum Co., Bartlesville, Okla.

Original application Mar. 28, 1968, Ser. No. 717,027, now abandoned, which is a continuation-in-part of application Ser. No. 635,657, May 3, 1967, now abandoned. Divided and this application Mar. 23, 1970, Ser. No. 22,096
Int. Cl. C07c 3/62
U.S. Cl. 260—683 D 12 Claims

Olefins are converted into other olefins having different numbers of carbon atoms by contact with a homogenous catalyst active for disproportionating an olefin into other olefins of both higher and lower carbon atoms comprising a coordination complex of zirconium, titanium or hafnium together with an aluminum-containing catalytic adjuvant.

3,670,044
CATALYTIC DEHYDROGENATION PROCESS

Lewis E. Drehman, and Darrell W. Walker, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed July 18, 1969, Ser. No. 843,239
Int. Cl. B01j 11/12; C07c 5/18
U.S. Cl. 260—683.3 11 Claims

Cycloalkanes, arylalkanes, and alkanes, such as n-butane, when diluted with steam are dehydrogenated in the presence of gaseous hydrogen or mixtures of gaseous hydrogen and gaseous oxygen to less saturated compounds with a catalyst composition comprising a Group VIII metal or a mixture of a Group VIII metal and a Group IVa metal deposited on a support, such as a Group II aluminate spinel.

3,670,045
ABA BLOCK POLYMERS OF POLYLACTONES AND POLYETHERS

Joseph Victor Koleske; Rene Marie-Joseph Roberts, and Frank Paul Del Giudice, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,923
Int. Cl. C08g 45/00; C08d 9/02
U.S. Cl. 260—830 R 7 Claims

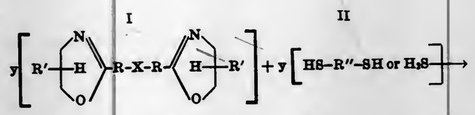
The invention relates to novel, solid, substantially water-insoluble ABA block polymers in which the A blocks comprise recurring linear lactone units and the B block comprises recurring oxyethylene units. The block polymers have utility as plasticizers for polyvinyl chloride resins, as surfactants, and as dye assists for polypropylene fiber.

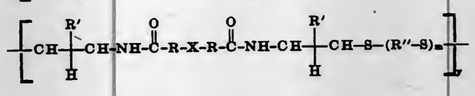
3,670,046
COPOLYMERS OF BIS-OXAZOLINES AND DITHIOL COMPOUNDS AS CURING AGENTS FOR POLYEPOXIDES

Donald A. Tomalia, and Bruce P. Thill, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 16, 1969, Ser. No. 833,759
Int. Cl. C08g 45/12, 45/00
U.S. Cl. 260—830 S 13 Claims

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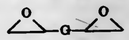




wherein R = alkylene, arylene or arylalkylene
R′ = hydrogen or lower alkyl
R″ = alkylene, arylene, arylalkylene, cycloalkylene, or substituted cycloalkylene groups
X = —O— or —S—
m = 0 or 1
y = molar quantity of monomers and degree of polymerization of polymers.
Also with excess of either I or II the polymer



or —SH end groups which react with



to yield epoxy resin copolymers, when G is the moiety bridging between oxirane groups in a polyepoxide adapted to be cured to obtain an epoxy resin: and processes for making the above. The resins are adapted to be employed as adhesives, and as thermoplastic to thermoset polymers for production of plastic articles of manufacture.

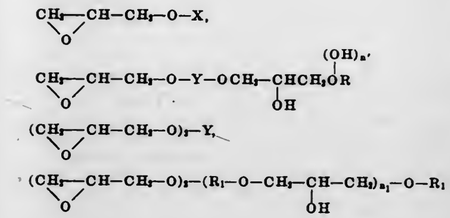
3,670,047
EPOXY RESINS ETHERIFIED WITH ETHYLENICALLY UNSATURATED ALCOHOLS AND COPOLYMERIZED WITH CARBOXY CONTAINING MONOMERS

Bernhard Broecker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

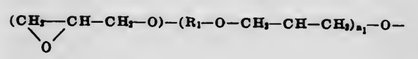
Filed Oct. 1, 1969, Ser. No. 862,939
Claims priority, application Switzerland, Oct. 8, 1968, 15278/68
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 11 Claims

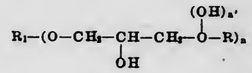
Water-dilutable vinyl modified polyether resins produced by etherifying an epoxide compound with an unsaturated monohydric alcohol containing at least one ethylenic double bond, copolymerizing the etherified product through its centers of unsaturation with an ehtylenically unsaturated carboxylic compound and neutralizing the copolymer wherein:

a. the epoxide compound is selected from the group consisting of



and





wherein X is an alkyl, acrylic or cycloalkyl group,
Y is an alkylene, arylene or cycloalkylene group,
n′ is 0 or a small integer,
n_1 is 0 or a small integer,
R_1 is an aliphatic or aromatic group, and
R is an aliphatic or aromatic group.

b. the unsaturated monohydric alcohol has three to 20 carbon atoms and the etherification is carried out by heating,

c. the carboxylic compound is an α,β-ethylenically unsaturated monocarboxylic or polycarboxylic acid, an anhydride and/or a half ester with monoalcohols having one to four carbon atoms, optionally containing vinyl or vinylidene compounds, and the copolymerization reaction is carried out with heating so that the reaction products have an acid number of at least 25, and

d. the neutralization is carried out in the presence of ammonia, strong organic nitrogen bases or mixtures thereof so that the reaction products are dispersible in or dilutable with water.

3,670,048
GRAFT COPOLYMERS OF UNSATURATED POLYETHERS ON POLYAMIDE AND POLYESTER SUBSTRATES

Eugene Edward Magat, and David Tanner, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 863,047, Dec. 30, 1959, now abandoned, Continuation-in-part of application Ser. No. 499,754, Apr. 6, 1955, now abandoned, and 503,790, Apr. 25, 1955, now abandoned, which is a division of application Ser. No. 735,288, May 14, 1958, now Patent No. 3,188,228. This application Sept. 9, 1966, Ser. No. 578,414
Int. Cl. C08g 41/04
U.S. Cl. 260—857 G 12 Claims

Dye receptive polymers may be prepared by grafting polyethers containing ethylenic unsaturation onto a fiber forming polyamide backbone. The graft copolymer is prepared by passing a polymer whose surface is coated with the vinyl monomer through a zone of irradiation.

3,670,049
BOWLING LANE FINISH CONTAINING A POLYURETHANE AND A POLYOLEFIN

Alex H. Stein, Waukegan, Ill., and William D. Coder, Jr., Akron, Ohio, assignors to The Dexter Corporation, Windsor Locks, Conn. and Brunswick Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 642,332, May 31, 1967, now abandoned. This application May 15, 1970, Ser. No. 37,876
Int. Cl. C08g 41/04
U.S. Cl. 260—859 R 7 Claims

A moisture curable polyurethane coating composition, suitable for finishing bowling lanes, contains from about 0.2 to about 10 percent by weight, based on the weight of the polyurethane prepolymer, of a finely divided slip agent such as polyethylene.

3,670,050
METHOD FOR PRODUCTION OF MODIFIED OXYMETHYLENE POLYMERS

Claire J. Castner, Nutley, N.J.; Robert V. Russo, Brooklyn, N.Y., and Raymond A. Berard, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed June 16, 1970, Ser. No. 46,820
Int. Cl. C08g 1/24, 39/10
U.S. Cl. 260—860 12 Claims

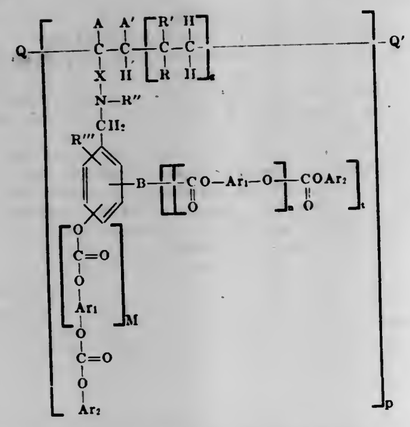
Disclosed herein is method for production of modified oxymethylene polymers by a coupling reaction of an oxymethylene polymer and a dissimilar organic polymer with an isocyanate or an isothiocyanate. The method comprises the consecutive steps of (1) forming an admixture of an organic tin catalyst and the reactive components; and then (2) adding an organic phosphite to enhance the reaction rate. When this sequence is followed a synergistic reaction rate is observed.

3,670,051
CARBONATE CONTAINING COPOLYMERISATION PRODUCTS AND PROCESS FOR THEIR PRODUCTION

Ferdinand Senge, Krefeld; Kurt Weirauch, and Ludwig Bottenbruch, both of Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

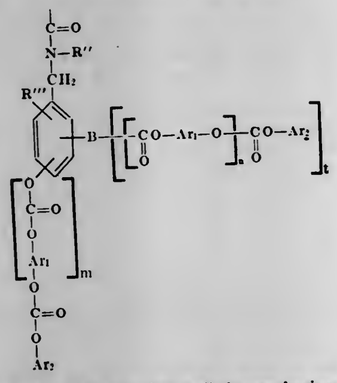
Filed Jan. 28, 1970, Ser. No. 6,648
Claims priority, application Germany, Jan. 31, 1969, P 19 04 651.6
Int. Cl. C07c 69/00; C08g 39/10
U.S. Cl. 260—873 10 Claims

New polymeric products are provided which correspond to the statistical formula



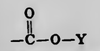
in which A is hydrogen or the methyl group,

A′ is hydrogen or the radical



R is a hydrogen; halogen; a lower alkyl group having up to six carbon atoms; a phenyl group; a vinyl group;

an ester group



of a monohydric alcohol containing the hydrocarbon radical Y of those alcohols which contain up to about 18 carbon atoms including methanol, ethanol, propanol, isopropanol, butanol, isobutanol, hexanol, octanol, lauryl alcohol, stearyl alcohol and the like;

an ester group



of a monocarboxylic acid containing the hydrocarbon radical Z of acids including acetic, propionic, butyric, benzoic and the like acids;

the amide group



the nitrile group —C ≡ N

or an alkyl ether group, preferably those containing up to octoxy eight carbon atoms including methoxy, ethoxy, allyloxy, hexoxy, ocotxy and the like;

R′ is hydrogen, halogen, methyl or nitrile,

R″ is hydrogen or a lower alkyl group having up to about six carbon atoms,

R‴ is hydrogen, a lower alkyl group having up to about six carbon atoms, halogen, an hydroxy group or a phenolic radical which is bound directly or via a methylene group, an oxygen or sulphur atom, a sulphonyl or sulphoxide group, or a silane group,

X is the >C=O or the >SO₂ group;

B is oxygen or an optionally nucleus-substituted phenoxy radical which may be linked to the benzene ring either directly or via a carbon, oxygen, sulphur or silicon atom, with the proviso that when *t* is 0, B is hydrogen,

Ar_1 is a bivalent, optionally nucleus-substituted aromatic radical which may contain a free hydroxy group,

Ar_2 is a monovalent, optionally nucleus-substituted aromatic radical,

Q and Q′ are the endgroups of the copolymerizates as they are formed by the copolymerization reaction initiated by ionic catalysts or free radicals,

g is an integer between about 9 and about 1,000,

m is an integer from about 5 to about 200,

n is an integer from 0 to about 200,

t is 0 or 1 and

p is an integer from 1 to about 15.

These new polymers are especially useful in the production of thermal and hydrolysis resistant thermoplastic resins.

3,670,052
THERMOPLASTIC VINYL RESIN COMPOSITIONS, AND METHOD OF MANUFACTURE

Kazuo Saito, Syracuse, N.Y.; Takeshi Tanaka, and Ichiro Saito, both of Osaka, Japan, assignors to Kanegafuchi Chemical Industry Company Limited, Osaka, Japan

Continuation-in-part of application Ser. No. 470,235, Aug. 7, 1965, now abandoned, and 502,545, Oct. 22, 1965, now abandoned. This application June 27, 1969, Ser. No. 837,309
Claims priority, application Japan, Jan. 25, 1965, 40/3925; 40/3927
Int. Cl. C08f *19/08, 41/12*
U.S. Cl. 260—876 R **10 Claims**

Production of synthetic vinyl resins having pronounced resistance to color deterioration, while also manifesting high impact strength and transparency, utilizing a butadiene graft polymer formed by the sequential addition to a polymer or copolymer of butadiene of from 80 to 30 parts of monomers for each 100 parts of total resin content, said monomers consisting of from 5 to 80 percent vinyl aromatic compound, from 5 to 50 percent of methyl methacrylate, and from 5 to 60 percent of acrylonitrile, the process being characterized in that at least 80 percent of the butadiene particles at the start are less than 0.1 μ in diameter and are dispersed in an aqueous emulsion which contains from 0.5 to 10.0 parts of a formaldehyde sulfoxylic salt, and catalytically effective amounts up to three parts of peroxide, for each 100 parts of resinous constituents used, said particle size being maintained at least until polymerization of the monomeric material has been effectively begun, said butadiene graft polymer being independently useful but also being capable of blending with a resin of the vinyl chloride type to produce a final resin of greatly enhanced properties.

3,670,053
PRODUCTION OF MODIFIED POLYPROPYLENES

Mutsuo Sennari, and Toshihiro Nakajima, both of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Filed Dec. 3, 1969, Ser. No. 881,911
Claims priority, application Japan, Dec. 10, 1968, 43/89931
Int. Cl. C08f *15/04*
U.S. Cl. 260—878 B **2 Claims**

Heteroblock copolymers of propylene and ethylene containing an isotactic polypropylene segment and two copolymer segments in which the quantities of the three segments are specific, and in which the ethylene (polymerized) contents in the copolymer segments are specific, which heteroblock copolymers are produced by three successive steps of polymerization with the monomer feeds in specific mole ratios of C_2/C_3, the ratio being zero (zero C_2 quantity) for the first step.

3,670,054
BLOCK COPOLYMERS HAVING REDUCED SOLVENT SENSITIVITY

Harold E. De La Mare, El Cerrito, Calif., and Alfred W. Shaw, Stanford, Conn., assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,387
Int. Cl. C08f *15/04, 27/24*
U.S. Cl. 260—880 B **4 Claims**

Block copolymers are provided which exhibit reduced sensitivity to organic solvents which comprise block copolymers of at least one elastomeric conjugated diene polymer block, block copolymerized with at least two monovinyl arene polymer blocks, all chains also containing either polyethylene or butadiene blocks, this latter block at least being hydrogenated to an extent sufficient to reduce the original double bonds by at least about 80 percent.

3,670,055
COMPOSITIONS COMPRISING A MIXTURE OF SULFUR-VULCANIZABLE ETHYLENE/PROPYLENE/DICYCLOPENTADIENE COPOLYMERS WITH SULFUR VULCANIZABLE ETHYLENE/PROPYLENE/BUTADIENE COPOLYMERS

Nazzareno Camelli; Paolo Longi; Alberto Valvassori, and Umberto Flisi, all of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 1, 1970, Ser. No. 24,865
Claims priority, application Italy, Apr. 2, 1969, 14983 A/69
Int. Cl. C08f *29/12*; C08d *9/08*
U.S. Cl. 260—889 **5 Claims**

There are disclosed new unsaturated sulfur-vulcanizable compositions comprising mixtures of at least one unsaturated, substantially amorphous, sulfur-vulcanizable copolymer of ethylene, propylene, and dicyclopentadiene with at least one unsaturated, substantially amorphous, sulfur-vulcanizable copolymer of ethylene, propylene and butadiene. The compositions are unsaturated and vulcanizable to elastomers having excellent mechanical and dynamic properties by means of sulfur-containing recipes, at vulcanization rates appreciably higher than can be obtained with the sulfur-vulcanizable copolymers of ethylene, propylene and dicyclopentadiene alone.

3,670,056
POLYVINYL ALCOHOL FIBER REINFORCED POST-CHLORINATED POLYVINYL CHLORIDE RESINS

Charles A. Heiberger, Princeton, and Henry O. Mottern, Far Hills, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 28, 1970, Ser. No. 102,205
Int. Cl. C08f *29/22, 29/24*
U.S. Cl. 260—897 C **7 Claims**

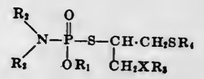
Post-chlorinated vinyl chloride resins including homopolymers of vinyl chloride and copolymers thereof with an olefin such as propylene, having high impact strength together with an adequate melt flow rate are prepared by incorporating polyvinyl alcohol fibers into the resin. The polyvinyl alcohol fibers are completely hydrolyzed, about one-eighth to one-half inch in length, about 1 to 10 denier and have a degree of polymerization in the range of 500 to 3,000.

3,670,057
S(ALKLLTHIO ETHYL) PHOSPHOROTHIOAMIDATE

Hiroshi Tsuchiya, Ashiya-shi; Kunio Mukai, Nishinomiya-shi; Akio Kimura, Ikeda-shi; Sumimori Kawano, Minoo-shi; Keimei Fujimoto, Kobe; Toshiaki Ozaki, Toyonaka-shi; Sigeo Yamamoto, Toyonaka-shi; Yositosi Okuno, Toyonaka-shi; Katsutoshi Tanaka, Takarazuka-shi; Tadashi Ooishi, and Hisami Takeda, both of Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

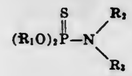
Filed Nov. 10, 1969, Ser. No. 875,565
Int. Cl. C07f *9/24*; A01n *9/36*
U.S. Cl. 260—948 **9 Claims**

A phosphorothioamidate having the formula,

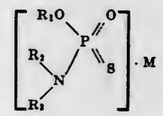


wherein R_1 is an alkyl having up to four carbon atoms, R_2 and R_3 are individually a hydrogen atom, an alkyl having up to 10 carbon atoms, a cycloalkyl having up to 6 carbon atoms, a phenyl, an aralkyl having up to eight carbon atoms or an alkenyl having up to five carbon atoms, R_4 and R_5 are each alkyl having up to five carbon atoms, and X is an oxygen or sulfur atom, which may be effectively used as an insecticidal, acaricidal and fungicidal composition.

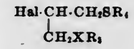
The phosphorothioamidate is prepared by (1) dealkylating a thionophosphoric acid amidate having the formula,



wherein R_1, R_2 and R_3 are as defined above, with an alkali hydrosulfide, to prepare a phosphate having the formula,



(2) condensing the thus obtained phosphate with a halogen compound having the formula,



wherein Hal represents a halogen atom, and R_4, R_5 and X are as defined above.

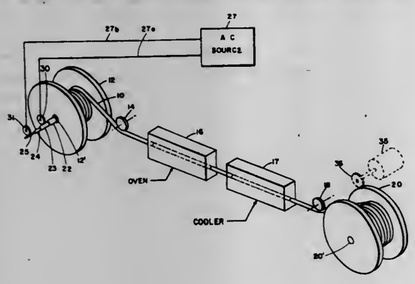
3,670,058
METHOD OF REDUCING SELF-GENERATED ELECTRICAL NOISE IN COAXIAL CABLE

Charles F. Burney, Milpitas, Calif., assignor to GTE Sylvania Incorporated

Filed Feb. 1, 1971, Ser. No. 111,292
Int. Cl. B29c *25/00*; H01b *11/06, 7/18*
U.S. Cl. 264—22 **4 Claims**

A method of reducing or minimizing internally generated electrical noise in coaxial cable consisting of the steps of

heating the cable sufficiently to heat-soften the dielectric filler, applying an alternating voltage across the inner and



outer conductors of the cable, cooling the cable while maintaining the ac bias across it, and thereafter removing the ac bias.

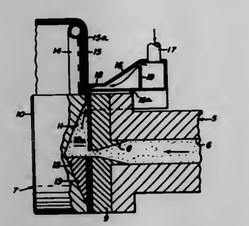
3,670,059
METHOD OF PRODUCING A SKIN-COVERED FOAMED THERMOPLASTIC

Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.

Continuation-in-part of application Ser. No. 736,871, Apr. 2, 1968, now abandoned, which is a division of application Ser. No. 506,805, Nov. 8, 1965, now Patent No. 3,461,496, dated Aug. 19, 1969. This application Dec. 24, 1969, Ser. No. 887,982

Int. Cl. B29d *7/04, 7/20, 7/24, 27/00*

U.S. Cl. 264—48 **4 Claims**



Method of producing foamed thermoplastic material having a low-density core and at least one integral, high-density, thin skin, the material being suitable for the production of three-dimensionally formed articles on a continuous basis. A narrow strip of the thermoplastic material is extruded at a high linear rate from an arcuate mouth die, immediately surface-chilled to produce the skin, and laterally expanded over a curved mandrel to avoid distortions such as wrinkling. Operating parameters are critically controlled.

3,670,060
A METHOD FOR MANUFACTURING ARTIFICIAL MARBLE

Antonino Cuffaro; Francesco Castronovo; Achille Bruno, all of Palermo, and Gianluigi Rancati, Carini, all of Italy, assignors to Medil, S.p.A., Carini, Italy

Filed Dec. 9, 1969, Ser. No. 883,620

Claims priority, application Italy, Dec. 10, 1968, 41851 A/68

Int. Cl. B28b *7/36;* **B29c** *1/04, 9/00*

U.S. Cl. 264—77 **7 Claims**

Artificial variegated marble is produced from natural stone in particulate form, i.e. in the form of powder or granules, by a method which comprises providing individual batches of color components consisting of the particulate natural stone, powdered thermosetting resin, powdered catalyst for the resin, and a pigment, mixing together the individual batched of color components in a container to form a heterogeneous mixture wherein said individual batches still have retained their separate identities, transferring the heterogeneous mixture to another container to effect at least one re-stratification, and subjecting the mixture to a moulding treatment under increasing temperature and pressure until the resin hardens.

3,670,061
INTRODUCING NITROGEN GAS INTO THE MELT TO IMPROVE FUSED CAST REFRACTORIES

Juna Nakayana, and Yukio Fukatsu, both of Tokyo, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 767,507, Oct. 14, 1968, now abandoned. This application Oct. 29, 1970, Ser. No. 85,267

Claims priority, application Japan, Nov. 7, 1967, 42/71134

Int. Cl. C04b *35/62*

U.S. Cl. 264—82 **1 Claim**

In the production of a dense fused refractory, a dry gas is introduced into/onto a charge of refractory raw materials in a melting furnace. In particular, dry nitrogen gas is introduced through the bores of hollow electrodes used in an electric arc furnace. The resulting melt is poured into a mould where it is solidified or, alternatively, is allowed to cool in the furnace where it is solidified.

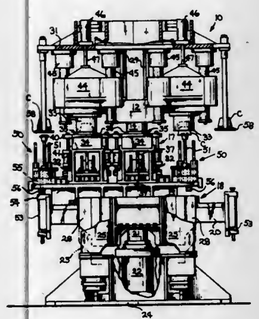
3,670,062
METHOD FOR FORMING PLASTIC ARTICLES

Casimir W. Nowicki, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application July 26, 1967, Ser. No. 656,116, now Patent No. 3,590,426. Divided and this application Mar. 23, 1970, Ser. No. 24,927

Int. Cl. B29d *23/03*

U.S. Cl. 264—97 **5 Claims**



Method therefor is provided for injection molding, at one station, a substantially flat, disc-shaped parison while simultaneously blow molding, at a second station, a cup-shaped container from a previously formed parison. The apparatus for performing such method has common clamping means for closing the injection mold and the blow molds with the clamping means arranged to provide maximum clamping force at the injection mold and only minimal forces at the blow molds.

3,670,063
PROCESS FOR THE PRODUCTION OF SHEETS HARDENABLE TO FORM MOLDED ARTICLES

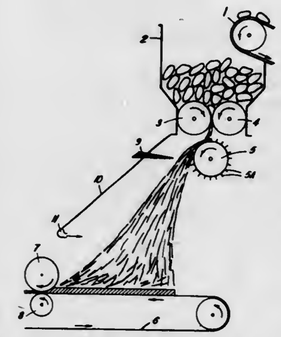
George Berthold Edward Schueler, Tideswell, England, assignor to Redland Bricks Limited, Reigate, Surrey, England

Continuation-in-part of application Ser. No. 561,549, June 29, 1966, now abandoned. This application Sept. 8, 1969, Ser. No. 856,008

Claims priority, application Great Britain, July 12, 1965, 29,471/65; Apr. 12, 1966, 15,160/66

Int. Cl. B01j *2/22*

U.S. Cl. 264—115 **4 Claims**



A mouldable sheet material is formed of a substantially homogeneous mixture of finely divided inorganic material such as mineral waste dust in a proportion of at least 50 percent by weight, a hardenable resin, such as a polyester, epoxy or acrylic resin, in a proportion of not more than 30 percent by weight, and additionally a fibrous material such as glass fibers, asbestos fibers, orsisal fibers. The mixture has a dough-like consistency and is torn to a fluffy mass which is deposited on a conveyor. The fluffy mass is compacted into a sheet in which substantially all the fibers lie in the plane of the sheet but in random directions. The fluffing disperses the fibers to the extent that they can be pressed into the plane of the sheet during the compaction step.

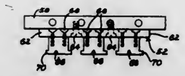
3,670,064
FORMING PRECISE REINFORCED RECESSES IN THERMOPLASTIC FOAMS

Clarence K. Edwards, 865 Morrison Street, and Lawrence D. Edwards, 2816 Rosemont Avenue, both of Medford, Oreg.

Filed Nov. 4, 1969, Ser. No. 873,953

Int. Cl. B29d *27/00*

U.S. Cl. 264—130 **4 Claims**



The invention relates to a novel method for making improved packaging components of thermoplastic foam. Recesses of predetermined size, shape and depth are pressed into sheets of the foam material by the combined effect of a die or hob structure maintained at a temperature which will not melt, but will substantially soften the material, such structure being forced into the material by a pressure which would be inadequate to effect penetration if the material were not progressively softened as the die advances. Each work piece is pre-coated on the face to be recessed with an appropriate release agent. The lateral walls of the recess are protected against heat shrinkage by limitation of temperature and by speed of penetration together with limitation of lateral die area. The material displaced by recess formation is all usefully employed through fusion and condensation to reinforce the wills of the components in the very areas where they are thinned and where the merchandise is to be nested in them.

3,670,065
PROCESS FOR PRODUCING DOSAGE UNITS OF A TYPE RESEMBLING TABLETS

Karl Gunnar Eriksson, Idunavägen 5, Lidingo, and Arnold Mangen, Rosenborgsgatan 27, Karlstad, both of Sweden

Continuation-in-part of application Ser. No. 677,653, Oct. 20, 1967, now abandoned. This application June 13, 1969, Ser. No. 833,184

Claims priority, application Sweden, June 19, 1968, 8362

Int. Cl. A61k *27/12*

U.S. Cl. 264—131 **7 Claims**

Granules composed of a medicine and at least one substance delaying dissolution of the medicine in the gastrointestinal tract are incorporated in a melt of a carrier substance, said dissolution-delaying substance(s) having a higher melting temperature than the carrier substance and remaining all the time unmolten in the melt, said melt with its unmolten granules then being formed into dosage units by mere casting in casting moulds. Medicine particles without dissolution-delaying substance may additionally be incorporated in the melt and/or in a surface layer on the dosage units.

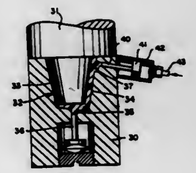
3,670,066
METHOD OF COMPRESSION MOLDING A THERMOPLASTIC ARTICLE WITH WALLS OF VARIABLE THICKNESS

Emery I. Valyi, 52 Sycamore Avenue, Riverdale, N.Y.

Original application June 12, 1969, Ser. No. 834,233, now abandoned, which is a continuation of application Ser. No. 618,862, Feb. 27, 1967, now abandoned. Divided and this application Nov. 10, 1969, Ser. No. 875,303

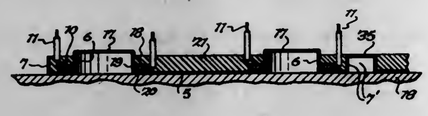
Int. Cl. B29c *3/00, 17/14;* **B29f** *1/00*

U.S. Cl. 264—148 **1 Claim**



A method for molding articles having variable thickness walls from thermoplastic material. An amount of plastic slightly in excess of that required to fill a mold cavity is severed from an extruded quantity and introduced into the cavity. The mold is closed to build up pressure and force the material throughout the cavity. The excess material causes a pressure build up above the necessary molding pressure and causes a plunger in an overflow well to retract under the excess pressure so as to cause the overflow well to receive the excess material. Pressure can be maintained on material in the well during cooling to maintain the cavity filled when shrinkage occurs. Where adjacent thick and thin wall portions are formed in the article, the thick wall forming portion of the cavity may contain another well which receives excess material at a pressure slightly lower than the overflow well and this excess material may then be forced back into the cavity under pressure to insure filling thereof.

3,670,067
METHOD OF MAKING ILLUMINATED PANEL
Richard W. Coolbaugh, East Aurora, and Floyd W. Engels, Colden, both of N.Y., assignors to A-T-O Inc., Cleveland, Ohio
Original application Jan. 2, 1968, Ser. No. 694,967, now Patent No. 3,545,110. Divided and this application Feb. 13, 1970, Ser. No. 11,124
Int. Cl. B28b 1/48; B29c 6/00
U.S. Cl. 264—154 4 Claims



An electroluminescent panel having a shell formed of light-transmitting material and having an indicia bearing face to be illuminated. An electroluminescent member is positioned adjacent the ace within the shell which is filled with potting compound to a level encapsulating the member. The shell can be formed with an open-ended wall extending inwardly from the indicia bearing face to provide a socket for a control member.

3,670,068
PROCESS OF SPINNING A NOVEL MODACRYLIC FIBER
Wilford Donald Jones, Jenkintown, Pa.; James Peter Baldino, Westmont, N.J., and Sidney Melamed, Elkins Park, Pa., assignors to Rohm & Haas Company, Philadelphia, Pa.
Original application Oct. 17, 1966, Ser. No. 586,929, now Patent No. 3,516,903. Divided and this application Mar. 4, 1969, Ser. No. 833,214
Int. Cl. D01f 7/00, 3/10
U.S. Cl. 264—182 10 Claims

A method of making a modacrylic fiber, said fiber having a skin wherein the chlorine and nitrogen content are each at least 20 percent less than in the core of the fiber. The skin effect occurs when certain critical copolymer compositions of acrylonitrile and vinylidene chloride are used and when particular spinning bath conditions are employed, namely, spinning into 65–75 percent nitric acid at from about 75°–100Φυ C.

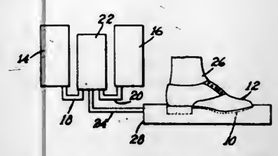
3,670,069
PROCESS FOR FORMING HYDROXYETHYL CELLULOSE FIBERS HAVING HIGH WATER ABSORPTION AND HIGH WATER RETENTION PROPERTIES
Reid L. Mitchell, Morristown; Thomas E. Muller, Springfield; Hugh D. Stevens, Long Valley, and Robert S. Tabke, Parsippany, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 858,573
Int. Cl. D01f 3/00
U.S. Cl. 264—187 1 Claim

Fibrous cellulosic products are prepared by extruding cellulose solutions through fiber forming devices. These fiber forming devices comprise porous extrusion media containing a controlled number and distribution of discrete flow paths. These flow paths constitute at least about 10 percent of the total extrusion surface area. The cellulosic fibers prepared by these processes exhibit unique and highly desirable physical



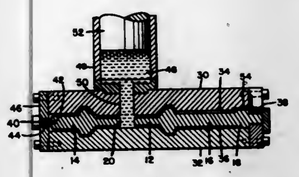
and structural characteristics for use in forming new and improved nonwoven fabrics and disposables.

3,670,070
PROCESSES FOR MOLDING POLYURETHANE FOAM ARTICLES
Daniel Appleton, Topsfield, Mass., assignor to USM Corporation, Boston, Mass.
Filed Dec. 17, 1968, Ser. No. 784,361
Int. Cl. A43d 65/00; B29h 7/08
U.S. Cl. 264—244 6 Claims



Process for molding polyurethane foam articles, particularly for molding polyurethane foam outsoles onto shoe uppers in which relative speeds of development of foam and viscosity in the mixture are controlled through a coaction of mixed catalysts in the reactive mixture.

3,670,071
METHOD OF MANUFACTURE OF A COATED VALVING MEMBER
David L. Walchle, and Peter J. Schmidt, both of Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed July 16, 1970, Ser. No. 55,370
Int. Cl. B29b 3/00; F16k 1/22
U.S. Cl. 264—273 13 Claims



All areas of the butterfly-type valving member which may be exposed to attack by corrosive substances, are coated with a protective material of the class of tetrafluoroethylene or equivalent substance, by a high-pressure and high-temperature molding process; the process involving withdrawing support from a journal end of the valve member during a critical phase of the molding procedure to ensure adequate coating of said journal end including the customary turning center hole thereof.

3,670,072
HEMATOLOGICAL STAIN SYSTEM
Thomas Mauthner, Livonia, Mich., assignor to Cambridge Chemical Products, Inc., Detroit, Mich.
Continuation-in-part of application Ser. No. 517,139, Dec. 28, 1965, now abandoned. This application Jan. 15, 1969, Ser. No. 791,500
Int. Cl. G01n 1/00, 1/30, 33/16
U.S. Cl. 424—3 3 Claims

A hematological stain system comprising a solution of Wright's stain, a modified buffer and a thiocarbamyl fixative glycerine and a lower alkanol.

3,670,073
HYDROPHILIC POLYMER CONTAINING AEROSOL
Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.
Division of Ser. No. 743,626, July 10, 1968, Pat. No. 3,574,822, which is a continuation-in-part of Ser. No. 654,044, July 5, 1967, continuation-in-part of Ser. No. 650,259, June 30, 1967, abandoned, continuation-in-part of Ser. No. 567,856, July 26, 1966, Pat. No. 3,520,949.
This application Sept. 9, 1970, Ser. No. 70,890
Int. Cl. A61k 7/00, 7/02, 7/10
U.S. Cl. 424—47 9 Claims

An aerosol composition is prepared containing a hydroxyl containing hydrophilic acrylate or methacrylate.

3,670,074
SUNSCREEN FORMULATION CONTAINING TRIETHANOLAMINE NEUTRALIZED 2-HYDROXY-4-METHOXY-BENZOPHENONE-5-SULFONIC ACID
Abraham J. Doner, deceased, late of North Miami Beach, Fla. (by Cyril Doner, executor), assignor to Miles Laboratories, Inc., Elkhart, Ind.
Continuation-in-part of application Ser. No. 698,679, Dec. 18, 1967, now abandoned. This application Jan. 22, 1971, Ser. No. 108,961
Int. Cl. A61l 23/00
U.S. Cl. 424—60 7 Claims

An active sunscreen ingredient comprised of 2-hydroxy-4-methoxy-benzophenone-5-sulfonic acid, neutralized with triethanolamine, and formulated with various compatible vehicles to produce effective sunscreens for human use.

3,670,075
PROCESS OF PREPARING A PROTEASE INHIBITOR
Viktor Mansfeld, and Zdenek Padr, both of Prague, Czechoslovakia, assignors to Spofa, United Pharmaceutical Works, Prague, Czechoslovakia
Filed May 13, 1970, Ser. No. 37,007
Claims priority, application Czechoslovakia, May 19, 1969, 3534/69
Int. Cl. A61k 17/00
U.S. Cl. 424—110 3 Claims

Process for preparing a protease inhibitor from animal pancreas, for instance hog and cattle pancreas, following extraction of insulin therefrom with a dilute mineral acid, such as phosphoric acid, comprising the steps of:

1. extracting moist cut-up pancreas material with 60 to 70 percent aqueous ethanol having a pH of 10–13,

2. removing the ethanol from the extract by evaporation under decreased pressure and at a temperature not exceeding 40° C.,

3. cooling the remaining concentrated extract whereby lipoids present therein are separated out and removing the separated lipoids,

4. introducing a water-soluble inorganic salt and preferably ammonium or magnesium sulfate, whereby a precipitate comprising an protein complex is separated out and recovering the precipitate,

5. forming a suspension of the precipitate from step 4 in water having a pH of 5.5 to 7.5 and heating the suspension to a temperature of 50° to 80° C, introducing trichloracetic or sulfosalicylic acid into the suspension in a concentration of 2 to 3 weight percent, cooling the resulting mixture to a temperature of 15° to 20° C., whereby the protein is separated out as a precipitate and separating off said albumin precipitate,

6. adjusting the pH of the filtrate to a pH of 7.0 to 7.5, saturating the filtrate with sodium chloride in an amount of 25 to 30 g/100 ml filtrate and acidifying the saturated filtrate with hydrochloric acid to provide a pH of 1.0 to 3.0 whereby the inhibitor is separated out as a precipitate,

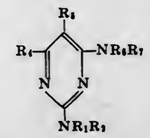
7. subjecting the precipitate from step 6 to successive washings with a buffered sodium chloride solution whose pH is successively increased from 1.7 to 9.0 and separately recovering the fractions from each washing, combining the fractions recovered in the pH range of 3.0 to 6.0, subjecting the combined fractions to deionization and recovering the pure inhibitor.

3,670,076
DENTAL PROPHYLAXIS COMPOSITION COMPRISING ALUMINA OF PARTICULAR PARTICLE SIZE
Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.
Filed Mar. 31, 1970, Ser. No. 24,354
Int. Cl. A61k 7/16
U.S. Cl. 424—157 6 Claims

A mixture of relatively large and relatively small alpha alumina particles (comprising between about 2.5 percent and 10 percent small particle size alumina and balance large particle size alumina) provides a superior abrasive component for a dental prophylaxis paste adapted for infrequent application to the teeth.

3,670,077
FUNGICIDAL AND INSECTICIDAL METHODS AND COMPOSITIONS EMPLOYING PYRIMIDINE DERIVATIVES
Peter Frank Hilary Freeman; Margaret Claire Shephard, and Brian Kenneth Snell, all of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England
Filed June 3, 1968, Ser. No. 733,770
Claims priority, application Great Britain, June 14, 1967, 27,482/67
Int. Cl. A01n 9/36, 9/22
U.S. Cl. 424—200 6 Claims

Fungicidal and insecticidal pyrimidine derivatives of the formula

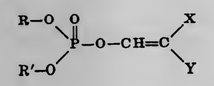


and salts thereof. The R_1 – R_7 substituents may all be hydrogen or various organic radicals.

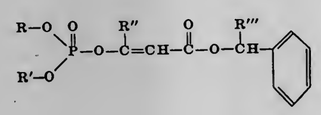
3,670,078
CONTROL OF HOOKWORM LARVAE EMPLOYING A MIXTURE OF CERTAIN PHOSPHATE ESTERS
William R. Coleman, and Thomas E. Dudley, both of Miami, Fla., assignors to Pet Chemicals, Inc., Miami Springs, Fla.
Filed Feb. 24, 1970, Ser. No. 13,798
Int. Cl. A01n 9/36
U.S. Cl. 424—212 5 Claims

Effective control of hookworm larvae in kennels, dog runs, yards, and like areas habited by hookworm susceptible

domestic animals is provided by contacting the area with a composition comprising an aqueous medium containing pesticidal amounts of a first compound having the formula:



and a second compound having the formula:



where in the formulae, R and R′ are lower alkyl having one to five carbon atoms, R″ and R‴ are hydrogen or lower alkyl having one to five carbon atoms, X is halogen, preferably chlorine, and Y is hydrogen or halogen, preferably chlorine.

3,670,079

ANABOLIC AGENTS

Dolores J. Patanelli, Rahway, and Glen E. Arth, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,636
Int. Cl. A61k 27/00
U.S. Cl. 424—241 3 Claims

The present invention relates to the use of certain steroid compounds as anabolic agents.

3,670,080

PROCESS FOR STABILIZATION OF A COMPOSITION OF 2α,3α-EPITHIO-ANDROSTANES AND COMPOSITION OBTAINED THEREBY

Masaharu Hirata, Suita, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Mar. 2, 1970, Ser. No. 15,826
Claims priority, application Japan, Mar. 6, 1969, 44/17118
Int. Cl. C07c 173/00
U.S. Cl. 424—241 46 Claims

A very stable composition of 2α,3α-epithio-androstanes comprising 2α,3α-epithio-androstane, basic substance and/or surface active agent, and a process for preparation thereof. The composition is useful as a medicament, because it can be stored for extended times and shows strong anabolic, myogenic, androgenic, uterotropic, antiestrogenic, antiuterotropic and antifertility activities.

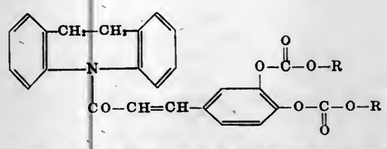
3,670,081

ANTI-DEPRESSANT PHARMACEUTICAL COMPOSITION CONTAINING N-[3,4DI(ALKOXYCARBONYL)CINNAMYL] IMINODIBENZYL AS THE ACTIVE INGREDIENT

Jean Cahn, Paris, France, and Mar-Pho, Societe d'Etude et d'Exploitation de Marques, Paris, France

Original application Mar. 21, 1967, Ser. No. 624,729, now Patent No. 3,523,944. Divided and this application Oct. 13, 1969, Ser. No. 870,738
Claims priority, application Great Britain, Mar. 25, 1966, 13,362/66
Int. Cl. A61k 27/00
U.S. Cl. 424—244 5 Claims

Anti-depressant pharmaceutical composition containing N-[3,4-di(alkoxycarbonyl)cinnamyl]iminodibenzyl of the formula:



wherein R is a lower alkyl group, or a non-toxic acid addition salt thereof as the active ingredient.

3,670,082

METHOD OF CONTROLLING RICE BLAST AND SHEATH BLIGHT DISEASE WITH 3,4-DICHLORO-6-HYDROXYIMINOMETHYLPYRIDAZINE-1-OXIDE

Yoshihachi Watanabe, Koga-gun, and Masaru Ogata, Kobe, both of Japan, assignors to Shionogi & Co., Ltd., Asaka, Japan

Continuation-in-part of application Ser. No. 743,950, July 11, 1968, now abandoned. This application Oct. 21, 1970, Ser. No. 82,812
Claims priority, application Japan, July 11, 1967, 42/44825
Int. Cl. A01n 9/22
U.S. Cl. 424—250 2 Claims

A method of preventing and controlling a rice blast disease and sheath blight disease which comprises applying thereto as an active ingredient 3,4-dichloro-6-hydroxyiminomethylpyridazine 1-oxide.

3,670,083

GERMINE-DIACETATE IN THE TREATMENT OF MYASTHENIA GRAVIS

Edward M. Cohen, Norristown, Pa.; Edward J. J. Grabowski, Westfield, N.J., and Rezso Aczel, Chalfont, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 6, 1970, Ser. No. 9,439
Int. Cl. A61k 27/00
U.S. Cl. 424—256 2 Claims

Germine-3,15-diacetate is prepared by transesterification of germine-3,16-diacetate. This novel compound has been found to be useful in the treatment of myasthenia.

3,670,084

METHOD OF TREATING PSORIASIS WITH CYCLOHEXIMIDE

Leopoldo F. Montes, 4319 Kennesan Drive, Birmingham, Ala.

Filed June 20, 1969, Ser. No. 835,230
Int. Cl. A61k 21/00, 27/00
U.S. Cl. 424—268 6 Claims

Cycloheximide composition for use in treating psoriasis. Cycloheximide dispersed in a pharmaceutically acceptable topical carrier and topically applied to psoriasis affected area of skin.

3,670,085

INJECTABLE THERAPEUTIC TETRAMISOLE FORMULATIONS

David Ernest Pryor, Balwyn, Victoria, and Bruce Adam Forsyth, Croydon, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed July 13, 1970, Ser. No. 54,641
Claims priority, application Australia, July 12, 1969, 58312/69
Int. Cl. A61k 27/00
U.S. Cl. 424—270 2 Claims

Aqueous injectable solutions of tetramisole comprising tetramisole acetate or hydrochloride equivalent to at least 6 percent w/v of L-tetramisole base and from 0.1 to 0.5 inclusive mole per liter of solution of a sodium salt of citric, tartaric or phosphoric acid, the pH of the solution being adjusted to the range of from 2 to 4 by addition of tartaric, citric or phosphoric acid.

3,670,086

INJECTABLE TETRAMISOLE COMPOSITIONS

David Ernest Pryor, Balwyn, Victoria, and Bruce Adam Forsyth, Croydon, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed July 13, 1970, Ser. No. 54,642
Claims priority, application Australia, July 21, 1969, 58311/69
Int. Cl. A61k 27/00
U.S. Cl. 424—270 8 Claims

Aqueous injectable solutions of tetramisole which comprise tetramisole citrate, tartrate, or phosphate equivalent to at least 6 percent w/v of L-tetramisole base, the pH of the solution being adjusted to the range of from 2 to 4 by addition of tartaric, citric or phosphoric acid.

3,670,087

METHOD OF LOWERING INTRAOCULAR PRESSURE

Olfeo John Lorenzetti, Forth Worth, Tex., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 16, 1970, Ser. No. 81,430
Int. Cl. A61k 27/00
U.S. Cl. 424—273 7 Claims

Oxymetazoline and xylometazoline preferably in the form of an aqueous solution of their hydrochlorides are effective in lowering intraocular pressure when applied topically to the eye and are therefore useful in the treatment of glaucoma.

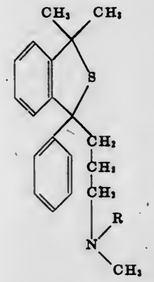
3,670,088

METHOD OF TREATING HYPERCHLORHYDRIA AND/OR ASSOCIATED CONDITIONS

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison, Limited, St. Laurent, Quebec, Canada

Continuation-in-part of application Ser. No. 826,657, May 21, 1969. This application Oct. 14, 1969, Ser. No. 866,396
Int. Cl. A61k 27/00
U.S. Cl. 424—275 5 Claims

A method for preventing the secretion of excessive amounts of hydrochloric acid in the stomach of humans suffering from hyperchlorhydria and/or associated conditions, by administering an effective amount of a compound of the formula

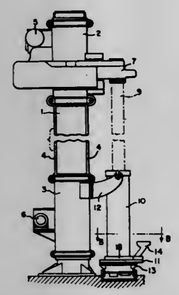


wherein R is hydrogen or methyl.

3,670,089
APPARATUS FOR ELECTROSLAG REMELTING OF METALS WITH MOLTEN SLAG INTRODUCTION

Boris Evgenievich Paton; Jury Vadimovich Latash; Boris Izrailevich Medovar; July Georgievich Emelianenko, all of Kiev, and Mikhail Markovich Kljuev, Elektrostal, all of U.S.S.R., assignors to Institut Elektrosvarki Im. E. O. Patona, Kiev, U.S.S.R.

Continuation-in-part of application Ser. No. 592,054, Nov. 4, 1966, now abandoned, and 61,014, July 9, 1970, now abandoned, which is a division of application Ser. No. 592,054, , Continuation of application Ser. No. 10,419, Feb. 11, 1970, now abandoned, and 10,485, Feb. 11, 1970, now abandoned, which is a continuation-in-part of application Ser. No. 592,054,. This application Sept. 1, 1970, Ser. No. 68,637
Claims priority, application Australia, Oct. 25, 1966, A 9973/66
Int. Cl. H05b 3/60
U.S. Cl. 13—9 54 Claims



An electroslag plant or apparatus in which molten slag can be introduced through the lower portion of a crucible device, either through its sidewall or bottom plate, into the bottom of the remelting zone, which occurs in an electroslag remelting process, in an amount sufficient to achieve a predetermined depth in the remelting zone. The plant can can use single or plural consumable electrodes and in some embodiments has a bottom plate weld lug to enhance efficient current flow. The achievement of the predetermined depth is signalled when current flows as a result of the bottom introduced slag contacting and closing a circuit through an energized electrode pre-positioned in the remelting zone.

3,670,090
ARRANGEMENT IN EXPLOSION JOINING OF HIGH TENSION LINES AND THE LIKE

Tor Osteng, 2831 Raufoss, Norway

Filed Dec. 2, 1970, Ser. No. 94,344
Claims priority, application Norway, Dec. 6, 1969, 4828/69
Int. Cl. H02g 15/08
U.S. Cl. 174—90 3 Claims

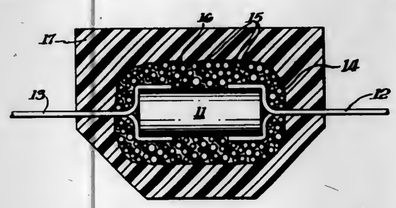


The present invention relates to detonation joining of high tension lines and the like in which the line ends and their steel cores respectively are joined together by a single shot or detonation. According to the invention each of the line ends to be joined is provided with an exposed core end on which is firmly wedged a separate steel sleeve having an outer diameter approximately equal to that of the line, a main connecting tube of aluminium enclosing the adjacent steel sleeves and parts of the line ends is provided with an exterior layer of explosive charge which during detonation compresses said main connecting tube around the line ends and simultaneously around the steel sleeves which thereby are compressed around the core ends so that an effective mutual anchorage of the components of the joint is obtained.

3,670,091
ENCAPSULATED ELECTRICAL COMPONENTS WITH PROTECTIVE PRE-COAT CONTAINING COLLAPSIBLE MICROSPHERES

Franklin D. Frantz, Woodford, Vt.; Salvatore J. Acello, Sharon Springs, N.Y., and Harold I. Geller, Nashua, N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed May 20, 1971, Ser. No. 145,365
Int. Cl. H05k 5/06
U.S. Cl. 174—52 PE 6 Claims

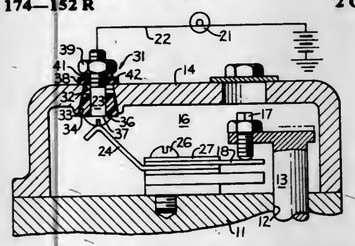


A compressible medium is dispersed throughout a somewhat flexible matrix, so as to provide a pre-coat for encapsulated electrical components that reduces the stresses occurring thereon. The stresses relieved could be produced either from the component or from the outer encapsulant. The design of the system is such that the low pressures exerted during the application of the final coating do not substantially collapse or render useless the effective stress reducing characteristics of the intermediate pre-coat.

3,670,092
HERMETICALLY SEALED ELECTRICAL FITTING

Kenneth W. Updyke, Peoria, and William J. Grebner, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1970, Ser. No. 69,704
Int. Cl. H01b 17/26
U.S. Cl. 174—152 R 2 Claims



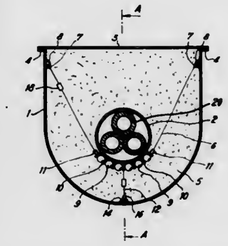
A hermetically sealed, insulated fitting for providing electrical continuity across a wall of an internally pressurized

housing, an opening in the wall tapering outwardly toward the housing interior, a threaded flanged electrical element penetrating the opening with a flexible insulating member arranged about the element and being formed with a taper generally mating with the tapered opening the tapered surface being formed with a plurality of stepped ridges, the flanged electrical element being effective to urge the tapered insulating member into sealing engagement with the tapered hole and the element itself.

3,670,093
ELECTRIC CRYOCONNECTION

Daniel Goumy, Seyssinet, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes and Georges Claude and Compagnie Generale D'Electricite, Paris, France

Filed June 28, 1971, Ser. No. 157,357
Claims priority, application France, June 30, 1970, 7024202
Int. Cl. H01b 7/34
U.S. Cl. 174—15 C 9 Claims

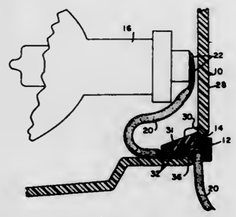


An electric cryoconnection operating under very cold conditions comprising an inner elongated cold chamber enclosing a plurality of electric leads, said cold chamber being housed inside a hot chamber with the interposition of heat insulating material and resting on a cradle constituted by transverse cables. Over each cable there are fitted balls lying in contacting relationship with the cold chamber and separated by washers. Said balls and washers are held in position on the cables by stops while the cables are held fast by guys.

3,670,094
STRAIN RELIEF WIRE HOLDER

William R. Mattson, Gloucester, Mass., assignor to Sylvania Electric Products, Inc.

Filed Oct. 26, 1970, Ser. No. 83,698
Int. Cl. H01r 13/58
U.S. Cl. 174—65 R 2 Claims

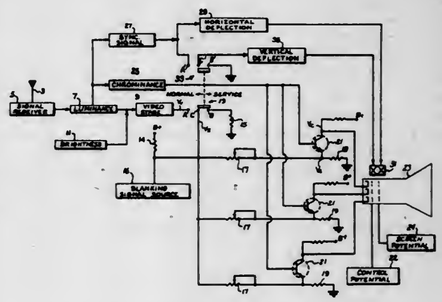


A strain relief element for electrical supply wires for use with small electrical appliance fixtures. The strain relief element is in the shape of a wedge which is inserted from the outside of the fixture through a wire-way opening. When the wedge is in place, it compresses the supply wires to the inner fixture wall and permanently locks itself to the fixture body.

3,670,095
CATHODE RAY TUBE "SET-UP" CIRCUITRY

Rangaswamy Arumugham, Oakfield, and Robert Charles Wheeler, Elba, both of N.Y., assignors to Sylvania Electric Products, Inc.

Filed Oct. 30, 1970, Ser. No. 85,462
Int. Cl. H04n 9/20
U.S. Cl. 178—5.4 R 7 Claims

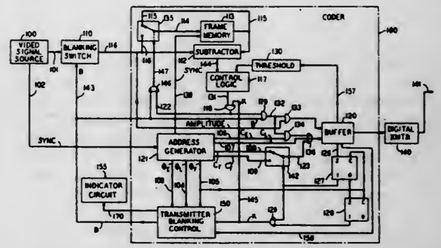


Control circuit apparatus for effecting "set-up" of a color cathode ray tube in a color television receiver includes a first switching means for selectively coupling and decoupling a magnitude alterable video signal source and a plurality of parallel connected "null" circuit arms each having an alterable impedance which, in turn, is coupled to circuitry having an electron device coupled to an impedance with the electron device coupled to a potential source, a chrominance signal source, and a cathode electrode of the cathode ray tube and the impedance coupled to a potential reference level. The circuitry is "bridge-like" in operation inhibiting current flow through the "null" circuits at "black level" setting of the video signal source and at a "service" position or decoupling of the video signal source.

3,670,096
REDUNDANCY REDUCTION VIDEO ENCODING WITH CROPPING OF PICTURE EDGES

James Charles Candy, Convent Station; Gladys Marie Franke, Matawan, and Frank William Mounts, Colts Neck, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 15, 1970, Ser. No. 46,292
Int. Cl. H04n 7/12
U.S. Cl. 178—6 17 Claims



In a conditional replenishment video system a coder selects only those samples from an input video signal which represent a significant change in amplitude for their corresponding spatial points within the video frame. A buffer memory in the coder stores the selected samples prior to

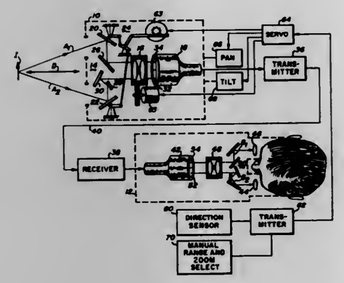
their being transmitted to a receiving location. In response to an overload signal from the buffer memory, all selection by the coder is stopped for an interval at least as long as one video frame, and a special code word is coupled into the buffer memory. In a plurality of video frames following the cessation of all selecting, only those samples from the center area of the video frame are processed by the coder for transmission to a receiving location. Upon receiving the special code word, the receiver apparatus establishes a constant video amplitude at the edges of the picture outside of the center area. After the above-mentioned plurality of video frames has elapsed, the number of samples processed in each video frame is increased at a rate of one line of picture elements per frame along each edge of the center area of the picture until the entire video frame of samples is again processed by the coder. Visual indication that only the center area of the picture is being processed is given to the party in a visual-telephone system whose activity is causing a cropping of the picture either by means of a display device such as a pilot light or by means of a novel circuit in which the video picture which he sees of the other party is cropped by substantially the same amount as the picture which he is transmitting.

3,670,097

STEREOSCOPIC TELEVISION SYSTEM AND APPARATUS

James L. Jones, San Jose, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 20, 1969, Ser. No. 867,842
Int. Cl. H04n 7/00
U.S. Cl. 178—6.5 **17 Claims**



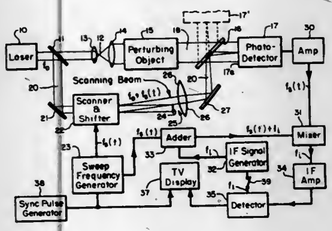
A novel stereoscopic remote viewing system is provided including a remote camera unit having means for projecting a pair of binocular images of a remote object through a common lens system onto the sensitive face of a single television camera tube for transmission to a viewing unit having a television picture tube which may be viewed through a binocular image separation system that enables the viewer to see a stereoscopic image of the remote object. Means are provided in the remote camera unit for inverting one of the two images and then causing the two images to be projected mirror symmetrically onto the camera tube through the common lens system. Because of this image symmetry, distortion produced by the lens system or camera tube similarly affects both images. Means are provided in the image separation system of the viewing unit for transposing the transmitted inverted image and producing binocular separation of the images.

3,670,098

OPTICAL SCANNING APPARATUS

Adrianus Korpel, Prospect Hgts., Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 9, 1970, Ser. No. 17,545
Int. Cl. H04n 1/00
U.S. Cl. 178—6 **11 Claims**



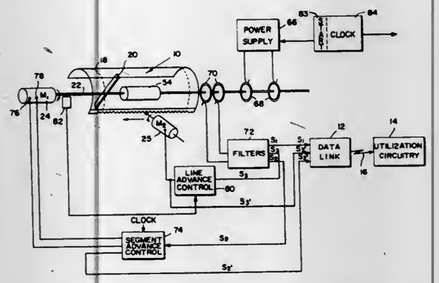
An object to be studied or analyzed is flooded with light from a laser. The light field transmitted from the object, which might for example be a transparency or a vibrating surface, is received by a photodetector. Another portion of the laser light or radiation is deflected throughout a scanning pattern and also caused to fall upon the photodetector. An optical system included in the reference beam path brings the reference beam to a focus (either real or virtual image) at a selected distance from the active surface of the photodetector. As a result, the electric signals developed by the photodetector represent a cross-section of the light field, transmitted from the object, located a distance from the photodetector surface which is the same as the distance therefrom to the focus of the scanned reference beam. Different cross-sections of the signal field from the object may be displayed merely by modifying the optical system. Depending on the manner in which the electric signals are processed, they may be caused to represent either a direct image or a hologram of the cross-section being visualized. By using the electric signals to drive a television-type monitor, a real-time display is reproduced.

3,670,099

FACSIMILE SYSTEM UTILIZING PRE-SCAN DETECTION OF INDICIA

Donald S. Oliver, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 18, 1968, Ser. No. 713,689
Int. Cl. H04n 1/12, 7/12
U.S. Cl. 178—6 **21 Claims**



A facsimile system connected to a transmission line of limited bandwidth has a novel optical scanner which scans data-bearing segments of a document at normal speed and blank segments at a higher speed to conserve the limited

bandwidth of the transmission line. In addition to the usual reading head, the scanner includes a first data-detecting head to scan the document a fixed distance in advance of the reading head and generate signals indicative of the presence or absence of data in scanned segment. These signals are applied to drive mechanism to control the speed of the scanner so that blank segments are "read" more rapidly than data-bearing segments. This results in significant time savings in scanning and allows compression of a greater amount of information into the transmitted signal. A second data-detecting head controls the skipping of blank lines and further improves the performance of the system.

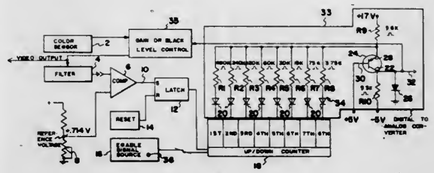
The invention is accordingly drawn to an apparatus for "reading" the contents of a document at different speeds depending on the presence or absence of indicia at various segments of the document and comprises a reading head, driving means for moving the reading head at a controlled speed with respect to the document, an optical indicia-detecting head spaced from the reading head and movable across the document in advance of the reading head to generate control signals indicative of the presence or absence of indicia in advance of the reading head, and means for controlling the speed of the driving means in accordance with the control signals generated by the indicia-detecting head to thereby move the reading head over indicia-bearing segments of the document at one speed and over indicia-free segments of the document at a greater speed to thereby reduce the time required to read and reproduce the contents of the document.

3,670,100

AUTOMATIC REFERENCE LEVEL SET FOR TELEVISION CAMERAS

John A. Briggs, Salt Lake City, and Ronald C. Ward, Taylorsville, both of Utah, assignors to Telemation, Inc., Salt Lake City, Utah

Filed Mar. 29, 1971, Ser. No. 129,061
Int. Cl. H04n 5/16
U.S. Cl. 178—7.1 **6 Claims**



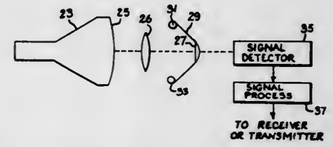
Methods and apparatus for automatically establishing the voltage levels in a television camera which represent signal amplitude levels corresponding to the black and white reference levels by sensing the voltage level of a video signal channel as the image of the scene to be televised is scanned, comparing the sensed signal with a reference signal and establishing a digital signal indicative of whether the voltage of the sensed signal is greater or less than that of the reference, storing the digital information and, if desired, altering the information stored upon command from the comparator, establishing an output voltage signal having a magnitude determined by the stored or altered digital information and modifying the black and white levels from the camera.

3,670,101

FILM SCANNING SYSTEM LINEARITY APPARATUS

John Francis Bulharowski, Rochester, N.Y., assignor to Sylvania Electric Products Inc.

Filed Sept. 14, 1970, Ser. No. 71,761
Int. Cl. H04n 5/84
U.S. Cl. 178—7.2 **1 Claim**



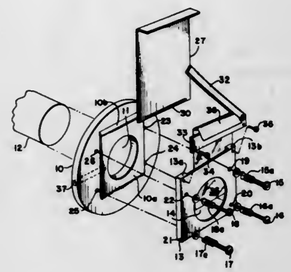
In a flying spot scanner system having a flying spot scanner tube with a curved faceplate, film scanning linearity and focus is improved by a film guide means having an outwardly curved surface exerting an outward and guiding force on a continuously moving photographic film.

3,670,102

FILM INSERTION AND REMOVAL DEVICE FOR USE WITH A CATHODE RAY TUBE

John Marez, San Diego, and Alan R. Hatch, La Jolla, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Mar. 2, 1971, Ser. No. 120,233
Int. Cl. H04n 5/64; G03b 27/60
U.S. Cl. 178—7.8 **8 Claims**

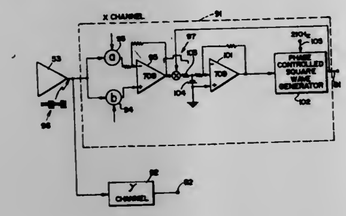


An assembly which facilitates the insertion and removal of a sheet of film which is positioned adjacent the face of the cathode ray tube. Film, such as that employed in photochromic techniques, positioned against the face of a cathode ray tube generating an ultra-violet beam, for example, can be drawn into intimate contact with the faceplate of the cathode ray tube by means of a partial vacuum applied between the film and the faceplate through a conduit in a member of the assembly which receives the faceplate portion of the cathode ray tube. Because of the chemical coatings on the film and the warmer temperature associated with the operation of photochromic equipments, the film frequently sticks to the faceplate. Since photochromic film has limited life, it requires relatively frequent replacement which is accomplished by inserting a sliding member between first and second members, the sliding member having a roller positioned along its bottom edge and parallel embossments along its sides for "peeling" the film from the faceplate of the cathode ray tube without marring or disfiguring the surface of the faceplate.

3,670,103
GRAPHICAL INPUT TABLET

Larry K. Baxter, and Shintaro Asano, both of Boston, Mass., assignors to Shintron Company, Inc., Cambridge, Mass.

Original application Apr. 18, 1968, Ser. No. 722,335, now Patent No. 3,591,718. Divided and this application Apr. 28, 1971, Ser. No. 138,203
Int. Cl. G08c 21/00
U.S. Cl. 178—19 1 Claim

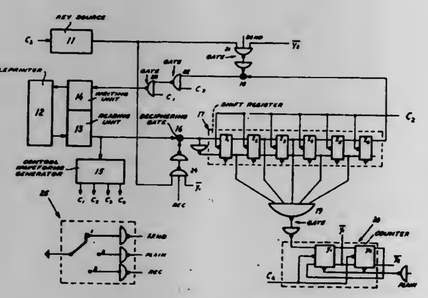


An a-c potential field is established on an electrographic tablet. A stylus that may be used to write upon the tablet comprises a capacitive pickup to provide a potential representative of the stylus position. The potential field is alternately switched at a rapid rate between vertical equipotentials and horizontal equipotentials in synchronism with output analog switches coupled to the stylus to provide an X analog signal output and a Y analog signal output representative of the horizontal and vertical coordinates, respectively, of the stylus tip above the tablet.

3,670,104
CIPHERING METHOD AND APPARATUS

Per Reider Abrahamsen, Kjeller, Norway, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,654
Claims priority, application Norway, Jan. 16, 1970, 151/70
Int. Cl. H04l 9/00
U.S. Cl. 178—22 8 Claims

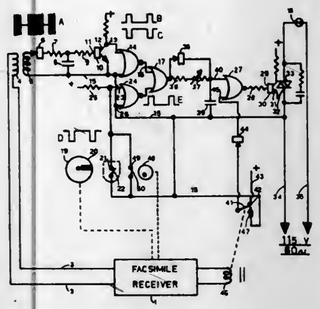


The present invention is related to a method and apparatus to avoid overprinting at the end of teleprinter lines on page-printing teleprinters when a coding signal is used for enciphering of teleprinter messages. This is accomplished by enciphering the first of three procedure characters (two CARRIAGE RETURN and one LINE FEED) in the normal manner while the next two characters are not enciphered. At the receiving end, the first CARRIAGE RETURN is retrieved as normal, and the next two characters are passed in plain text without deciphering.

3,670,105
PHASING SYSTEM FOR FACSIMILE RECORDERS

Deward J. Houck, Mastic Beach, N.Y., assignor to International Scanatron Systems, Wyandanch, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,483
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 F 2 Claims

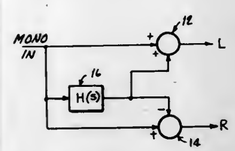


A phasing system for facsimile recorders seeks to match pulses from the received signal with recorder generated pulses. When the recorder is out of phase with the received signals, a controlled width pulse interrupts the power to the recorder motor causing a predetermined slippage until phasing is corrected.

3,670,106
STEREO SYNTHESIZER

Robert A. Orban, East Palo Alto, Calif., assignor to Parasound, Inc., San Francisco, Calif.

Continuation-in-part of application Ser. No. 667,216, Sept. 12, 1967, now abandoned. This application Apr. 6, 1970, Ser. No. 25,775
Int. Cl. H04r 5/00
U.S. Cl. 179—1 G 4 Claims



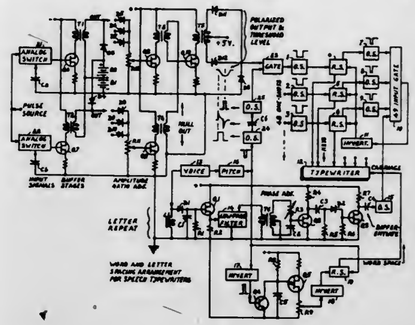
A stereo synthesizer for synthesizing a stereo output from a monophonic input, according to which a source of monophonic sound signals is connected to two sound channels, the signals being applied directly to the two sound channels and also in delayed fashion thereto by means of a network transfer function so as to reinforce the direct signals in one channel and oppose them in another channel as a function of frequency. The network transfer function is such that the amplitude of the frequency response is independent of frequency while the phase response varies as a function of frequency.

3,670,107
WORD AND LETTER SPACING ARRANGEMENT FOR HUMAN-SPEECH TYPEWRITERS

Meguer V. Kalfaian, 962 Hyperion Avenue, Los Angeles, Calif.

Filed Dec. 14, 1970, Ser. No. 97,892
Int. Cl. G10l 1/16
U.S. Cl. 179—1 SA 4 Claims

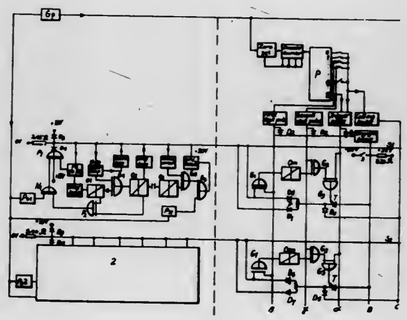
In speech recognition phenomena, each phonetic information is contained within major peaks of the sound wave. The longest time period between these major peaks has a time limit according to the lowest pitched voice, which is considered to be 45 cycles per second. Thus any longer time period that may occur between the major peaks is considered as termination point of a spoken word, and a signal is produced to operate the carriage of the typewriter. There is also provided means for preventing repetition of printing phonetic symbols during a spoken word. And further, there is provided means for allowing repetition of phonetic symbols to be typed during a spoken word, when so spoken in some languages.



3,670,108
DECENTRALIZED LOCAL TELEPHONE SYSTEM

Bjorn Andersen, Oslo, Norway, assignor to Max Manus Landoya, Askes and George Manus, Oslo, Norway

Continuation of application Ser. No. 603,027, Dec. 19, 1966, now abandoned. This application Feb. 25, 1970, Ser. No. 14,759
Claims priority, application Norway, Jan. 6, 1966, 161,141
Int. Cl. H04m 3/00
U.S. Cl. 179—18 J 4 Claims

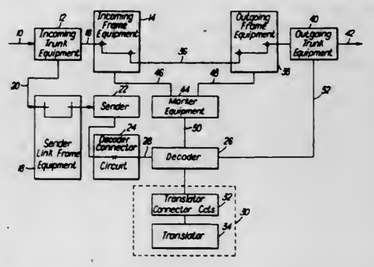


An intercommunication system the stations of which contain at least one electro-acoustic transducer, a duplex amplifier and an electronic connections device which in cooperation with an electronic control circuit common to all stations continuously transmits synchronization pulse trains over one pair of conductors to all stations. Over a second pair of conductors, connection is established between the calling station and the called station, if this called station is not busy. All stations are connected in parallel at the same communication time. For each simultaneous communication desired, an extra pair of conductors (communication line) is parallel-connected to all stations together with one connection device in each station and in the common control circuit. This is made possible by the synchronizing pulse train and the coincidence of these pulses and a calling pulse.

3,670,109
TELEPHONE TRANSLATING APPARATUS

Derek Leyburn, Mississauga, Ontario; Bernard R. Montague, Dollard des Ormeaux, Quebec, and Henry K. Mattila, Roxboro, Quebec, all of Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed June 29, 1970, Ser. No. 50,493
Claims priority, application Great Britain, July 3, 1969, 33,656/69
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET 9 Claims

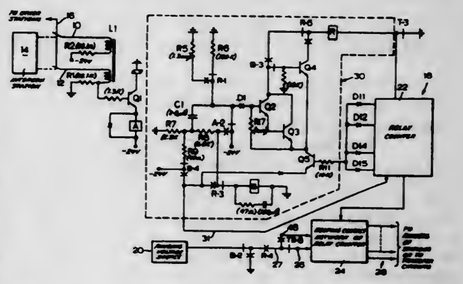


A telephone system translator for translating input codes each made up of a number of code digits into translations each made up of a number of information bits including a decoder to initiate a direct route connection and capable of providing an alternate route when a direct route is not available. The invention also extends to the provision of two translator preference units and an exclusion gate unit capable of selective connection to one or both of the translator preference units and also extends to the exclusion gate unit including a plurality of stages each associated with a respective decoder stage; each of the exclusion gate stages is capable of being rendered non-responsive if a prior call is being handled by another one of said exclusion gate stages.

3,670,110
TELEPHONE LINE TRANSFER CIRCUIT USING DISJOINT ROUTING NETWORK FOR PARTIAL DECODING

Wesley John Warner, Mississauga, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 22, 1971, Ser. No. 117,550
Int. Cl. H04m 3/38
U.S. Cl. 179—18 AD 11 Claims



An intercom telephone system having a relay counter which includes a disjoint routing contact network. For single

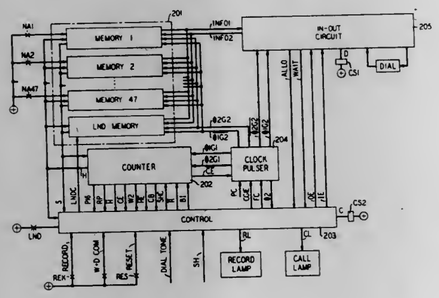
digit codes, the routing network decodes ringing applied to a first input thereof onto one of 10 outputs depending on the digit dialled. For two digit codes, a transfer circuit connected to one of the 10 outputs is activated by a transfer signal applied to the first input after the first digit, to switch the ringing source to a second input of the routing network. After the second digit is dialled, ringing applied to the second input is partially decoded by the routing network onto one of four of the outputs. The remaining decoding onto one of 10 further outputs for two digit stations is effected by two relays in the transfer circuit slaved to two corresponding relays in the relay counter. Thus, a portion of the routing network is reused on the second digit of two digit calls for partial decoding.

3,670,111

REPERTORY DIALER TELEPHONE SET WITH REGISTER STORAGE OF THE DIGITS

Allen A. Bukosky; Michael A. Flavin, both of Indianapolis, Ind.; Donald G. Hill, Boulder, Colo.; Donald D. Huizinga, Indianapolis, and James F. Ritchey, Carmel, both of Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 2, 1969, Ser. No. 881,515
Int. Cl. H04m *1/45*
U.S. Cl. 179—90 B **3 Claims**



In an electronic type repertory dialer telephone set, direct station selection for recording or automatically dialing out is provided by a name button switch array, each button accessing an associated shift register memory. A clock pulser and counter circuit initiates an automatic call sequence in response to the electronic detection of dial tone after a particular memory has been designated.

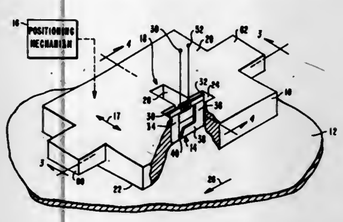
3,670,112

AIR BEARING MAGNETIC HEAD WITH GLASS SLIDER BODY

James F. Ruszczyk, and Duane R. Secrist, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1969, Ser. No. 850,765
Int. Cl. G11b *5/60, 5/10, 5/42*
U.S. Cl. 179—100.2 P **3 Claims**

An air bearing slider assembly includes a U-shaped magnetic head and a monolithic glass body which is formed in the glassy state so as to chemically as well as physically bond the head thereto, a nonmagnetic gap in the base of the head being disposed at an air bearing surface of the glass body to facilitate noncontact magnetic recording. The slider assembly is fabricated using a mold having a central cavity which defines the desired configuration of the glass body and which positions the magnetic head at a selected location relative to the glass body to be formed. The mold cavity is filled with a



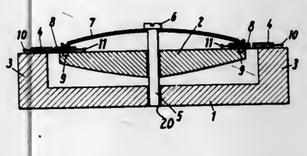
fluid glass composition which solidifies as a monolithic body in bonded relation to the head.

3,670,113

VIDEO TRANSDUCER HEAD ALIGNMENT APPARATUS

Peter Bragas, Itzum, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Oct. 8, 1970, Ser. No. 79,068
Claims priority, application Germany, Oct. 17, 1969, P 19 52 369.4
Int. Cl. G11b *5/42, 5/56*
U.S. Cl. 179—100.2 B **8 Claims**



To align transducer heads on a rotating carrier, so that the gap extends exactly radially and is properly placed on the carrier, a drum-shaped support is provided with magnetic transducer heads (preferably similar to the video heads) facing inwardly and accurately located to define the orientation of the video transducers on their carrier. One of the heads is energized and the signal read from the other. The head on the carrier is then adjusted until the observed signal is a maximum, which will occur only upon accurate alignment. The heads are then fixed in place on the carrier by means of an adhesive, for example introduced in grooves between the carrier and the head.

3,670,114

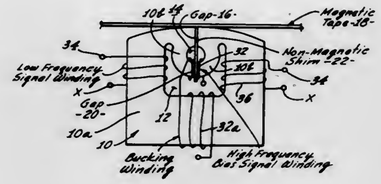
ELECTROMAGNETIC TRANSDUCER HEAD HAVING A BIAS FREQUENCY GAP AND AN INTELLIGENCE FREQUENCY GAP

Keith O. Johnson, Topanga Canyon, and Kent D. Broadbent, San Pedro, both of Calif., assignors to MCA Technology, Inc.

Continuation-in-part of application Ser. No. 786,293, Dec. 23, 1968, now abandoned. This application Nov. 17, 1969, Ser. No. 877,305
Int. Cl. G11b *5/20, 5/24*
U.S. Cl. 179—100.2 C **4 Claims**

An improved electromagnetic transducer head is provided for high quality audio recording and which includes a folded shim mounted in the gaps of its magnetic core to enhance the recording operating characteristics of the head. The particular transducer head to be described includes a magnetic core having a first section of minimum volume, on which a high frequency bias winding is wound for recording purposes, with relatively low power and heating effects; and having a second

section of relatively large volume on which the record/playback intelligence signal windings are wound, and



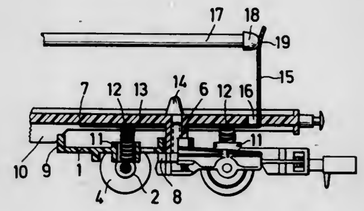
which exhibits the desired low frequency response for high quality playback.

3,670,115

CURRENT COLLECTOR FOR VEHICLES OF ELECTRIC TOY AND MODEL RAILROAD INSTALLATIONS

Robert Munzing, Nurnberg, Germany, assignor to Mas Ernst, Nurnberg, Germany

Filed June 8, 1970, Ser. No. 44,486
Claims priority, application Germany, June 6, 1969, P 19 28 825.6
Int. Cl. B60l *5/00, 9/02, 9/16*
U.S. Cl. 191—45 R **5 Claims**



A rail vehicle for toy and model railroads in which a helical thin electrically conductive spring wire has one end in sliding engagement with an electrically conductive wheel axle having an electrically conductive railroad wheel mounted thereon, whereas the other end of said helical spring wire is in electrical engagement with a plate adapted to be connected to an electric current consumer.

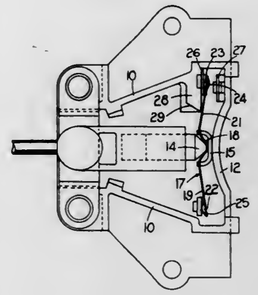
3,670,116

ELECTRICAL SWITCHES

Edward Cryer, Higham, near Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 10, 1970, Ser. No. 45,001
Claims priority, application Great Britain, June 17, 1969, 30,534/69
Int. Cl. H01h *13/28*
U.S. Cl. 200—6 BB **1 Claim**

An electrical switch includes a body, a conductive support member carried by the body, a pair of electrically interconnecting conductive leaf springs carried by said support member and extending in opposite directions therefrom and fixed contacts carried by the body and engageable by the leaf spring. An operating member is pivotally mounted on the body and engageable with the leaf spring to move the leaf spring relative to the fixed contacts, and the switch has a first stable position in which a plunger holds one of the leaf springs stressed, a second stable position, reached by moving the operating member in one angular direction, in which the plunger moves out of engagement with the leaf spring so that the leaf spring is unstressed, and a third unstable position



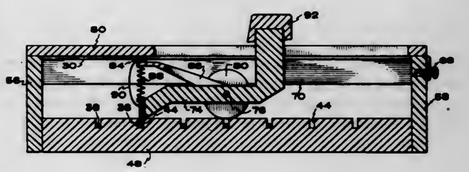
reached by moving the operating member in the opposite angular direction in which the leaf spring is again unstressed.

3,670,117

ELECTRIC SWITCHBOARD WITH ROCKER MOVABLE CONTACT MOUNTED ON A WHEEL

Le Roy D. Yancey, Bountiful City, Utah, assignor to Major Corporation, Chicago, Ill.

Filed Mar. 9, 1967, Ser. No. 621,984
Int. Cl. H01h *15/06*
U.S. Cl. 200—16 C **16 Claims**



A switchboard having a base with parallel grooves and flat lateral strips spacing the grooves, electrical conductive rods positioned in the grooves, and a contact blade secured to one end of a lever mounted on a programming wheel so that the blade contacts a rod in a groove when the programming wheel bottoms on the opposite sides of a groove. Conductive rails, normal to the conductive rods, can be secured to the switchboard to coact with a contact plate, in electrical contact with the contact blade, which is urged against the rails with a coiled spring coacting between the contact plate and the contact blade.

3,670,118

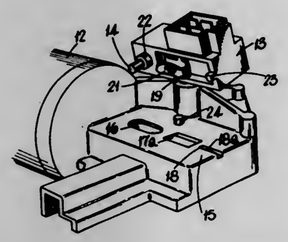
WINDSCREEN WIPER MOTORS

Brian Stowe, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 7, 1970, Ser. No. 1,168
Claims priority, application Great Britain, Jan. 17, 1969, 2,825/69
Int. Cl. H01h *9/08*
U.S. Cl. 200—47 **2 Claims**

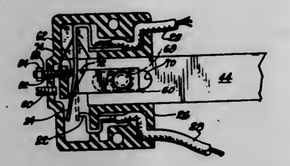
A windscreen wiper motor includes a limit switch which is secured to the casing of the motor, co-operating location means provided on the limit switch and the casing for locat-

ing the limit switch in the desired position relative to the casing. The limit switch carries a resilient tongue which engages



the casing to retain the limit switch in engagement with the casing.

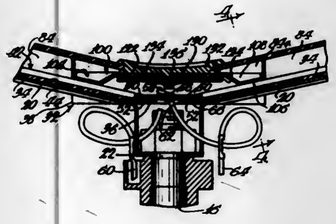
3,670,119
SWITCH WITH IMPROVED ACTUATOR MEANS
Wallace A. Gebhardt, and Prentice R. Corn, both of Logansport, Ind., assignors to Switches Incorporated
Filed Mar. 2, 1971, Ser. No. 120,139
Int. Cl. H01h *35/00*
U.S. Cl. 200—52 R **31 Claims**



A switching mechanism that is adapted to be incorporated into a seat to sense the presence of an occupant and actuate a switch in response thereto. The switching mechanism includes a switch supported in a housing and having a movable element with an actuating system cooperating with the switch. The actuating system includes an elongated member having one end connected to the support and a free end spaced from the support. The elongated member extends generally parallel to the upper surface of the seat and is deflected from normal in response to an occupant in the seat. An elongated actuating arm cooperates with the element and the free end of the first elongated member to move the element between the first and second positions in response to deflection of the elongated member thereby actuating the switch. The switching mechanism further includes automatic adjustment means to compensate for manufacturing and age variations of the seat.

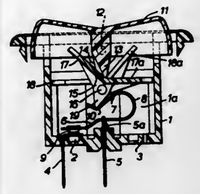
3,670,120
HORN ACTUATING MEANS
Prentice R. Corn, and Wallace A. Gebhardt, both of Logansport, Ind., assignors to Switches, Inc.
Filed Jan. 11, 1971, Ser. No. 105,357
Int. Cl. H01h *9/00*
U.S. Cl. 200—61.55 **14 Claims**

A horn actuating mechanism for actuating elongated spaced metal strip switches forming part of the steering wheel of an automobile. The actuating mechanism includes a flexible cover cooperating with a base supporting a pair of switches that extend in opposite directions from a central portion of the steering wheel with the cover having a rigid plate connected at the center thereof. The rigid plate has free ends that overlie the inner ends of the respective switches and the plate has projections extending towards the strips so that a force applied adjacent the center of the cover will actuate at least one of the switches.



In addition, the plate is releasably secured to the cover through an emblem which prevents relative movement between the respective elements.

3,670,121
ELECTRICAL SWITCH
John Arthur Howe, Chilwell, England, assignor to TRW Inc., Cleveland, Ohio
Filed July 9, 1970, Ser. No. 53,362
Claims priority, application Great Britain, July 14, 1969, 35,356/69
Int. Cl. H01h *13/28*
U.S. Cl. 200—67 G **3 Claims**

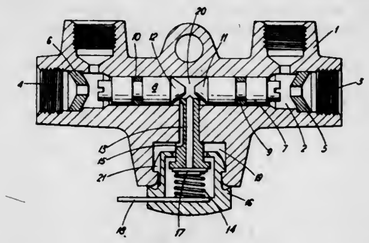


An electrical switch includes a first pivotally mounted actuating member, the rocking movement of which is transmitted to a second pivotally mounted actuating member whose rocking movement effects the operation of a leaf spring over its dead center position to open and close the switch contacts. The said first actuating member has a depending lug which engages with and rides over sloping ramps forming part of the said second actuating member.

3,670,122
WARNING DEVICE FOR DUAL CIRCUIT HYDRAULIC BRAKE SYSTEMS
Juan Belart, Walldorf, and Ulrich Seidel, Wehr, both of Germany, assignors to ITT Industries, Inc.
Filed Dec. 4, 1970, Ser. No. 95,308
Claims priority, application Germany, Dec. 10, 1969, P 19 61 845.2
Int. Cl. H01h *35/38, 3/42*
U.S. Cl. 200—82 D **5 Claims**

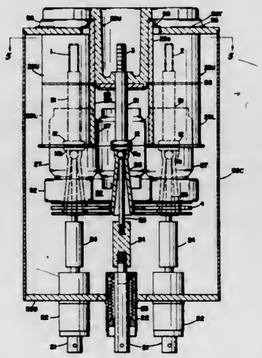
A warning device for indicating the failure of one circuit in a two-circuit brake system. Two pistons in a closed cylinder are normally balanced by the pressure from one circuit acting on the outside of one piston and the pressure from the other circuit acts on the outside of the other piston. The inside ends of the pistons are tapered cam surfaces against which a cam follower is spring biased. A contact switch movable with the cam follower is closed when the pistons move to either end of the cylinder due to a pressure failure in one circuit.

A pressure medium groove is provided connecting the space between the two pistons to the chamber in which the switch is located. This latter chamber is vented to the atmosphere. This draws attention to a leaking seal of either or



both pistons of the warning device. A check valve is provided between the space between the two pistons and the atmosphere to allow leaking hydraulic fluid to flow out while preventing foreign matter from entering the brake system.

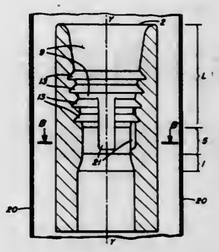
3,670,123
MULTI-POINT TO COMMON POINT DEAD TANK SWITCH HAVING VACUUM INSULATED CONTACTS AND VACUUM INSULATED TERMINALS
Elmer L. Luehring, Cleveland Heights, Ohio, assignor to Joslyn Mfg. and Supply Company, Chicago, Ill.
Filed Apr. 29, 1971, Ser. No. 138,562
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **4 Claims**



A vacuum switch has means for selectively opening or closing one or more of plural contact sets each having a stationary contact and a relatively movable contact. Terminals for the stationary contacts are provided within an electrically dead tank which provides the vacuum enclosure for the contacts and also for terminal conductors.

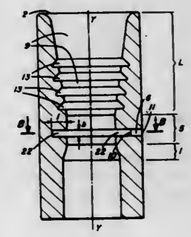
3,670,124
BLAST ORIFICE UNIT FOR SELF-BLASTING COMPRESSES GAS ELECTRIC CIRCUIT-BREAKERS
Benito Jose Calvino y Teijeiro, Bergamo, Italy, assignor to MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M. S.p.A., Milan, Italy
Filed Apr. 15, 1971, Ser. No. 134,268
Claims priority, application Italy, Apr. 16, 1970, 23393
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 R **5 Claims**

An axial blast breaking chamber for self-blasting compressed gas electric circuit breakers wherein the chamber wall is solid and is provided with a plurality of internal longitudinal grooves extending parallel to and symmetrically disposed about the axis of the chamber. When the contacts are closed the fixed contact, which is in close-proximity to the inner wall of the chamber, extends past the grooves



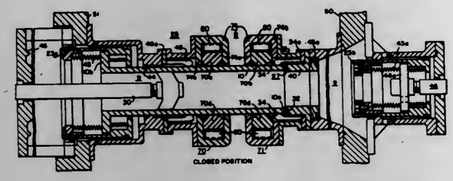
thereby inhibiting flow of quenching gas. Flow of quenching gas remains inhibited until the chamber and attached movable contact are displaced sufficiently to withdraw a portion of the longitudinal grooves below the lower end of the fixed contact.

3,670,125
BLAST NOZZLE FOR SELF-BLASTING COMPRESSED GAS ELECTRIC CIRCUIT-BREAKERS
Benito Jose Calvino y Teijeiro, Bergamo, Italy, assignor to MAGRINI Fabbriche Riunite Magrini - Scarpa e Magnano M.S.M. S.p.A., Milan, Italy
Filed Apr. 15, 1971, Ser. No. 134,269
Claims priority, application Italy, Apr. 16, 1970, 23394 A/70
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 R **6 Claims**



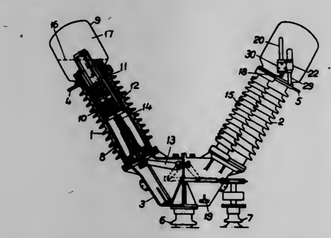
An axial blast breaking chamber for self-blasting compressed gas electric circuit breakers wherein the chamber wall is provided with a plurality of radial holes having an entrance to the inside of said breaker chamber through a ring-like feeding groove coaxial to the longitudinal axis of the chamber. When the contacts are closed the fixed contact, which is in close proximity to the inner wall of the chamber, extends past the feeding groove thereby inhibiting flow of quenching gas. Flow of quenching gas remains inhibited until the chamber and attached movable contact are displaced sufficiently to withdraw the feeding groove and radial holes below the lower end of the fixed contact.

3,670,126
COMPRESSED-GAS CIRCUIT INTERRUPTER HAVING A PAIR OF RAPID TRANSFER INSULATING NOZZLES
Robert M. Reidt, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 1, 1969, Ser. No. 838,157
Int. Cl. H01h 33/54
U.S. Cl. 200—148 R 5 Claims



A gas-blast type of circuit breaker is provided having a pair of separable contacts with a pair of contractable insulating nozzles disposed closely adjacent the point of separation of the separable contacts. In one embodiment of the invention, there is provided a pair of tubular separable contacts, through which the gas exhausts, and a pair of spaced contractable insulating nozzles are provided to locate the arc quickly axially and to control the gas-flow conditions.

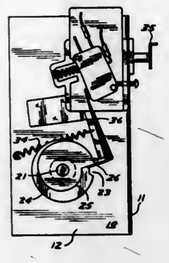
3,670,127
HIGH VOLTAGE CIRCUIT BREAKER OF LOW LIQUID TYPE
Inge Gard, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Apr. 21, 1971, Ser. No. 135,934
Int. Cl. H01h 33/75
U.S. Cl. 200—150 B 7 Claims



In a high voltage circuit breaker of low liquid type the breaking chambers are pressurized to prevent the circuit breaker from restriking when breaking capacitive loads. All the seals required for these pressurized chambers are located below the liquid level in each chamber.

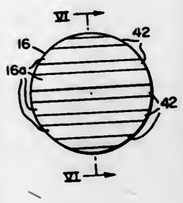
3,670,128
ADJUSTABLE TIMER HAVING ROTATING CAM AND WIDE RANGE VARIABLE DWELL
Malcolm J. Estrem, Edina, Minn., assignor to The Cornelius Company, Anoka, Minn.
Division of Ser. No. 795,389, Jan. 2, 1969, abandoned.
Filed Oct. 13, 1969, Ser. No. 865,904
Int. Cl. H01h 3/42
U.S. Cl. 200—153 17 Claims

Adjustable timing apparatus for actuating individual switch contact assemblies at various predetermined times during the cycle of rotation of a shaft including a plurality of cams characterized by the inclusion of a peripheral involute actuating surface which further includes a switch contact resetting portion. Individual switch contact assemblies are removably disposed in operative position adjacent to a cam whereby a cam follower type of switch contact actuator is biased into adjustable continuous contact with the peripheral surface of each of the cams. Means are provided for effecting rotation of the shaft, upon which the cams are disposed, at a predetermined substantially constant rotational velocity. Further means are provided to be responsive to tokens supplied thereto for controlling and initiating the operation of



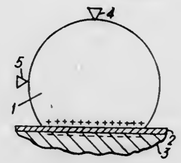
the timing apparatus. A suitable slot adapted to receive tokens is provided with a removable stop for arresting the motion of a coin and further means are provided for generating a signal in response to the presence of the token. The signal is utilized to initiate operation of the timer. Prior to the end of the timing cycle of operation, the removable stop means is actuated to allow release of the token into a collection receptacle.

3,670,129
ELECTRICAL CONTACT MEMBERS
Sidney J. Cherry; Albert Bereza, both of Elmira, and Paul O. Wayland, Montour Falls, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,362
Int. Cl. H01h 1/02
U.S. Cl. 200—166 C 7 Claims



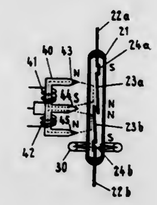
Electrical make and break contact members for use in a vacuum-type circuit interrupter including a casing forming an evacuated chamber with a pair of separable contacts contained therein and composed of copper (or other similar metal), the contacting surface of each contact having a non-continuous coating of a refractory material, covering the major part of the contact surface and whereby during disengagement of the contacts the welding and high erosion rate of copper caused by an electric arc in a vacuum is minimized by the refractory material coating.

3,670,130
IMPROVEMENTS IN ELECTROSTATIC RELAYS
John Christopher Greenwood, Pinner, England, assignor to International Standard Electric Company, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,450
Claims priority, application Great Britain, Mar. 7, 1969, 12,221/69
Int. Cl. H01h 29/00, 57/00
U.S. Cl. 200—183 21 Claims



A relay is provided which includes a drop of conducting liquid, for example mercury, and means for subjecting the drop to an electro-static field to effect movement of the drop between at least two positions. This movement causes the conductive drop to interconnect different contacts, switching the relay from one state to another.

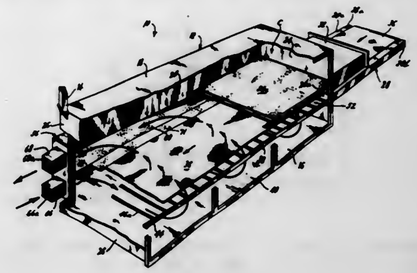
3,670,131
ADJUSTING AND CONTROLLING REED RELAYS
Jean-Louis Beaud, Neuchatel, Switzerland, assignor to Hasler A. G., Bern, Switzerland
Filed June 3, 1970, Ser. No. 43,134
Claims priority, application Switzerland, June 6, 1969, 8605/69
Int. Cl. H05b
U.S. Cl. 219—7.5 5 Claims



A process for adjusting and checking reed relays comprises locally heating one of the two switching tongues by a high frequency heating system, and deflecting both switching tongues simultaneously by magnetic force, so that the switching tongue exposed to high frequency heating undergoes a permanent material deformation.

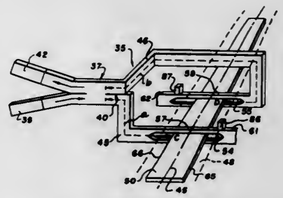
3,670,132
ENVIRONMENTAL CONTROL SYSTEM FOR MICROWAVE PROOFER
Harold B. Kaufman, Jr., New York; Robert F. Schiffmann, Brooklyn, and Ernest W. Stein, New York, all of N.Y., assignors to DCA Food Industries Inc., New York, N.Y.
Filed July 13, 1970, Ser. No. 54,157
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 22 Claims

An environmental control for a microwave cavity which provides a controlled air temperature and relative humidity in the cavity particularly suitable for use in a microwave proofer in which a yeast-leavened dough is proofed and matured by exposing dough pieces to a microwave field of an intensity and duration to elevate the temperature of the dough



piece sufficient to initiate the generation and expansion of gases in the dough piece and the complete proofing thereof.

3,670,133
MICROWAVE DRYING APPARATUS AND METHOD
Lambertus Admiraal, Coquitlam, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed June 3, 1971, Ser. No. 149,651
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 18 Claims

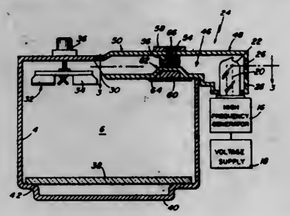


Apparatus and method for drying moisture-laden dielectric materials by microwave energy and including directing microwave energy from a generator to opposite sides of material to be dried. Means is provided for protecting the generator from microwave energy reflected by the material. It is preferable to include means for controlling the output of the generator in accordance with the moisture content of the portion of the material exposed to the microwave energy. This is accomplished by measuring energy transmitted through the material, and controlling the output of the generator inversely relative to the level of the transmitted energy.

3,670,134
MICROWAVE OVEN NO-LOAD SENSOR
Arnold M. Bucksbaum, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa
Filed Jan. 26, 1971, Ser. No. 109,818
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 12 Claims

A no-load sensor is disclosed for protection of the electromagnetic wave energy generator in an electronic heating apparatus including a magnetized body of a ferrimagnetic material disposed within the waveguide launching section. Improved magnetic field producing means include a field concentrator associated with a permanent magnet member. Embodiments are also provided within a waveguide

launching section having a reduced cross-sectional area adjacent to the ferrimagnetic body to concentrate propagated electromagnetic waves with a resultant decrease in the



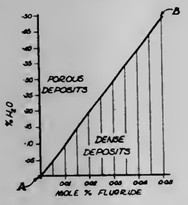
material requirements for exciting electron spin action to direct reflected energy from a load to energy absorbing means.

3,670,135

ARC WELDING ELECTRODE AND PROCESS FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company

Continuation-in-part of application Ser. No. 879,045, Nov. 24, 1969, now Patent No. 3,585,352, which is a continuation-in-part of application Ser. No. 777,405, Nov. 20, 1968, now abandoned. This application June 2, 1971, Ser. No. 149,271
Int. Cl. B23k 9/00
U.S. Cl. 219—137 18 Claims



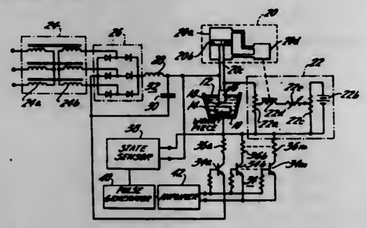
There is disclosed an arc welding process for stainless steel and a flux-cored electrode particularly useful therein which is formulated of components having relatively low moisture absorptivity.

3,670,136

ELECTRIC DISCHARGE MACHINING METHOD AND APPARATUS

Nagao Saito, and Kazuhiko Kobayashi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Feb. 2, 1970, Ser. No. 7,898
Claims priority, application Japan, Feb. 4, 1969, 44/8326
Int. Cl. B23p 1/08
U.S. Cl. 219—69 C 7 Claims



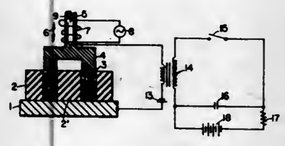
Upon electric-discharge machining a workpiece by intermittently applying pulse voltages across a gap between it and the opposed electrode, a pause time following each pulse voltage is adjusted by predetermined small incremental amounts in accordance with the voltage conditions developed across the gap.

3,670,137

METHOD OF SPARK SINTERING ELECTRICALLY CONDUCTIVE PARTICLES ONTO A METALLIC SUBSTRATE

Kiyoshi Inoue, Tokyo, Japan, assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation of application Ser. No. 611,497, Nov. 30, 1966, now abandoned, which is a division of application Ser. No. 356,714, Apr. 2, 1964, now Patent No. 3,340,052, dated Sept. 5, 1967, which is a continuation-in-part of application Ser. No. 247,387, Dec. 26, 1962, now Patent No. 3,250,892, dated May 10, 1966. This application Feb. 16, 1970, Ser. No. 10,090
Claims priority, application Japan, Dec. 26, 1961, 36/47409
Int. Cl. B23k 9/04
U.S. Cl. 219—76 3 Claims



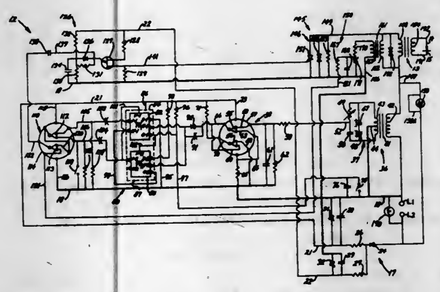
A method of spark sintering electrically conductive particles, e.g. copper, nickel, ferrochromium and tungsten carbide, onto a metallic substrate (e.g. of nickel, iron or steel) in which a mass of particles is positioned along the substrate in light-contacting relationship therewith. An electric current pulse is applied across the mass of particles to effect a spark discharge among them and between the mass and the substrate to sinter the particles to one another and to the substrate. The method also increases the fatigue resistance of iron and steel when tungsten carbide is spark-sintered thereto.

3,670,138

WELDING EQUIPMENT

Lester C. Schmiege, and Wendell C. Zeluff, both of Kalamazoo, Mich., assignors to American Wire Cloth Company, Parchment, Mich.

Continuation-in-part of application Ser. No. 722,326, Apr. 18, 1968, now Patent No. 3,553,416. This application Dec. 7, 1970, Ser. No. 95,828
Int. Cl. B23k 9/10
U.S. Cl. 219—114 5 Claims



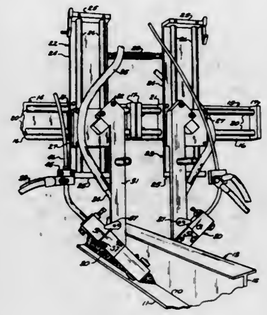
A welding apparatus including a pair of electrodes connected by elongated electrical conductors to a transformer and a circuit for controlling the duration and strength of the welding current. One electrode is mounted upon a handle containing a normally open switch which is closed when said one electrode is pressed against an object. Closure of said switch initiates a current flow which is accurately terminated after a predetermined period of time controlled by the circuit.

3,670,139

WELDING HEAD

Anthony K. Pandjiris, St. Louis; Arthur I. Frederick, Webster Groves, and Edward J. Weinfurt, St. Louis, all of Mo., assignors to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Dec. 21, 1970, Ser. No. 99,924
Int. Cl. B23k 9/00
U.S. Cl. 219—130 11 Claims



A welding head having a wire guide tube, through which a welding wire extends, located in and positioned longitudinally of a housing with its wire discharge and in alignment with a flux discharge opening provided in the housing. A plate, made of electrically insulating material, is slidably mounted on the housing and is connected to the wire guide tube for longitudinal adjustment of the nozzle to determine the amount of projection of the welding wire through the flux discharge opening. The plate includes a guide portion extending into an elongate slot formed in and arranged longitudinally of the housing, the guide portion cooperating with the slot margins to guide the plate, and hence the wire guide tube, longitudinally of the housing. Fastening means, made of an electrically insulating material, extends through an elongate hole formed in the plate and arranged longitudinally of the housing, the fastening means interconnecting the plate and housing to retain the plate in longitudinally adjusted positions. Pivot means mount the wire guide tube to the plate on a transverse axis, while wire guide tube-pivoting means selectively move the wire guide tube about the axis to adjust the position of the wire discharge end laterally of the flux discharge opening.

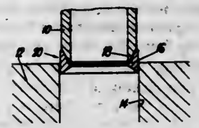
3,670,140

JOINING OF TUBES TO TUBE PLATES

Daniel Frank Thomas Roberts, Kent, England, assignor to Foster Wheeler John Brown Boilers Limited, London, England

Filed Feb. 24, 1970, Ser. No. 13,460
Claims priority, application Great Britain, Feb. 27, 1969, 10,519/69
Int. Cl. B23k 9/10
U.S. Cl. 219—137 3 Claims

This invention relates to the joining of tubes to tube sheets in alignment with bores through the latter. These bores are slightly larger in diameter than the outside diameters of the tubes. An annular filler insert is positioned adjacent the end of the bore in engagement with the end of the tube. When a non-consumable electrode arc weld is made, the insert melts and becomes united with the end of the tube and the tube sheet, the shape and size of the insert being such that the resulting join has a smooth crevice-free contour, between the tube and the tube sheet.

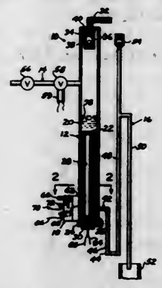


3,670,141

HUMIDIFIER

David R. Dines, 4801 N. W. 34, Oklahoma City, Okla.

Filed Apr. 15, 1971, Ser. No. 134,249
Int. Cl. F22b 1/28
U.S. Cl. 219—271 5 Claims



A boiler formed by a water containing vertically disposed casing having a heater in its depending end portion is provided with a steam outlet at its upper end portion. An overflow tube, connected with the depending end portion of the case, drains minerals and salts tending to accumulate in the bottom of the casing. A thermal switch secured to the depending end of the case operates a water flow controlling solenoid valve which refills the casing in response to temperature changes of the casing in converting water contained thereby to steam.

3,670,142

RECESS MOUNTED ELECTRIC AIR HEATER

John T. Attridge, Monroe, Conn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 26, 1970, Ser. No. 40,494
Int. Cl. H05b 3/02; F24h 3/04
U.S. Cl. 219—367 6 Claims



A recess mountable electrical appliance is provided with a cover supporting on its inner surface the working elements of the appliance and also means for temporarily securing the

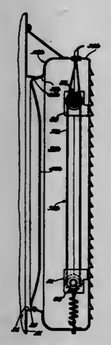
cover in a tilted open position for access to the inner surface upon placement in a recess. The invention is particularly applicable to electrical heaters for wall mounting in which the cover is placed within the recess and temporarily secured in a tilted open position for the completion of electrical connection. A tilt and alignment mechanism is provided, such as by brackets extending from the cover engaging pins within the recess, for permitting the cover to be placed in the tilted open position. Upon closing of the cover, while the brackets on the cover side on the pins, there is preferably provided direct alignment of apertures for fasteners to permanently secure the cover to an underlying support. Other features include a deflector partially enclosing a heater element to define a primary air path over the heater element while also permitting a secondary air path to the rear of the deflector. Also, a front grill is provided that is secured to the cover by an overhanging edge disposed in a groove in the upper edge of the cover and a single fastener secures the grill and cover proximate the lower edge thereof.

3,670,143

ELECTRIC HEATING UNIT FOR CLOTHES DRYERS

Fred J. Zenz, Berrien Springs, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 17, 1970, Ser. No. 29,388
Int. Cl. H01c *1/02*; F24h *3/04*
U.S. Cl. 219—375 **12 Claims**



A heater box assembly for an electrically heated clothes dryer has a pair of spaced insulators with a wire heating element wound around the two insulators and with adjacent turns spaced apart. The support for the heating unit includes at least one spring acting on at least one insulator to apply a tension on the wire heating element to compensate for the change in length of the wire element due to thermal expansion. The box-like support is snugly received in a flanged opening of a wall of the dryer to form the heated air inlet for the dryer and mounting means including one or more tabs on the box for insertion into one or more corresponding slots in the flanged opening and a single fastener for securing the box at a side removed from the position of the slot or slots.

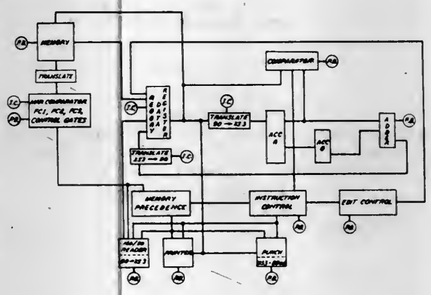
3,670,144

ELECTRONIC PLUGBOARD CONTROLLED DATA PROCESSOR

Mary Anne Breslin, Philadelphia; George R. Cogar, Doylestown, both of Pa.; Charles A. Lee, Stamford, Conn.; Donald O. Neddenriep, Willow Grove; Albert J. Romeo, Springfield, both of Pa.; Ernesto G. Sevilla, New York, N.Y., and Torkjell Sekse, Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed June 18, 1962, Ser. No. 203,071
Int. Cl. G06f *7/12, 7/00, 15/00*
U.S. Cl. 235—61.9 **21 Claims**

An electronic processing unit having solid state components and including a punched card reader, printer and punch output, and plugboard program for controlling the operations of start, stop, read, add, subtract, compare, insert,



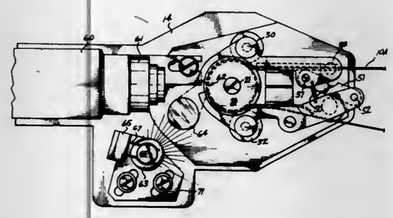
delete, print, punch, etc. The processor can perform the operations of transfer of information, add, compare, and edit. It can use 80-, 90-, or 160- column cards.

3,670,145

TAPE FEED SYSTEM

David C. Allais, Edmonds, Wash., assignor to Interface Mechanisms, Inc., Mountlake Terrace, Wash.

Filed Dec. 9, 1970, Ser. No. 96,444
Int. Cl. G03b *1/24*; G06k *13/05*
U.S. Cl. 235—61.11 E **8 Claims**



A tape feed system together with an optical reader for reading data from the tape. A drive capstan having inner and outer flanges defining a tape holding region is driven by a step motor. One of the flanges is spring-loaded so that the tape is gripped between the two flanges. Spring-loaded tape guide devices located above and below the center of the capstan each have idler wheels urging the tape against the capstan in an arrangement such that the tape passes around substantially more than 90° of the capstan. A cylindrical lens and light source provides light in a slit pattern on the flat surface so that high intensity light is reflected to the reader for reading data from the tape.

3,670,146

SIGNAL CONVERTER

Gill Gunnar Soderstrom, Rorstrandsgatan 37, Stockholm; Bertil Nilsson, Pettersbergsvagen 86, Hagersten, and Nils Evert Johan Stahl, Hjortstigen 18, Stocksund, all of Sweden

Filed Dec. 4, 1969, Ser. No. 882,752
Int. Cl. G06k *7/08*; G11b *5/00*
U.S. Cl. 235—61.11 D **7 Claims**

In a signal converter for reading of information recorded on a magnetic tape and for conversion of said information to a language suitable for punched tape, data tape, data communication or the like, the magnetic tape comprising two information-carrying channels, one of which contains digit bits and the other the corresponding inverse digit bits, and each

digit having a control bit which starts the digit, and the signal converter comprising

a magnetic tape reader for successive reading of the bits in the information-carrying channels,

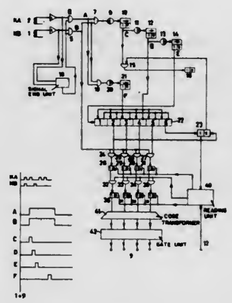
a digit store with a number of locations for parallel storage of a digit, which number corresponds to the number of digit bits per digit,

a code transformer for re-coding the stored information to the suitable language, and

a reading unit for the release of each one of the digits thus re-coded,

the improvement which resides in that the signal converter includes

1. a synchronizing chain connected between the reader and the digit store and provided with a starting step,



2. a number of intermediate steps corresponding to the number of digit bits per digit, and
3. an end step, where the control bit, which is simultaneously recorded in both channels mentioned, is arranged partly to re-set the chain and partly to 1-set the first intermediate step of said chain when reading the first digit bit, said digit bits and said inverse digit bits being arranged to successively 1-set the successive steps of the chain, and
4. a number of gates corresponding the number of intermediate steps with an input connected to the corresponding intermediate step and another input connected for being fed from the channel containing the digit bits, so that each respective gate is opened for each digit bit in order to transmit said bit to the location in the digit store which corresponds to its position.

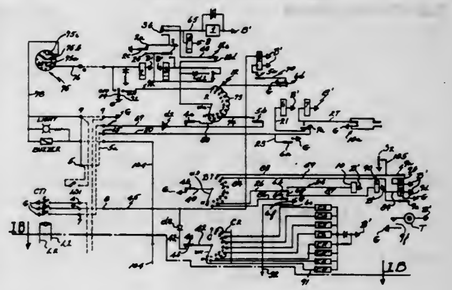
3,670,147

ELECTRONIC INSTRUMENT FOR DETERMINING AND TOTALIZING THE REPETITIVE OPERATION OF A MATERIAL FABRICATING MACHINE

Richard B. Wright, 448 Saint Andrews Drive, Akron, Ohio

Filed Oct. 3, 1969, Ser. No. 863,493
Int. Cl. H03k *23/03*
U.S. Cl. 235—92 J **4 Claims**

An electronic instrument for determining and totalizing the operation and production output of a material fabricating machine such as a machine tool lathe, punch press, drill press and the like, and which instrument includes an element that is responsive to a workpiece fabricating member of the machine to actuate a counter or recorder capable of sensing the workpiece fabricating performance of the said member and totalizing the number of fabricating cycles of said machine. The instrument also includes switch means actuatable by the operator to indicate that the machine is temporarily out of production for a selective predetermined interval such as, for example, the interval required for setting up the machine preparatory to production, repair and/or adjustment of tools thereof. A timing device actuatable by the switch means which device is identifiable with the particular purpose(s) for which said machine is "out of production" or in "down time" is operable with the counter or recorder to



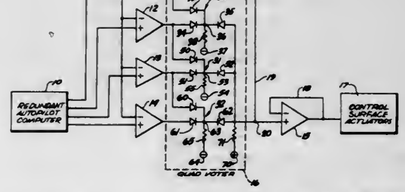
record the reason(s) or purpose(s) for said "down time" whereby it may be visually noted, analyzed and utilized for corrective and record purposes. The instrument includes timing means for recording on said recorder the total production time and total "down time" for the machine for any preselected time period.

3,670,148

SELECTIVE SIGNAL TRANSMISSION SYSTEM

Adrian J. Moses, Newhall, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 14, 1970, Ser. No. 71,751
Int. Cl. G06f *15/50, 11/00*
U.S. Cl. 235—150.2 **13 Claims**

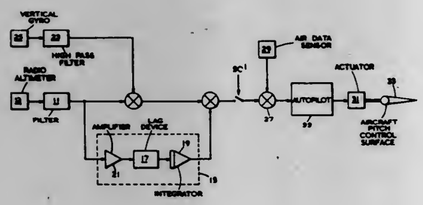


A plurality of high-gain amplifiers equal in number to the number of inputs of a signal voter that selectively transmits the signal applied to one of its inputs, depending upon the relative input signal amplitudes is disclosed. The outputs of the amplifiers are connected to drive the respective inputs of the voter and the output of the voter is fed back to the inputs of the amplifiers in a sense to cause the output of the voter to track an external signal applied to the amplifier driving the transmitting input of the voter. Preferably, the amplifiers are of the differential type, the output of the voter being connected to the inverting input and redundant autopilot computers being coupled to the respective non-inverting inputs, and the output of the voter is coupled by an isolating operational amplifier to aircraft control surface actuators.

3,670,149
AUTOMATIC FLIGHT CONTROL SYSTEMS

William Terence Parkman, and James Kenneth Maxwell MacCormac, both of London, England, assignors to Elliott Brothers (London) Limited, London, England

Filed Jan. 28, 1970, Ser. No. 6,371
Claims priority, application Great Britain, Jan. 29, 1969, 5,069/69
Int. Cl. G06g 7/78; B64c 13/50
U.S. Cl. 235—150.22 4 Claims



The specification discloses an aircraft control apparatus for supplying a "flare-out phase" pitch demand signal for an aircraft automatic pilot of such a character as to render the autopilot less dependent on the values of the aircraft flight system constants which are subject to variation from aircraft to aircraft as a result of tolerances in manufacture. The control apparatus develops an electrical pitch demand signal represented by:-

$$\eta_{d_{flare}}=\left[K_1(h+K_3\dot{h})\cdot\left(1+\frac{1}{T_1s(1+T_2s)}\right)+\frac{K_3s\theta}{1+T_3s}\right]$$

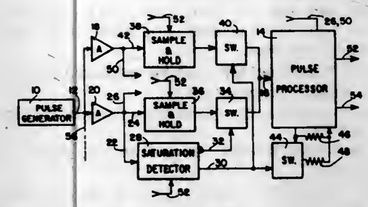
where
θ is the aircraft pitch angle,
h is the aircraft altitude,
$\dot{h}$ is the rate of aircraft vertical descent,
s is the Laplace operator,
K_1, K_2, K_3 are flight systems constants of the aircraft,
T_1, T_2, T_3 are time constants of the aircraft flight system.
Optionally, a signal component dependent upon changes from a predetermined value in the aircraft airspeed may be added into the pitch demand signal η_{dflare}.

3,670,150
DYNAMIC RANGE SPLITTER FOR AN ANALYZER OF PARTICLE-PRODUCED PULSES

Walter R. Hogg, Miami Lakes, and David R. Figueroa, Hialeah, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 4, 1970, Ser. No. 34,189
Int. Cl. H03k 17/30, 5/20
U.S. Cl. 235—151.3 26 Claims

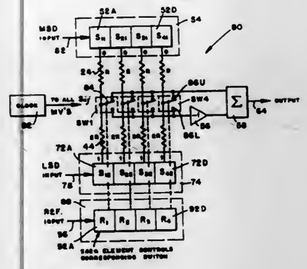
Generated pulses, having random amplitudes relative to particle sizes which lie in an especially wide range, are fed into a plurality of parallel channels, at the input of each of which there is an amplifier. Each amplifier has a different amplification factor and saturates in response to a correspondingly related maximum input pulse magnitude, so as to define a subrange of acceptable pulses. Saturation of a particular amplifier disables its channel and enables the adjacent, lower amplification, higher channel to accept or be saturated by the same pulse. Each pulse, when accepted by a channel, is further processed for particle analysis purposes. During the processing, the pulse amplitude is reduced by the same amplification factor as that of the accepting channel, so as to return all pulses to their initial relative amplitudes.



3,670,151
CORRELATORS USING SHIFT REGISTERS

George F. Lindsay; Shelby F. Sullivan, both of Arcadia, and Harper John Whitehouse, Hacienda Heights, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 5, 1970, Ser. No. 43,880
Int. Cl. G06g 7/19; G06f 15/34
U.S. Cl. 235—181 7 Claims

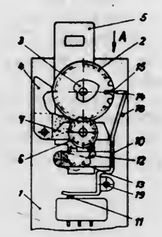


A correlator comprising a set of multivibrators which are serially connected to form a shift register, each multivibrator having a set and a reset output lead, indicating its binary state. Each multivibrator is connectable to a clocking source for shifting the states of the multivibrators. One of the multivibrators at one end of the series, the input multivibrator, is connectable to a source of signals, generally bilevel signals or pulses, each pulse having a predetermined time duration or a multiple thereof. Means are operatively connected to the output leads of the multivibrators for summing the outputs of the multivibrators for each shift of binary states, the sum being a maximum for a particular combination, or coding, of binary states of the multivibrators of the shift register. The means may comprise a plurality of output resistors, one for each multivibrator, each resistor having one end, the input end, connected to one only of a set or reset output lead of a multivibrator, the specific combination of connections being chosen in a manner so that, with an applied input signal, a particular combination of binary states of the multivibrators will result in a maximum total output signal.

3,670,152
RESET ERROR DETECTING PULSE COUNTER

Kurt Kratt, Aldingen, Germany, assignor to J. Hengstler K.G., Aldingen, Germany

Filed Mar. 30, 1970, Ser. No. 23,689
Claims priority, application Germany, June 20, 1969, P 19 31 367.8
Int. Cl. G06c 15/42
U.S. Cl. 235—144 HC 21 Claims

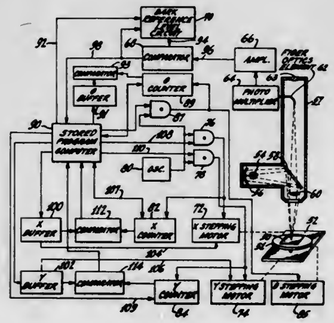


The counter comprises a plurality of rotatable digit wheels. A pinion bridge carries pinions and tends to assume an operative position, in which said pinions are in mesh with respective ones of said digit wheels and operable to rotate the same. The pinion bridge is movable from said operative position to an inoperative position; in which said pinions are disengaged from said digit wheels. Resetting means are operable to move said pinion bridge to and hold it in said inoperative position and to rotate said digit wheels to a predetermined reset position. Feeler means are engageable with said digit wheels and said pinion bridge and operable to a reset-confirming position when, and only when, said digit wheels and said pinion bridge are in said predetermined reset position and said operative position, respectively. Indicating means are adapted to derive from the position of said feeler means an indication when said feeler means are operated to a position short of said reset-confirming position.

3,670,153
MACHINE IMPLEMENTED METHOD FOR POSITIONING AND INSPECTING AN OBJECT

Lawrence Arnold Rempert, Ringoes, and Edward Philip Helpert, Kendall Park, both of N.J., assignors to RCA Corporation

Filed Oct. 8, 1970, Ser. No. 79,055
Int. Cl. G06f 15/46
U.S. Cl. 235—151.11 11 Claims

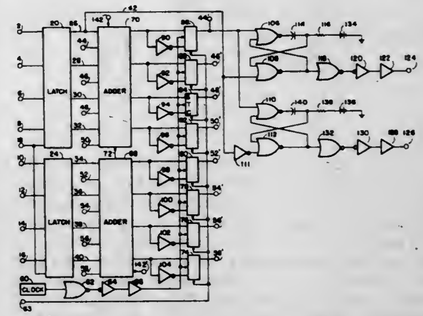


The object it is desired to position has areas thereon whose peripheral edges are boundries between light and dark regions. For example, the areas may be metal electrodes which appear light and are located on a dark substrate. This object is placed beneath a light-sensing element such as an optical fiber. The object is then scanned in different directions under computer control, by producing relative movement between it and the light-sensing element to ascertain the shapes of a number of these areas, and the position within each such area of a characteristic point such as the center of gravity or the center of one particular edge, of each such area. The coordinates of these points are compared with reference coordinates previously stored in the computer memory for calculating the translational and/or the rotational movement required to center the object and for imparting this movement to the object.

3,670,154
PARALLEL DIGITAL DIFFERENTIAL ANALYZER

James A. McMurray, Highlands, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.

Filed Sept. 14, 1970, Ser. No. 71,883
Int. Cl. G06f 7/38
U.S. Cl. 235—152 2 Claims

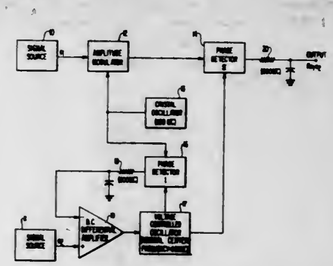


The specification discloses a parallel digital differential analyzer employing a first register, a circulating adder and a plurality of JK flip-flops for updating the adder, the flip-flops being controlled from a clock source. The polarity and magnitude of the overflow is detected by polarity sensitive logical single shot multivibrators connected to the output of a selected JK flip-flop.

3,670,155
HIGH FREQUENCY FOUR QUADRANT MULTIPLIER

Paul H. Grobert, Thousand Oakes, Calif., assignor to Communications & Systems, Inc.

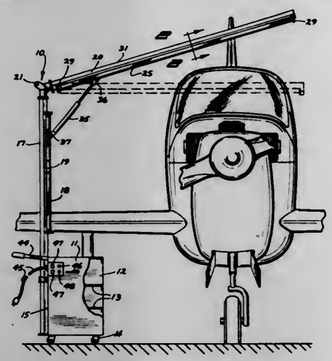
Filed July 23, 1970, Ser. No. 57,480
Int. Cl. G06g 7/16
U.S. Cl. 235—194 7 Claims



There is disclosed a four quadrant multiplier for producing the bi polar product of a pair of extremely high frequency

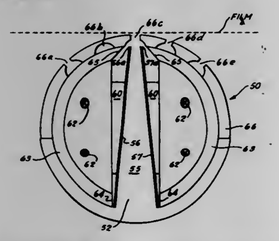
sgined signal voltages. The invention features the use of a conventional analog mixers and a phase linearizing loop to achieve four quadrant multiplication with low distortion.

3,670,156
PORTABLE WORK STAND CABINET AND ILLUMINATION SOURCE UNIT
Donald R. Schmidt, Route 1 P.O. Box 93 B, Worthington, Minn.
Filed Oct. 5, 1970, Ser. No. 77,936
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **6 Claims**



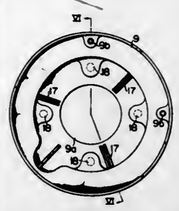
A heavy castor mounted work stand cabinet forms the support base for a fixed vertical stanchion extending up a backside of the stand. The stanchion pivotally supports, at its top end, an elongated arm which extends outwardly above and past the front face of the work stand. Adjustable means are provided for supporting the arm either at right angles to the stanchion or at an obtuse angle with respect thereto. Pairs of parallel, spaced apart fluorescent light sources are positioned along forward and downwardly facing faces of the stanchion and of the arm, respectively, and the faces of the stanchion and the arm are each provided with surfaces of high light reflecting capability, said surfaces facing outwardly from each other at an obtuse angle. The weight and length of the arm and the weight of the stand are such that the device will not tip even when the stand is empty and the arm is in its horizontal position. Shelves in the cabinet are provided for the storage of work tools and supplies which, when so stored make the unit more stable and less susceptible to accidental tipping.

3,670,157
REFLECTIVE CONDENSING SYSTEM FOR CONCENTRATING ILLUMINATION AT AN APERTURE
Herbert E. Bragg, Mansfield Township, Warren County, N.J., assignor to De Luxe General Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 739,772, June 25, 1968, now abandoned. This application Oct. 28, 1970, Ser. No. 84,720
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 **4 Claims**



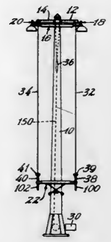
The final condensing lens element, commonly used in a system for concentrating light at an aperture, is replaced by light restricting path means forming a transversely unobstructed, open ended light path. Spaced, opposed front surface mirrors define a portion of the path along which light is reflected back and forth between the mirror surfaces to emerge at the open end as a uniform flood of light. The absence of transverse surfaces avoids any collecting of dirt which would cause streaks to be printed on film printed with the concentrated light.

3,670,158
PROJECTOR
Norio Suzuki, and Yoji Furukawa, both of Kawasaki-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 13, 1969, Ser. No. 865,814
Claims priority, application Japan, Oct. 15, 1968, 43/89496; Dec. 28, 1968, 43/114282
Int. Cl. F21r *13/14, 17/00*; F21m *3/18*
U.S. Cl. 240—41.5 **3 Claims**



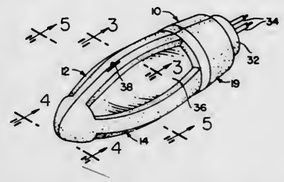
A projector comprising a lamp unit enclosing a concave reflector, a light source disposed at a vicinity of focus point of said reflector, a front lens secured at the open end of said reflector, and a retaining ring engaged to the peripheral edges of said lamp unit is mounted on a supporting frame by means of the adjusting screws and a coil spring which resiliently biasing said lamp unit to the frame. The frame is provided on its inner surface with projections which engage the outer surface of the reflector, whereby adjustment of the adjusting screws renders the lamp unit slidably movable so as to aim the optical axis without using a mounting ring.

3,670,159
HIGH LEVEL LIGHT PALE INCLUDING MEANS FOR LOWERING LIGHTS FOR SERVICING
Paul A. Millerbernd, 230 McLeod Avenue West, Winsted, Minn.
Filed May 13, 1970, Ser. No. 36,896
Int. Cl. F21v *21/36*
U.S. Cl. 240—65 **9 Claims**



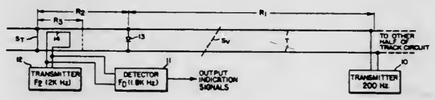
Apparatus to service an unusually high light pole is disclosed. The lights on the pole are supported by a ring having latches capable of engaging support members at the top of the pole. The lights are lowered by moving a retriever ring up the pole to disengage the latches and carry the support ring to the bottom. Motive power is supplied by an electric motor which is connected to the retriever ring by three steel cables traveling up the inside of the pole and over pulleys at the top of the pole.

3,670,160
LAMP AND SOCKET DECORATIVE LOCKING DEVICE
Leonard B. Flowers, 753 Valley Chase Road, Bloomfield Hills, Mich., and Vincent F. Okuniewski, 5136 Gerald Street, Warren, Mich.
Filed May 20, 1971, Ser. No. 145,348
Int. Cl. F21v *15/00*
U.S. Cl. 240—102 A **10 Claims**



A decorative protective and locking closure for a lamp and socket combination is disclosed. Complementary section members have interlocking features which, when engaged, provide a protective closure and covering device secured about a lamp and socket combination so that the lamp cannot be removed without disengagement of the complementary section members forming the closure.

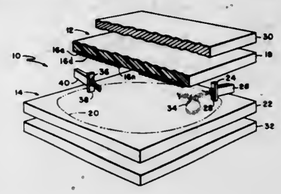
3,670,161
COMBINED HIGH AND LOW FREQUENCIES FOR TRACK CIRCUIT
Henry C. Sibley, Adams Basin, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed May 4, 1970, Ser. No. 34,236
Int. Cl. B61l *23/30*
U.S. Cl. 246—40 **6 Claims**



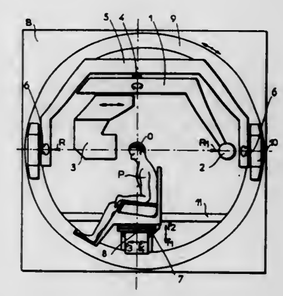
A continuous rail alternating current track circuit has been provided having shunts at extreme ends for terminating the circuit. A track transmitter is coupled to the rails for center feeding the circuit with a first signal having an associated effective range less than the distance to the shunt. The improvement for providing accurate detection of a vehicle shunt between the termination shunt and the end of the effective range of the signal includes a transmitter located at each end of the track circuit coupled to the rails for propagating a second signal at least to the range end of the first signal. Means at the range end of the second signal modulates the first and second signals in the rails to high and low side-band frequencies and a detector means at each end of the track circuit responds to at least one side-band frequency for detecting the modulated frequency and providing indication of vehicle presence when the side-band frequency is interrupted.

3,670,162
CHARGED PARTICLE ANALYZER
Robert E. Elmore, Tulsa, Okla., assignor to Avco Corporation, Tulsa, Okla.
Continuation-in-part of application Ser. No. 61,068, Aug. 5, 1970, now abandoned. This application Sept. 23, 1970, Ser. No. 74,694
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **18 Claims**

A charged particle analyzer for analyzing charged particles with respect to their specific mass is disclosed. The charged particle analyzer employs the principle of crossed electric and magnetic fields to obtain perfect double focusing and high resolution. The electric field is radial in direction and proportional in magnitude to the radius of the analyzer at any point in the flight cylinder and is normal to the magnetic field. A suitable source of ions is provided to permit introduction of ions into the analyzer and a suitable ion receiver is provided to receive ions from the analyzer.



3,670,163
RADIOLOGICAL EXAMINATION APPARATUS
Pierre Lajus, Meudon, France, assignor to Compagnie Generale de Radiologie, Paris, France
Filed July 6, 1970, Ser. No. 52,305
Claims priority, application France, July 16, 1969, 6924187
Int. Cl. G03b *41/16*
U.S. Cl. 250—50 **1 Claim**

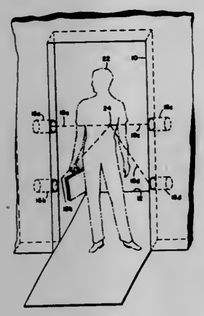


A support for a patient, such as a chair, table or the like, is movably mounted on a track to slide horizontally, or move up and down, the track itself being rotatable within a ring-like frame forming a common structural support for the patient supporting device, as well as for an X-ray examining system including an X-ray source and an X-ray receiver, so as to position the patient to have the region of the patient's body to be examined at the center of the ring-shaped structure. The X-ray examining device itself is mounted on a two-axis gimbal, having its center of rotation coincident with the center of the ring-shaped structure, so that the same region of the patient's body can be examined from all angular positions in three dimensions, that is, can be spherically examined.

3,670,164
PERSONNEL PLUTONIUM MONITOR

Richard W. Hardy, Santa Barbara; Robert B. Knowles, Goleta; Cecil W. Sandifer, and William C. Plake, both of Santa Barbara, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 18, 1970, Ser. No. 64,713
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R 5 Claims

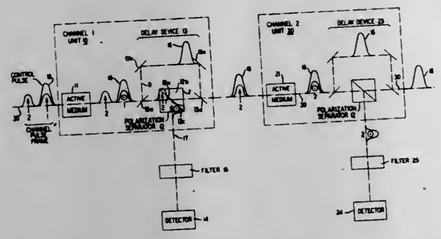


A system for monitoring a zone for the presence of a source of plutonium in which the updated background level of gamma rays is compared with the readings obtained when a possible carrier of a gamma ray source enters the zone. Counting is initiated, and an alarm is sounded when the counting after a predetermined period of time accumulates to a value in excess of the background total plus a significant statistical deviation as a factor of the background total.

3,670,165
OPTICAL TIME DEMULTIPLEXER UTILIZING A SINGLE CONTROL PULSE PER FRAME

Tracy Stewart Kinsel, Bridgewater Township, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,438
Int. Cl. H04b 9/00
U.S. Cl. 250—199 7 Claims

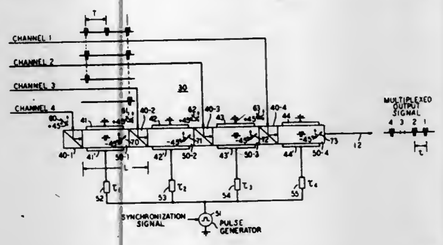


A single optical control pulse per frame is utilized to spatially separate the linearly polarized channel pulses of time multiplexed optical PCM signal in an optical time demultiplexer, the basic unit of which comprises an active medium in which birefringence can be optically induced, a polarization separator in optical series therewith to deflect out of the unit channel pulses to be detected, and a delay device which selectively delays the control pulse and causes it to by-pass the separator. A plurality of such units, equal in number to the number of channels to be demultiplexed, are disposed in optical series in the transmission path of the signal.

3,670,166
TIME DIVISION MULTIPLEX OPTICAL COMMUNICATION SYSTEM

Ivan Paul Kaminow, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,980
Int. Cl. H04b 9/00
U.S. Cl. 250—199 9 Claims



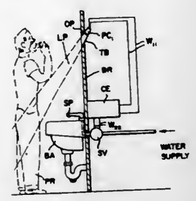
Time-division multiplexing and demultiplexing of N optical, pulse code modulated signals is achieved by means of a cascaded array of N polarization rotators and associated polarization selective prisms. At the multiplexer, the N pulse-encoded signals, polarized along a first direction, are coupled bit-by-bit into the respective rotators by means of their associated prisms. Simultaneously, pulses, having a repetition rate equal to the bit rate of the individual signals are applied to all of the rotators, including a 90° rotation in the direction of polarization of the signals. This permits the signals to pass through the rotator-prism pairs and to enter into a common transmission path as a time-division multiplexed signal. At the receiver, the multiplexed signal enters a demultiplexer comprising an identical array of polarization rotators and polarization prisms. Simultaneously, synchronized pulses, applied to the rotators, effect a 90° rotation in the direction of polarization of the signals, causing the prism to deflect each of the signals, bit-by-bit along W different wavepaths.

In a second embodiment, traveling electrical pulses are employed to produce the 90° rotation of the signal polarization.

3,670,167
PROXIMITY SWITCHING EQUIPMENT

Norman Arthur Forbes, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed May 14, 1970, Ser. No. 37,077
Int. Cl. H01j 39/12
U.S. Cl. 250—221 12 Claims

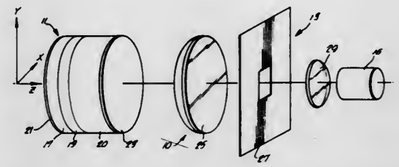


Covers equipment for a plumbing fixture, such as a wash basin, lavatory, etc., employing a photo-conductive cell structure mounted within a view tube pointed in the direction of the user of the plumbing fixture. The photo cell structure will recognize or respond to the presence or absence of a user in the vicinity of the plumbing fixture. The cell may act as a trigger or switch to initiate the operation of the plumbing fixture to transmit water therethrough and then control apparatus to shut off the flow of water to the plumbing fixture after the user has removed his hands from the wash basin or has removed himself from the view of the photo cell structure.

3,670,168
LIGHT DIRECTION SENSOR

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Alan R. Johnston, 1226 Olivelane, La Canada, Calif.

Filed Oct. 1, 1970, Ser. No. 77,220
Int. Cl. G01j 1/36; G01b 11/26; G01c 1/00
U.S. Cl. 250—225 15 Claims

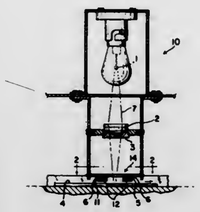


A light direction sensor is disclosed for providing third axis control of spacecraft. The light direction sensor comprises a direction-sensitive modulator positioned before a set of telescopic light gathering optics which, in turn, is followed by a detector. The direction-sensitive modulator comprises birefringent crystal means cut at suitable angles so that the retardation suffered by the light beam would be dependent upon the direction from which the light beam is incident upon the crystal means. The crystal means is coupled with an electro-optic phase modulator which adds a sinusoidal retardation to the light beam. The crystal means and modulator are positioned between crossed polarizers to convert the beam retardation to intensity varying at a certain frequency. The transmitted intensity is then collected by the telescopic optics and led to the detector.

3,670,169
COLOR GRADIENT DETECTOR DEVICE

Ephraim W. Hogue, Potomac, Md., assignor to The United States of America as represented by the Postmaster General

Filed Aug. 18, 1970, Ser. No. 64,724
Int. Cl. H01j 39/12
U.S. Cl. 250—226 10 Claims

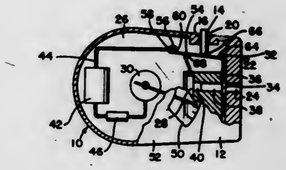


A color gradient detector device is disclosed, allowing for the performance of postal meter mark discrimination, which requires a scanning step followed by a signal producing and detecting step. The device has a sensor head connected to an electronic circuit comprising a dual input—single output signal amplifier followed by a signal discriminator and detector.

3,670,170
NON-VISIBLE ELECTROMAGNETIC RADIATION MEASURING DEVICE

John M. Stevens, Upper Darby, and Richard R. Maxwell, Media, both of Pa., assignors to John M. Stevens, West Chester, Pa.

Filed Mar. 15, 1971, Ser. No. 124,667
Int. Cl. G01d 5/34
U.S. Cl. 250—229 7 Claims

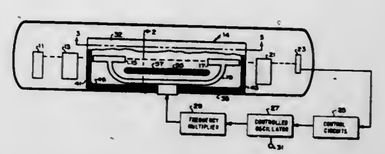


A non-visible electromagnetic radiation measuring device which incorporates a photoconductive cell responsive to electromagnetic waves of wavelength in the range of 3700 angstroms, a microammeter connected in series with the photoconductive cell and a variable resistor connected in the circuit to vary the current flow through the photoconductive cell. A switch has its arm connected to an apertured shutter and is responsive to an external push button to both close the photoconductive cell circuit and to simultaneously register the shutter aperture with an opening in the device housing which communicates with the photoconductive cell to thereby admit electromagnetic waves to the cell for measuring purposes. Release of the push button automatically releases the switch arm to both open the photoconductive cell circuit and to move the shutter aperture out of registry with the housing opening.

3,670,171
ATOMIC BEAM TUBE HAVING A HOMOGENIOUS POLARIZING MAGNETIC FIELD IN THE RF TRANSITION REGION

Richard F. Lacey, Peabody, Mass.; Leonard S. Cutler, Los Altos Hills, and Wilson S. Turner, Los Gatos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 30, 1969, Ser. No. 837,398
Int. Cl. G01n 27/78; H01s 1/00
U.S. Cl. 250—41.3 8 Claims



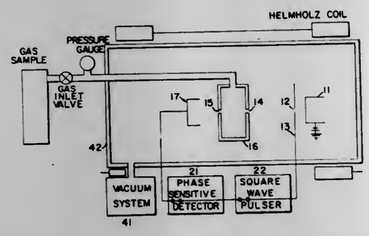
An atomic beam tube has a magnetic C-field region which produces a very uniform static magnetic polarizing field transverse to the path of the atomic beam. The C-field is produced by two coils wound inside a tubular member and longitudinally aligned with the atomic beam. The two coils are spaced apart a predetermined distance. A magnetic field-producing baffle shield is disposed in the C-field region adjacent to the atomic beam for assisting in the maintenance of a uniform C-field.

3,670,172

CHARGED PARTICLE GENERATING AND UTILIZING

David E. Golden, Cambridge, Mass., assignor to Advanced Research Instrument Systems, Inc., Austin, Tex.

Filed Apr. 20, 1970, Ser. No. 30,075
Int. Cl. G01n 23/02
U.S. Cl. 250—43.5 R 18 Claims



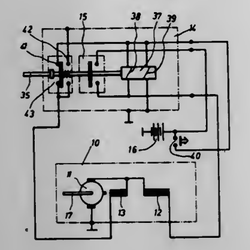
A cylindrical, retarding potential difference type electron monochromator with exceptionally high energy resolution includes an electron beam source having essentially zero transverse velocity in a region that is maintained essentially free from magnetic fields. This device can also be used as an electron energy analyzer. In the electron spectrometer the electron beam passes through a chamber having a gas to be analyzed and then impinges upon an electron collector or electron energy analyzer. A sawtooth scanning potential waveform is applied to the chamber; a square wave of higher frequency, to a retarder electrode. The collector current as a function of the instantaneous value of the sawtooth potential measures the electron resonances of the gas. The electron resonances identify the various constituents of the gas and determine the partial pressures of the individual constituents. The device described herein to produce a monoenergetic electron beam or to energy analyze an electron beam applies equally well to other charged particles such as atoms or molecules.

3,670,173

STARTING ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES

Gerhard Pfluger, Markgroeningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 18, 1970, Ser. No. 90,614
Claims priority, application Germany, Nov. 21, 1969, P 19 58 444.2
Int. Cl. F02n 11/08
U.S. Cl. 290—38 R 10 Claims



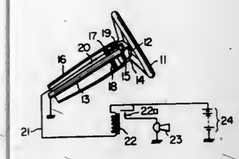
The electric starting motor for an internal combustion engine has its auxiliary field winding and series exciter coil so connected in an electric starting circuit that the field winding and exciter coil produce opposed magnetic fields that, together with the armature field, tend to turn, but do not actually turn, the armature shaft in reverse direction until the starting pinion and gear of the internal combustion engine meshes, whereupon a switch automatically changes the connection of the field winding so that the latter and the exciter coil produce aiding fields that, together with the armature field, turn the armature shaft in its normal direction.

3,670,174

SWITCHING CIRCUIT FOR ELECTRICAL DEVICES OF MOTOR VEHICLES

Naoji Sakakibara, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken

Filed Dec. 23, 1970, Ser. No. 100,863
Claims priority, application Japan, Dec. 26, 1969, 44/1068
Int. Cl. H02g 3/00
U.S. Cl. 307—10 R 6 Claims



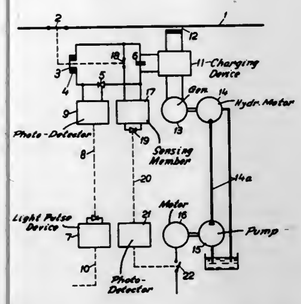
A switching circuit for a motor vehicle comprises a plurality of switches for a horn and other electrically operated devices of the motor vehicle, all these switches being disposed on the vehicle steering wheel so as to make common use of a single slip ring of a horn switch provided for electrical connection between the steering wheel and steering post of the motor vehicle in general. Upon closure of the horn switch, a horn relay connected between a bus and the collector of a transistor is energized to sound the horn since then conduction is caused in that transistor, whereas, when the other switches are closed, a constant voltage at a point between the switches and a constant voltage line of the switching circuit is divided into desired fractions by means of resistances provided respectively to those other switches and a fixed resistance provided between the aforesaid point and the constant voltage line. These voltage fractions are utilized to energize desired relays of the devices associated with the switches via transistors, zener diodes and the like.

3,670,175

ARRANGEMENT FOR SUPPLYING ENERGY TO DEVICES AS HIGH POTENTIAL, FOR EXAMPLE FOR OPERATING PURPOSES

Jorgen Zinck-Petersen, and Bertil Lundovist, both of Hokasen, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 18, 1970, Ser. No. 99,343
Int. Cl. H01h 3/26
U.S. Cl. 307—64 8 Claims



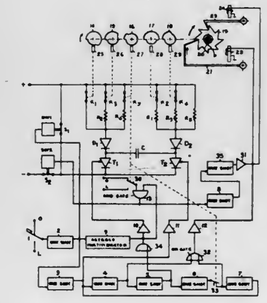
An arrangement for supplying electric energy to operating, measuring and indicating devices placed at the potential of a high voltage line. When current flows through the line, the energy is transmitted from the line to said devices through a saturated current transformer. When the line has no load, however, the energy is transmitted from an energy source at earth potential through a rotating electric generator at high potential.

3,670,176

SWITCHING ARRANGEMENT FOR DISCONNECTING HIGH VOLTAGE DIRECT CURRENT LINES

Werner Faust, Zentralstrasse 101, 5430 Wettingen, Switzerland

Filed Apr. 5, 1971, Ser. No. 131,143
Claims priority, application Switzerland, Apr. 10, 1971, 5325/70
Int. Cl. H01h 33/16
U.S. Cl. 307—136 6 Claims



A switching arrangement for disconnecting a high voltage direct current line and commutating the line current includes a first isolator switch arranged in parallel to the commutating system and a second isolator switch arranged in series with this parallel circuit which latter is connected across the high voltage line through the second isolator switch. The commutating system includes two variable resistance branches connectible in parallel with the first isolator switch for commutating the load current, each such branch includes a controllable electric valve in series with the variable resistance, the valves are rendered conductive in alternation so that the resistance branches are likewise connected in alternation in parallel with the first isolator switch, and the values of the resistances in the respective branches are increased in steps in the time intervals during which they do not carry current. Disconnection of the line is initiated by opening the first isolator switch thus to commutate the load current to the two paralleled resistance branches, the load current is progressively reduced as a result of the stepped increases in resistance values, and lastly the second isolator switch is opened thus to complete the line disconnection.

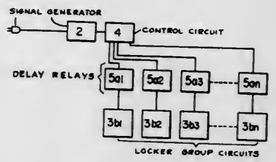
3,670,177

COIN-LOCKER CONTROL DEVICE

Komei Inoue, and Masayuki Iguchi, both of Himeji, Japan, assignors to Kabushiki Kaisha Kokuei Kikai Seisakusho, Himeji-shi, Hyogo-ken, Japan

Filed Dec. 14, 1970, Ser. No. 97,962
Claims priority, application Japan, Dec. 18, 1969, 44/120733
Int. Cl. G07f 5/18; H01h 43/00
U.S. Cl. 307—141.4 8 Claims

A coin-locker control device comprising a signal generator which produces a control signal when a unitary period of time has passed, a control circuit which successively generates operating signals by utilizing the control signal produced by the signal generator for every predetermined time difference, and a plurality of locker group circuits which are connected to the control circuit, and whose charge-day (or hour) - indication shifting operations are controlled by the operating signals produced for every predetermined time difference. After the locker group circuit of a preceding stage has been controlled, the locker group circuits of the following stages are individually and successively controlled without duplicate control.

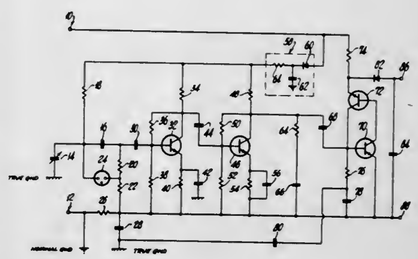


3,670,178

CONTROL CIRCUIT WITH ANTI-SWITCHING AND ANTI-NOISE CIRCUITRY

Carl E. Atkins, Montclair, N.J., assignor to Wagner Electric Corporation

Filed Apr. 17, 1970, Ser. No. 29,548
Int. Cl. H02h 7/20
U.S. Cl. 307—202 5 Claims

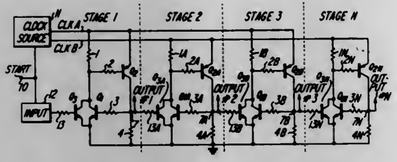


A phase-shifting circuit connected in the output circuit of the first amplifier stage in a control circuit causes cancellation of transient signals at the input terminals of the amplifier. The magnitude of such transients appearing on the neutral line is reduced by a resistance between nominal ground and the neutral line and a filtering capacitor between the neutral line and true ground. A safety capacitor connected between true ground and the bias circuit of a switch of the control circuit prevents a change in the state of the switch if the wrong circuit terminal is connected to the hot terminal of the power source. Circuitry for degrading the amplification of low-frequency sinusoidal components of the output of the final amplifier stage is provided.

3,670,179
ELECTRICAL CIRCUIT

Winthrop Seeley Pike, Princeton, N.J., assignor to RCA Corporation

Filed Oct. 22, 1970, Ser. No. 82,945
Int. Cl. G11c 19/00; H03k 23/08
U.S. Cl. 307—221 10 Claims

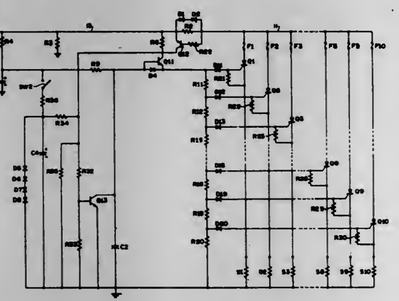


A shift register employing a plurality of complementary flip-flop circuits with noncapacitive interstage coupling.

3,670,180
INTERVALOMETER

Herbert P. Grossmon, Lexington; James O. McDonough, Concord, and James K. Roberge, Lexington, all of Mass., assignors to Concord Control Inc., Boston, Mass.

Filed Nov. 19, 1969, Ser. No. 877,893
Int. Cl. H03k 17/30, 17/28; F41f 3/04
U.S. Cl. 307—244 3 Claims



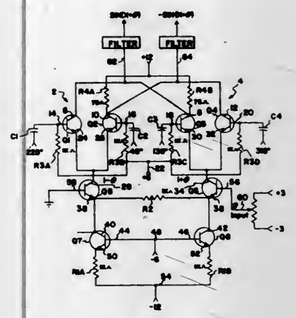
A solid-state rocket firing intervalometer is disclosed which employs a plurality of SCRs (silicon controlled rectifiers) for controlling the launching of respective electrically fired rockets, the gate circuit of each SCR being responsive to an input voltage above a predetermined threshold for triggering the SCR thereby to fire the rocket. The charging of a capacitor provides a progressively rising control voltage and a voltage divider applies a different portion of the rising control voltage to each of the gate circuits. Accordingly, each rocket is fired when the respective portion of the control voltage reaches the gate circuit threshold of the respective SCR.

3,670,181
SHIFTING PHASE IN A TELEVISION CAMERA

Donald E. Pauly, Salt Lake City, Utah, assignor to Telemation, Inc., Salt Lake City, Utah

Filed Mar. 29, 1971, Ser. No. 128,839
Int. Cl. H03k 1/12
U.S. Cl. 307—262 6 Claims

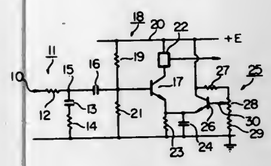
Methods and apparatus for electrical phase shifting comprising a pair of transistor phase modulator circuits having the collectors of the transistors in each of the modulator circuits connected in a parallel summing relation to the collectors of the corresponding transistors in the other modulator circuit. The base of each transistor is biased with a square wave signal in a manner such that the phase of the signal applied to each transistor is 180° out of phase with the bias signal applied to the other transistor of the same modulator and is 90° out of phase with the bias signal applied to either of the transistors in the other modulator. A transistor bridge input circuit is provided which permits the value of the circuit input to be a known voltage multiplied by the number of degrees of phase shift desired.



3,670,182
HIGH-SPEED PULSE DELAYING CIRCUIT

Tsuyoshi Konno; Katsuo Nakazato, and Satoshi Ise, all of Kodoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 17, 1970, Ser. No. 72,981
Claims priority, application Japan, Sept. 17, 1969, 44/75037
Int. Cl. H03k 17/26
U.S. Cl. 307—293 2 Claims

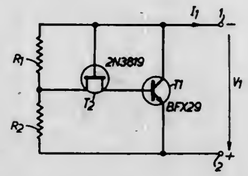


This specification discloses a high-speed pulse delaying circuit having its extremely slight minimal delay and adapted for use as a time-base circuit for a wideband oscilloscope. The pulse delay circuit comprises essentially an integrator consisting of a resistor, a capacitor and a grounded resistor connected to the capacitor in series and a high-speed pulse generator using an avalanche transistor. The grounded resistor has such a low resistance that the waveform of the integrator output resulting from the integration of a rectangular input pulse has a sharp rising portion at a position corresponding to the leading edge of the rectangular pulse, thereby to reduce the minimal delay time. Provision of a voltage adjustment circuit is made for varying the emitter potential of the avalanche transistor to vary the delay time.

3,670,183
TWO-TERMINAL NEGATIVE RESISTANCE DEVICE EMPLOYING BIPOLAR-UNIPOLAR TRANSISTOR COMBINATION

David Joseph Ager, Grundisburgh, and Ian William Stanley, Ipswich, both of England, assignors to The Post Office, London, England

Filed Dec. 22, 1970, Ser. No. 100,623
Claims priority, application Great Britain, Jan. 2, 1970, 191/70
Int. Cl. H01c 7/10
U.S. Cl. 307—304 12 Claims

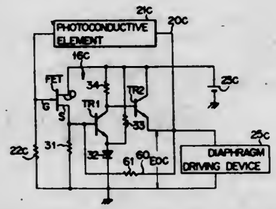


This Specification describes electrical networks having two terminals and exhibiting negative dynamic resistance characteristics achieved by the use of a field effect transistor having its gate electrode connected to one of the terminals and connected in a resistive bias circuit to control the base current of a bipolar transistor having its collector-emitter path connected in a circuit from one to the other of the terminals. Both voltage controlled and current controlled networks are described and examples of the use of negative feedback arrangements to improve network linearity are given.

3,670,184
LIGHT SENSITIVE AMPLIFIER CIRCUIT HAVING IMPROVED FEEDBACK ARRANGEMENT

Gijun Idei, Tokyo, and Saburo Numata, Saitama-ken, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Fuji Shashin Kouki Kabushiki Kaisha, Saitama-ken, Japan

Filed Feb. 9, 1971, Ser. No. 113,979
Claims priority, application Japan, Feb. 13, 1970, 45/11970; 45/11971; Feb. 18, 1970, 45/13404
Int. Cl. H03k 3/42; H01j 39/12
U.S. Cl. 307—311 13 Claims

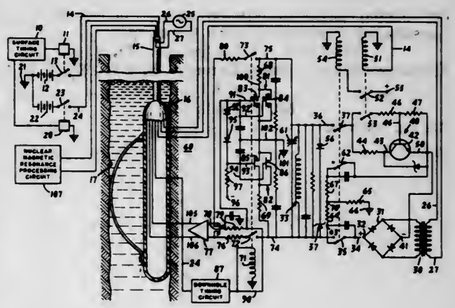


A light sensitive amplifier circuit arrangement for detecting light comprising a source follower field effect transistor having at least one resistor connected to its gate as well as between its source and ground; a second transistor whose base is connected to the field effect transistor, and whose collector is connected to a power source through a resistor; a constant voltage supply element connected between emitter of the second transistor and ground; a photocell connected in a negative feedback loop disposed between the gate of the field effect transistor and the output side of the second transistor; and a load connected to the output side of the second transistor and which driven in response to the variation of the resistance of the photocell due to the intensity of incident light. Further included is a negative feedback transmitting element from the output side of the second transistor to the grounded point of the resistor included in the source circuit of said field effect transistor. The resistor placed between the source of said field effect transistor and the grounded point may be a variable or semifixed type, there may be connected in parallel with the variable resistor a circuit including a first resistor, a heat sensitive resistor element and a second resistor all connected in series, the junction of the first resistor and the heat sensitive resistor element or second resistor is connected to the base of the second transistor. Still further, an additional resistor may be connected between the power source and either or both of the gate of said field effect transistor and the base of the second transistor.

3,670,185
INDUSTRIAL TECHNIQUE

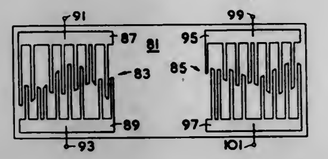
Clifford Vermette, Houston, Tex., assignor to Schlumberger Technology Corporation

Filed Apr. 15, 1970, Ser. No. 28,797
Int. Cl. H03k 17/60
U.S. Cl. 307—304 3 Claims



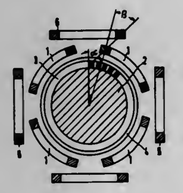
An illustrative embodiment of the invention relates to a circuit for a nuclear magnetic logging tool in which two sets of two parallel connected field effect transistors (FET), are coupled to respective gate voltages that are of equal magnitude and of opposite polarity. During polarization, the FETs are in a low impedance condition to avoid being subjected to large voltages. The method of biasing, together with the parallel connection of the FETs ensures symmetrical voltages with respect to ground across the coil. At the end of polarizing, the coil voltage reverses causing conduction to occur in a Zener diode which is connected across the coil. When the reverse voltage of the coil drops below a predetermined level, the Zener diode stops conducting and the circuit rings at its resonant frequency for a few milliseconds. To further reduce the charge in the circuit, a low value critical damping resistance is applied across the coil through another field effect transistor. After most of the stored charge has been dissipated, both FET sets are switched to a high impedance state in order to apply the formation fluid nuclear magnetic resonance signal to the downhole amplification system input.

3,670,186
PIEZOELECTRIC DEVICE UTILIZING LITHIUM GERMANATE
Maurice Vernon Hobden; George Joseph Rich, and Daniel Stewart Robertson, all of Malvern, England, assignors to National Research Development Corporation
Filed July 19, 1971, Ser. No. 163,826
Claims priority, application Great Britain, July 20, 1970, 35,026/70
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 5 Claims



A device using the piezoelectric effect wherein the material in which the piezoelectric effect takes place is lithium germanate, Li_2GeO_3.

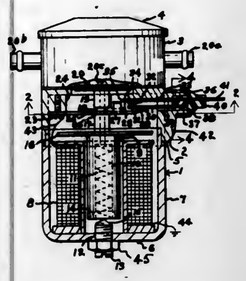
3,670,187
IRONLESS DIRECT-CURRENT MACHINE HAVING A NORMAL CONDUCTING ROTOR AND A SUPERCONDUCTING EXCITATION SYSTEM
Egon Thum, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 4, 1971, Ser. No. 149,941
Claims priority, application Germany, June 5, 1970, P 20 27 673.7
Int. Cl. H02k 23/22
U.S. Cl. 310—10 2 Claims



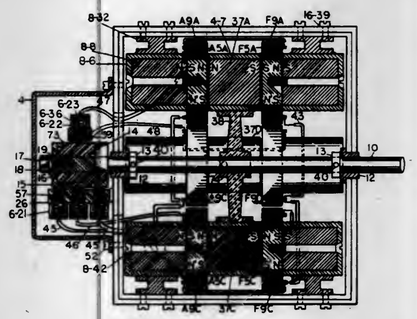
An ironless direct-current machine with a rotor having a rotor winding of normal conductivity and being equipped with a superconducting excitation system is provided with compensation coils electrically coupled with the rotor and traversed by the rotor current. The superconducting excitation system has super-conducting heteropolar excitation coils disposed between the compensation coils and the rotor winding. The compensation coils are dimensioned, arranged in proximity to the excitation coils and have ampere-turns such that the sum of the torque forces arising from the coaction of the field of the compensation coils with the current flowing through the excitation coils substantially cancels the torque forces arising from the coaction of the rotor winding field with the current flowing through the excitation coils.

3,670,188
ELECTROMAGNETIC RECIPROCATING MOTOR
Anton Voros, Jr., 15886 Dacosta, Detroit, Mich.
Filed July 16, 1971, Ser. No. 163,257
Int. Cl. H02k 11/00
U.S. Cl. 310—17 8 Claims

An electromagnetically reciprocating motor assembled in a housing, and including an electrical circuit having normally open contacts, and arm mounted in the housing and actuable to close said contacts, a magnetically permeable core, a spring yieldably urging said core in travel to actuate said arm to close said contacts, a solenoid, effective when energized to counter said spring and reverse the travel of said core to open said contacts; said contacts being assembled in and projecting from a plug, the housing having a socket to removably receive said plug to facilitate replacement of worn contacts, and a closure adapted to enclose both plug and socket to resist introduction of moisture and dirt into said housing; one said contact having a flat face, and the other contact having an arcuate face, to effect a rocking, wiping, cleansing action upon closing of the contacts.

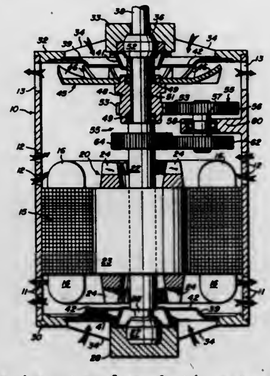


3,670,189
GATED PERMANENT MAGNET MOTOR
Paul Peter Monroe, 109 East San Antonio Drive, Long Beach, Calif.
Filed Apr. 30, 1971, Ser. No. 138,891
Int. Cl. H02k 23/04
U.S. Cl. 310—46 6 Claims



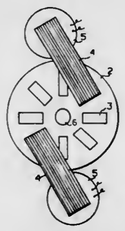
A self-starting permanent magnet motor, particularly a type which will operate on batteries, or alternate half cycle current, consisting of a fore and aft stator assembly. Both fore and aft stator assemblies embody an identical number of permanent magnets of preferred ceramic material and high permeability soft iron inductors, combined into hybrid magnetic poles. A multi-pole permanent magnet rotor, having permanently fixed north and south poles is sandwiched between the fore and aft stator assemblies on a rotatable shaft. The rotor is caused to rotate, due to a gating action which alternates the poles one complete cycle with each transverse passing of the rotor poles between the stator poles. Because of this action, fifty per cent of the energy required to do a specific amount of work is derived from the peak energy product of the permanent magnets.

3,670,190
ELECTRIC MOTOR AND HIGHER SPEED FAN ASSEMBLY
Robert W. Goebel, Springfield, Ohio, assignor to Robbins & Myers, Inc., Springfield, Ohio
Filed Mar. 11, 1971, Ser. No. 123,354
Int. Cl. H02k 9/06
U.S. Cl. 310—60 6 Claims



A stator and a rotor of an electric motor are enclosed within a housing which also encloses a fan mounted for rotation with respect to the rotor shaft. The housing also encloses a transmission unit which connects the fan to the rotor shaft for rotation of the fan at a speed substantially higher than that of the rotor shaft. Preferably, the transmission unit incorporates a stub shaft which is supported for rotation in parallel spaced relationship to the rotor shaft and is connected to the rotor shaft and the fan hub by corresponding sets of drive wheels.

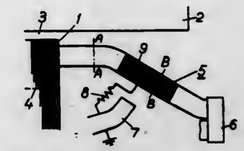
3,670,191
SINGLE-PHASE MOTORS
Max Alth, 6 Tamarack Road, Port Chester, N.Y.
Filed Jan. 11, 1971, Ser. No. 105,381
Int. Cl. H02k 19/14
U.S. Cl. 310—163 10 Claims



Rotor comprises a conductive disc pierced by a plurality of iron cores spaced a distance from edge of disc and equidistant from each other. Stator comprises a plurality of U-shaped solenoids positioned about rotor, with disc approximately centered within the U-shape. Flux is propagated in lines parallel to rotor shaft and in a series of relatively narrow bands tangential to disc radius.

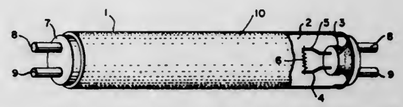
Alternately, flux lines parallel to rotor shaft, perpendicular to rotor and directed in relatively narrow bands at an angle tangential to to rotor disc circumference are generated by means of a single coil set within a circular iron pole piece having a U-shaped cross section with slots cut into legs of the U, which is directed inward and positioned above and below the rotor.

3,670,192
ROTATING ELECTRICAL MACHINE WITH MEANS FOR PREVENTING DISCHARGE FROM COIL ENDS
Anders R. Andersson, and Lars-Goran Virsberg, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Oct. 22, 1970, Ser. No. 82,955
Claims priority, application Sweden, Oct. 29, 1969, 14763/69
Int. Cl. H02h 7/085
U.S. Cl. 310—196 5 Claims



In order to prevent glow discharge from coil ends of a rotating electrical machine to adjacent grounded machine parts, the coil end is provided on the outside of its insulation with a conducting layer which is connected to ground by a voltage dependent impedance, such as a resistance, whose impedance decreases as the voltage increases.

3,670,193
ELECTRIC LAMPS PRODUCING ENERGY IN THE VISIBLE AND ULTRA-VIOLET RANGES
Luke Thorington, Berkeley Heights, and Louis J. Parascandola, North Bergen, both of N.J., assignors to Duro-Test Corporation, North Bergen, N.J.
Continuation of application Ser. No. 654,148, July 18, 1967, now abandoned. This application May 14, 1970, Ser. No. 37,433
Int. Cl. H01j 61/44
U.S. Cl. 313—108 R 17 Claims



Electric lamps having spectral radiation characteristics approximating natural daylight with a controlled amount of energy in the near and middle ultraviolet ranges which also produce light of sufficient intensity and proper color to make them usable as general illuminants.

3,670,194
COLOR-CORRECTED HIGH-PRESSURE MERCURY-VAPOR LAMP
William A. Thornton, Jr., Cranford, and Melvin C. Unglert, Wyckoff, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1971, Ser. No. 109,802
Int. Cl. H01j 61/44, 61/48
U.S. Cl. 313—109 9 Claims

Color-corrected high-pressure mercury-vapor lamp provides good color rendition of illuminated objects, and especially good color rendition of flesh tones. The lamp utilizes a particular phosphor coating principally comprising a two-component blend. One of the phosphor blend components provides an emission in the shorter wavelength region of the visible spectrum peaking at from 440 nm to 470 nm, and an example of this component is a strontium chlorophosphate having an apatite structure and activated by a divalent europium. The other phosphor component provides an emission in the longer wavelength region of the visible spectrum peaking at from 605 nm to 630 nm, and an example of this

phosphor component is yttrium phosphate-vanadate activated by tervalent europium. For the foregoing examples,

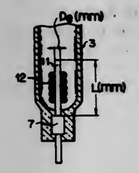


the relative weight ratio of the one phosphor component to the other phosphor component is from 0.05:1 to 0.4:1.

3,670,195
METAL VAPOUR DISCHARGE LAMP

Takeo Kamegaya, Tokyo; Yutaka Imahori, Kawasaki; Akira Ohta, Sagamihara; Tadao Kanoh, Fujisawa, and Akio Ohara, Yokosuka, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Mar. 17, 1971, Ser. No. 125,321
Claims priority, application Japan, Mar. 20, 1970, 45/23097; Mar. 27, 1970, 45/25379
Int. Cl. H01j *17/06*
U.S. Cl. 313—217 **9 Claims**

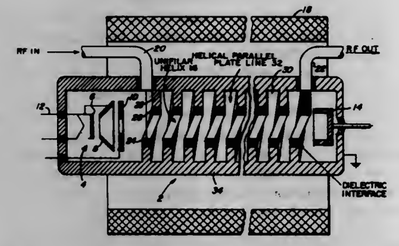


A metal vapor discharge lamp wherein the ratio of the effective diameter to the length of the electrode body used therein and the ratio of said effective diameter to the current of said discharge lamp are so designed to have specified values.

3,670,196
HELIX DELAY LINE FOR TRAVELING WAVE DEVICES

Burton H. Smith, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 24, 1971, Ser. No. 118,256
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **13 Claims**

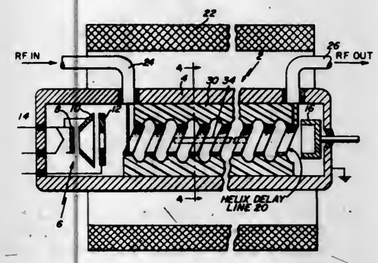


A helix type wave propagating delay line structure for high power broadband traveling wave devices is disclosed having a parallel plate transmission line support arrangement with a dielectric interface. Improved thermal energy dissipation is provided with a minimum of disruption of the electrical circuit parameters necessary for electron beam-RF wave interaction. The phase velocity characteristics of the parallel plate support and helix delay line structures are substantially similar.

3,670,197
DELAY LINE STRUCTURE FOR TRAVELING WAVE DEVICES

Robert McCowan Unger, Wayland, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 25, 1971, Ser. No. 118,791
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **4 Claims**

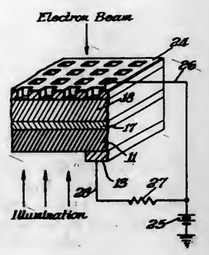


An RF wave periodic delay line is disclosed having thermal energy dissipation and support structure of an insulating material with reduced "dielectric loading" between adjacent elements. For devices requiring internal attenuation to prevent undesired oscillations the appropriate attenuator structure is mounted independently of the dissipation and support structure.

3,670,198
SOLID-STATE VIDICON STRUCTURE

Krut Lehovec; Frank H. Hielscher, both of Williamstown, Mass., and Horst M. Preier, Vienna, Austria, assignors to Sprague Electric Company, North Adams, Mass.

Filed Sept. 30, 1969, Ser. No. 862,338
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **21 Claims**

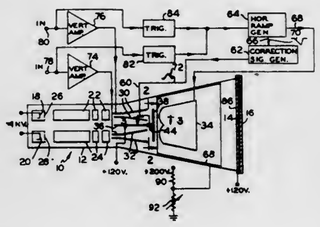


A charge storage vidicon camera structure is provided by covering a thin semiconductor wafer with a semi-insulating layer. A spacial optical pattern is projected onto this photoelectrically active material and transformed into a time sequence of electrical codes which can be subsequently reconverted into an optical image.

3,670,199
CATHODE RAY TUBE HAVING AUXILIARY DEFLECTION PLATE TO CORRECT PINCUSHION DISTORTION

James D. Hawes, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of application Ser. No. 845,740, July 28, 1969, now abandoned. This application Apr. 6, 1970, Ser. No. 23,097
Int. Cl. H01j *29/50, 29/74*
U.S. Cl. 315—13 R **12 Claims**

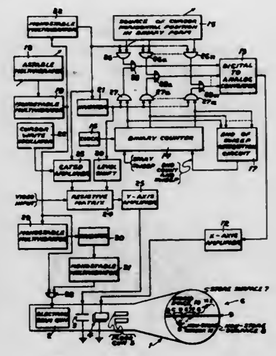


A cathode ray tube having two electron beams and associated deflection systems is described in which an auxiliary deflection plate is employed between two pairs of vertical deflection plates at their outputs to correct pincushion distortion. A correction signal is produced by a control circuit and applied to the auxiliary deflection plate in response to a ramp voltage input corresponding to the horizontal sweep signal. The correction signal is a positive going peak shaped voltage so that the auxiliary deflection plate tends to vertically deflect the beams away from such plate at both the start and end of the horizontal sweep signal to correct pincushion distortion while not deflecting such beam appreciatively at the center of such sweep signal.

3,670,200
NON-STORE CURSOR WRITING ON A STORAGE TUBE

Francis L. Fielding, Montclair, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 3, 1970, Ser. No. 86,497
Int. Cl. H01j *43/30*
U.S. Cl. 315—12 **8 Claims**

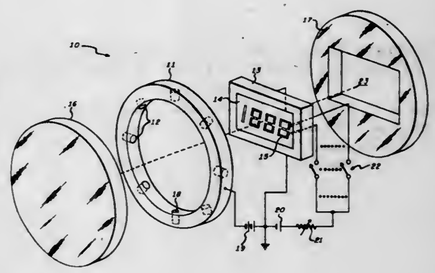


This technique employs a split-screen storage tube wherein the top half of the viewing screen stores the video signal being viewed, and the bottom half, having a non-store characteristic, is used for the cursor. In order that the same deflection system can be used for both the viewed signal and the cursors, the writing of the viewed signal and the cursor is performed by time sharing the writing electron beam, there being no interference with the stored trace because of the small time spent in writing the cursor. The sweep voltage for the viewed signal is produced by a binary counter driven by a clock. The horizontal position of the cursor is presented in binary form. An astable multivibrator determines the frequency of writing the cursor and drives a monostable multivibrator that determines the duration of the cursor. The output signal of the monostable multivibrator and its complement control logic circuitry that couples the sweep voltage in binary form or the cursor horizontal position in binary form to a digital to analog convertor, the output of which drives the horizontal deflection system of the storage tube, resulting in time shared horizontal deflection of the electron beam in the store and non-store portions of the viewing screen. Also, the monostable multivibrator output signal and its complement controls circuitry which results in time shared vertical deflection of the electron beam in the store and non-store portions of the viewing screen. The cursor is vertically written by a sine wave oscillation starting from a predetermined vertical position in the non-stored portion of the viewing screen. In addition, the astable multivibrator output controls the writing electron gun to blank the electron beam during its deflections between the viewed signal and the cursor and vice-versa.

3,670,201
GAS DISCHARGE DISPLAY DEVICE WITH PERIMETRICAL CATHODE

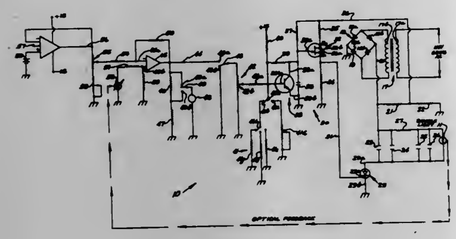
Harry Veron, Framingham, Mass., assignor to Sperry Rand Corporation

Filed July 10, 1970, Ser. No. 52,761
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 TV **6 Claims**



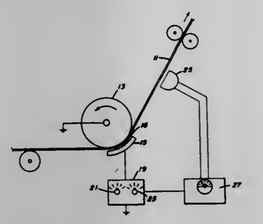
A display device employing a planar array of elements disposed on a dielectric substrate. The dielectric substrate is affixed to a metallic plate which functions as an anode element in an electrical discharge while a perimetrical metallic strip serves as a cathode element. These components are disposed between two non-conductive plates in which a partial vacuum is created and backfilled with an inert gas. The non-conductive plate proximate the display surface of the array of elements is transparent enabling an undistorted view of the segments. A relatively large potential applied between the anode and the cathode elements sustains the electrical discharge thereby providing a source of free electrons in the area between the elements and the transparent plate. The application of a small bias voltage between selected segments of the array of elements and the anode element produces a thin luminous sheath over the energized segments which provides a sharply defined display.

3,670,202
ULTRASTABLE CALIBRATED LIGHT SOURCE
Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Michael F. Heidt, 3530 Nasa Road 1, Apt. 40, Seabrook, Tex.; John E. Novotny, 3904 Arlington Square Drive 021, and Naranappa K. Shankar, 702 Gilpin Street, both of Houston, Tex.
Filed July 31, 1970, Ser. No. 59,956
Int. Cl. H05b 37/02
U.S. Cl. 315—297 7 Claims



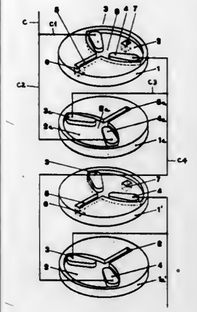
Light from an electrically powered light source is optically monitored by a transducer which converts the optical signal to an electrical error signal. The error signal is compared with a reference signal and a signal representing the difference between the reference and the error signals is generated. The difference signal is employed to control an electronic switching network which in turn regulates the electrical power input to the light source to maintain a constant light level at the optical monitor.

3,670,203
METHOD OF AND APPARATUS FOR IMPARTING AN ELECTRICAL CHARGE TO A WEB OF FILM OR PAPER OR THE LIKE
Thomas C. Whitmore, Jr., Rochester, and Robert G. Cunningham, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 20, 1970, Ser. No. 29,816
Int. Cl. H05f 3/00
U.S. Cl. 317—2 R 4 Claims



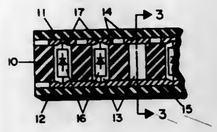
An electrical charge is applied to a moving web of flexible material such as film or paper by transporting the web over a grounded roller while maintaining a stationary electrically charged plate adjacent to the web but spaced slightly therefrom. A direct current voltage of the required sign and magnitude is applied to the plate from any suitable source such as a generator or battery. Alternatively the plate can be grounded and the voltage applied to the roller.

3,670,204
SPARK GAP SYSTEM FOR MAGNETICALLY QUENCHED SURGE VOLTAGE ARRESTER
Robert Greuter, Zurich, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed July 6, 1971, Ser. No. 159,688
Claims priority, application Switzerland, July 23, 1970, 11161/70
Int. Cl. H02h 9/06
U.S. Cl. 317—61.5 2 Claims



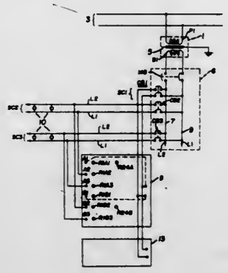
A spark gap system for a surge voltage arrester of the magnetically quenched type is composed of a stack of superposed plates each of which is provided with a recess which defines an arc chamber and a pair of spaced electrodes therein and between which an arc can be struck and lengthened by the magnetic field. The pairs of electrodes in adjacent arc chambers are electrically connected in parallel, and an arrangement of ducts which provide an inter-communication between adjacent chambers permit the ionized gas formed by an arc in either chamber after being lengthened to pass to the other chamber to assist in striking an arc in the latter chamber as the arc in the first-mentioned chamber is extinguished. The arc is thus enabled to be transferred back and forth between adjacent arc chambers until the current has been reduced to such an extent that no further arc can be sustained.

3,670,205
METHOD AND STRUCTURE FOR SUPPORTING ELECTRIC COMPONENTS IN A MATRIX
Corbin Dixon, and John J. Larew, both of Waynesboro, Va., assignors to General Electric Company
Filed Mar. 25, 1970, Ser. No. 22,495
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CE 6 Claims



Electric components are held at selected positions of a matrix defined by a plurality of rows and columns. An upper plate containing rows of conductors and a lower plate containing columns of conductors sandwich the components and complete a matrix structure wherein the components are securely held and are in good electrical contact with external circuitry.

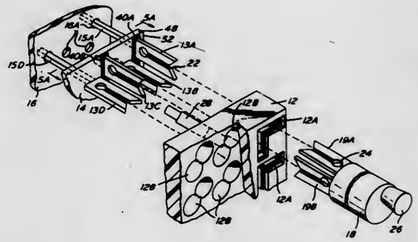
3,670,206
PROTECTION AGAINST ELECTRICAL SHOCK
Richard Cumming Sircom, Windsor, Nova Scotia, Canada, assignor to Eastech Limited
Filed Apr. 12, 1971, Ser. No. 133,158
Claims priority, application Canada, Oct. 6, 1970, 094,882
Int. Cl. H02h 3/28
U.S. Cl. 317—18 D 21 Claims



To reduce the danger of electrical shock in two-wire non-grounded electrical systems, the leakage current from line L1 to ground is balanced by an injected current from ground to line L1, and similarly the leakage current from line L2 to ground is balanced by an injected current from ground to line L2.

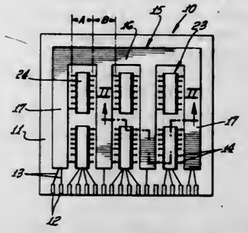
In this way, the leakage current from line L1 to ground cannot pass through a human body from ground to L2, since the leakage current form a closed current loop.

3,670,207
MODULAR MATRIX WITH PLUG INTERCONNECTION
William A. Seabury, III, Highland Road, Ulster Park, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,408
Int. Cl. H05k 1/04
U.S. Cl. 317—101 DH 7 Claims



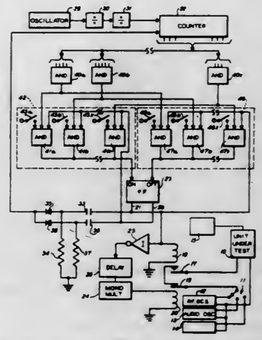
A modular matrix with plug interconnection including at least two individual modular matrix boards of insulating material essentially alike in construction with each board having an upper and a lower face, upper conductive members secured to the upper face and lower conductive members secured to the lower face, detachable contacts secured to the boards, certain of the contacts being electrically united to the upper conductive members and certain of the contacts being electrically united to the lower conductive members, certain of the contacts having wire wrap tails extending beyond the boards with the wire wrap tails of individual boards being electrically united together whereby a series of individual boards may be wired together to produce the equivalent of a large matrix.

3,670,208
MICROELECTRONIC PACKAGE, BUSS STRIP AND PRINTED CIRCUIT BASE ASSEMBLY
Vram E. Hovnanian, Sherman Oaks, and Edward Kitzmiller, Manhattan Beach, both of Calif., assignors to Logic Dynamics, Inc., El Segundo, Calif.
Filed July 13, 1970, Ser. No. 54,325
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CM 6 Claims



A space-saving assembly including a printed circuit card with aligned sets of wire lead mounting terminals such as holes therethrough arranged in modularly spaced parallel rows, a strip including ground and voltage supply busses separated by insulation, located on the card between the holes of each of the aligned sets with a wire lead from each strip extending into respective diagonally opposite holes of each set, and Dual-In-Line Packages (DIP) located over the buss strip with the package wire leads extending into the respective holes of the respective set to be soldered to respective printed leads on the card, with the buss strip under the DIPs acting as the heat sink for the DIPs. An alternative embodiment of the buss strip has one of the conductive busses formed in a U-shaped section providing buss elements above and below the other buss thereby shielding the latter. A second alternative embodiment of the buss strip has three busses with three respective leads for each set of holes to provide ground and voltage at two different potentials to each DIP.

3,670,209
PULSE GENERATOR COMPRISING SERIALLY CONNECTED MAKE AND BREAK RELAYS, TIMING CIRCUIT, FLIP-FLOP AND MONOSTABLE MULTIVIBRATOR
Harold R. Hensen, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 3, 1971, Ser. No. 139,680
Int. Cl. H01h 47/00
U.S. Cl. 317—135 R 6 Claims



Pulse signals are produced by serially connected make and break contacts of respective relays. A timing circuit turns a

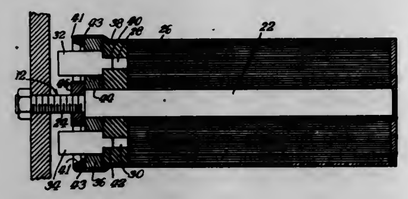
flip-flop on and off to correspond to the beginning and end of a pulse. When the flip-flop is turned on, the make contacts are closed to initiate a pulse and when the flip-flop is turned off, a monostable multivibrator causes the break contacts to open and end the pulse. The timing circuit includes an on selecting circuit and an off selecting circuit which operates independently of each other.

3,670,210

ELECTROLYTIC CAPACITOR HAVING A HEAT DISSIPATING CENTER THEREFOR

Emil F. Blase, Pickens, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed Mar. 22, 1971, Ser. No. 126,577
Int. Cl. H01g 9/00
U.S. Cl. 317—230 10 Claims



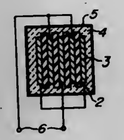
An electrolytic capacitor designed to reduce its internal operating temperatures by incorporating an elongated solid metal arbor into the center of the circular convolute winding. By placing the arbor into thermal contact with the capacitor container and/or an external metallic member, the arbor functions as a heat sink to reduce the operating internal temperature of the capacitor.

3,670,211

SWITCHING CONDENSER ELEMENT FOR SWITCHING AN ALTERNATING CURRENT

Akio Kumada, Kodaira; Kenkichi Suzuki, Hachioji, and Kenichi Kitta, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 65,995
Claims priority, application Japan, Aug. 29, 1969, 44/68843
Int. Cl. H01g 9/00
U.S. Cl. 317—230 9 Claims



A condenser using a dielectric material of $Pb(Zr\text{-}Ti)O_3$ system is used as a starting condenser for a single phase induction motor, so that the ferroelectric material is heated by an alternating current flowing through the condenser to a temperature near the Curie-point thereof and that the impedance of the condenser changes considerably.

3,670,212

CAPACITOR WITH AZEOTROPIC ELECTROLYTE FOR WIDE TEMPERATURE RANGE OPERATION

Daniel J. Anderson, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation-in-part of application Ser. No. 648,251, June 23, 1967, now abandoned. This application July 9, 1969, Ser. No. 840,504
Int. Cl. H01g 9/00
U.S. Cl. 317—230 10 Claims

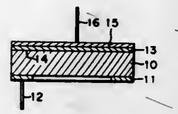
An electrolyte comprising a binary organic system which forms in the correct proportions an azeotropic composition having a boiling point higher than that of either of the system's pure components and a solvent inert to the azeotropic mixture.

3,670,213

SEMICONDUCTOR PHOTOSENSITIVE DEVICE WITH A RARE EARTH OXIDE COMPOUND FORMING A RECTIFYING JUNCTION

Takashi Nakagawa; Tadashi Tsutsumi, both of Tokyo, and Hiroo Hori, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 21, 1970, Ser. No. 39,381
Claims priority, application Japan, May 24, 1969, 44/39883; June 17, 1969, 44/47325
Int. Cl. H01l 15/00
U.S. Cl. 317—234 R 7 Claims



A semiconductor device comprising a substrate made of semiconductor materials such as silicon, germanium and compounds of the elements of Groups III–V, and at least one layer defining at least one junction therewith, said layer being made of a mixture of a rare earth element and titanium oxide and/or zirconium oxide.

3,670,214

VOLTAGE-DEPENDENT RESISTORS

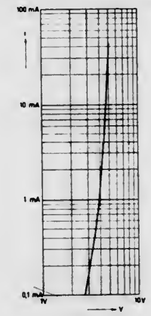
Siegfried Hendrik Hagen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,738
Claims priority, application Netherlands, Jan. 31, 1969, 6901538
Int. Cl. H01l 9/00, 9/06
U.S. Cl. 317—234 R 2 Claims



Voltage-dependent resistor comprising a foil of insulating material in which semiconductor grains are embedded, which project from the foil on both sides and are in contact with

electrode layers applied to both sides of the foil, the grains having a diameter of not more than 150 μ and consist of a



III–V compound, preferably GaP having an energy gap of at least 1.1 eV.

3,670,215

HEAT DISSIPATOR FOR INTEGRATED CIRCUIT

Seymour Wilkens, Wantagh, and Edmund G. Trunk, East Meadow, both of N.Y., assignors to The Staver Company, Incorporated, Bay Shore, L.I., N.Y.

Filed Sept. 28, 1970, Ser. No. 76,035
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 24 Claims



A heat dissipator for a semiconductor component of the type having L-shaped heat conductive tabs extending therefrom comprising a stamped sheet metal body having two pairs of oppositely facing fingers struck from said sheet metal body and bent out of the plane thereof. One of said pairs of fingers functions as resilient snap means adapted to holdingly receive the body of the semiconductor device. The other pair of fingers are L-shaped to correspond with the shape of said heat conductive tabs and are adapted to snugly engage oppositely facing surfaces thereof in planar heat conductive relationship. The dissipator body has two wing portions extending in diverging relationship in a generally opposite direction from said two pairs of fingers.

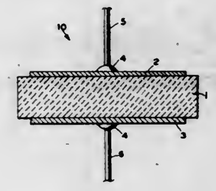
3,670,216

VOLTAGE VARIABLE RESISTORS

Takeshi Masuyama, Osaka; Toshiaki Amemiya, Tokyo, and Yoshio Ida, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Feb. 12, 1970, Ser. No. 10,959
Claims priority, application Japan, Feb. 24, 1969, 44/14792; Mar. 7, 1969, 44/18238; Aug. 15, 1969, 44/65498; 44/65500; 44/65501; 44/65502
Int. Cl. H01e 3/22
U.S. Cl. 317—238 8 Claims

A voltage variable resistor comprising a sintered wafer consisting essentially of zinc oxide (ZnO) and, as an additive, lanthanum oxide (La_2O_3) and/or yttrium oxide (Y_2O_3) and two electrodes applied to opposite surfaces of said sintered wafer, at least one of said two electrodes being a silver paint electrode. The voltage variable resistor modified with lanthanum oxide (La_2O_3) and/or yttrium oxide (Y_2O_3) has



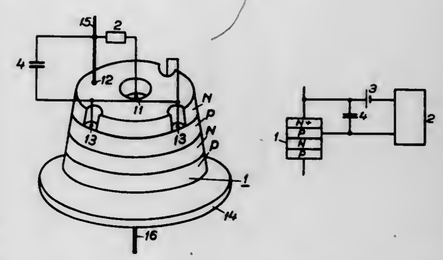
the electrical properties thereof improved by the further addition of cobalt oxide (CoO) and manganese oxide (MnO).

3,670,217

THYRISTOR WITH A CONTROL DEVICE AND HAVING SEVERAL CONTROL ELECTRODES

Carl Ingvar Boksjo, and Bengt Allan Sehman, both of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation of application Ser. No. 712,770, Mar. 13, 1968, now abandoned. This application Aug. 14, 1970, Ser. No. 63,911
Claims priority, application Sweden, Mar. 16, 1967, 3639/67
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 3 Claims



A thyristor has a control device connected between a base layer and an emitter layer. The base layer is provided with a plurality of connecting electrodes one at the center and several around the periphery. A control device is connected to the central electrode while a capacitor is connected between the emitter electrode and the peripheral electrodes.

3,670,218

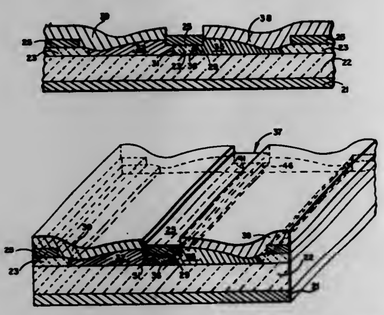
MONOLITHIC HETEROEPITAXIAL MICROWAVE TUNNEL DIE

Rudolf R. August, Laguna Beach, and Richard L. Palmquist, Anaheim, both of Calif., assignors to North American Rockwell Corporation

Continuation of application Ser. No. 805,304, Mar. 7, 1969, now abandoned. This application Aug. 2, 1971, Ser. No. 168,452
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 15 Claims

A monolithic heteroepitaxial microwave tunnel diode with a vertical tunnel junction is manufactured from an insulating substrate on which a layer of p-type semiconductor material has been grown. A layer of dielectric thin film is placed over the p-type semiconductor layer and where an ohmic contact is desired an opening is formed in the dielectric thin film. A circuit metal is then alloyed to the p-type semiconductor

material. A similar opening is formed where a tunnel junction is desired and a second metal is alloyed to the p-type



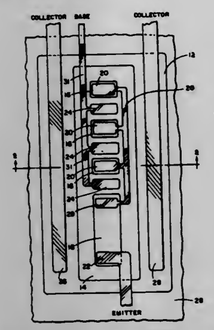
semiconductor material. An n-type semiconductor region is formed during the second alloying.

3,670,219

CURRENT LIMITING TRANSISTOR

Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 7, 1970, Ser. No. 95,760
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 4 Claims



A transistor which may be fabricated on a chip is disclosed whose beta remains at about a constant value with collector current up to a desired percentage above the maximum rated load value thereof and then falls off very rapidly, whereby the collector current never exceeds a desired value. This is accomplished by providing a resistor using the emitter diffusion, within the base region of the transistor and then passing all of the emitter current through this resistor. At a designable value of current flow, transistor action is locally, enhanced at the remote end of this emitter resistor and the current gain of the transistor is thereby degraded as high level injection conditions are artifically established in this localized region.

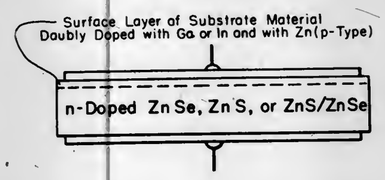
3,670,220

PN JUNCTIONS IN ZNSE, ZNS, OR ZNS/ZNSE AND SEMICONDUCTOR DEVICES COMPRISING SUCH JUNCTIONS

Zoltan K. Kun, Skokie, and Robert J. Robinson, Park Ridge, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,240
Int. Cl. H01l *7/62*
U.S. Cl. 317—237 27 Claims

PN-junctions are formed in a wide band gap zinc chalcogenide (i.e., zinc selenide, zinc sulfide or a zinc sulfo-selenide by pre-doping a surface layer of an N-doped zinc chalcogenide substrate by in-diffusion of a Group III metal to condition it for conversion to P-type conductivity, and converting the pre-doped surface layer to P-type conductivity by doping



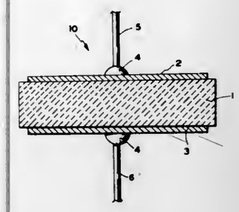
it with zinc. The pre-doping and conversion steps may be conducted either simultaneously or sequentially. Well defined PN-junctions are produced, with majority carrier concentrations on the P-conductivity side of the junction of at least 10^{16} to 10^{17} holes per cubic centimeter.

3,670,221

VOLTAGE VARIABLE RESISTORS

Kazuo Hamamoto; Michio Matsuoka, and Takeshi Masuyama, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Nov. 28, 1969, Ser. No. 880,758
Claims priority, application Japan, Dec. 2, 1968, 43/88824; 43/88825; Dec. 3, 1968, 43/88861; 43/88862
Int. Cl. H01l *3/22*
U.S. Cl. 317—238 7 Claims



Voltage variable resistors comprising a sintered wafer consisting essentially of zinc oxide (ZnO), 0.05 to 8.0 mole percent of bismuth oxide (Bi_2O_3) and 0.05 to 10.0 mole percent of at least one member selected from the group consisting of niobium oxide (Nb_2O_5), zirconium oxide (ZrO_2), vanadium oxide (V_2O_5) and tungusten oxide (WO_3) and two electrodes applied to opposite surfaces of said sintered wafer, at least one of said two electrodes being a silver paint electrode.

3,670,222

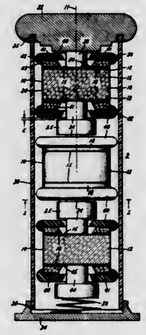
HIGH VOLTAGE CERAMIC CAPACITOR ASSEMBLY

Roy Nakata, Bryn Mawr, and John A. Oppel, Aldan, both of Pa., assignors to General Electric Company

Filed June 28, 1971, Ser. No. 157,265
Int. Cl. H01g *1/13*
U.S. Cl. 317—261 8 Claims

A ceramic capacitor assembly for high voltages comprising a plurality of ceramic capacitor blocks disposed in stacked relation within a tubular insulating housing. A spacer ring of insulating material is associated with each block for maintaining the peripheries of the blocks radially spaced from the insulating housing by a predetermined minimum amount sufficient to effectively prevent ionization in the gaps between the peripheries of the blocks and the tubular housing. Each spacer ring is anchored to its associated ceramic block in

such a manner that all portions of the spacer ring that are disposed radially outward of the periphery of the ceramic



block are located in a position axially spaced from each ceramic block.

3,670,223

METHOD AND APPARATUS FOR PRODUCING VIBRATIONS OR IMPULSES

Henri Louis Etienne Pommeret, 37 Boulevard Suchet, Paris, France

Filed Mar. 5, 1971, Ser. No. 121,506
Claims priority, application France, Mar. 6, 1970, 121506
Int. Cl. H02k *33/08*
U.S. Cl. 318—124 6 Claims

This device for producing vibrations, oscillations or impulses to be converted if necessary into unidirectional impulses or into linear movements comprises a reversible magnetic yoke and core assembly for either driving piles, sheet piles or the like, or generating alternating current, or for measuring vibration and the like.

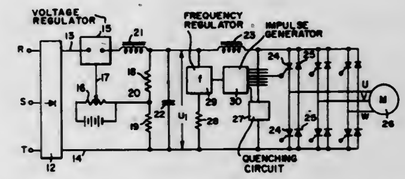
3,670,224

SPEED AND VOLTAGE CONTROL MEANS FOR AN ALTERNATING-CURRENT MOTOR, PARTICULARLY A POLYPHASE INDUCTION MOTOR

Arne Jensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of application Ser. No. 806,655, Mar. 12, 1969, now abandoned. This application Feb. 18, 1971, Ser. No. 116,657
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 2 Claims

The invention relates to a speed and voltage control system for an alternating current motor such as a polyphase induction motor. The system includes voltage and frequency regulators and an inverter. In order to avoid the damaging effects of reverse currents and excessive voltages due to hyper-



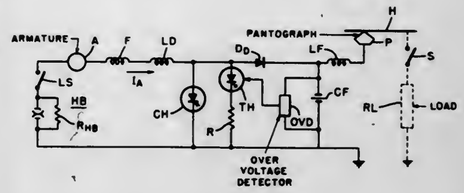
synchronous speed operation upon reducing motor speed, the direct current voltage is made the independent variable with the control frequency being dependent on the actual direct current voltage at the inverter.

3,670,225

SYSTEM FOR BRAKING ELECTRIC MOTOR VEHICLES

Takashi Kitaoka, and Akira Shirashoji, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,718
Claims priority, application Japan, June 19, 1969, 44/48600
Int. Cl. H02k *3/14*
U.S. Cl. 318—270 3 Claims



An electric motor vehicle having at least one DC traction motor is provided with a braking system including a DC chopper device for controlling the speed of the traction motor, and a voltage detector for detecting the voltage across a capacitor during regenerative braking of the motor vehicle and providing a triggering signal whenever the detected voltage exceeds a predetermined magnitude due to the interruption of a load consuming the regenerative power. The triggering signal is applied to a switching thyristor connected across the chopper device to fire the thyristor thereby preventing a further increase in the capacitor's voltage. Also a high speed current decreasing device having a predetermined time delay is actuated in response to the triggering signal and then an associated line switch is opened to interrupt the circuit.

3,670,226

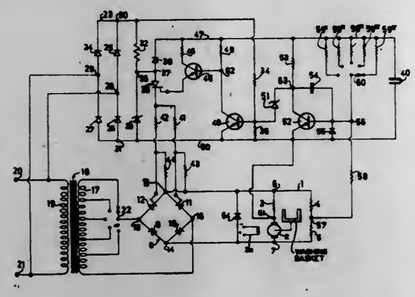
DEVICE FOR THE CONTROLLED ACTUATION OF THE BASKET OF A WASHING MACHINE

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed May 14, 1970, Ser. No. 37,104
Claims priority, application Italy, May 17, 1969, 16948 A/69
Int. Cl. H02p ; D06f *33/00*; H02m *1/08*
U.S. Cl. 318—345 3 Claims

A speed governing device for washing machines for overcoming the defect of generating radiofrequency noises without using any filter. In addition, the device exploits the advantages of DC motors in general without suffering from the inconveniences thereof. The arrangement essentially comprises a DC motor fed through a constant current trans-

former and a rectifier having rectifying elements whose opening is controlled by a device which delivers opening pulses synchronized with the zeros of the AC feeding current until



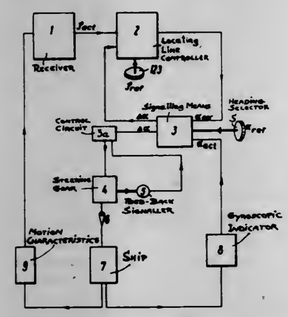
the speed of the motor is below a predetermined value, while the delivery of pulses is discontinued as the predetermined value aforementioned is exceeded.

3,670,227

ELECTRICAL AUTOMATIC PILOT

Walter Kundler, Kiel, and Gerd Hingst, Kiel-Ellerbek, both of Germany, assignors to Anschutz & Co., G.m.b.H., Kiel-Wik, Germany

Filed Oct. 13, 1970, Ser. No. 80,438
Int. Cl. G05d *1/00*; B63h *25/02*
U.S. Cl. 318—581 9 Claims



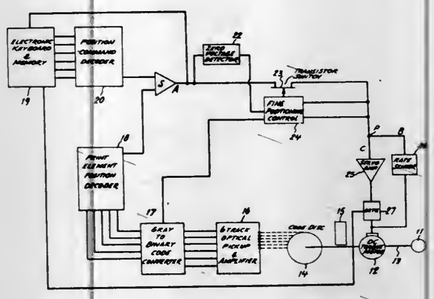
Our invention relates to an automatic pilot for a ship of the type equipped with a gyroscopic compass indicating the true heading of the ship and with a manually adjustable selector set-up in accordance with the selected or desired course. An electrical error signal indicating the difference of the true heading from the selected course controls a trigger circuit which in its turn controls a motor-operable steering gear for actuating the rudder of the ship. As a result, the rudder is so actuated as to keep the error signal to a minimum. For the purpose of our invention a correcting signal is superimposed on the error signal for steering the ship along a track coinciding with a "locating line." This is a line connecting the points in which electro-magnetic waves received from two stationary radio stations have the same phase-angle. The error signal is produced by a PID-network controlled by a radio navigational receiver installed on the ship. As a result, the automatic pilot whose selector has been set up in accordance with the approximate azimuth of the locating line will so steer the ship as to keep the sum of the error signal and the correcting signal to zero. This means, however, that the ship will travel along a track coinciding with the locating line.

3,670,228

DIGITAL FINE-COARSE SERVOMECHANISM FOR A SINGLE ELEMENT PRINTER CONTROL SYSTEM

Donald P. Crosby, Ridgefield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,744
Int. Cl. G05b *11/18*
U.S. Cl. 318—594 11 Claims



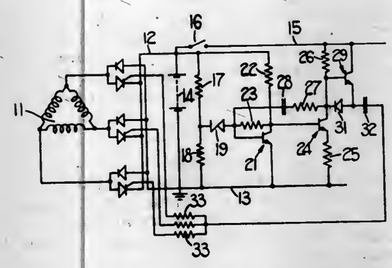
A single element printer selection servomechanism for selectively positioning a spherical printing head to one of a plurality of printing positions arrayed about the printing element. Each printing position comprises a type character disposed within a sector on the surface of the printing element. An error signal representative of the difference between actual and commanded position of the printing element energizes a motor to roughly position the sector of the printing element containing the selected type character. Fine positioning means provide a signal to precisely position the midpoint of the sector of a selected type character after the error signal has been reduced to zero and rough positioning taken place. Circuit means are also provided for braking the motor when its speed reaches a predetermined amount relative to the amplitude of the error signal.

3,670,229

BATTERY CHARGING SYSTEMS

Paul Anthony Harris, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 20, 1970, Ser. No. 91,414
Claims priority, application Great Britain, Dec. 2, 1969, 58,725/69
Int. Cl. H02j *7/06*
U.S. Cl. 320—59 2 Claims



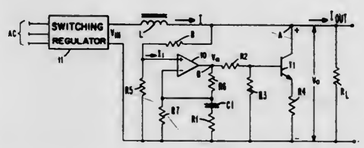
A battery charging system of the kind using a permanent magnet alternator with its output controlled by thyristors associated with a full wave rectifier has an oscillator controlled by voltage sensitive means for determining whether or not the thyristors conduct. The oscillator operates through the intermediary of a capacitor which is charged by the oscillator and discharges through the gate-cathodes of the thyristors, and the discharge path includes a load in the collector circuit of an output transistor in the oscillator. This collector load is bridged by a low resistance path so that the collector load does not reduce the discharge current of the capacitor.

3,670,230

ACTIVE FILTER CAPACITOR FOR POWER SUPPLY SWITCHING REGULATORS

James J. Rooney, Apalachin, and Augustyn Z. Walach, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,110
Int. Cl. H02m *1/14*
U.S. Cl. 321—10 9 Claims



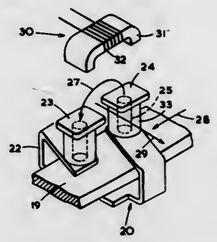
An active filter capacitor circuit for DC voltage regulation in power supply systems with the active capacitor consisting of an amplifier and a transistor output stage driven by the amplifier.

3,670,231

APPARATUS FOR MONITORING FLOW OF CURRENT IN A CONDUCTOR

George Albert Farquhar Maddick, c/o The English Electric Company Limited, Stafford, England

Filed Feb. 8, 1971, Ser. No. 113,472
Claims priority, application Great Britain, Feb. 6, 1970, 5,868/70
Int. Cl. H02m ; G08b *21/00*; H01f *21/06*
U.S. Cl. 321—12 7 Claims



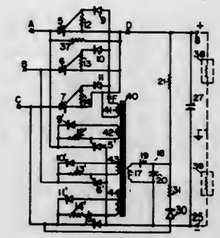
Apparatus for monitoring the flow of recurring pulses of direct current in a conductor. The apparatus includes magnetic means coupled to the conductor for establishing a magnetic field in a known discrete path in response to the recurring pulses and sensing means for generating a signal when a magnetic field is established. The apparatus can be included in a rotatable rectifier system having a plurality of rectifier arms, a magnetic means being coupled to a conductor in each rectifier arm. The magnetic means are disposed in a circular arrangement so that they may generate a signal in a common stationary sensing means as they rotate and pass the sensing means.

3,670,232

PROTECTED POWER SUPPLY

Charles Theodore, Huntington Beach, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.

Filed Nov. 9, 1970, Ser. No. 87,690
Int. Cl. H02m *1/08*, *1/18*
U.S. Cl. 321—14 12 Claims



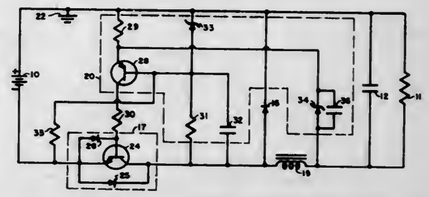
A plural-phase rectifier having triggerable SCRs for rectification, with an oscillator energized from the output of the rectifier for triggering. A diode in each trigger lead with the cathode thereof connected to the trigger of the SCR to prevent inter-SCR triggering when the power supply is short-circuited. Under short-circuit the power supply ceases to operate within a fraction of a cycle of the alternating current being rectified.

3,670,233

DC TO DC CONVERTER

Neale A. Zellmer, Belmont, and Wayne B. Johnson, Los Altos, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 12, 1971, Ser. No. 133,035
Int. Cl. G05f *1/56*
U.S. Cl. 323—17 4 Claims



A circuit for efficiently converting unregulated direct current voltage into a regulated direct current voltage of lower magnitude across a load in which a capacitor and an inductor are used to store electrical energy with a switch to alternately connect and disconnect the circuit to the unregulated voltage source, the switch being controlled by a circuit in which zener diodes are used to detect variations in regulated voltage and turn the switch "on" or "off" in response to rises and falls in load voltage from a predetermined value.

3,670,234

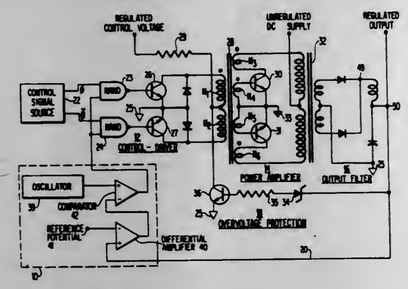
PULSE WIDTH MODULATED VOLTAGE REGULATOR

James M. Joyce, Huntsville, Ala., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,052
Int. Cl. H02m *3/32*
U.S. Cl. 321—18 7 Claims

A regulated power supply of the driven power inverter type. The widths of the driver pulses are controlled by a

modulation waveform which varies in accordance with variations in the regulated output from the reference potential. The driver transistors are simultaneously turned on during the dwell periods of the modulation waveform to dissipate current in the windings of the interstage transformer and switch off the power transistors. The transformer is a current transformer which includes positive feedback windings on the secondary side. The turns ratio of the positive feedback



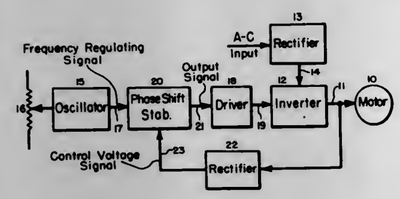
winding and the secondary current winding associated with each power transistor is set equal to the inverse current gain of the transistor to ensure a fixed gain when the transistor is in saturation. A regulated low current voltage is applied to the midpoint of the primary side of the transformer to provide low power switching of the power transistors. A transistor switch connected from the regulator output to the primary side of the transformer removes the driver pulses from the inverter in the event of a component failure.

3,670,235

MOTOR CONTROL SYSTEM WITH COMPENSATION FOR LOW-FREQUENCY VARIATIONS IN MOTOR ENERGIZING VOLTAGE

Benton Bejach, Santa Ana, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 25, 1970, Ser. No. 75,472
Int. Cl. H02m *1/08*
U.S. Cl. 321—18 **9 Claims**



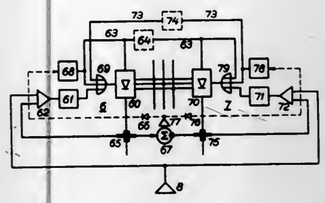
A phase-shift stabilizer is connected in series with an inverter to provide a selective phase-shift of the individual timing pulses passed to the inverter, while maintaining a constant average frequency of these timing pulses. A rectifier circuit in a feedback line from the inverter output side provides a control voltage signal which modifies the phase-shift of each timing pulse in a direction and by an amount appropriate to offset undesired low-frequency fluctuation in the average output voltage from the inverter. The phase-shift stabilizer includes a sawtooth generator for producing a constant amplitude output signal varying in frequency as a function of a frequency regulating signal. A filter is connected to provide a signal which is a function of the undesired low-frequency modulation of the inverter output. A comparator circuit is connected to receive a composite signal formed by mixing the filter output and sawtooth generator signals, and to compare the composite signal against a reference signal. The comparator provides a phase-shifted output signal for controlling the inverter frequency to compensate for the unwanted low-frequency modulation.

3,670,236

CONVERTER STATION HAVING PARALLEL-CONNECTED STATIC CONVERTERS

Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Jan. 25, 1971, Ser. No. 109,433
Claims priority, application Sweden, Jan. 27, 1970, 967
Int. Cl. H02m *7/00*
U.S. Cl. 321—27 R **3 Claims**



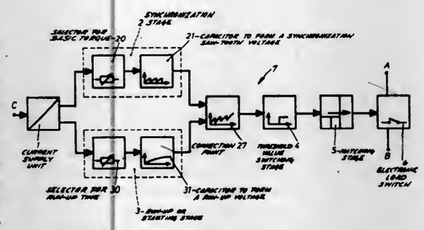
A converter station for high voltage direct current includes two substantially identical parallel converter branches provided with control systems therefore which limit the control angles of the converters of the branches upwards or downwards. A balancing arrangement is provided to assure equal current distribution between the two converter branches when they are forced so far in one direction that the limit value emitter for the converters of one of the converter branches becomes active. The balancing arrangement includes a device responsive to the difference between the current in the two branches to regulate the control system of the converter of the other branch. This arrangement may include cross connections between the limit value emitters to control converters of both converter branches.

3,670,237

APPARATUS FOR THE SMOOTH SWITCHING-ON OF AN ELECTRICAL LOAD

Egon Hubel, Nurnberg, and Gerhard Hoeber, Ingolstadt, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Dec. 16, 1970, Ser. No. 98,839
Claims priority, application Germany, Dec. 23, 1969, P 19 64 376.6
Int. Cl. H02m *7/12*
U.S. Cl. 321—47 **13 Claims**



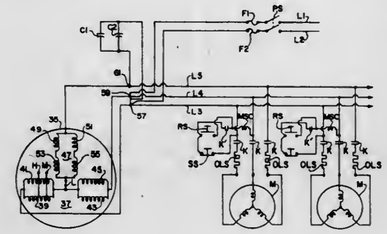
In apparatus for the smooth switching-on of an electrical load a supply line transformer feeds a rectifier having its output connected jointly with a synchronization stage and with a run-up or starting stage. Two such stages are connected to the outputs of the respective rectifiers, each of the stages including capacitor means, resistor means and selectors for varying the capacitor means and the resistor means, the capacitor means of the two stages being connected in series at a connection point for supplying a control voltage. A limiting value switch has its input connected with the limiting value switch and with an electrical load for controlling the voltage supplied to such electrical load.

3,670,238

ROTARY DYNAMOELECTRIC MACHINE HAVING HIGH-RESISTANCE ROTOR

Leroy B. Ronk, Nokomis, Ill., assignor to Ronk Electrical Industries, Inc., Nokomis, Ill.

Filed June 16, 1971, Ser. No. 153,567
Int. Cl. H02m *5/00*
U.S. Cl. 321—55 **25 Claims**



A rotary dynamoelectric machine having a generally annular stator including first and second primary windings oriented at 90° electrical phase relationship with respect to one another, the second winding having approximately 0.845 the number of effective turns of the first winding. An induction rotor of the machine has a cylindrical laminated ferromagnetic core positioned within the stator for rotation about a central axis thereof when the stator is energized by an a.c. power source. The rotor is of single-bar squirrel-cage construction having a plurality of electrically conductive bars each extending the length of the core adjacent the cylindrical surface thereof. Conductive end rings at the ends of the rotor electrically are connected to the ends of the bars at the respective ends of the core. The bars and end rings provide a secondary winding and are physically dimensioned such as to provide this secondary winding with a relatively high resistance, viz., at least twice the resistance of a rotor of conventional commercial design. The windings are interconnected with a source of single-phase a.c. power source to permit the machine to be used either as a self-starting rotary phase converter for supplying three-phase power to a load or as a motor having low inrush current.

ERRATUM

For Class 323—17 see:
Patent No. 3,670,233

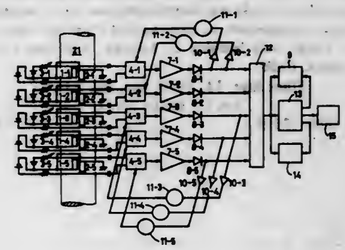
3,670,239

METHOD AND APPARATUS FOR MAGNETIC FLAW DETECTION BY USING MAGNETO-SENSITIVE DIODES

Toshio Shiraiwa, Ikoma, and Tatsuo Hiroshima, Minoo, both of Japan, assignors to Sumitomo Metal Industries Limited, Osaka, Japan

Filed Mar. 19, 1970, Ser. No. 21,062
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **4 Claims**

This invention relates to method and apparatus for inspecting flaws, herein magneto-sensitive diodes are used so as to provide a remarkably higher detecting sensitivity than of the conventional detector such as a search coil or Hall generator.

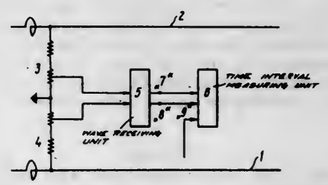


3,670,240

METHOD FOR DETERMINING THE DISTANCE TO A FAULT ON POWER TRANSMISSION LINES AND DEVICE FOR ITS REALIZATION ON D.C. LINES

Vasily Makarovich Maranchak, Lefortousky val, 7/6, korpus 9, kv. 12; Vladimir Nikolaevich Novella, Utrennyaya ulitsa, 10, korpus 2, kv. 43, and Stanislav Petrovich Veisky, ulitsa Lobanova, 4, kv. 36, all of Moscow, U.S.S.R.

Filed June 23, 1970, Ser. No. 49,025
Int. Cl. G01r *31/08*
U.S. Cl. 324—52 **3 Claims**



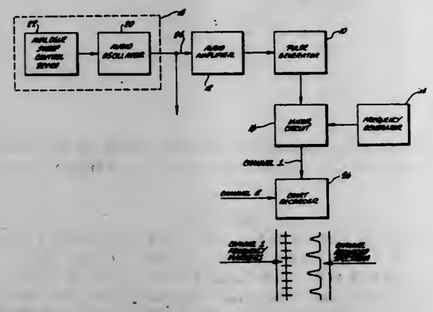
A method for determining the distance to a fault on power transmission lines from the time of propagation of electromagnetic waves along the line, in which at least at one point on the line the timer interval is measured between the instant of arrival of the leading edge of a wave occurring at the fault and propagated towards said point on the line around the loop formed by the line wires, and the instant of arrival of another wave occurring likewise at the fault and propagated towards said point around the loop formed by the line wires and earth, after which the distance to the fault is found as a function of the measured time interval.

A device for applying the above-disclosed method on d.c. power transmission lines, comprising a series combination of a wave-receiving unit connected to the power transmission line via voltage dividers and a time-interval measuring unit, with the wave-receiving unit incorporating at least two transformers whose primaries are connected via voltage dividers to the unlike poles of the power transmission line and whose corresponding secondaries are combined in pairs and connected via rectifiers to said time-interval measuring unit, with some secondaries being connected series-aiding so that they develop a signal proportional to the electromagnetic wave propagated from the fault around one of the two said loops and the remaining secondaries being connected in series opposition so that they develop a signal proportional to the electromagnetic wave propagated from the fault around the other loop.

3,670,241
AUDIO FREQUENCY MARKER SYSTEM

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Edward A. Cohen, 1021 Scripps Drive, Claremont, Calif., and Stanley L. Manatt, 358 San Juan Way, LaCanada, Calif.

Filed Aug. 11, 1970, Ser. No. 63,195
Int. Cl. G01r 23/14
U.S. Cl. 324—79 R 13 Claims

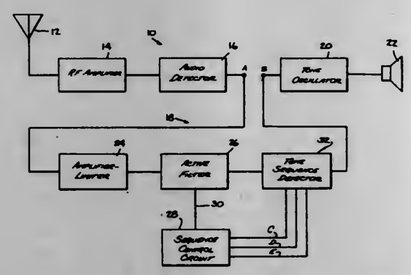


A system for providing a precise temporal display, or record, of the frequencies through which a sweeping audio frequency signal is swept, is disclosed. A sweeping audio frequency signal, of which the exact frequency with respect to time is unknown, is applied as an input to a pulse generator for the purpose of generating a train of pulses having a pulse repetition rate which is the same as the frequency of the applied signals. The train of pulses is applied to a mixer circuit for the purpose of being mixed with a signal having a known frequency with respect to time. The beat frequency signals generated by the mixer circuit are applied to an appropriate display device, such as a chart recorder, for the purpose of providing the desired display or record.

3,670,242
A SELECTIVE PAGING RECEIVER AND DECODER EMPLOYING AN ELECTRONIC FILTER MEANS

Charles F. McGarvey, Ringwood, N.J., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 3, 1969, Ser. No. 881,817
Int. Cl. H04b 1/100
U.S. Cl. 325—55 42 Claims

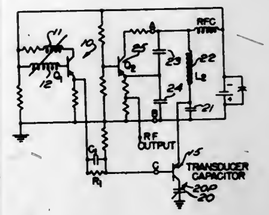


A preset tone grouping arranged in some predetermined order in tone encoded paging signals is detected by attempting to sequentially pass said tone encoded signals through an electric filter. The electric filter is initially arranged to pass only the first tone of the predetermined order and upon the passage of the first tone, the electric filter is then sequentially retuned to pass in the predetermined order the remaining tones of the predetermined tone grouping.

3,670,243
PHYSICAL DISPLACEMENT MEASURING SYSTEM UTILIZING IMPEDANCE CHANGING THE FREQUENCY OF AN OSCILLATORY CIRCUIT

Guy L. Fougere, Lincoln; John L. Rothery, Marblehead, both of Mass., and Raymond H. Miller, Warwick, R.I., assignors to Federal Products Corporation

Continuation-in-part of application Ser. No. 331,225, Dec. 17, 1963, now abandoned, and 592,502, Nov. 7, 1966, now abandoned, and 730,539, May 20, 1968, now abandoned. This application Feb. 27, 1970, Ser. No. 14,937
Int. Cl. G01r 27/26, 27/00
U.S. Cl. 324—57 R 3 Claims

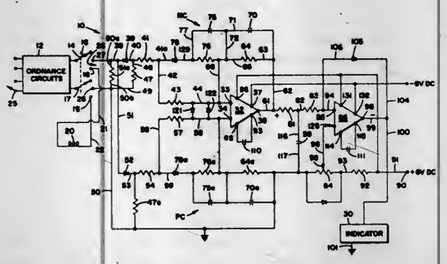


An analog data transmission system having as the transmitting means an oscillator with a tuned circuit and means to vary the tuning of this circuit by an incremental value by a switching means operating repetitively, the entire system including a receiving means having a frequency discriminator followed by a voltage sensitive readout device which measures the difference between the two alternate frequencies of the oscillator caused by the switching.

3,670,244
STRAY ELECTRICAL ENERGY DETECTOR CIRCUIT

James H. Trim, Hurst, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed June 29, 1970, Ser. No. 50,613
Int. Cl. G01r 31/02, 19/14
U.S. Cl. 324—72 10 Claims

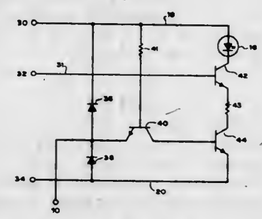


A circuit for detecting stray electrical energy in aircraft ordnance circuits and providing a warning signal if the stray electrical energy has such characteristics as to cause operation of pyrotechnic device, such as an igniter, if applied thereto.

3,670,245
LOGIC CLIP

Gary B. Gordon, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1970, Ser. No. 16,757
Int. Cl. G01r 15/12, 31/02
U.S. Cl. 324—73 R 7 Claims

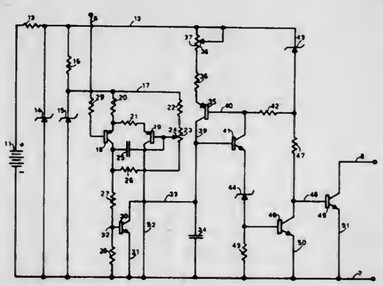


A device which clips onto dual in-line integrated circuit (referred to herein as I.C.) package has a visual indicator for each pin or lead on the I.C. package to indicate the logic state on each pin or lead, and the device determines which leads are connected to the power supply and ground and uses the voltage across those leads to power itself.

3,670,246
UNDER-VOLTAGE MONITORING DEVICE HAVING TIME DELAY MEANS FOR REGULATED POWER SUPPLIES

Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Mar. 16, 1970, Ser. No. 19,858
Int. Cl. G01r 19/16
U.S. Cl. 324—133 7 Claims



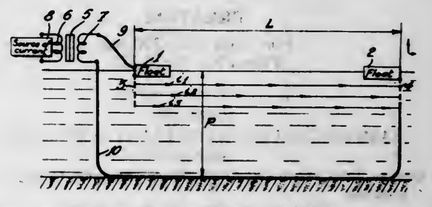
A regulated power supply for use with voltage sensitive devices such as integrated circuits is monitored for low voltage conditions. When the monitored voltage drops below or remains below a predetermined level for longer than a predetermined period of time an inhibit signal is provided.

3,670,247
METHOD AND DEVICE FOR RADIATING MEGAMETRIC RADIO WAVES

Henri Gutton, 134, rue Perronet, Neuilly-sur-Seine, France; Jean Jacques Hugon, deceased, late of Asnieres, France; Simone Jeanne Georgette Hugon, 21, rue de Belfort, Asnieres, France; Marie Jeanne Augarde, 16, rue du Poste, Saint Barnabe-Marseille, France, and Emile Hugon, 101 Boulevard de Paris, Casablanca, Morocco (heirs)

Filed May 31, 1961, Ser. No. 122,367
Claims priority, application France, May 31, 1960, 828676
Int. Cl. H04b 13/00; H01g 1/34, 1/104
U.S. Cl. 325—28 20 Claims

1. A process for radiating megametric radio waves which consists in generating an alternating voltage at extremely low frequency ranging from 1 cycle to 100 cycles per second, applying said voltage to two points which are immersed within a conductive liquid mass close to the free surface thereof and distant from each other by several kilometers in order to create in said liquid mass between said points and close to



said free surface current streams parallel to said free surface and capable of generating by radiation electromagnetic waves propagating far off at said extremely low frequency, and rendering negligible the perturbations of said waves under the action of the induction effects produced by the application of said current to said points.

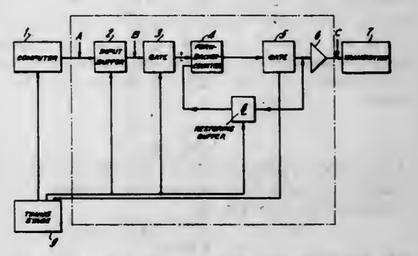
ERRATUM

For Class 325—55 see:
Patent No. 3,670,242

3,670,248
METHOD AND APPARATUS FOR CONVERTING MULTI-PULSE COMMANDS INTO COMMAND UNITS FOR TRANSMISSION

Fritz Hofmann, Munich, Germany, assignor to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed July 9, 1969, Ser. No. 840,412
Claims priority, application Germany, July 18, 1968, P 17 63 685.0
Int. Cl. H04b 1/04
U.S. Cl. 325—141 8 Claims



In a method of transmitting cyclically formed commands, in the form of individual pulses, over a transmission channel which is restricted in its transmission capacity, security against interference, or both, the individual pulses are combined to form larger command units which units are cyclically transmitted. The balance of pulses remaining within a transmission cycle, during formation of the larger command units, is transferred to the respective following transmission cycle. The apparatus includes an input buffer providing an output command in the form of a number of individual pulses related to a certain time period. A first gate circuit connects the buffer with the forward-counting input of a forward-backward counter, and the counter is connected, through a second gate circuit and an output amplifier, with a transmitter forming the input of a transmission channel. The output of the second gate circuit is connected, through a restor-

ing buffer, with the backward-counting input of the counter. The two buffers and the two gate circuits are controlled by a common timing stage, with the respective timing sequences for the individual components being coordinated in a selected manner.

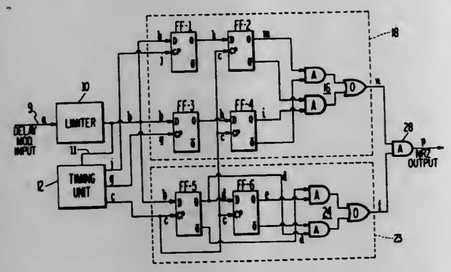
ERRATUM

For Class 325—370 see:
Patent No. 3,670,275

3,670,249
SAMPLING DECODER FOR DELAY MODULATION SIGNALS

George John Mesleaer, Acton, Mass., assignor to RCA Corporation

Filed May 6, 1971, Ser. No. 140,886
Int. Cl. H03k 9/04
U.S. Cl. 328—110 4 Claims

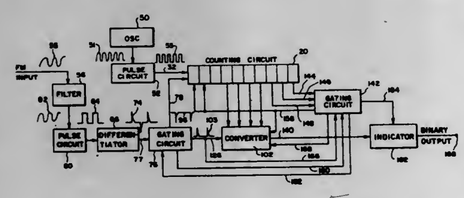


A decoder is disclosed for an input delay modulation information signal in which a transition occurs at the center of a bit cell containing a "1" and a transition occurs at the boundary between two successive bit cells containing "0s." The polarities of the information signal a quarter of a bit cell prior to and a quarter of a bit cell following the center of a bit cell are compared and a first decoded signal is generated when the polarities are different. The polarities of the information signal at the beginning and end of a bit cell are compared and a second decoded signal is generated when the polarities are different. The first and second decoded signals are applied to an "and" gate to produce an NRZ output signal.

3,670,250
FM SYSTEM FOR RECEIVING BINARY INFORMATION

George A. Fritkin, Silver Spring, Md., assignor to Tel-Tech Corporation, Rockville, Md.

Filed May 26, 1970, Ser. No. 40,526
Int. Cl. H04l 27/14
U.S. Cl. 329—104 14 Claims

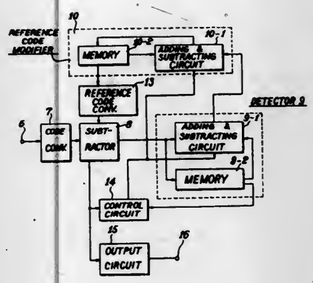


A system for determining the frequency of an oscillating signal is provided. The system can be used in the demodulating circuitry of an FM system for receiving binary information in the form of an FM signal. The frequency of the received FM signal is determined by transforming the FM signal into a series of pulses having voltage transitions occurring at a frequency determined by the received signal and by measuring the time lapse between successive voltage transitions in the series of pulses. The system is responsive only to frequencies in a predetermined frequency operating range, and produces a binary output signal to indicate the binary information represented by a received FM signal in the frequency operating range of the system.

3,670,251
SYSTEM FOR DEMODULATING AN AMPLITUDE-MODULATED TELEGRAPHIC WAVE OR WAVES

Sotokichi Shintani; Kazuo Kawai, both of Tokyo, and Hidetaka Yanagidaira, Ohmiya, all of Japan, assignors to Kokusai Denshin Denwa Kabushihi Kaisha, Tokyo-to, Japan

Filed Sept. 10, 1970, Ser. No. 71,082
Claims priority, application Japan, Sept. 12, 1969, 44/72463
Int. Cl. H03k 9/02
U.S. Cl. 329—109 2 Claims



A system for demodulating at least one amplitude-modulated telegraphic wave by comparing a detected envelope of the amplitude-modulated telegraphic wave with a threshold level, in which the detected envelope is converted to digital code units for each signal element of the amplitude-modulated telegraphic wave while the threshold level is also indicated by a reference code unit, so that the above-mentioned comparison operation is performed by digital circuitry. The reference code unit is corrected by the use of an accumulated result of successive ones of the above comparison.

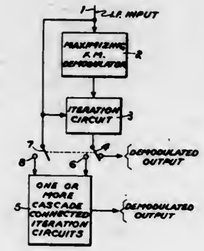
3,670,252
FREQUENCY MODULATION DEMODULATION SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 2, 1969, Ser. No. 829,399
Int. Cl. H03d 3/00
U.S. Cl. 329—112 7 Claims

A combined maximizing-iterative FM demodulator wherein the FM demodulator of an iterative FM demodulator coupled directly to the input for the FM signal to be demodulated is replaced by a maximizing FM demodulator. The maximizing demodulator provides an output signal approximating the input FM signal. The iteration circuit or circuits of the iterative demodulator then operates on this output signal and the input FM signal to provide the demodulated output

signal. The coarser the approximation by the maximizing demodulator the less complex is the implementation thereof.

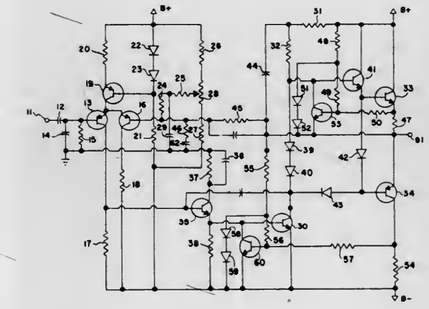


The threshold improvement is greater than that achieved with an iterative demodulator alone.

3,670,253
A.C. POWER AMPLIFIER

Arthur L. Newcomb, Jr., Route 4, P.O. Box 321, Yorktown, Va., and Richard N. Young, 7 Hondo Court, Hampton, Va.

Filed June 18, 1970, Ser. No. 47,441
Int. Cl. H03f 3/18
U.S. Cl. 330—17 5 Claims



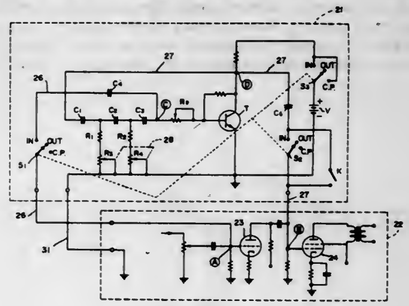
A high power, low distortion, A.C. power amplifier for laboratory and special applications.

3,670,254
UNDERDAMPED AUDIO PHASE SHIFT OSCILLATOR FOR INCREASING SELECTIVITY OF RADIO RECEIVER

Avner Barzely, New York, N.Y., assignor to I. Jordan Kunik, New York, N.Y., a part interest

Filed Oct. 14, 1970, Ser. No. 80,538
Int. Cl. H03f 1/36
U.S. Cl. 330—107 10 Claims

Underdamped audio phase shift oscillator connected across the audio voltage amplifier section of a radio receiver that sharply increases the selectivity or the response to signal of predetermined frequency and simultaneously relatively attenuates all other frequencies transmitted to output of receiver. The feedback circuit included in the phase shift oscillator is particularly useful in improving the selectivity of

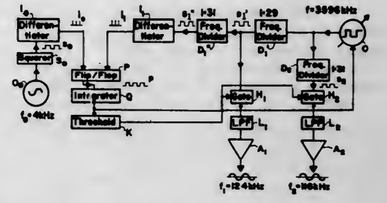


a radio receiver working in the continuous wave (C.W.) mode.

3,670,255
PHASE-LOCK-STABILIZED SYSTEM FOR GENERATING CARRIER FREQUENCIES USABLE IN MULTIPLEX COMMUNICATION

Giuliano De Nicolay, and Piero Venturini, both of Milan, Italy, assignors to Societa' Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Nov. 12, 1970, Ser. No. 88,535
Claims priority, application Italy, Nov. 13, 1969, 24367 A/69
Int. Cl. H03b 3/04
U.S. Cl. 331—25 6 Claims



A voltage-responsive carrier-frequency oscillator, with a limited range of adjustability designed to compensate for frequency drifts, works through a frequency divider into a phase comparator also receiving a relatively low base frequency harmonically related to the desired carrier frequency. The output of the phase comparator is fed back to the oscillator to maintain a predetermined phase relationship between the two low frequencies. The phase comparator includes a pair of differentiation circuits, deriving respective pulse trains from these low frequencies, and a flip-flop alternately set and reset by interleaved pulses from the two trains; the integrated output wave of the flip-flop constitutes the feedback voltage controlling the output frequency of the oscillator.

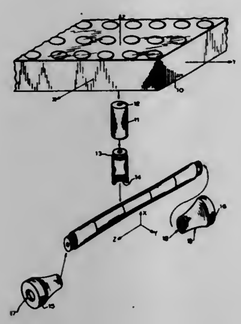
3,670,256
LASER GUIDE CONSTRUCTION

William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915. Divided and this application Mar. 9, 1970, Ser. No. 17,461
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 8 Claims

A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge

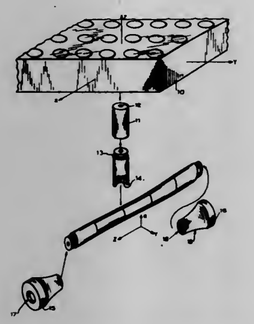
region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electrical character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.



3,670,257
METHOD OF GAS ION LASER ACTION

William H. McMahan, Winter Park, Fla., assignor to Control Laser-Orlando, Inc., Orlando, Fla.

Original application July 24, 1967, Ser. No. 655,652, now Patent No. 3,544,915. Divided and this application Mar. 9, 1970, Ser. No. 17,460. The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed.
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 4 Claims

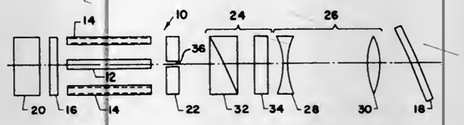


A laser construction utilizes a gas which assumes an ionic state at the discharge temperature and in the active discharge region the plasma is contained and "guided" by a tube exhibiting anisotropic and semi-conductor properties, pyrolytic carbon being used as an example. The tube utilizes the thermal and electrical characteristics of the material such that radially of the axis of discharge the tube exhibits high thermal conductivity and axially of the discharge the tube exhibits low thermal conductivity and a semi-conductor electrical character. The tube is held at an anodic potential which enables employment of a unique starting technique and reduction of ionic bombardment between the plasma and the bore of the tube. Other electrical and physical configurations for reducing ion bombardment or "sputtering" are disclosed.

3,670,258
FREQUENCY-DOUBLED NEODYMIUM DOPED GLASS LASER UTILIZING A LITHIUM NIOBATE CRYSTAL

Peter C. Magnante, West Brookfield, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 2, 1970, Ser. No. 7,626
Int. Cl. H01s *3/10, 3/11*
U.S. Cl. 331—94.5 1 Claim

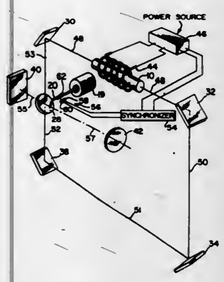


A frequency-doubled neodymium doped glass laser is provided in which a narrow spectral bandwidth, high-radiance neodymium doped glass laser is used to irradiate a lithium niobate crystal which is cut and aligned with the laser so that the crystal and laser are at the proper phase matching angle. A Q-switching device is included in the optical cavity of the laser to control the initiation of the laser oscillations thus permitting the attainment of higher peak power.

3,670,259
DOUBLE Q-SWITCH LASER

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of application Ser. No. 831,558, June 9, 1969, now abandoned. This application Apr. 13, 1970, Ser. No. 27,529
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 9 Claims



In a laser apparatus, both ends of the laser rod are simultaneously Q-switched effectively. A rotating mirror is provided, in a particular arrangement with fixed mirrors, to provide effectively two counter-rotating mirrors for Q-switching of both ends of the laser rod.

3,670,260
CONTROLLED OPTICAL BEAM FORMING DEVICE

Charles J. Koester, Sudbury, and Charles Hermas Swope, Holliston, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 15, 1970, Ser. No. 37,576
Int. Cl. G02b *27/00;* H01s *3/05*
U.S. Cl. 331—94.5 24 Claims



A controlled optical beam forming device distributes the light from a collimated source such as a laser within a controlled solid pattern with any desired relative intensity distribution. The device is formed of two optical elements. The first element apportions the beam into a plurality of extensive zones. The second element diffuses the light in the zones to form a beam having the desired form and distribution.

3,670,261
ANODE DESIGN FOR GAS DISCHARGE LASERS

Abel S. Halsted, Palos Verdes Peninsula, and David D. Hallock, Palos Verdes Estates, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 9, 1970, Ser. No. 87,816
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 5 Claims



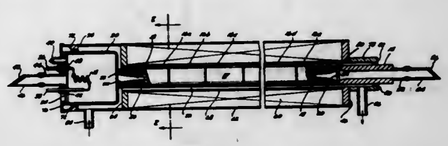
The disclosed laser anode arrangement includes a tubular anode-containing body of ceramic material bonded to an end of an elongated cylindrical body which defines a laser gas containing discharge-confining longitudinal bore. The bore of the anode-containing body is axially aligned with the discharge-confining bore and has a diameter greater than that of the discharge-confining bore. An electron collecting anode surface is provided by a metal coating bonded to the inner lateral surface of the anode-containing body. The metal coating may include a base layer of a molybdenum-manganese mixture and a nickel layer bonded to the base layer. The metal coating extends around the end of the anode-containing body away from the discharge-confining body and is brazed to a metal sleeve to provide an electrically conductive path to the metal coating. A coolant such as ordinary tap water may be passed in direct contact with the outer lateral surface of the discharge-confining body and a portion of the outer lateral surface of the anode-containing body. The coolant is electrically insulated from both the metal anode coating and the electrically conductive path thereto.

3,670,262
GAS LASER WITH DISCHARGE AND GAS RETURN PATHS THROUGH A COMMON CYLINDRICAL BODY

David D. Hallock, Palos Verdes Estates, and Abel S. Halsted, Palos Verdes Peninsula, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 2, 1970, Ser. No. 77,475
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 3 Claims

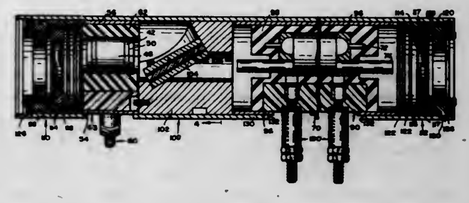
In the disclosed gas ion laser a plurality of axially aligned electrically insulating elongated cylindrical bodies are successively disposed between a cathode housing and an anode in hermetically bonded relationship with one another and with the cathode housing and the anode to form a laser gas containing hermetic enveloping assembly. The respective cylindrical bodies define aligned discharge confining axial longitudinal bores and aligned gas return off-axis longitudinal bores isolated from the discharge confining bores except in the vicinity of the cathode housing and in the vicinity of the anode. A coolant is passed in direct contact with the outer lateral surface of the bonded cylindrical bodies in an annular coolant flow channel between the outer lateral surface of the cylindrical bodies and an annular axial magnetic field generating arrangement coaxially disposed about the cylindrical bodies. Improved gas return flow at relatively low temperature results, enabling the achievement of high efficiency, high power laser operation.



3,670,263
LASER STRUCTURE

Joseph W. Kantorski, Southbridge, Mass.; David A. La Marre, and Donald A. Smith, both of Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed June 16, 1969, Ser. No. 833,330
Int. Cl. H01s *3/02;* H01j *19/58*
U.S. Cl. 331—94.5 1 Claim



The composite laser structure is self-aligning and; therefore, individual elements thereof are easily replaceable without contemporaneous adjustment. The method for fabricating and assembling the composite structure is also described.

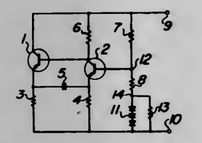
3,670,264
ASTABLE MULTIVIBRATOR

Shuzo Wakai, Kyoto, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed Mar. 22, 1971, Ser. No. 126,458
Claims priority, application Japan, Mar. 27, 1970, 45/26351
Int. Cl. H03k *3/282*
U.S. Cl. 331—113 R 1 Claim

A multivibrator circuit comprising a base bias-supplying circuit for a transistor which is connected with at least one diode in parallel with a resistor for obtaining stable temperature and voltage characteristics. This resistor serves to overcome the problem of the cessation of variations in bias voltage directly proportional to the supply voltage which is

caused by the insertion of the diode. Thus it is possible to start and stop oscillation of the multivibrator circuit even



when the supply voltage is reduced to a considerably lower voltage.

3,670,265

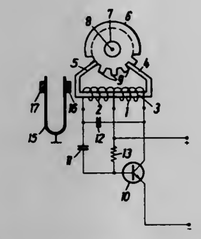
TUNING FORK STABILIZED TRANSISTOR DRIVE FOR TIME PIECES

Karl Schmitt, Achern, Germany, assignor to Gehap Gesellschaft fur Handel und Patentverwertung mbH. & Co. Kg, Germany

Continuation-in-part of application Ser. No. 719,782, Apr. 8, 1968, now Patent No. 3,579,974. This application July 14, 1970, Ser. No. 54,759

Int. Cl. G04c 3/00; H03b 5/30

U.S. Cl. 331—116 M **7 Claims**



An electronically controlled movement mechanism for time pieces and the like having an electronic oscillatory circuit stabilized by means of a tuning fork resonator, the ends of the tuning fork legs carrying small permanent magnets which face the axial ends of the yoke of an oscillation and drive coil assembly over air gaps, thereby being directly excited by the extraneous magnetic field of the oscillation and drive coil assembly. The moving magnetic field of the oscillating permanent magnets is fed back into the oscillation and drive coil assembly to stabilize its oscillatory frequency. The circuit is further stabilized by a field-responsive resistor in parallel with the resistance of the oscillatory circuit and interacting with the oscillating permanent magnets.

3,670,266

PHASE-COHERENT FREQUENCY-SHIFT MODULATION SYSTEM FOR OSCILLATION MULTIVIBRATOR

Patrick de Laage de Meux, Saint-Germain-en-Laye, France, assignor to Ligne Telegraphiques et Telephoniques, Paris, France

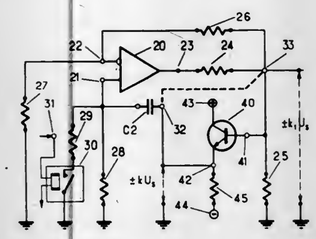
Filed Dec. 15, 1970, Ser. No. 98,383

Claims priority, application France, Jan. 14, 1970, 7001141

Int. Cl. H04l 27/12

U.S. Cl. 332—14 **3 Claims**

A modulation system for a free-oscillating multivibrator consisting of an operational amplifier having a first non-phase inverting input, a second phase-inverting input and an output, combined with two feedback circuits respectively coupling said output to said first and second inputs. One of said circuits consists of a voltage divider, while the second includes a capacitor in series with a resistor. Frequency modulation is obtained by variation of the latter resistor. Preferably, the latter circuit also includes a transistor in



emitter-follower connection and having its base electrode fed from the output of the multivibrator through other voltage divider means.

3,670,267

MICROWAVE SWITCH UTILIZING LATCHED FERRIMAGNETIC MATERIAL IN COUPLING APERTURE OF WAVEGUIDE COUPLER

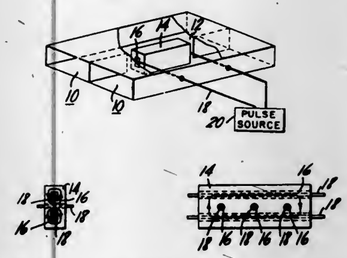
Shojiro Nakahara, and Hidetoshi Kurebayashi, both of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1970, Ser. No. 11,939

Claims priority, application Japan, Feb. 19, 1969, 44/12389

Int. Cl. H01p 1/10

U.S. Cl. 333—1.1 **6 Claims**



Two rectangular waveguides are interconnected by a coupling aperture in which a ferrimagnetic body is disposed. At least one latching conductor extends through the body in the axial direction of the waveguides or in a direction perpendicular thereto. A pulse current flowing through the conductor causes a change in direction or magnitude of the magnetization of the ferrimagnetic body. This permits an electromagnetic wave, applied to either one of the input waveguide ends, to appear at that output end at which the wave did not previously appear.

3,670,268

WAVEGUIDE HYBRID JUNCTION WHEREIN A WALL OF THE E-ARM IS CONTIGUOUS WITH A WALL OF THE H-ARM

William R. Connerney, Needham, Mass., assignor to Raytheon Company, Lexington, Mass.

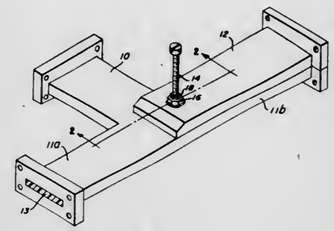
Filed Apr. 15, 1970, Ser. No. 28,894

Int. Cl. H01p 5/12

U.S. Cl. 333—11 **3 Claims**

A waveguide hybrid junction for microwave energy in which the various arms, i.e., the E-arm, and two sidearms, are fabricated from rectangular waveguides, the E-arm having a 90° bend formed therein in close proximity to the plane

of the joint between such arm and the H-arm. A tuning post, located at the 90° bend of the E-arm, is used to compensate



for field distortion so that electrical symmetry of the hybrid junction is maintained.

3,670,269

AUTOMATIC TRANSVERSAL EQUALIZER

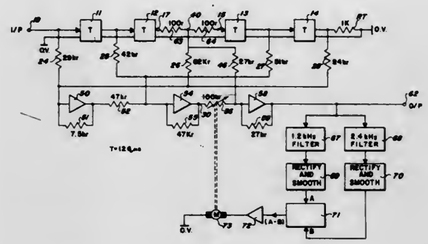
Arthur T. Starr, New Barnet, and David G. Edwards, Tonbridge Wells, both of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1970, Ser. No. 87,546

Claims priority, application Great Britain, Apr. 21, 1970, 19,039/70

Int. Cl. H04b 3/04

U.S. Cl. 333—18 **10 Claims**



An equalizing circuit, intended to be inserted between the transmission link and the receiver of an electrical information transmission system, the equalizer being arranged to have, within a preselected bandwidth of audio frequencies, an amplitude frequency response in the form of a family of similar curves, the equalizer including comparison means which is responsive to the difference between the outputs of the equalizer at two different frequencies of which at least one is within the said bandwidth to thereby automatically select a predetermined one of the said curves.

3,670,270

ELECTRICAL COMPONENT

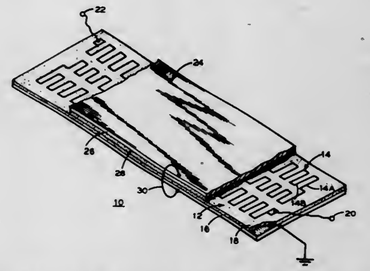
William T. Storey, II, West Chester, Pa., assignor to Technitrol, Inc., Philadelphia, Pa.

Continuation-in-part of application Ser. No. 629,139, Apr. 7, 1967, now abandoned. This application Apr. 15, 1968, Ser. No. 725,570

Int. Cl. H03h 7/30, 7/36

U.S. Cl. 333—30 **8 Claims**

A distributed constant electrical component which may be utilized as a transmission or a delay line is disclosed which utilizes a length of non-conductive material such as a matrix of polytetrafluoroethylene in which is dispersed particles of a magnetic material such as powdered iron or powdered ferrite. Alternatively, a length of ferrite material may be used. At least a portion of a signal conductor extends through the length of material to provide a path for electrical signals. Both balanced and unbalanced lines are disclosed.



There also is disclosed a device which may be used as a variable delay line which includes means for varying the spacing between portions of the length of material.

3,670,271

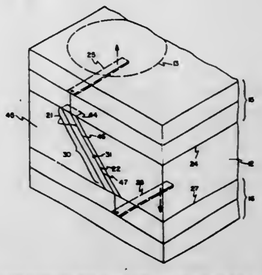
TWO PORT MAGNETOELASTIC DELAY LINE

Carmine F. Vasile, Greenlawn, N.Y., assignor to Hazeltine Corporation

Filed Sept. 18, 1970, Ser. No. 73,287

Int. Cl. H03h 7/30

U.S. Cl. 333—30 **14 Claims**



A two part magnetoelastic delay line in which the coupling elements of an electromagnetic coupling structure are arranged in a colinear configuration at the end-face of a piece of single crystal yttrium iron garnet (YIG) to which electromagnetic energy is coupled. The sample of YIG is located in an axially varying magnetic bias field whose lines of magnitude include concentric circles of constant magnitude which increase in value radially from a point near the center of the end-face of the YIG, and the coupling devices are positioned so that each device crosses the same circle of magnitude only once, and so that the coupling devices together traverse the maximum number of concentric circles of magnitude of the bias field at the end-face. Alternate embodiments are also considered.

3,670,272

RELAY SWITCHING APPARATUS

Gundokar Braumann, Munich; Walter Klor, Hofenschaftlarn, and Albert Huber, Unterpfaffenhofen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 27, 1970, Ser. No. 84,441

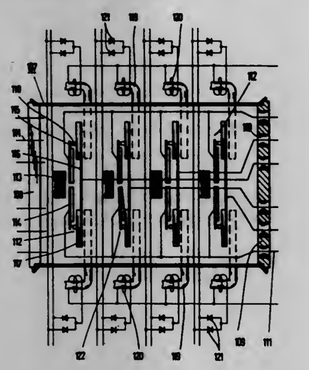
Claims priority, application Germany, Oct. 31, 1969, P 19 54 952.1

Int. Cl. H01h 67/04

U.S. Cl. 335—112 **12 Claims**

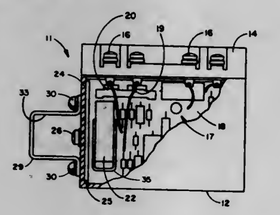
A relay switching apparatus of particular utility in telephone switching installations is described. The apparatus

includes a plurality of magnetically actuatable switching arrangements encapsulated in a protective cartridge. The magnetic circuits of each switching arrangement includes first and second polestrips and an armature having its movable end extended into an air-gap formed by the two polestrips. The operating parts and the supports for the operating parts are clamped in a self-gripping manner onto at least one separator piece which determines the size of the air-gap, and these parts are so secured to one another as to form a mechanical unity. The switching arrangements are divided into at least two construction groups with the construction groups being positioned one over the other, and the switching arrangements are placed in each construction



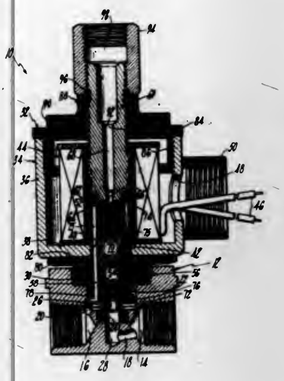
group such that pairs are formed with the switching arrangements in the other construction group. The switching arrangements are clamped between the above described supports, and a case connects the supports in such a manner as to form therewith a protective cartridge enclosing all of the switching arrangements. The construction groups formed a switching arrangement compressed against the sides of the walls of the cartridge by pressure strips. Each pair of switching arrangements have a common electrical energizing circuit which includes a winding and a soft iron yoke with the shoulders of the yoke extending outside of the cartridge and being magnetically coupled to the second pole pieces in the cartridge.

3,670,273
CURRENT RESPONSIVE SWITCHING MODULE
Robert G. Ries, Milwaukee, Wis., assignor to Square D Company, Park Ridge, Ill.
Filed Dec. 4, 1970, Ser. No. 95,163
Int. Cl. H01h 51/28
U.S. Cl. 335—204 **5 Claims**



A reed relay mounted within a housing is responsive to a magnetic field induced in a flux-conducting clip mounted on an outer surface of the housing by current in a conductor passing through the clip. A flux diverting shield is placed over the relay in an adjusted position to provide the relay with a predetermined sensitivity to the magnetic field.

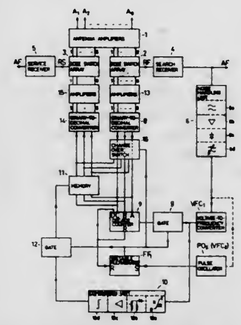
3,670,274
EXPLOSION-PROOF VALVE OPERATOR
John E. Ellison, Newington, Conn., assignor to Skinner Precision Industries, Inc., New Britain, Conn.
Filed Oct. 6, 1970, Ser. No. 78,513
Int. Cl. H01f 7/08
U.S. Cl. 335—260 **3 Claims**



A valve operator wherein a solenoid housing has a cylindrical side wall and integral bottom wall having an opening for receiving an armature sleeve assembly. The bottom wall of the solenoid housing is supported on a nut secured to the sleeve assembly and having a radially extending flange substantially coextensive with the bottom housing wall for providing a metal-to-metal connection therebetween, and means including an end closure for the top of the housing compressively clamping the bottom housing wall against the flange of the nut to form a flameproof gas cooling escape path.

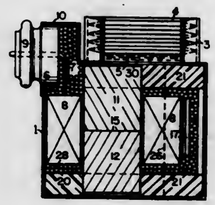
3,670,275
ELECTRONIC AND AUTOMATIC SELECTOR DEVICE CONNECTED TO AN ANTENNA ARRAY FORMED BY TWO OR MORE ANTENNAS
Kalevi Juhani Kalliomaki, Oulu; Martti Eelis Tiuri, Tapiola, and Seppo Matti Vakkila, Helsinki, all of Finland, assignors to Vaisala Oy, Vantaa, Finland
Filed Apr. 14, 1970, Ser. No. 28,408
Int. Cl. H04b 7/08
U.S. Cl. 325—370 **11 Claims**

An electronic automatic selecting device has an antenna array consisting of two or more antennas pointing in different directions for the purpose of selecting and connecting to a service receiver that antenna from which the desired radio signal is best obtained. The selection is carried out by a selecting device and a search receiver having a low frequency output, from which, when receiving a frequency modulated emission, a noise signal is obtained proportional to the S/N ratio of the signal received by the receiver. This signal steers the selecting device. In accordance with the present invention the selecting device includes a noise handling unit the input of which receives the noise voltage from the search receiver and the output of which is large when the search receiver receives a signal with a poor S/N ratio and small when the search receiver receives a signal with a good S/N ratio. There is a voltage-to-frequency converter the operating frequency of which is determined by the output voltage of the noise handling circuit, whereby the output frequency is high when the output voltage is large and is low when the output voltage is small, a pulse oscillator which oscillates at a constant frequency and which gives the search command, an electronic change-over switch which upon receiving the search command from the pulse oscillator, sequentially connects, steered by the voltage-to-frequency converter, the antennas of the antenna array to the search receiver, and which after sampling all antennas returns to zero. There is also a circuit for comparing the signals obtained from the various antennas to the input of which are fed the pulses from the voltage-to-frequency converter and the output of which produces a pulse when during a search cycle an antenna giv-



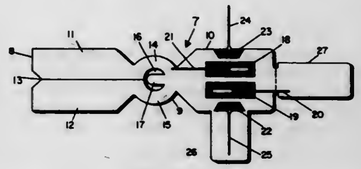
ing a signal with a better S/N ratio than any other antenna previously sampled during the search cycle is connected to the search receiver, and a memory circuit to the input of which is fed from a dividing circuit constituting a part of said electronic change-over switch, the number in binary form of each of the antennas connected to said search receiver during the search cycle. This binary number moves to the output of the memory circuit only when an output pulse is obtained from the signals comparing circuit. Finally there is an electronic switch controlled by said memory circuit and connecting the service receiver to that antenna of the antenna array from which the search receiver during the search cycle has received the signal with the best S/N ratio.

3,670,276
HERMETIC TRANSFORMER
Charles Theodore, Huntington Beach, Calif., assignor to LTV Ling Altec, Inc., Anaheim, Calif.
Filed Feb. 11, 1971, Ser. No. 114,440
Int. Cl. H01f 27/02
U.S. Cl. 336—92 **11 Claims**



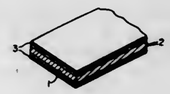
A hermetically-sealed completely oil-filled high voltage transformer of small size and rugged construction for use over a wide range of ambient temperature and ambient pressure. Required expansion bellows are desirably small because interstices between the core-coil structure and the enclosing case are filled with at least one insulating piece and numerous refractory beads in addition to oil. The oil is restricted to the internal volume that is under high electrical stress.

3,670,277
UNITARY INSULATION AND TERMINATION MEMBER
Charles L. Decker, Charlottesville, and Edward G. Tutle, Waynesboro, both of Va., assignors to General Electric Company
Filed Dec. 22, 1969, Ser. No. 887,226
Int. Cl. H02f 27/30
U.S. Cl. 336—192 **9 Claims**



An improved means for providing coil wire terminations in electrical coils used in relays and the like, which utilizes a unitary insulation member carrying electrically conductive terminal means and captivating cinches which secure the winding terminations and portions of the insulation without need of adhesive tapes, yarns or other additional assembly securing elements.

3,670,278
BONDED CORE STRUCTURE COMPRISING A PLURALITY OF GLASS COATED ELECTRICAL STEEL SHEETS
Karl Foster, and Joseph Seidel, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Original application Sept. 2, 1966, Ser. No. 576,963, now Patent No. 3,528,863, which is a continuation-in-part of application Ser. No. 556,337, June 9, 1966, now abandoned. Divided and this application June 15, 1970, Ser. No. 46,376
Int. Cl. H01f 27/24
U.S. Cl. 336—213 **5 Claims**

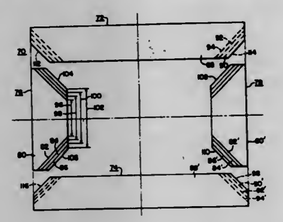


An oriented silicon steel product and method for producing the same is described in which improved magnetostriction and strain sensitivity are obtained by means of bonding a thin glass layer to the surface of the steel.

3,670,279
MAGNETIC CORES AND METHODS OF CONSTRUCTING SAME
William Q. Milleap, Muncie, Ind.; Belvin B. Ellis, Pulaski, and Charles E. Burkhardt, Sharon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 14, 1971, Ser. No. 143,429
Int. Cl. H01f 27/04, 41/02
U.S. Cl. 336—217 **17 Claims**

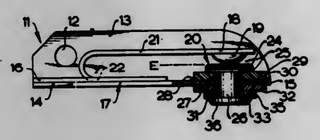
Magnetic cores of the stacked type, and methods of constructing same, having stepped-lap joints between adjoining

leg and yoke portions of the core. The length dimensions of the leg and yoke laminations are changed in opposite directions from layer to layer of the magnetic core, while maintaining the midpoints of the laminations in each leg and



yoke position in alignment. This arrangement offsets the ends of the laminations from one another, at each end of each leg and yoke portion, in a predetermined stepped pattern, with the stepped patterns of adjoining leg and yoke portions being complementary to provide the desired stepped-lap joints.

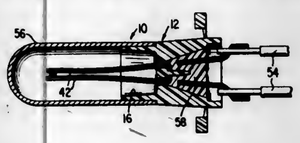
3,670,280
CIRCUIT BREAKER
Erwin Nagele, Hessigheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed Dec. 15, 1970, Ser. No. 98,288
Claims priority, application Germany, Dec. 19, 1969, P 19 63 666.9
Int. Cl. G01k 5/62; H01h 37/52, 61/01
U.S. Cl. 337—111 **4 Claims**



A circuit breaker has a support on which a one-piece bimetallic strip is mounted. The strip has two arms which together define a substantially U-shaped configuration, and a portion narrower than one of the arms and fast with the same as well as with the support. A first electrical contact is provided on the support and a cooperating second electrical contact on the other of the arms and heating of the bimetallic strip due to occurrence of an overload in a circuit in which it is interposed, causes temporary bending deformation of the other arm and of the narrower portion in mutually opposite directions, thereby resulting in interruption of the circuit due to disengagement of the electrical contacts.

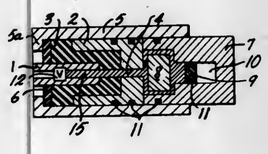
3,670,281
THERMALLY RESPONSIVE SWITCH AND METHOD FOR MAKING THE SAME
William D. Rattan, Paramount, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Apr. 5, 1971, Ser. No. 131,205
Int. Cl. H01h 37/04, 37/52, 61/06
U.S. Cl. 337—112 **8 Claims**

A thermally responsive switch and method for making the same in which a base container having a cover supports a pair of contact elements, including at least one bimetallic element, and is filled with a hardenable material cured at the desired operating temperature of the switch to form an integral support base. The contact elements each have a protruding tab which cooperates with an interior wall of the base container so as to properly position the contact elements in the container after the cover has been attached, to close off the bottom of the container such that the hardenable material may be retained therein, and to cause the con-



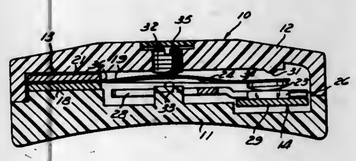
tact elements to pivot together at their contact ends under the force of gravity whereby the switch is accurately calibrated and the contact elements are protected during assembly.

3,670,282
CURRENT LIMITING DEVICE
Toshio Itoh; Toshio Miyamoto, and Yuichi Wada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 6, 1969, Ser. No. 847,924
Claims priority, application Japan, Aug. 7, 1968, 43/55958
Int. Cl. H01h 85/06
U.S. Cl. 337—21 **9 Claims**



A unitary structure of two opposite electrodes insulated from each other by a solid insulation is connected to a housing including cylinder and piston means. A current limiting material with self-restoration centrally extends through the structure except for the external portion of the outer electrode and contacts the piston. To prevent the material vaporized upon a flow of overcurrent from externally leaking O-rings or a metallic gasket can be disposed between the structure and housing. Alternatively the housing may be jointed to the structure through metal-to-metal or metal-to-insulation contact under pressure, shrink fit, welding or brazing.

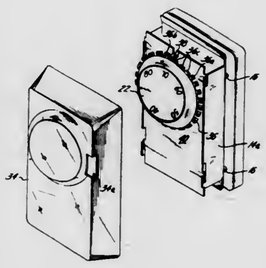
3,670,283
MOTOR OVERLOAD PROTECTOR
Ronald L. Holden, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio
Filed Oct. 2, 1970, Ser. No. 77,635
Int. Cl. H01h 37/52
U.S. Cl. 337—354 **11 Claims**



A motor overload protector is disclosed which includes a cantilever mounted bimetal snap element provided with a mobile contact at its free end. The snap element moves the

mobile contact into and out of engagement with the fixed contact carried by the body. A central stop post is provided by the body located to engage the central portion of the snap element when the contacts are open. A pull-in calibration screw engages the opposite side of the bimetal when the contacts are closed to calibrate the temperatures on opening. The snap travel of the installed snap element is reduced to limit the stresses imposed on the bimetal and reduce the tendancy to fatigue or crack. Contact life is improved because the contacts reliably snap both open and closed.

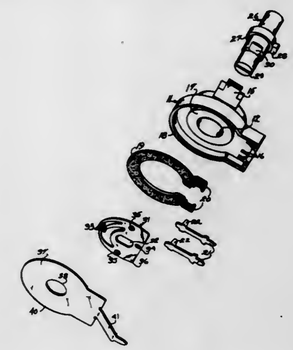
3,670,284
RANGE LIMITER FOR A THERMOSTAT
Jean R. Fortier, South Orange, and Donald P. Wrobel, Allendale, both of N.J., assignors to Federal Pacific Electric Company, Newark, N.J.
Filed Mar. 3, 1971, Ser. No. 120,669
Int. Cl. H01h 37/04, 37/18
U.S. Cl. 337—360 **6 Claims**



A thermostat is described having a bimetal that actuates a snap-switch for maintaining the temperature of the room at approximately a given set-point. A knob operates a cam for controlling the resting position of the bimetal to determine the temperature set-point. The knob has a series of radial fingers which can be broken away individually, and the stationary structure of the thermostat has a fixed lug that can be bent up into the path of the knob fingers. Certain fingers of the knob are broken away and the lug is bent into the space left free of fingers. The remaining fingers limit the rotation of the knob and thus limit the range of adjustment.

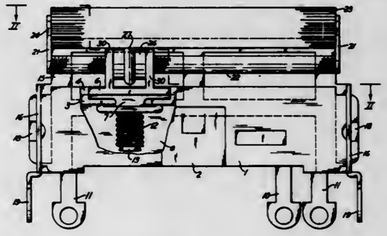
3,670,285
VARIABLE RESISTANCE CONTROL WITH END COLLECTOR
Jack A. English, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.
Filed Mar. 16, 1970, Ser. No. 19,969
Int. Cl. H01c 9/02
U.S. Cl. 338—175 **22 Claims**

A variable resistance control is provided wherein a contactor is pinched between a resistance element and a collector. The resistance element and collector lie substantially flatwise thereby providing uniform pressure on the contactor pinched therebetween. The contactor is constrained to rotate upon rotation of a driver rotatably supported in a housing. To minimize cost of the control a portion of the collector is utilized to close the housing. The driver has axially opposed shoulders bearing against the outer faces of the housing and collector to hold the same in place. The housing is formed of



a one piece flexible, creep resistant material with integral resilient legs for mounting the control to a panel.

3,670,286
POTENTIOMETER ADJUSTABLE BY ROTATABLE DRUM
Mogens W. Bang, and David A. Olson, both of Ridgway, Pa., assignors to Stackpole Carbon Company, St. Marys, Pa.
Filed June 7, 1971, Ser. No. 150,302
Int. Cl. H01c 9/02
U.S. Cl. 338—180 **8 Claims**

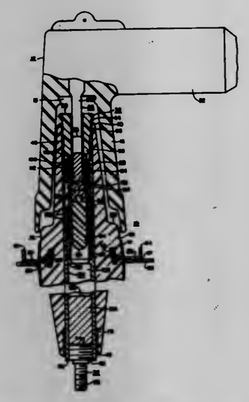


The front wall of the elongated case of a linear motion potentiometer is provided with a longitudinal slot, in which a slide is disposed. The slide carries a bridging contact inside the case, where it engages spaced parallel resistor and collector elements. In front of the case and parallel to the slot are a stationary lead screw and a manually rotatable cylindrical drum, both supported from the case. The drum, when rotated, rotates internally threaded cylindrical means mounted on the screw and thereby moves it along the screw and drum. The slide is connected with the rotatable means so that the slide will be moved lengthwise of the case when the drum is rotated.

3,670,287
ELECTRICAL CONNECTOR ASSEMBLY
August L Keto, Sharpsville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,383
Int. Cl. H01r 11/30
U.S. Cl. 339—12 R **20 Claims**

A load-break electrical connector assembly including a plug-in cable connector having a probe which includes a first

electrical conductor, and a bushing assembly which includes a second conductor adapted to engage the first conductor of the cable connector. A magnetic clamp is disposed in the



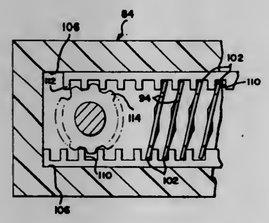
bushing assembly which prevents removal of the cable connector from the bushing assembly when the magnitude of current flowing through the first and second electrical conductors exceeds a predetermined magnitude.

3,670,288

TORSION CONTACT ZERO-INSERTION FORCE CONNECTOR

William Robert Evans, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1971, Ser. No. 115,358
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **7 Claims**



Disclosed is a connector for receiving the edge of a printed circuit board, ceramic substrate or other circuit boards of the like. The connector contains a plurality of pre-twisted contacts that are untwisted for zero-force insertion of a circuit board after which they are released to return toward their original position making electrical contact with such board.

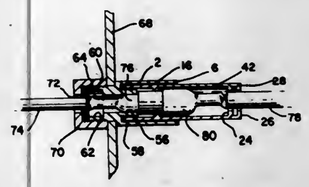
3,670,289

TANDEM MATING RECEPTACLES

Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 12, 1970, Ser. No. 45,735
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **3 Claims**

An assembly of tandem mated receptacles including first receptacles connected by a web and adapted for bulkhead mounting. A plurality of second receptacles is provided with a removable cover plate and are partially received in mating engagement within the first receptacles. A portion of the first receptacles overlie the cover plate to prevent accidental



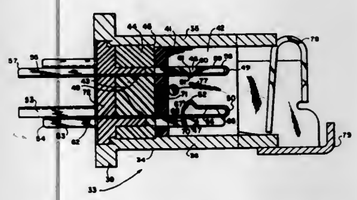
removal thereof. A tongue associated with the second receptacles is resiliently latched in an aperture provided in the web.

3,670,290

ELECTRICAL CONNECTOR

Wilhelm Angele, and Hans G. Martineck, both of Huntsville, Ala.

Filed Apr. 21, 1971, Ser. No. 136,006
Int. Cl. H01r *23/52, 23/54*
U.S. Cl. 339—75 MP **10 Claims**



A separable flat cable connector having each pair of mating electrical contacts fully isolated from one another by means of insulating compartments extending rearwardly from the mating face of the plug half. The plug body is an integral, molded plastic member with two rows of compartments separated by a central wall. Two flat conductor cables, introduced through the rear of the plug, have exposed conductors extending forward along the central wall, with the conductor ends being secured in grooves defined by projections on the central compartment wall spaced back from the mating face. The receptacle half of the connector has an outer housing adapted to receive the plug body and forward-projecting spring contact elements with arcuate surfaces for engagement with the exposed conductors in the plug. Spring contact elements of the receptacle are disposed so that their rearwardly extending ends are alined in four spaced-apart rows to facilitate soldering thereto of conductors of round wire or flat conductor cables.

3,670,291

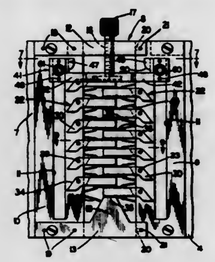
CONNECTING DEVICE

Banancio Garcia, 2691 Holl Road Northwest, North Canton, Ohio

Filed May 14, 1970, Ser. No. 37,208
Int. Cl. H01r *13/54*; A44b *19/02*
U.S. Cl. 339—92 M **4 Claims**

A connecting device for joining together two panels end-to-end of various sizes and materials. Each panel includes a plurality of pivotally mounted toggle arms which are alternately positioned with respect to arms on the opposite panel. The toggle arms are also positioned so that their ends overlap and interlock when in closed or engaged position. A top and bottom bar partially connects and properly positions

the two panels. The top bar may be provided with a bolt or other means to secure the interlocked toggle arm ends together against the bottom connecting bar when in closed position. A slide member is provided with two pairs of slida-



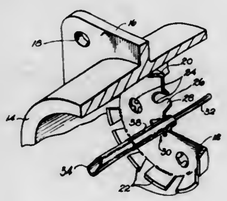
ble cams to operate the toggle arms which are provided with corresponding cams. The device is connected and disconnected by opposite movement of the slide member with the cams pivoting the toggle arms open or closed by engaging mating cam surfaces.

3,670,292

GROUNDING FOIL FOR ELECTRICAL CONNECTORS

William K. Tracy, Rosemead, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 29, 1970, Ser. No. 6,900
Int. Cl. H01r *23/06, 23/08*
U.S. Cl. 339—143 R **3 Claims**



A grounding foil having one or more cavities therein formed of tangs. The surface of the tangs integral with the foil members contacts electrical elements inserted in the cavities formed by the tangs. The front edge surface of the tangs do not contact the electrical elements, thus prolonging both the use of the electrical element and preventing failure of the tangs. A relatively large number of tangs may be provided which occupy a sufficient area so that should failure of one of the tangs occur, the remaining tangs will provide sufficient electric contact as well as support so that the electrical element supported in the tangs will not be displaced. The tangs may be designed so that the tang portion integral with the foil has a greater stiffness than the tip portion of the tang.

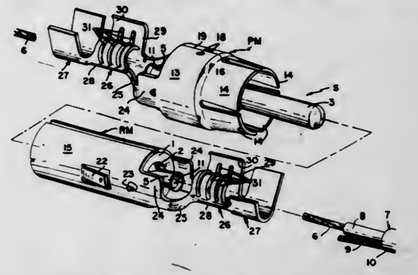
3,670,293

SHIELDED WIRE CONNECTORS

William Joseph Garver, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 20, 1970, Ser. No. 65,462
Int. Cl. H01r *17/18*
U.S. Cl. 339—177 MP **5 Claims**

A shielded cable electrical connector is provided with a coaxial contact section having inner and outer contact members separated from each other by a dielectric means which carries the inner contact member. The outer contact member is provided with axially-spaced ferrule means coaxially aligned with ferrule member means of the inner contact member extending outwardly from the dielectric means. One of the axially-spaced ferrule means has a first section of substantially annular construction and a second section extending substantially tangentially outwardly from the first section so that a drain or ground wire of a shielded cable can be crimped between the first and second sections while a center conductor of the cable is crimped in the ferrule member means of the inner contact member.

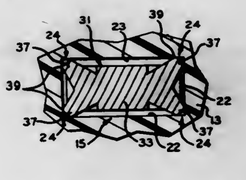


3,670,294

MULTIPLE CONTACT ELECTRICAL CONNECTOR

Gordon L. Johnson, Jamestown, N.Y., and Thomas E. Gannoe, Warren, Pa., assignors to Sylvania Electric Products Inc.

Filed Oct. 19, 1970, Ser. No. 81,847
Int. Cl. H01r *13/50, 9/08*
U.S. Cl. 339—195 M **4 Claims**



An electrical connector assembly consisting of a connector block of insulative material having a plurality of connector pins established therein. The pin receiving openings in the block each have a cylindrical shape portion which extends into the block a predetermined distance until it interconnects and aligns with a rectangular shaped portion which extends on through to the opposing surface of the block. The connector pins for this assembly each consist of a cylindrical shaped male end, a centrally located retaining portion, and a rectangular shaped wirewrap end.

3,670,295

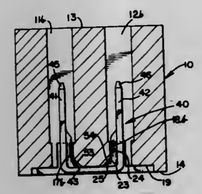
TERMINAL BLOCK AND TERMINAL CONNECTOR

Hans Raymond Ege, Des Plaines, and Walter L. Doctor, Jr., Schaumburg, both of Ill., assignors to Underwriters Safety Device Co., Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,807
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 S **16 Claims**

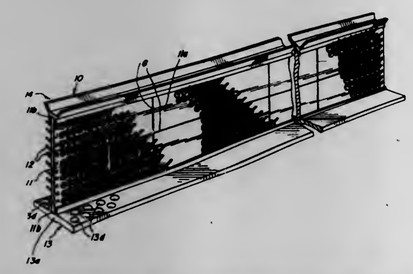
The terminal block has a plurality of paralleling apertures for receiving blades of different types of terminal connectors. One type of connector is U-shaped with two generally parallel spaced apart blades interconnected at their bases. Each of the blades has a locating projection. Another type of connector is of the spade type with two spaced apart co-planar blades connected to a co-planar base portion of the spade type connector. A plurality of notches are formed on one face of the terminal block and each notch is located adjacent

to and opens into one of the apertures. A slot extends into the one face of the block between and communicating with at least two adjacent apertures. The projections cooperate and mate with the notches to maintain each blade of a U-



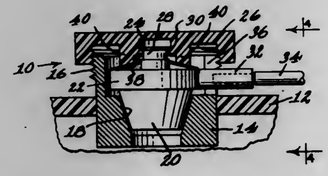
shaped connector located centrally of the aperture into which it is received and to prevent movement of the blades against a side wall of the aperture. The slot receives the base portion of the spade type connector with the blades thereof received in the two adjacent apertures.

3,670,296
WIRE TERMINATION BLOCK CONSTRUCTION
Joseph H. MacKenzie, Jr., 431 Prairie Avenue, Wilmette, Ill.
Filed Jan. 27, 1971, Ser. No. 110,080
Int. Cl. H01r 9/00
U.S. Cl. 339—198 H **5 Claims**



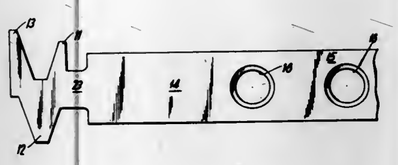
A wire termination block construction is provided wherein various components thereof may be readily extruded and interfitted so as to form a block of desired length and configuration.

3,670,297
BATTERY CONNECTOR ASSEMBLY
Walter Erlenbach, Selma, Ind., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 4, 1970, Ser. No. 16,420
Int. Cl. H01r 7/08
U.S. Cl. 339—232 **5 Claims**



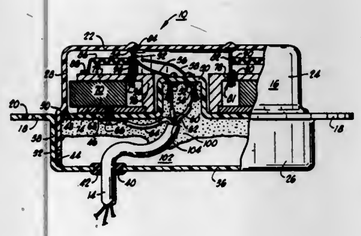
The present invention relates generally to electrical connectors and more particularly to electrical connectors for storage batteries and the like. The illustrated embodiment includes a tapered plug member adapted to contact an internal complementary surface of a metallic battery insert. An internally threaded cap swively supports the upper extremity of the tapered plug member, and a spring washer is interposed between the underside of the cap and an upper surface of the tapered plug.

3,670,298
ELECTRIC CONTACT BLADE CRIMP
Ferdninand Klumpp, Jr., Mountainside, N.J., assignor to Heyman Manufacturing Company, Kenilworth, N.J.
Filed Dec. 8, 1970, Ser. No. 96,118
Int. Cl. H01r 11/08
U.S. Cl. 339—276 T **6 Claims**



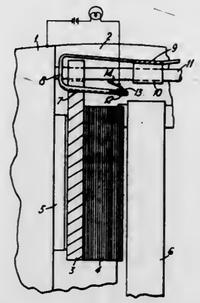
An electric plug blade has a crimp using the neck width for part of the crimp finger length improving the strength and reducing the resistance of the blade. Other gripping fingers may be offset from each other, extending the latitudinal distance between one fingertip and an opposite fingertip. The crimp works especially well with thin stock blades.

3,670,299
SPEAKER DEVICE FOR SOUND REPRODUCTION IN LIQUID MEDIUM
Jay Dee C. Kahn, Yukon, Okla., assignor to LTV Ling Altec, Inc., Oklahoma City, Okla.
Filed Mar. 25, 1970, Ser. No. 22,623
Int. Cl. G01v 1/00
U.S. Cl. 340—8 R **6 Claims**



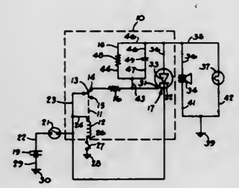
Apparatus for transducing electrical signal energy to acoustic energy for projection within liquid medium. Such speaker device consists of a sealed housing enclosure which is formed of resilient material such that it includes at least one generally planar side, and a permanent magnet cooperating with an electromagnetic drive coil are operatively disposed within said enclosure in suitable affixure to drive the planar side of the housing means so that it acts as the sound producing vibratile member in contact with the liquid medium.

3,670,300
SPOT-TYPE BRAKE WEAR INDICATOR
Otto Depenheuer, Bad Homburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Sept. 28, 1970, Ser. No. 76,118
Claims priority, application Germany, Oct. 13, 1969, P 19 51 475.1
Int. Cl. B60t 17/22; G08b 21/00
U.S. Cl. 340—52 A **4 Claims**



This electrical warning device for indicating brake lining wear includes an electrical circuit which is closed by means of the brake shoe coming into electrical contact with a contact element carried by the brake shoe retaining spring when the brake lining wears down to a predetermined thickness. The contact element is electrically insulated from the retaining spring.

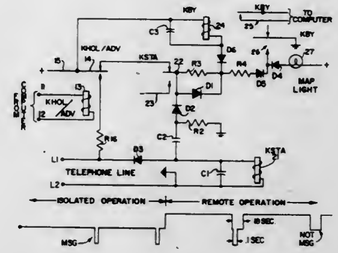
3,670,301
VEHICLE ANTI-THEFT DEVICE
Larry D. Douglas, San Francisco, Calif., assignor to Pete Pakulak and Lucile A. Pakulak, San Francisco, Calif.
Filed Mar. 15, 1971, Ser. No. 124,018
Int. Cl. G08b 13/00
U.S. Cl. 340—65 **7 Claims**



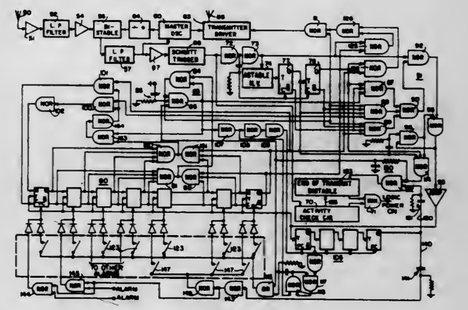
A light-weight portable alarm device is readily installed upon a mobile unit and sounds an alarm for a predetermined time interval in the event that an unauthorized person attempts to move the unit. The alarm is operable whether or not the wires of an associated electrical circuit are cut, and it is insensitive to changes in temperature, atmospheric pressures, moisture, dust or vibration.

3,670,302
CENTRAL TRAFFIC SIGNAL CONTROL
Gregory Sikios, Bronx, and James B. Rudden, Manhattan, both of N.Y., assignors to Marbelite Company, Inc., Brooklyn, N.Y.
Filed Nov. 21, 1969, Ser. No. 878,762
Int. Cl. G08g 1/07
U.S. Cl. 340—40 **5 Claims**

Two lines interconnect a central traffic signal control station with a local control station. The two lines carry signals from the central station to the local station that determines whether the local station is under local or central control. When on central control, the two lines carry signals that cause the traffic signal at the local station to advance to the next condition. In addition, the system includes circuitry that establishes a predetermined interval in which the central station is conditioned to receive signals over the two lines from the local station indicative of a predetermined condition, such as the main thoroughfare signal being green so that a shift between local and central control may be effected without interrupting the smooth flow of traffic during the changeover, and so that central control may continuously monitor the operation of the local control station.



3,670,303
TRANSPONDER MONITORING SYSTEM
John S. Dame, Oak Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 28, 1970, Ser. No. 67,875
Int. Cl. G08b 29/00
U.S. Cl. 340—146.1 C **25 Claims**

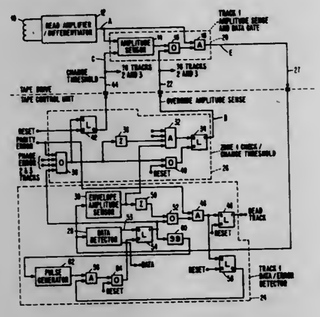


A transponder monitoring system includes a fixed location interrogation station and transponder units carried by vehicles, with the transponder units being placed in an activated transmit mode in response to interrogation pulses transmitted by the interrogation station. The messages received at the interrogation station are verified by the transmission of verification pulses on a bit by bit basis, with failure of verification causing a vehicle transponder unit to be reset to begin transmission over again. This permits an orderly response from the vehicle units to be obtained even though several units may be within the interrogation field at the same time and may be simultaneously attempting to transmit information to the interrogation station. Upon completion of transmission of an error free (verified) message from a transponder, the transponder is disabled from further transmission until the vehicle leaves the interrogation field.

3,670,304
METHOD AND APPARATUS FOR DETECTING ERRORS READ FROM MOVING-MAGNETIC-STORAGE DEVICE WITH DIGITAL INTERFACE

Rolf Andresen, Broomfield; Benjamin C. Fiorino, Longmont, and Fred W. Niccore, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,143
Int. Cl. G06k 5/00
U.S. Cl. 340—146.1 F 16 Claims

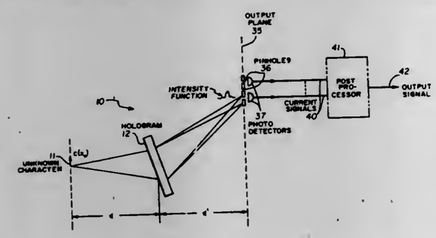


A data signal read from magnetic tape is converted from an analog signal into a digital signal by hard limiting. This hard-limited data signal is combined with an indication as to whether the amplitude of the digital signal is above a predetermined threshold and then passed to the control unit operating with the tape drive. The control unit, in turn, detects the data, checks for parity error, phase error, and amplitude error and provides control signals back to the tape drive. These control signals are used to change the predetermined threshold used by the tape drive. The predetermined threshold is changed by these control signals in accordance with detection of a history of good data and in accordance with errors in the record block.

3,670,305
LENSLESS OPTICAL RECOGNITION SYSTEM

William T. Maloney, Sudbury, Mass., assignor to Sperry Rand Corporation

Filed Sept. 30, 1970, Ser. No. 76,869
Int. Cl. G06k 9/00; G02b 27/38
U.S. Cl. 340—146.3 P 12 Claims

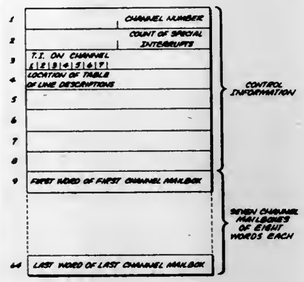


A lensless recognition system including a hologram having interference patterns therein corresponding to known characters. The interference patterns are formed by a character beam which passes through a transparent mask of the character to be recorded and intersects a reference beam on a photographic plate. In the recognition process quasi-monochromatic incoherent illumination from an unknown character transmits through the hologram which is obtained by developing and bleaching the photographic plate. Correlated output signals of varying intensity are formed in the output plane at the locations occupied during the recording process by the transparent masks which most closely correspond to the unknown character. Each of a plurality of pinholes positioned at the locations corresponding to each mask transparency transmits the central value of a correlated output signal. A photodetector aligned with each pinhole senses the transmitted central value and produces a current signal that is processed in a postprocessor to provide an output signal that is indicative of the corresponding known character.

3,670,306
PROCESS FOR DATA COMMUNICATION BETWEEN DATA PROCESSING SYSTEMS

David J. Fox, Phoenix; Jane E. King, Sun City, and Orazio J. Nardelli, Phoenix, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 1, 1971, Ser. No. 120,021
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 19 Claims



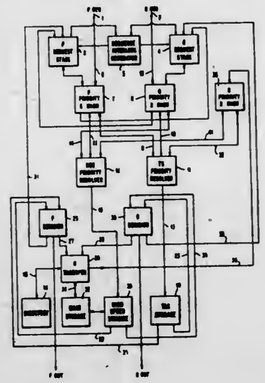
A process is disclosed which provides for data communication among two or more data processing systems interconnected by a single physical communication channel. A communication is initiated by utilizing one of a plurality of storage areas in the memory of one of the data processing systems. Data and control information necessary for preparing for a communication is stored in a storage area to await processing by the appropriate data processing system. While the control information from one storage area is being processed, control information relating to a different communication may be stored in another storage area. In this manner, many communications among the data processing systems may be processed in an apparently parallel fashion.

3,670,307
INTERSTORAGE TRANSFER MECHANISM

Richard F. Arnold, Palo Alto, Calif.; Philip S. Dauber, Ossining; Charles V. Freiman, Pleasantville, both of N.Y.; Russel J. Robelen, Palo Alto, and John R. Wierzbicki, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,467
Int. Cl. G11c 9/00; G06f 13/00
U.S. Cl. 340—172.5 10 Claims

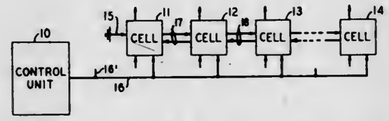
Described is an interstorage transfer mechanism suitable for use in a storage control system for a two-level storage, wherein the storage system includes a high-speed storage against which requests for data are processed and a slower, larger-capacity main storage. Requests can be received and serviced concurrently at a plurality of request ports in the system where they are buffered in the request stacks. A tag storage serves as an index to the data concurrently resident in high-speed storage and a directory storage acts as an index to data currently in main storage. Requests for data in each port cause the tag storage to be interrogated to determine whether the desired data is in high-speed storage. If not, then the desired data is retrieved from main storage and placed into high-speed storage by the interstorage transfer mechanism. Priority means for accessing said high-speed storage are provided, said interstorage transfer mechanism being given first priority to access said high-speed and tag storages in case of conflicts in access between said interstorage transfer mechanism and at least one of said plurality of request ports. Means are provided for choosing a target address in High-speed storage wherein said desired data will be relocated. The tag indexing said target address is updated by said interstorage transfer mechanism to reflect the new data. Means are further provided for invalidating all requests currently in transit at the time said tag is changed to insure data integrity in case said requests refer to old data in said target line. The aforementioned tags contain a bit indicating that the corresponding address in high-speed storage has recently been accessed. Cold generator means are provided for periodically resetting this bit in each tag to mark the corresponding high-speed storage physical address as a candidate for replacement target.



3,670,308
DISTRIBUTED LOGIC MEMORY CELL FOR PARALLEL CELLULAR-LOGIC PROCESSOR

David Morris Tutelman, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 24, 1970, Ser. No. 101,311
Int. Cl. G06f 13/00, 15/16
U.S. Cl. 340—172.5 21 Claims

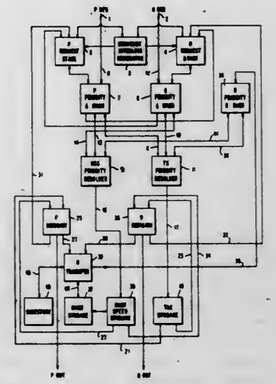


In a parallel cellular logic processor including a program control unit and a plurality of logic memory cells, all data inputs, except intercell inputs, for any cell are channeled through common input coupling logic to a one-bit intracell bus. The coupling logic is enabled or disabled in accordance with predetermined combinations of states of program control signals and of a plurality of control flip-flop circuits within the cell. Those flip-flop circuits receive data signal inputs from the bus. The same bus also provides data inputs for a data flip-flop circuit and for a data store within the cell. Data input to the bus is provided by way of the coupling logic from a program-selected one of the data flip-flop circuit, the store, an external source, or from program. Additional logic allows communication among cells by way of selective interconnection of their respective intracell buses as determined by further program control signals.

3,670,309
STORAGE CONTROL SYSTEM

Gene M. Amdahl, Saratoga; Richard F. Arnold, Palo Alto, both of Calif.; Philip S. Dauber, Ossining; Charles V. Freiman, Pleasantville, both of N.Y.; Russell J. Robelen, Palo Alto, Calif.; Herbert Schorr, Briar Cliff, N.Y., and John R. Wierzbicki, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,469
Int. Cl. G11c 9/00; G06f 13/00
U.S. Cl. 340—172.5 29 Claims



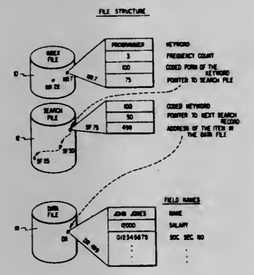
Described is a storage control system for a two-level storage system. The system includes a high-speed storage against which requests for data are processed and a slower, larger-capacity main storage. Requests for data are received in terms of logical addresses. Requests can be received concurrently at a plurality of request ports where they are buffered in request stacks. A tag storage serves as an index to the data currently resident in high-speed storage, and a directory storage acts as an index to data currently in main storage. A sequence interlock generator is included which interlocks requests in the plurality of request stacks to insure that requests to the same storage area are performed in proper sequence to insure data integrity. When a request is serviced, the logical address is transformed into a plurality of physical addresses in high-speed storage. The corresponding tags from the tag storage and the corresponding data from the high-speed storage are concurrently fetched. A comparison is made of the tags with the transformed address to determine whether the requested data is in high-speed storage. Since request to the same storage entity in high-speed storage or tag storage can be made concurrently by all request ports, conflict resolvers are included to resolve conflicts arising from simultaneous requests to either of these two storages. High-speed storage is divided into storage modules capable of simultaneous operation such that requests from the plurality of request ports can be serviced concurrently. If comparison of the tags indicate that the requested data is available, the request is serviced. An in-

terstorage transfer mechanism is included such that if the requested data is not available in high-speed storage, then the data is retrieved from main storage and placed into high-speed storage for subsequent processing of the request. Concurrently with interstorage transfer, processing of other requests from the request ports is permissible. In the replacement of data from main storage to high-speed storage, provision is made for also replacing data from high-speed storage to main storage if such be necessary.

3,670,310
METHOD FOR INFORMATION STORAGE AND RETRIEVAL

Bansi U. Bharwani, Rochester, N.Y., and Harry Kaplowitz, Annandale, Va., assignors to Infodata Systems Incorporated, Webster, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,953
Int. Cl. G06f *7/10*
U.S. Cl. 340—172.5 **22 Claims**



A data storage and retrieval system based upon a three file concept is disclosed. The computer oriented system comprises at least an index, search, and data file. Access to the file structure is through the index file wherein a plurality of keywords are stored. Each keyword, either individually or in combination, is used to identify one or more data records stored in the data file. A plurality of paths through the search file, called chains, whose links comprise links addresses, provide a connection between the index and data files.

Keywords are automatically generated from field values contained in data records. Updating of these field values initiates the automatic updating of keywords in the index and search files.

In addition, to conserve file space, the allocation of space for keywords in the index file is made adjustable.

Provision is made for marking items as deleted and for bypassing deleted items during searching.

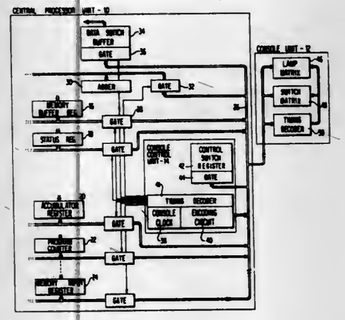
Provision is also made for the addition of a single item as a data record without using the loading procedure used to initially load the data base.

3,670,311
DATA PROCESSOR CONSOLE COMMUNICATIONS SYSTEM

Frederick C. Aumann, III, Chelmsford, Mass., and Gerald V. Butler, Jr., Whittier, Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Nov. 19, 1970, Ser. No. 91,132
Int. Cl. G06f *3/14*; H04q *11/00*
U.S. Cl. 340—172.5 **11 Claims**

A data processing system which multiplexes signals between the central processing unit and a console unit over a single set of conductors. Sets of indicating lamps and switches in the console unit correspond to storage units in the central processor unit. Selector circuits respond to recurring sequential gating signals to connect each storage unit to its corresponding row of switches or indicating lamps repeatedly in sequence over the conductors. Persistence causes

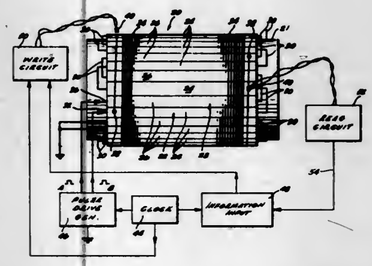


the lamps to continuously display the contents of the corresponding storage units while the switches alter the contents in the storage units intermittently connected to them.

3,670,312
WRITE STATION FOR A MAGNETIC STORAGE MEDIUM

Berne D. Broadbent, Orange, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 30, 1970, Ser. No. 85,597
Int. Cl. G11c *19/00*, *11/04*, *11/14*
U.S. Cl. 340—174 SR **21 Claims**

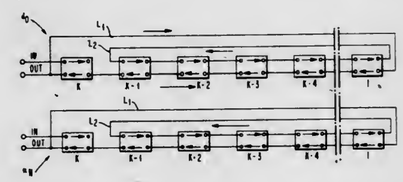


A magnetic shift register including a fine magnetic wire recording medium, the wire being wound under tension in a helix around a substrate including a cylindrically disposed polyphase advance array which includes a plurality of drive windings oriented transverse to the axis of the magnetic wire so that a series of spaced magnetic domains, sequentially formed at the input end segment of the magnetic wire by a drive field produced by one of the drive winding, can be propagated through the length of the magnetic wire by the polyphase advance array when current pulses are applied to the drive windings. A write winding fastened adjacent the magnetic wire toward the input end thereof can selectively impede propagation of and cause destruction of the magnetic domain in selected storage segments. A read winding disposed toward the output end of the magnetic wire senses magnetic domains propagated therethrough past the write winding such that the absence of a magnetic domain from a spaced storage segment of the magnetic wire represents a digital ZERO and the presence of a magnetic domain represents a digital ONE.

3,670,313
DYNAMICALLY ORDERED MAGNETIC BUBBLE SHIFT REGISTER MEMORY

William F. Beausoleil, Poughkeepsie; David T. Brown, and Ernest L. Walker, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,822
Int. Cl. G11c *11/14*, *19/00*
U.S. Cl. 340—174 TF **8 Claims**

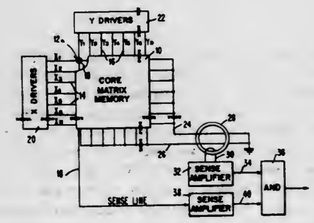


This specification discloses a bubble domain memory in which data is arranged for immediacy of access in accordance with its last use. The memory comprises a plurality of parallel shift registers in which data can be accessed in parallel. In other words, each of the shift registers contains a bit of a page or word so that by the performance of one shifting operation all of the bits of the page or word can be accessed. Data in each shift register is arranged in its order of last use so that the access position K of a shift register having K bit positions contains the last bit of information used and the position K−1 preceding the access position K in the shift register contains the bit of data used just previously to the data in the access position K and so on. In these shift registers the shift positions are arranged in loops for shifting the data between the positions of the shift register. Two such loops are provided, one of the loops contains all the shift positions so that data in any position in the shift register can be shifted into the access position K of the register for reading or writing. The other loop contains all the positions of the shift register but the access position K. This second loop is for reordering the data in the shift register in order of last use after data has been shifted into the access position K for reading or writing by the first loop.

3,670,314
READ GATING CIRCUIT FOR CORE SENSING

Lawrence A. Tate, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, New York, N.Y.

Filed June 14, 1960, Ser. No. 35,994
Int. Cl. G11c *5/08*, *11/06*
U.S. Cl. 340—174 RC **32 Claims**

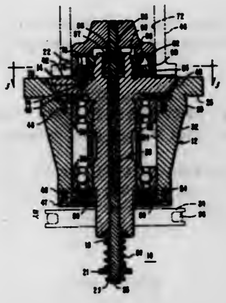


An information storage matrix, such as an array of magnetic cores, is provided with a separate reference storage device which is driven by the same read-out driver as the array. The reference read-out signal and the information signals are sensed and applied to a gating means, such as an AND gate, which operates only on the coincidence of the reference and information signals, thereby eliminating stray noise in the output.

3,670,315
MAGNETIC DISK MEMORY SPINDLE ASSEMBLY

Robert R. Fowler, 10625 Northridge Hill Drive, Chatsworth, Calif.

Filed May 14, 1970, Ser. No. 37,235
Int. Cl. G01d *15/28*
U.S. Cl. 340—174.1 C **9 Claims**



A spindle assembly provides orthogonal reference surfaces for receiving an annular mounting member for a memory disk assembly having corresponding orthogonal reference surfaces disposed about a central axis. A spindle having a central bore concentric with a central axis turns within a housing on widely spaced bearings. The spindle includes an annular reference surface perpendicular to the central axis and a conical surface concentric with the central axis. A segmented collet has an internal conical surface mating with the conical surface of the spindle as well as a cylindrical reference surface which is orthogonal to the first reference surface and concentric with the central axis. Pins transmit rotational force from the spindle to the collet, and a cage holds the collet against the spindle. A drawbar extends from the cage through the central bore of the spindle and controls movement of the cage, thereby allowing the disk assembly to be selectively engaged or disengaged. The assembly combines stable operation with economy and ease of manufacture.

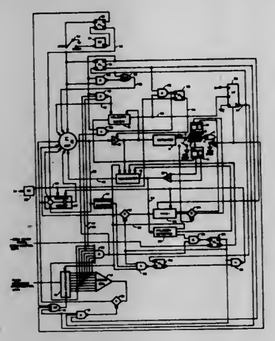
3,670,316
CONTROL FOR DISC DRIVE APPARATUS

Richard D. Matthews; Martin O. Holtzhill; Frank J. Sordello, and Harold S. Yang, all of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 24, 1970, Ser. No. 66,526
Int. Cl. G11b *5/58*, *5/82*
U.S. Cl. 340—174.1 C **7 Claims**

A disc drive control for a disc drive apparatus, which con-

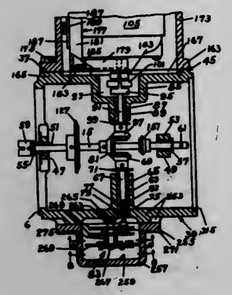
trol, during each power-on sequence, tests the various control functions individually and sequentially to ascertain if the disc drive apparatus is in proper working order.



3,670,317
INSTRUMENT DRIVE SYSTEM FOR FLUID METERING

Lester R. Overy, Fort Wayne, Ind., assignor to Tokheim Corporation

Filed Mar. 16, 1971, Ser. No. 124,844
Int. Cl. G08c *19/48*, *19/16*
U.S. Cl. 340—198 20 Claims



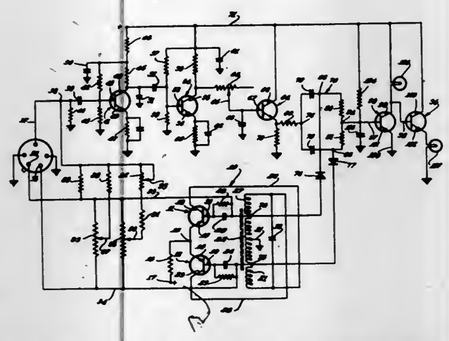
The invention relates to an improvement in a fluid metering apparatus which, in the prior art, commonly comprises three or more elements mounted together in stacked, interfitting relationship, wherein the lowermost element is a meter having an output shaft, wherein the intermediate element or elements have input and output shaft means, wherein the uppermost element has at least an input shaft and wherein the input shaft of each element is coupled with the output shaft means of the subjacent element.

3,670,318
LOAD CELL OUTPUT CIRCUIT

George H. Fathauer, Decatur, Ill., assignor to Eaton Yale & Towne Inc., Morton Grove, Ill.

Filed July 7, 1969, Ser. No. 839,289
Int. Cl. G08c *19/00*
U.S. Cl. 340—199 5 Claims

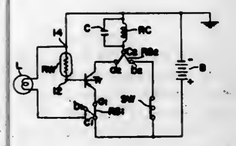
A load weighing system including an oscillator for supplying a signal to a load cell and at the same time supplying a like signal to a phase detector circuit. The output of the load cell is coupled through an amplifier to the input of the phase detector circuit, and changes in loading on the cell produce a linearly increasing signal at the output of the phase detector circuit for triggering a meter device or the like. Spurious signals including signals of the operating frequency or of incorrect phase are nullified in the phase detector circuit and accordingly do not trigger the metering circuit. The metering circuit may include a pair of transistors connected in parallel so that both of the transistors conduct equally when a null condition is received at the output of the load cell. This equal conduction is then measured by means of lamps or the like which may be connected in series with each of the transistors.



3,670,319
ELECTRICAL ALARM DEVICE FOR OIL FILTERS RESPONSIVE TO WATER SEDIMENT LEVEL

Yoshio Ohtani, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1970, Ser. No. 62,049
Int. Cl. G08b *21/00*; F01m *11/10*
U.S. Cl. 340—244 C 2 Claims

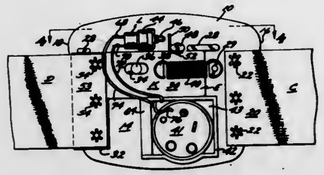


An alarm device for oil filters responsive to the water sediment level in the filter includes a pair of electrodes which are short-circuited when the sediment reaches a predetermined level. Short-circuiting of the electrodes energizes an alarm circuit which includes an amplifier connected to the electrodes and a relay coil connected to the output of the amplifier. First and second pairs of switching contacts controlled by the relay coil complete a circuit between the amplifier and coil and a source in the normal, unactuated states thereof. These contacts, when actuated responsive to energization of the relay coil, complete a circuit to an indicating device and to a reset switch and break the circuit between the coil and amplifier. Opening of the reset switch de-actuates the switching contacts.

3,670,320
POSTURE IMPROVING DEVICE

Robert D. Palmer, 6475 Bayard, Long Beach, Calif.

Filed July 6, 1970, Ser. No. 52,172
Int. Cl. G08b *3/00*
U.S. Cl. 340—279 1 Claim

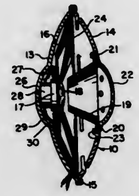


A posture improving device that includes a housing assembly having two belt segments extending from opposite sides thereof, which device may be adjustably mounted to encircle the waist of a user when he is standing with correct posture and with his stomach muscles taut. The device lightly contacts the waist portion of the user when he is so standing, but upon the user assuming an incorrect posture in which his stomach muscles are allowed to sag, additional tension is placed on the belt segments that results in an electric circuit being completed within the housing to actuate a buzzer or other sound reproducing device to warn the user that his posture is incorrect. The device is compact, light in weight and may be worn by a user without the device being conspicuous.

3,670,321
POCKET NOISE MAKING AND ALARM DEVICE

Savas P. Savides, 92-09 Rockaway Boulevard, Rockaway Beach, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,675
Int. Cl. G08b *3/10*
U.S. Cl. 340—384 3 Claims

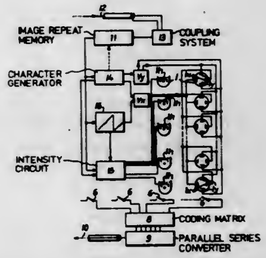


A personal noise making and alarm signal device which can be worn in the pocket of a garment, comprising two concave parts opposingly connected together at their peripheries. Within the enclosure is an electric sound producing device, including an electromagnetic speaker, sounding board means carried by the electromagnetic speaker and by one of the parts, a cone carried by one of the parts and having its small opening lying close to the loud speaker device and a combined battery and push button switch device connected in circuit relation with the sound producing and loud speaker devices, the combined battery and switch contact device including a switch button unit adapted to be alternately extended and retracted for engagement with the battery contacts or disengagement of the battery contacts. A combined battery and switch may be confined within the enclosure or may be a separate unit and wired to the sound producing and loud speaker device. When the combined battery and switch device is disposed in the enclosure an enlarged cover member engages the switch button and is spring biased from a partition wall toward a retaining ring secured in an enlarged opening in one of the parts. A plug outlet is provided on the enclosure parts to supply a separate combined battery and push button unit to effect operation of the unit separate and apart from the sound producing and loud speaking unit.

3,670,322
PROGRAMMABLE KEYBOARD

Rainer Mallebrein, Singen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed Aug. 17, 1970, Ser. No. 64,439
Claims priority, application Germany, Aug. 16, 1969, P 19 41 671.8
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A 10 Claims

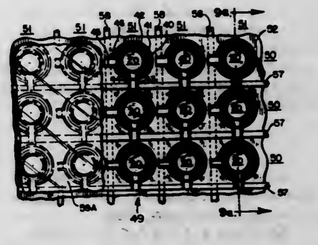


A programmable keyboard having a plurality of information input elements constituted by small cathode-ray tubes connected to present a display of the type of information to which they relate.

3,670,323
IMAGE-DISPLAY DEVICES COMPRISING PARTICLE LIGHT MODULATORS WITH STORAGE

Alan Sobel, and Joseph Markin, both of Evanston, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 14, 1970, Ser. No. 97,867
Int. Cl. G02f *1/30*
U.S. Cl. 340—324 R 21 Claims



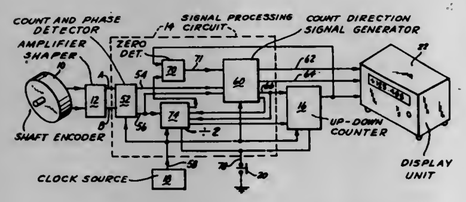
An image-display panel is composed of horizontal rows and vertical columns of illumination-control cells, each of which includes anisometric particles of suspended magnetic material that normally obstruct light but become oriented to pass light in response to the application of a magnetic field. Individually associated with different cells are a plurality of magnetic storage elements that effect control of the application of the fields to the cells. A like plurality of magnetic-field-producing devices are individually associated with

respective cells and storage elements. In response to vertical synchronizing signals, conditioning pulses are selectively applied to respective rows of the field-producing devices in order to create in the corresponding storage elements respective field components of magnitudes insufficient to orient the particles in the associated cells for light control. In response to horizontal synchronizing signals, control pulses are selectively applied to respective columns of the field-producing devices in order to create, in the corresponding storage elements, respective field components of magnitudes sufficient, together with the respective field components created in response to the conditioning pulses, to establish in the respective cells resultant fields sufficient to orient the affected particles for light control. At the same time, the amplitude of the conditioning or control pulses is modulated by video signals so that the total magnitude of each of the resultant fields is proportional to the instantaneous video level. The storage elements thereafter serve to maintain orientation of the particles until, finally, in response to synchronizing signals, the storage elements are periodically de-activated in time-correspondence with successive intervals of the video information. In one extension of the basic disclosure, a manually movable magnet is employed to write additional information into the display.

3,670,324
ANALOG-DIGITAL SHAFT POSITION ENCODER

John B. Trevor, 3rd, Feeks Lane, Locust Valley, N.Y.

Filed Mar. 27, 1970, Ser. No. 23,270
Int. Cl. H03r *13/20*
U.S. Cl. 340—347 SY **10 Claims**



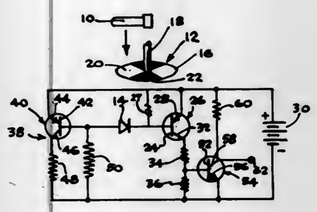
Encoding equipment in which the output signals of a position encoder such as a shaft position encoder are sampled for counting only during a short sampling period in each cycle of the output signals. The sampling period is determined by a signal from a clock source, and the clock source is used to synchronize the operation of the entire counting system. Thus, the chances that spurious counts will be created by spurious signals is minimized. The shaft encoder preferably produces two trains of output pulses in quadrature. The output pulses are counted by an up-down counting system which displays a digital number representing the shaft position together with a plus or minus sign to indicate the direction in which the shaft has been rotated.

3,670,325
ANALOG TO DIGITAL ENCODER

Yervand Mathevosian, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed May 4, 1970, Ser. No. 34,501
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 P **11 Claims**

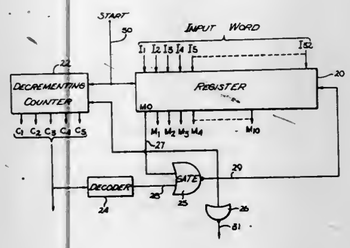
A photoresponsive device employing a silicon photocell to excite on illumination of the photocell, a transistor in a discriminator circuit and drive the transistor from a non-conducting to a conducting condition. The photovoltaic output of the silicon photodiode is added to the direct current potential of a bias source to exceed the threshold conduction potential of the discriminator transistor. Thermal stability is achieved by employing a transistor in the bias source of identical type and similar characteristics to the discriminator transistor. The discriminator transistor has an emitter-collector circuit which includes a load resistor, and the output which is developed across the load resistor is amplified by a common emitter transistor amplifier circuit. The transistor of the amplifier circuit is an N-P-N type, while the transistor of the discriminator circuit is a P-N-P type. In addition to employing a bias source responsive to ambient temperature, a second bias source is used to reduce the collector-emitter potential of the discriminator transistor responsive to temperature increases. The second bias source utilizes a thermistor in addition to the emitter-collector potential of a bias supply transistor in order to compensate for the non-linear temperature-output characteristics of silicon photodiodes.



3,670,326
DIGITAL TO LOG-ANALOG CONVERTER

Edwin A. Sloane, Los Altos, and Lee E. Scaggs, Mountain View, both of Calif., assignors to Time/Data Corporation, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 775,216, Sept. 3, 1968, now abandoned. This application Nov. 23, 1970, Ser. No. 91,860
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA **10 Claims**

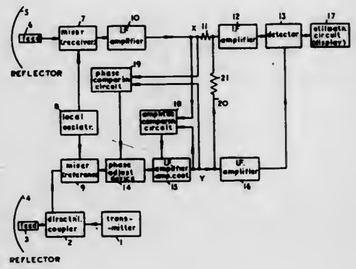


A system for converting digital information into logarithmic (log) analog form is disclosed. The characteristic and mantissa for each converted digital work are determined separately and then summed. The characteristic and mantissa are determined utilizing a linear, resistive network.

3,670,327
CONTINUOUS WAVE RADAR SYSTEMS

John Dickens Clare, and Stanley Bruce Marsh, both of Malvern, England, assignors to Minister of Supply in Her Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 1, 1956, Ser. No. 619,904
Int. Cl. G01s *9/44*
U.S. Cl. 343—8 **1 Claim**



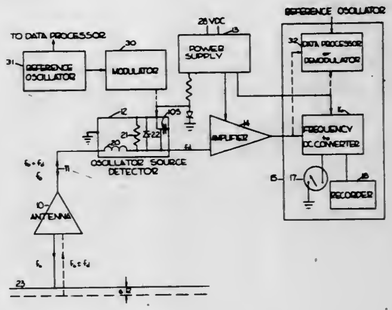
1. A continuous wave radar system comprising a transmitting channel and a receiving channel, a first heterodying means included in said receiving channel to convert the received signal to an intermediate frequency, a reference signal channel including a second heterodyning means coupled to said transmitting channel for converting a portion of the transmitted signal to an intermediate frequency, phase comparison means coupled to the intermediate frequency outputs of said receiving and said reference channels for producing an output proportional to the phase relationship between the channels, phase adjusting means included in said reference channel and coupled to said phase comparison means for maintaining a fixed phase relationship between channels, amplitude comparison means coupled to the intermediate frequency outputs of said receiving and said reference channels, amplitude adjusting means included in said reference channel and coupled to said amplitude comparison means for maintaining a fixed amplitude relationship between said channels, circuit means for applying a portion of said reference signal to said receiving channel in opposition to cancel the noise component of said received signal, a detector coupled to said receiver channel and to said reference channel to provide an output proportional to the doppler frequency difference between the received signal and the reference signal.

3,670,328
TUNNEL DIODE MOVEMENT DETECTOR

Austin Mardon, Santa Barbara, and Robert N. Nielsen, Jr., Woodland Hills, both of Calif., assignors to American Nucleonics Corporation, Glendale, Calif.

Filed Nov. 29, 1968, Ser. No. 785,005
Int. Cl. G01s *9/46, 9/50*
U.S. Cl. 343—8 **8 Claims**

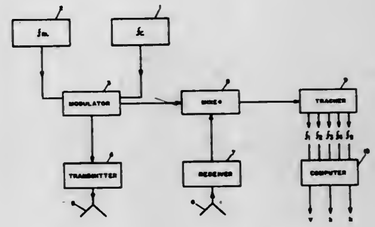
This disclosure involves a radar system designed primarily to give an indication whenever the relative distance between the source of electromagnetic energy and the reflecting surface changes. It is particularly adaptable for use in indicating the sink or climb rate of an aircraft alternatively in indicating the opening or closing rate as required in avoidance systems. It employs a single antenna and a single active RF element; the former constitutes simultaneously the transmitting and receiving antenna and the latter active RF element constitutes both the radio frequency energy generator for the system and the receiver down-converter for the system.



3,670,329
METHOD OF MEASURING AIRCRAFT PARAMETERS USING DOPPLER TECHNIQUES AND ALTITUDE HOLES

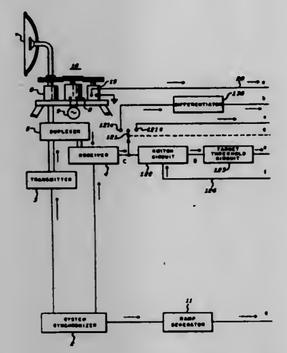
Keith C. M. Glegg, Montreal, Quebec; John F. Haberl, Pointe Claire, Quebec; Hans W. Baumans, Montreal, Quebec; Rein Pilbe, Dollard des Ormeaux, Quebec, all of Canada, assignors to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Oct. 5, 1970, Ser. No. 77,803
Int. Cl. G01s *9/46*
U.S. Cl. 343—9 **4 Claims**



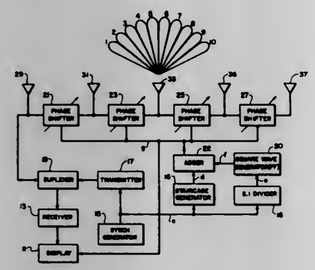
In FM/CW airborne radar systems, the presence of altitude holes at multiples of half the wavelength of the modulating frequency has presented problems in that these altitude holes represent "blind" spots. In accordance with the invention, it has been discovered that these altitude holes can be used to advantage by detecting the Doppler shifts associated with several altitude holes and using the data thus obtained to solve a like number of simultaneous equations, and to thereby obtain aircraft flight parameters. The disclosure treats of the theory behind the invention and describes, in general terms, a system for detecting altitude holes and the Doppler shifts associated therewith.

3,670,330
RADAR COLLISION AVOIDANCE INDICATOR
Robert F. Riggs, Charlottesville, Va., assignor to Sperry Rand Corporation
Filed July 6, 1970, Ser. No. 52,329
Int. Cl. G01s 7/12
U.S. Cl. 343—11 R 12 Claims



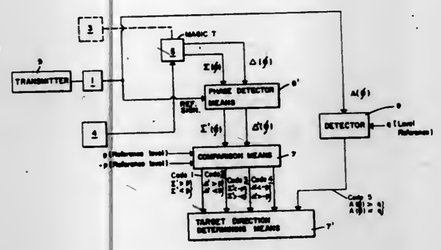
A collision warning and collision avoidance radar navigation system employs combined modified tau-proximity collision warning criteria to derive an improved presentation on a radar plan position cathode ray indicator. An intruding target is labelled dangerous if the target is below a predetermined range or if the ratio of intruder closing range to his range rate is less than a predetermined value.

3,670,331
SCANNING MEANS AND METHOD FOR SEARCH RADAR
Otto E. Rittenbach, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed July 16, 1970, Ser. No. 55,499
Int. Cl. G01s 9/06
U.S. Cl. 343—11 R 8 Claims



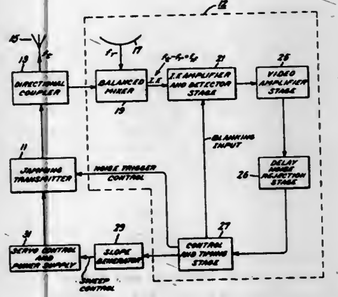
According to this invention, an electronically scanned radar antenna array is rapidly scanned over a plurality of adjacent beam positions, to avoid the possibility of fast-moving targets escaping detection. The radar PRF is increased to yield the same unambiguous range and target echo sensitivity compared to a slow-scan system. In a modification of this concept, rapid interlaced scanning is provided to reduce the probability of second-time-around echoes entering adjacent beam positions.

3,670,332
DIRECTION FINDING DEVICE
Ronald Blommendaal, Noordwijk, Netherlands, assignor to Christiaan Huygenslaboratorium N. V., Noordwijk, Netherlands
Filed Sept. 10, 1969, Ser. No. 856,859
Claims priority, application Netherlands, Sept. 19, 1968, 6812918
Int. Cl. G01s 9/02
U.S. Cl. 343—16 R 6 Claims



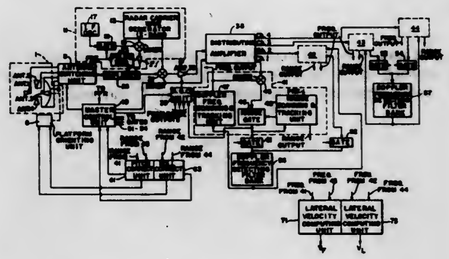
Direction finding device with a high directivity antenna with a narrow beam, and a pair of interferometer elements with a periodical radiation pattern. The signals obtained from the high directivity antenna and the interferometer elements respectively are compared in such a way, that by means of the comparison results a distinction can be made between signal sources in different sectors of the beam of the high directivity antenna.

3,670,333
AUTOMATIC SWEEP ELECTRONIC COUNTERMEASURES SYSTEM
Oliver H. Wise, Whitesboro, N.Y., assignor to General Electric Company
Filed Apr. 27, 1960, Ser. No. 25,165
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E 6 Claims



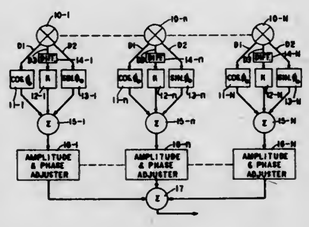
1. An automatic sweep jamming system having a high duty cycle and rapid acquisition rate for jamming victim transmission systems comprising transmitter means capable of being swept very rapidly over a prescribed frequency spectrum for radiating electromagnetic energy, tuning control means coupled to said transmitter for sweeping said spectrum repetitively, receiver means capable of rapidly sweeping said prescribed frequency spectrum to detect electromagnetic energy from victim transmission systems, and means including said transmitter, said tuning control means and receiver means for automatically reducing the sweep rate of said transmitter means for a predetermined period in response to detection of victim electromagnetic energy.

3,670,334
ATTITUDE CONTROL SYSTEM
Alfred F. Gaheen, Jr., Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 24, 1969, Ser. No. 809,779
Int. Cl. G01s 9/02, 9/44
U.S. Cl. 343—7.4 2 Claims



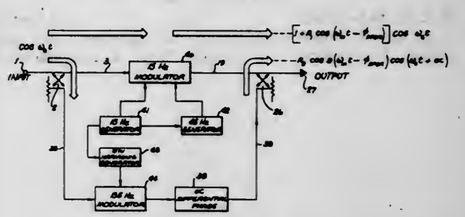
A radar system for use on an aircraft or spacecraft for determining and controlling the attitude of the system antenna or of the craft, the system including an antenna unit producing four equiangularly spaced beams each of which is angularly offset by a substantial amount from a center reference axis, and means for applying radar pulse signals to each beam in succession and for deriving, from the received pulses returning from the ground, range and velocity information which is employed for orienting the antenna unit or the craft on which the system is mounted so as to impart a vertical orientation to the antenna system reference axis.

3,670,335
ARRAYS WITH NULLS STEERED INDEPENDENTLY OF MAIN BEAM
Peter Hirsch, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 8, 1967, Ser. No. 644,539
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA 6 Claims



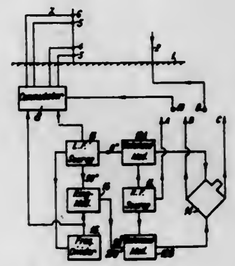
The directions of selected nulls in the characteristic pattern of an array of signal converting elements are controlled independently of the direction of the main beam of this pattern and substantially independently of the strength of the main beam. This is done by constructing each signal converting element either of two mutually perpendicular dipole transducers and an omnidirectional transducer, or their equivalent. Array nulls are then rotated independently of the main beam by varying the relative weights given to the signals associated with the transducers comprising each element.

3,670,336
ELECTRONIC TECHNIQUE FOR AN ALL-ELECTRONIC CYLINDRICAL ARRAY BEACON ANTENNA
Gregory G. Charlton, Calabasas; Robert J. Hanratty, Northridge, and Hiram H. Ohta, Venice, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed May 11, 1970, Ser. No. 36,050
Int. Cl. G01s 1/44
U.S. Cl. 343—106 10 Claims



A system for generating the amplitude modulation functions to apply to the individual columns of radiating elements in a cylindrical array antenna for the TACAN system. Two harmonically related low frequency modulation waveforms are contemplated, and means are provided for adjusting the radio-frequency phase of the higher of these two aperture excitation components relative to the RF phase of the carrier component. The result is broadening of the "operating lobe" of the modulation pattern, permitting operation over a broader band of frequencies and a wider range of elevation angles in a cylindrical array of moderate size.

3,670,337
RADIO NAVIGATION BEACON UTILIZING A COMMUTATOR WHICH SUPPLIES RADIO FREQUENCY IN SUCCESSION TO SEVERAL AERIALS
Charles William Earp, London, and Francis Giles Overbury, Cuffley, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Jan. 21, 1970, Ser. No. 4,653
Claims priority, application Great Britain, Feb. 5, 1969, 6,157/69
Int. Cl. G01s 1/16
U.S. Cl. 343—108 8 Claims

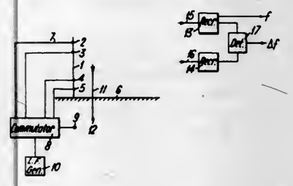


A radio navigation beacon is provided having a linear array of equally spaced aerials and means which commutate radio-

frequency to each said aerial in succession so as to produce bi-directional constant-velocity scanning of the array. Further means including an aerial for radiating radio-frequency energy of a frequency which differs by a fixed amount from the radio frequency which is commutated to the array. The sign of frequency difference is changed at each half period of commutation to the array.

3,670,338
RADIO NAVIGATION RECEIVING EQUIPMENT
Charles William Earp, Hampstead, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,802
Claims priority, application Great Britain, Mar. 7, 1969, 12,225/69
Int. Cl. G01s *1/40*
U.S. Cl. 343—108 M **11 Claims**

A beacon which simulates a moving source provides signals from which, at a receiver, there is determined in terms of frequency the distance and angle of elevation from the receiver to the beacon. In the receiver, the frequency information is used to define a non-rectilinear glide path or approach track for an aircraft. This is achieved with summing and multiplying equipment in a defined relationship.



DESIGNS

JUNE 13, 1972

223,791
SKI-SHOE
Jean-Louis Barrault, Paris, France, assignor to Le Trappeur Sillans, Isere, France
Filed Aug. 20, 1970, Ser. No. 24,603
Claims priority, application France May 5, 1970
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—276



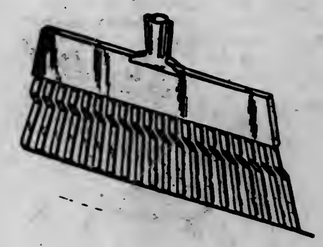
223,792
FISHERMAN'S SHOE
Leon L. Martuch, Midland, Mich., assignor to Scientific Anglers Inc., Midland, Mich.
Filed Jan. 30, 1970, Ser. No. 21,155
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



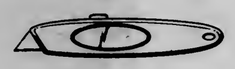
223,793
COMBINATION HOE, CUTTER AND EDGER FOR GARDENING
Angelo De Feo, Jr., 664 Riverview Drive, Totowa Borough, N.J. 07512
Filed Dec. 26, 1967, Ser. No. 9,909
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—11



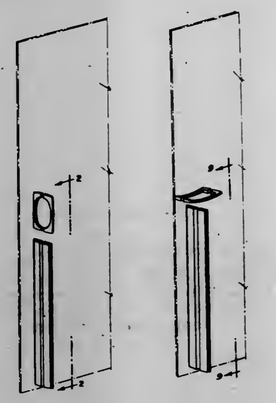
223,794
TOOL HEAD FOR A LAWN RAKE
Walter R. Hart, Columbus, Ohio, assignor to The Union Fork and Hoe Company, Columbus, Ohio
Filed Feb. 24, 1970, Ser. No. 21,582
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—13



223,795
BLADE HOLDER
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Oct. 12, 1970, Ser. No. 25,428
Term of patent 14 years
Int. Cl. D8—05
U.S. Cl. D8—107



223,796
COMBINED DOOR HANDLE AND LOCK HOUSING SET
William J. Horgan, Jr., Allegheny County, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Continuation-in-part of design applications Ser. No. 20,029, Nov. 10, 1969, and Ser. No. 20,194, Nov. 20, 1969. This application June 1, 1970, Ser. No. 23,251
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—138



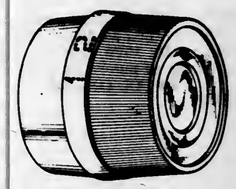
223,797
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,566
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—140



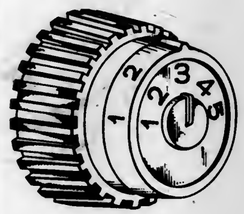
223,798
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,569
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—140



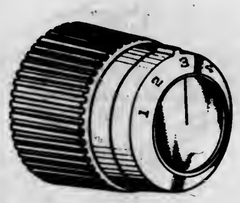
223,799
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,572
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—140



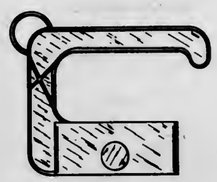
223,800
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,565
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—142



223,801
CONTROL KNOB FOR A THERMOSTATIC VALVE OR THE LIKE
Jens E. G. Jensen, Holm, near Nordborg, and Niels P. G. Graversen, Augustenborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark
Filed Aug. 19, 1970, Ser. No. 24,571
Term of patent 14 years
Int. Cl. D8—07
U.S. Cl. D8—142



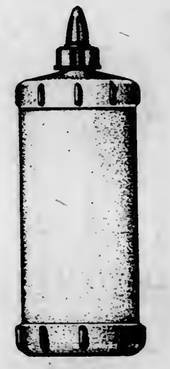
223,802
CARRIER HANDLE FOR GARMENT HANGERS
James A. Belland, 310 Wildwood Road, Willernie, Minn. 53090; and Eugene Brown, 2600 Mayfair Ave.; and David De Wuske, 103 Wildwood Road, both of White Bear Lake, Minn. 53090
Filed Dec. 14, 1970, Ser. No. 26,446
Term of patent 14 years
Int. Cl. D8—05
U.S. Cl. D8—154



223,803
SUPPORT FOR REINFORCING ROD
Harold A. Lichnecker, 12808 Nutwood St., Garden Grove, Calif. 92640
Filed Oct. 28, 1970, Ser. No. 25,692
Term of patent 14 years
Int. Cl. D8—08
U.S. Cl. D8—228



223,804
BOTTLE OR THE LIKE
Edwin F. Kaush, Norwalk, Conn., assignor to Borden, Inc., Columbus, Ohio
Filed Sept. 24, 1970, Ser. No. 25,185
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—2



223,805
COMBINED BOTTLE, WRAPPING AND PRODUCT IDENTIFICATION LABEL
Giancarlo Polenghi, % Dr. Ing. Mistrano A.G., 217 Via Padova, 20127 Milan, Italy
Filed July 16, 1970, Ser. No. 24,004
Claims priority, application Italy May 29, 1970
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—10



223,806
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,937
Term of patent 14 years
Int. Cl. D9—01
U.S. Cl. D9—40



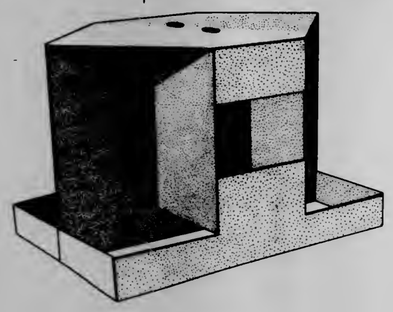
223,807
BOTTLE OR SIMILAR ARTICLE
Ernest F. Thomson, Fairfield, Conn., assignor to Lever Brothers Company, New York, N.Y.
Filed Feb. 9, 1971, Ser. No. 114,103
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



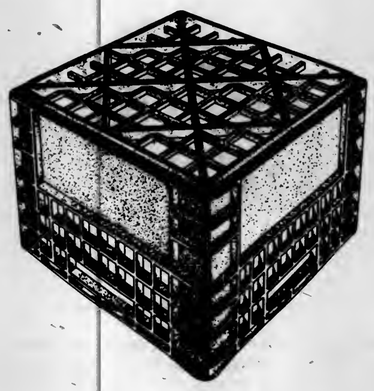
223,808
JAR OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,754
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44



223,809
CARTON FOR GLASSES
Richard K. Oglesbee, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Sept. 17, 1970, Ser. No. 25,038
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



223,810
MILK CASE OR SIMILAR ARTICLE
Howard H. McIlvain, Hamilton County, Ohio, assignor to Borden, Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 15,365, Jan. 15, 1969, now Patent No. 217,440, dated May 5, 1970. This application Feb. 9, 1970, Ser. No. 21,367
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—177



223,811
FLUID DISPENSER PACKAGE
Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 30, 1970, Ser. No. 25,757
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,812
CLOSURE FOR LIQUID CONTAINERS
Morris A. Long, Lakewood, Colo., assignor to Yorker Manufacturing, Inc., Denver, Colo.
Filed Jan. 25, 1971, Ser. No. 109,727
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—287



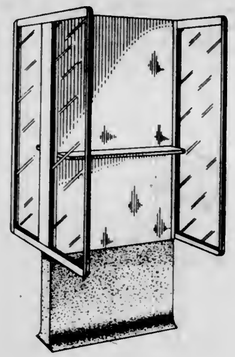
223,813
CHAIR
Ruth Francken, 11 Rue Lepic, Paris, France
Filed Oct. 12, 1970, Ser. No. 25,435
Claims priority, application France May 8, 1970
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D15—1



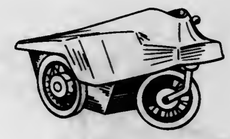
223,814
BUILDING
David P. Ney, 4800 N. Keystone Ave., Indianapolis, Ind. 46205
Filed July 2, 1970, Ser. No. 23,805
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



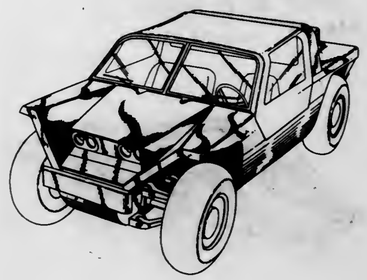
223,815
PEDESTAL MOUNTED TELEPHONE STATION
James Warren Ericsson, Indianapolis, Ind., and Donald Michael Genaro, Haworth, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 1, 1970, Ser. No. 25,295
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



223,816
GOLF BAG CART
Richard A. Hinkle, Little Rock, Ark., assignor to Citation Manufacturing Company Incorporated, Siloam Springs, Ark.
Filed Aug. 10, 1970, Ser. No. 24,406
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3



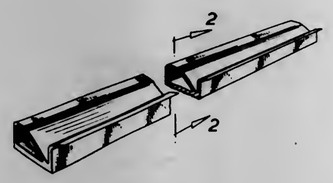
223,817
ALL-TERRAIN VEHICLE
William E. Halopoff, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Oct. 12, 1970, Ser. No. 25,459
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—3



223,818
ROLLER-BED TRAILER
Shusuke Shimoji, Ichikawa, Japan, assignor to Kabushiki Kaisha Tokyo Sachiro Shuryo Seisakusho, Tokyo, Japan
Filed Dec. 4, 1970, Ser. No. 26,297
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3

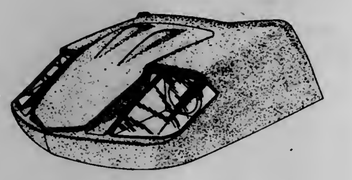


223,819
SEALING STRIP FOR THE SLIDING ROOF OF A VEHICLE OR SIMILAR ARTICLE
Harry Edwards, Solihull, England, assignor to Weathershields Limited, Birmingham, England
Filed June 30, 1970, Ser. No. 23,760
Claims priority, application Great Britain Dec. 31, 1969
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6

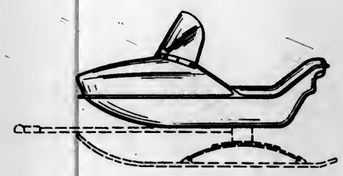


223,820
SNOWMOBILE HOOD
Kurt B. Boehm, Lake Bluff, Ill., assignor to Textron Inc., Providence, R.I.
Filed Nov. 19, 1970, Ser. No. 26,075
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24

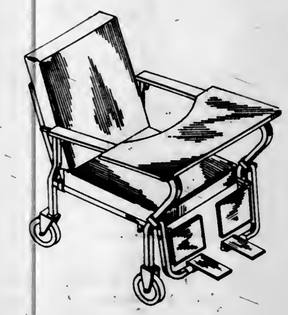
223,821
SNOWMOBILE HOOD
Kurt B. Boehm, Lake Bluff, Ill., assignor to Textron Inc., Providence, R.I.
Filed Dec. 14, 1970, Ser. No. 26,457
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—24



223,822
SNOW SLED BODY
Allan W. Lund, 2641 118th Ave. NW., Minneapolis, Minn. 55433
Filed Dec. 14, 1970, Ser. No. 26,485
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



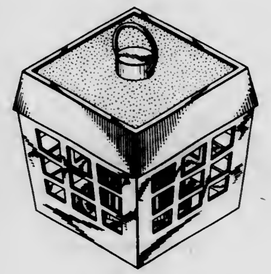
223,823
COMBINED CASTER CHAIR AND TRAY FOR INVALID
Thomas E. Bowen, Birmingham, Ala., assignor to Southeastern Metals Division of U.S. Industries, Inc.
Filed Apr. 17, 1970, Ser. No. 22,487
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



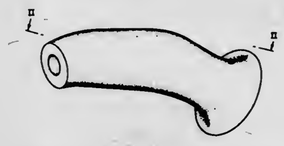
223,824
FRAME FOR A CHAIR
John W. Caldwell, 2202 Pinecrest Drive, Altadena, Calif. 91001
Filed Aug. 26, 1970, Ser. No. 24,706
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



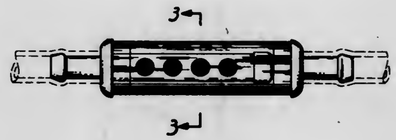
223,825
INSECT ELECTROCUTING TRAP
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,618
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



223,826
FISHING ROD HANDLE
Vaughn R. Harrell, 71 Lynnfield Road, Memphis, Tenn. 38138
Filed Nov. 27, 1970, Ser. No. 26,187
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



223,827
IN-LINE FUEL FILTER
Carlo Vecchi, Avenida Uno 4, San Bartolo Naucalpan, Estado de Mexico, Mexico
Filed July 9, 1970, Ser. No. 23,874
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



223,828
DUPLEX STRAINER UNIT
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Sept. 8, 1970, Ser. No. 24,882
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



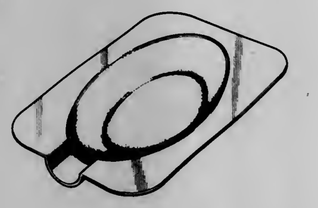
223,829
EAVES TROUGH SHIELD
Frank M. Cook, 28854 E. River Road, Perrysburg, Ohio 43551
Filed Oct. 2, 1970, Ser. No. 25,758
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—42



223,830
COMBINATION UTILITY SINK CAN WASHER SANITIZER
Roy L. Emanuele, Massapequa, N.Y., assignor to Institutional Maintenance Corporation, Brooklyn, N.Y.
Filed July 27, 1970, Ser. No. 24,131
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—50



223,831
SITZ BATH
Richard J. Perlman, Worcester, Mass., assignor to JMR Enterprises, Inc., Worcester, Mass.
Filed June 11, 1970, Ser. No. 23,438
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—51



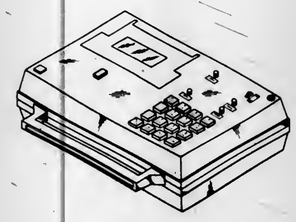
223,832
ELECTRONIC CALCULATOR
Richard H. Penny, New York, N.Y., and Rodney W. Fyfield, New Canaan, Conn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed May 25, 1970, Ser. No. 23,137
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



223,833
VIDEOTELEPHONE TRANSCEIVER CONTROL UNIT
Henry Dreyfuss, South Pasadena, and Rembert Ryan Stokes, Middletown, Calif., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Continuation-in-part of design application Ser. No. 15,753, Feb. 12, 1969. This application Apr. 30, 1970, Ser. No. 22,733
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



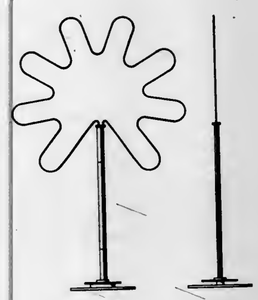
223,834
DIGITAL TAPE RECORDER
William R. Guidi, Huntington, N.Y., assignor to Digital Technology Corporation, Halsite, N.Y.
Filed Oct. 15, 1970, Ser. No. 25,493
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



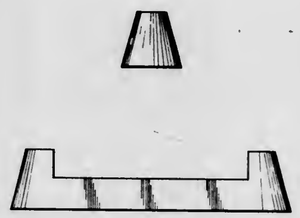
223,835
PAGING RECEIVER HOUSING
Arthur W. Schmidt, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 3, 1970, Ser. No. 26,265
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



223,836
ANTENNA
John J. Root, 3875 Waldo Ave., Bronx, N.Y. 10463
Filed Dec. 21, 1970, Ser. No. 26,577
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



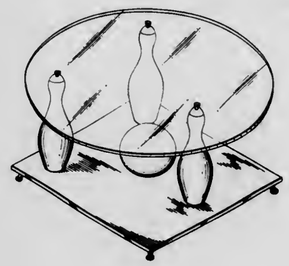
223,837
COMBINED BOOK SUPPORT RACK AND PLANTER
Roy C. Martin, 294 Hanover St., Boston, Mass. 02113
Filed May 27, 1970, Ser. No. 23,171
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—2



223,838
DOUBLE DESK
Anton J. Valic, 183 Elmhurst, Elmhurst, Ill. 60126
Filed Apr. 14, 1970, Ser. No. 22,424
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—7



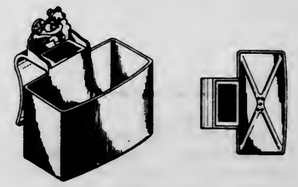
223,839
COCKTAIL TABLE
Leroy Mikell, 768 Quincey St., Brooklyn, N.Y. 11221
Filed Sept. 24, 1970, Ser. No. 25,186
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



223,840
KITCHEN CABINET
Raymond Loewy, New York, N.Y.
(% C.E.I., 39 Avenue d'Iena, Paris 16e, France)
Filed May 15, 1970, Ser. No. 23,005
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D33—19



223,841
COMBINED SOAP TRAY AND TOY RECEPTACLE
Richard Bohan, 88 Edgewood Place, Edgewater, N.J. 07020
Filed Aug. 17, 1970, Ser. No. 24,512
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—24



223,842
COMBINED PHONOGRAPH RECORD AND SUPPORT FOR FIGURE TOY OR THE LIKE
Frank J. Knights, Redondo Beach, and Richard L. May, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 9, 1970, Ser. No. 26,382
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



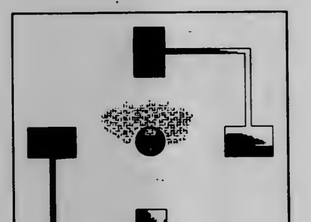
223,843
EXERCISING WEIGHT
Tony Li, 399 Alcatraz Ave., Apt. 15, Oakland, Calif. 94618
Filed Dec. 4, 1970, Ser. No. 26,287
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



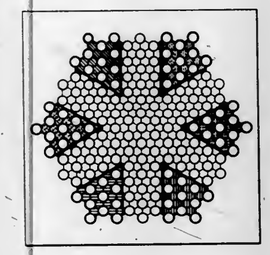
223,844
HOOP ROLLING DEVICE
Virgil K. Rath, 112 S. Pearl St., Janesville, Wis. 53545
Filed Dec. 14, 1970, Ser. No. 26,482
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



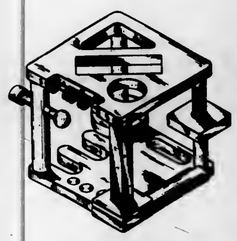
223,845
POKER GAME BOARD
Theodore Lane Roberson, 8 Hillcrest Road, Box 619, Ogden Dunes, Portage, Ind. 46368
Continuation-in-part of design application Ser. No. 21,237, Feb. 3, 1970. This application Jan. 29, 1971, Ser. No. 111,172
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,846
GAMEBOARD
Richard D. Smith, 913 N. Liberty St., Arlington, Va. 22205
Filed Feb. 16, 1971, Ser. No. 115,906
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,847
ACTIVITY TOY
Clayton Austin Laughlin, Minneapolis, Minn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,748
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



223,848
ANIMAL FIGURE SEAT FOR PLAYGROUND APPARATUS
Steven A. Henning and Philip G. Miller, Anderson, Ind., assignors to American Playground Device Co., Anderson, Ind.
Filed Dec. 7, 1970, Ser. No. 26,340
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—15



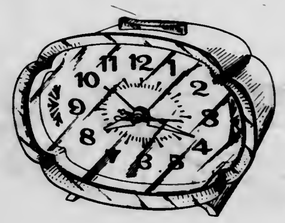
223,849
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,812
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



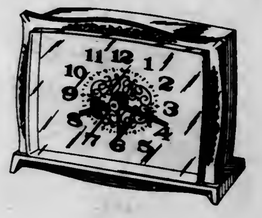
223,850
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, 192—24A 69th Circle, Fresh Meadows, N.Y. 11365
Filed Nov. 4, 1970, Ser. No. 25,816
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



223,851
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., and Walter A. Stapleton, Sr., Milford, Conn., by Jean H. Johnson, executrix, assignors to General Electric Company
Filed May 11, 1970, Ser. No. 22,915
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



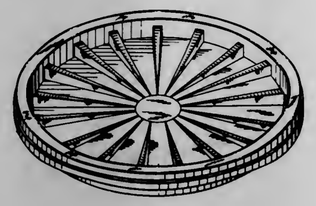
223,852
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., by Jean H. Johnson, executrix of the estate of Carl N. Johnson, assignor to General Electric Company
Filed May 11, 1970, Ser. No. 22,917
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

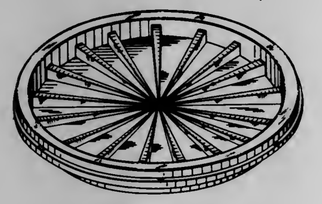


223,853
CLOCK OR SIMILAR ARTICLE
Carl N. Johnson, deceased, late of Stratford, Conn., by Jean H. Johnson, executrix of the estate of Carl N. Johnson, assignor to General Electric Company
Filed May 11, 1970, Ser. No. 22,916
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7

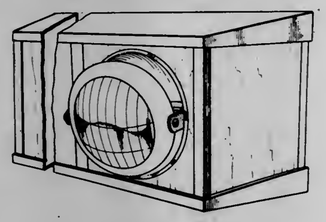


223,854
CONTAINER CLOSURE OR THE LIKE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 27, 1970, Ser. No. 24,724
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1

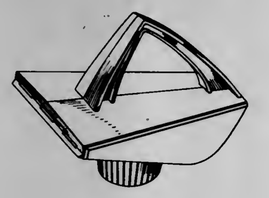




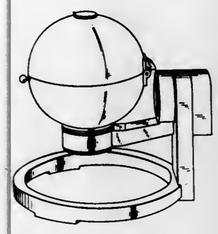
223,855
EMERGENCY LIGHTING UNIT
Frank D. Shaw, 143 Bermondsey St., Toronto, Ontario, Canada
Filed June 29, 1970, Ser. No. 23,702
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



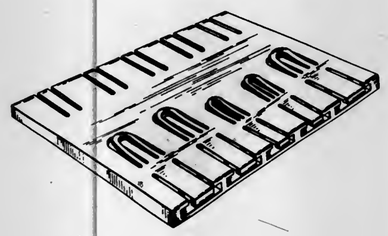
223,856
PORTABLE HAND STEAMER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Dec. 17, 1970, Ser. No. 26,540
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—13



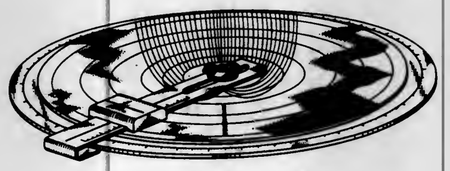
223,857
WATCH TEST STAND
Andre Lehmann and Aime Fumey, La Chaux-de-Fonds, Switzerland, assignors to PORTESCAP, La Chaux-de-Fonds, Switzerland
Filed Dec. 7, 1970, Ser. No. 26,345
Claims priority, application Switzerland June 11, 1970
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—1



223,858
COIN DISPENSER
Louis C. McIlheran, 6123 Velasco St., Dallas, Tex. 75214
Filed Oct. 14, 1970, Ser. No. 25,478
Term of patent 14 years
Int. Cl. D31—Misc.
U.S. Cl. D52—4



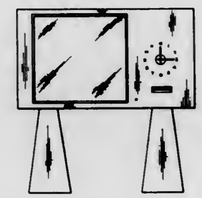
223,859
CIRCULAR SLIDE RULE
Jesse H. Jefferies, Houston, Tex. (18515 Vineland Drive, Nassau Bay, Tex. 77058)
Filed Feb. 26, 1971, Ser. No. 119,444
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



223,860
TRANSISTOR RADIO
Shogo Imai, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Dec. 28, 1970, Ser. No. 26,664
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



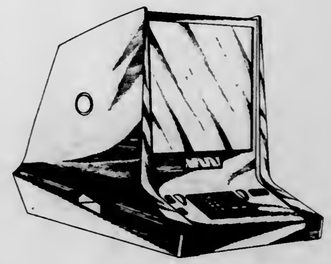
223,861
PROJECTION VIEWER CABINET
Jerry T. Melton, Tampa, Fla., assignor to Televue, Inc., Tampa, Fla.
Filed Feb. 24, 1970, Ser. No. 21,578
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



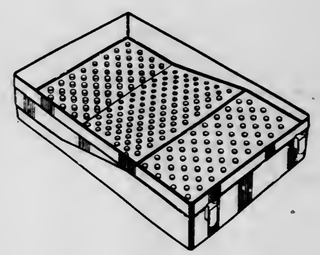
223,862
COPY CAMERA SUPPORT STAND
Anthony T. Clarkson, 5655 N. Maria Drive, Tucson, Ariz. 85704
Filed Apr. 27, 1970, Ser. No. 22,644
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1



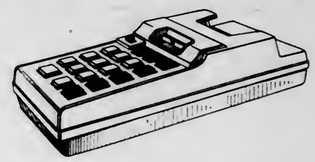
223,863
MICROFILM VIEWER
Jay Sacre, Exton, Pa., and William Adam Hoffman, Collingswood, N.J., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of design application Ser. No. 17,680, June 12, 1969. This application Aug. 26, 1970, Ser. No. 24,700
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



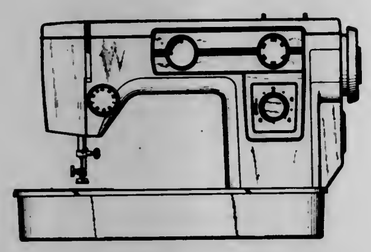
223,864
PAINT TRAY
Ellsworth Vines, Wellesley Hills, Mass., assignor to Baltimore Brushes, Inc., Boston, Mass.
Filed Mar. 10, 1971, Ser. No. 123,126
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D64—18



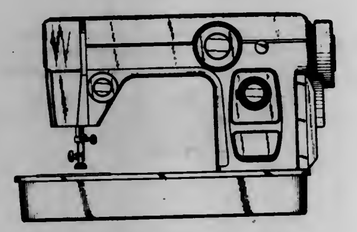
223,865
CALCULATOR
Shiro Anzai and Minoru Murata, Kanagawa-ken, Tatsuo Nishikawa, Tokyo, and Takamitsu Hanakata, Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1970, Ser. No. 25,431
Claims priority, application Japan Apr. 13, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



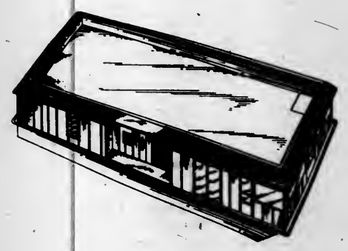
223,866
SEWING MACHINE
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Mar. 30, 1970, Ser. No. 22,121
Claims priority, application Japan Oct. 9, 1969
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



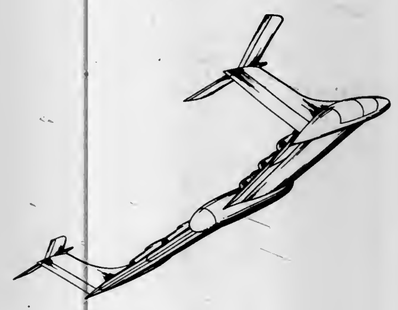
223,867
SEWING MACHINE
Yoshiaki Eguchi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Apr. 7, 1970, Ser. No. 22,303
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



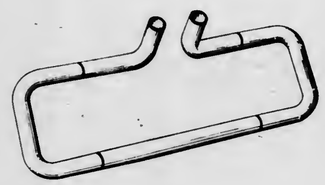
223,868
FLOATING HOME
Clifton E. Carlisle, 15715 Krukus Road, Burtonsville, Md. 20730, and Martin A. Spalding, 121 Pleasant Hill Road, Owings Mills, Md. 21117
Filed July 8, 1970, Ser. No. 23,862
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



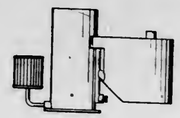
223,869
AIRPLANE
Charles H. Hurkamp, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Oct. 15, 1970, Ser. No. 25,512
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1



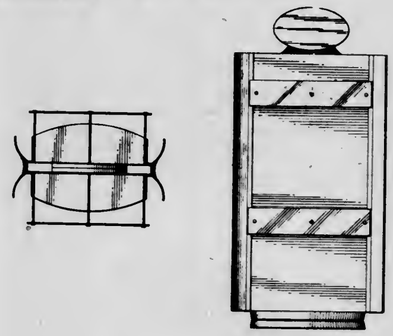
223,870
DUAL PEN HOLDER
Richard K. Enseki, Glen Rock, and Michael P. Arnone, Fairview, N.J., assignors to Kreisler Manufacturing Corporation, North Bergen, N.J.
Filed Sept. 4, 1970, Ser. No. 24,855
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



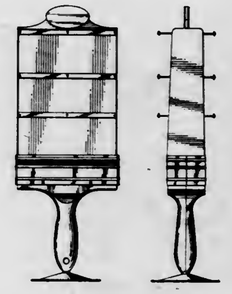
223,871
CARBURETOR
Jiro Sakai, 1954–6 Yahatamachi; and Junichi Kawaguchi, 322 Oaza-Koyama, both of Suzaka, Nagano Prefecture, Japan; and Michihiro Noda, 1, 4-chome, Showa, Chiryumachi, Hekikai-gun, Aichi Prefecture, Japan
Filed July 22, 1970, Ser. No. 24,062
Claims priority, application Japan Feb. 5, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



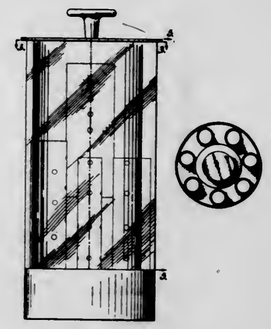
223,872
DISPLAY STAND
James J. Jarecki, Greendale, Wis., assignor to EZ Paintr Corporation
Filed Nov. 26, 1970, Ser. No. 26,102
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D80—9



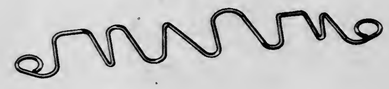
223,873
DISPLAY STAND
James J. Jarecki, Greendale, Wis., assignor to EZ Paintr Corporation
Filed Nov. 20, 1970, Ser. No. 26,103
Term of patent 3½ years
Int. Cl. D6—*06*
U.S. Cl. D80—9



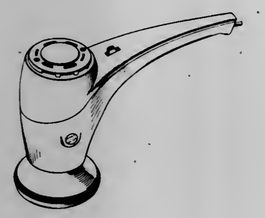
223,874
ELECTRIC BRUSH STERILIZER
Charles M. Ellis, 812 Natches, Liberty, Mo. 64068
Filed Mar. 2, 1970, Ser. No. 21,706
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



223,875
ORTHOPEDIC DRILL GUIDE TARGET
William X. Halloran, 440 Fair Drive, Costa Mesa, Calif. 92,626
Filed Dec. 8, 1970, Ser. No. 26,361
Term of patent 14 years
Int. Cl. D24—*02, 03*
U.S. Cl. D83—1

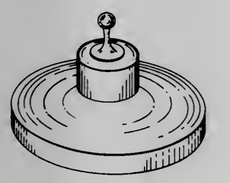


223,876
HAND MASSAGER
Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills, Inc.
Filed Dec. 10, 1970, Ser. No. 26,391
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



223,877
RADIOTELEMETRY TRANSMITTER FOR MONITORING HEART RATE
Roger Michael Glaser, 266—07 137th Ave., Laurelton, N.Y. 11413
Filed Dec. 28, 1970, Ser. No. 26,669
Term of patent 7 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

223,878
COMBINED CIGARETTE LIGHTER AND ASH TRAY
Samuel J. Koch, % Korex Industries, 831 Malcolm Road, Burlingame, Calif. 94010
Filed Aug. 4, 1970, Ser. No. 24,294
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2



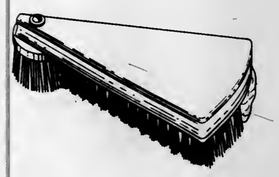
223,879
SMOKING DEVICE FILTER CARTRIDGE
Milton P. Chernack, West Hempstead, N.Y., assignor to Delcron Products, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,467
Term of patent 14 years
Int. Cl. D27—*01*
U.S. Cl. D85—6



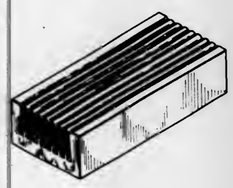
223,880
COMB
James Edgar Tucker, Chicago, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Nov. 16, 1970, Ser. No. 26,023
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8



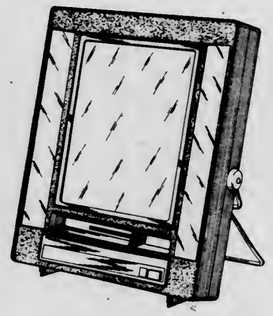
223,881
COMBINATION SHOE BRUSH, POLISHER AND DAUBER
David Belbow, 280 1st Ave., Redwood City, Calif. 94063
Filed June 29, 1970, Ser. No. 23,735
Term of patent 14 years
Int. Cl. D4—*99*
U.S. Cl. D86—11



223,882
COIN TRAY
Justin D. Christensen, 6808 W. 69th St., Overland Park, Kans. 66204
Filed June 2, 1970, Ser. No. 23,256
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



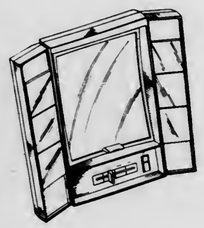
223,883
ILLUMINABLE MAKEUP MIRROR OR SIMILAR ARTICLE
John C. Shalvoy, Fairfield, Conn., assignor to General Electric Company
Filed Apr. 30, 1970, Ser. No. 22,741
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



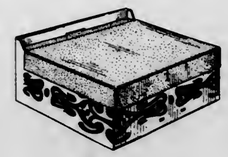
223,884
ARTIFICIAL EYELASH
Jan Dean, New York, N.Y., and Milton Schwarz, Westport, Conn., assignors to Revlon, Inc.
Filed Aug. 20, 1970, Ser. No. 24,591
Term of patent 14 years
Int. Cl. D28—*04*
U.S. Cl. D86—10



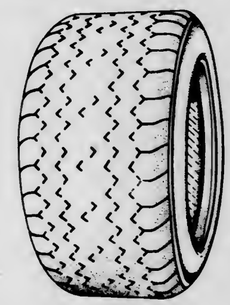
223,885
ILLUMINABLE MAKEUP MIRROR
Jeffrey D. Bransky, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed Oct. 2, 1970, Ser. No. 25,308
Term of patent 14 years
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U.S. Cl. D86—10



223,886
STORAGE BOX
Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, Ill., assignors to The Hirsh Company, Skokie, Ill.
Filed Mar. 16, 1970, Ser. No. 21,918
Term of patent 3½ years
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223,887
TIRE
Iain C. Mills, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, Birmingham, England
Filed Aug. 18, 1970, Ser. No. 24,560
Claims priority, application Great Britain Mar. 4, 1970
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



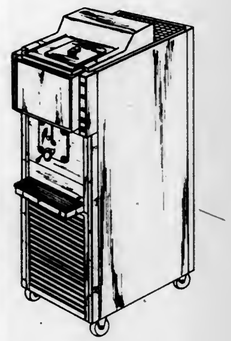
223,888
TIRE
Eric Clifford Bartlett, Erdington, Birmingham, England, assignor to Dunlop Holdings Limited, Birmingham, England
Filed Dec. 15, 1970, Ser. No. 26,505
Claims priority, application Great Britain July 3, 1970
Term of patent 14 years
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223,889
BEVERAGE SMOOTHER UNIT
George E. Kunkle, Jr., P.O. Box 8321, Mesquite, Tex. 76112
Filed Mar. 27, 1970, Ser. No. 22,077
Term of patent 14 years
Int. Cl. D15—*99*
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223,890
SEMIFROZEN JUICE DISPENSER OR SIMILAR ARTICLE
Robert B. Hartley, Columbia Heights, Minn., assignor to The Cornelius Company, Anoka, Minn.
Filed Nov. 9, 1970, Ser. No. 25,901
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3



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British Aircraft Corporation Limited: *See*—
Rhodes, Arthur Neville; and Blackburn, Denis Edward, 3,669,367.

British Scientific Instrument Research Association: *See*—
Dunn, Geoffrey Bernard; and York, Leonard Ernest, 3,669,048.

British Steel Piling Company Limited, The: *See*—
Elliott, Roger M., 3,669,198.

Brizzolesi, Gustavo, to Societa Applicazioni Gomma Antivibranti 'SAGA' S.p.A. Flexible couplings. 3,668,891, Cl. 64-12.

Broadbent, Berne D., to Hughes Aircraft Company. Write station for a magnetic storage medium. 3,670,312, Cl. 340-174.0ar

Broadbent, Kent D.: *See*—
Johnson, Keith O.; and Broadbent, Kent D.,3,670,114.

Broadfoot, John T. Deep water pumping of fluids and semifluids. 3,669,574, Cl. 417-477.000

Brodie, Mary G.: *See*—
Keyl, Alex C.; and Brodie, Mary G.,3,669,716.

Broecker, Bernhard, to Reichhold-Albert-Chemie Aktiengesellschaft. Epoxy resins etherifed with ethylenically unsaturated alcohols and copolymerized with carboxy containing monomers. 3,670,047, Cl. 260-837.

Broido, Jacques. Bracelet with plurality of interchangeable coupling members for varying the length thereof. 3,668,890, Cl. 63-3.000

Brooke, David W. I., to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,205, Cl. 180-98.000

Brooke, David William Ingham, to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,208, Cl. 180-98.000

Brooke, David William Ingham, to International Harvester Company of Great Britain Limited, mesne. Vehicle guidance systems. 3,669,209, Cl. 180-98.000

Brown & Root, Inc.: *See—*
Jones, Jerry J.; Keenon, Delbert L.; Morgan, William A.; and Lochridge, Joe C., 3,668,878.
Koehler, Albert M., 3,668,876.

Brown, Carl A., to Parker-Hannifin Corporation. Fluid filter device. 3,669,268, Cl. 210-90.000

Brown, David T.: *See—*
Beausoleil, William F.; Brown, David T.; and Walker, Ernest L.,3,670,313.

Brown, Gaylor W., to Koehring Company. Apparatus for forming protrusions with enlarged head portions in thermoplastic sheet material. 3,669,606, Cl. 425-398.

Brown, Gaylord W., to Koehring Company. Apparatus and methods for friction welding plastic parts which require a particular relative angular orientation. 3,669,809, Cl. 156-582.000

Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A., to Koehring Company. Module thermoforming machine. 3,669,594, Cl. 425-186.

Brown, James D.; and Uraneck, Carl A., to Phillips Petroleum Company. Pressure sensitive cohesion. 3,669,798, Cl. 156-334.000

Brown, John J., Jr., to Forrest Paschal Machinery Company. Method and apparatus for dehacking brick. 3,669,283, Cl. 214-8.50c

Brown, Robert S., II, to Federal Screw Works. Form tool holder. 3,668,954, Cl. 82-36.000

Brown, Robin Lawford: *See—*
Parr, Norman Lawrence; and Brown, Robin Lawford,3,669,723.

Bruelemans, Karel Bernard Marie, to Fabrique Nationale d'Armes de Guerre, Societe Anonyme. Device for actuating the narrowing points of two needle bed knitting machines. 3,668,895, Cl. 66-70.000

Bruner, Peter Martin, to AMP Incorporated. Tandem mating receptacles. 3,670,289, Cl. 339-91.00r

Bruno, Achille: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi,3,670,060.

Brunswick Corporation: *See—*
Stein, Alex H.; and Coder, William D., Jr., 3,670,049.

Bruton, John M., to Eastman Kodak Company. Web or strip material handling apparatus. 3,669,375, Cl. 242-75.400

Bryan, Darrel L.: *See—*
Dunlap, Dennis L.; and Bryan, Darrel L.,3,669,467.

Bryan, Darrel L.; and Maisch, Larry D., to Pacific Car and Foundry Company. Flexible leap springs for kickers and clamps for log stackers. 3,669,293, Cl. 214-767.000

Bryant, James G., to Bryant-Poff, Inc. Bucket elevator with grain cleaner. 3,669,264, Cl. 209-138.000

Bryant-Poff, Inc.: *See—*
Bryant, James G., 3,669,264.

Buce, Walter F. Apparatus and method for sealing a vessel opening. 3,669,055, Cl. 114-229.000

Bucher, Paul E.; and Picunko, Thomas, to Union Carbide Corporation. Analog data reduction circuit for a rotating spectrophotometer wherein the light passing through a selected chamber is compared with all others. 3,669,551, Cl. 356-197.000

Buckman, John D.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W.,3,670,004.

Buckman Laboratories, Inc.: *See—*
Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W., 3,670,004.
Pera, John D.; and Raths, Fred W., 3,669,981.

Buckman, Stanley J.; Buckman, John D.; Pera, John D.; and Raths, Fred W., to Buckman Laboratories, Inc. Thiocyano substituted acrylates and propionates and their use as pesticides. 3,670,004, Cl. 260-454.000

Bucksbaum, Arnold M., to Amana Refrigeration, Inc. Microwave oven no-load sensor. 3,670,134, Cl. 219-10.550

Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karzov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich. Stirrup frame for hydraulic press. 3,668,921, Cl. 72-455.

Bujor, Eugen: *See—*
Horer, Oswald; and Bujor, Eugen,3,669,554.

Bukosky, Allen A.; Flavin, Michael A.; Hill, Donald G.; Huizinga, Donald D.; and Ritchey, James F., to Bell Telephone Laboratories, Incorporated. Repertory dialer telephone set with register storage of the digits. 3,670,111, Cl. 179-90.00b

Bulharowski, John Francis, to Sylvania Electric Products, Inc. Film scanning system linearity apparatus. 3,670,101, Cl. 178-7.200

Bunker, Robert W. Lockable assembly and rake-cultivator implement for using same. 3,668,849, Cl. 56-400.170

Burgard, Ernst; and Gross, Jurajochen, to International Standard Electric Corporation. Multiple holding arrangement. 3,669,279, Cl. 211-41.000

Burke, William E.: *See—*
Cullen, Roy H.; Aker, Jimmie R.; and Burke, William E.,3,669,199.

Burkhalter, Robert, Jr.; Heskett, Don Edward; and Hoover, Frank Kryder, to Morton-Norwich Products, Inc., mesne. Bypass valve for fluid treating assembly. 3,669,148, Cl. 137-625.290

Burkhardt, Charles E.: *See—*
Millsop, William Q.; Ellis, Belvin B.; and Burkhardt, Charles E.,3,670,279.

Burkhardt, Walter; and Wedler, Herbert, to Lohmann & Stolterfoht Aktiengesellschaft. Drive for ships. 3,669,230, Cl. 192-48.800

Burlington Industries, Inc.: *See—*
Fusco, Vito A.; Ogden, Charles T.; and Illman, Walter F., 3,668,852.

Burney, Charles F., to GTE Sylvania Incorporated. Method of reducing self-generated electrical noise in coaxial cable. 3,670,058, Cl. 264-22.000

Burr, John F. Hoist conversion unit for small tractors. 3,669,410, Cl. 254-139.100

Burr, Robert C.: *See—*
Jones, Duane A.; Fanta, George F.; and Burr, Robert C.,3,669,915.

Burton, Derek Arthur, to Johnson, A., & Company (London) Limited. Electrolytic cells. 3,669,869, Cl. 204-268.

Buss AG: *See—*
Sutter, Fritz; and Maier, Andreas, 3,669,416.

Butler, Gerald V., Jr.: *See—*
Aumann, Frederick C., III; and Butler, Gerald V., Jr.,3,670,311.

Butler, James W., to Laurentian Coscentrates Limited. Foam protection of plant life. 3,669,898, Cl. 252-307.

Butler Manufacturing Company: *See—*
Conway, Maurice A.; Perkins, Carl C., Jr.; and Bellem, Norman A., 3,669,051.

Buttke, Richard A.; Sabatino, Anthony; Orlando, Daniel; and Behrens, William H., to Globe-Union, Inc. Machine for manufacturing electric storage batteries. 3,668,761, Cl. 29-204.00d

Cabana Theatres, Inc.: *See—*
Bankston, Earl F., 3,668,810.

Cahill, William Francis, Jr. Apparatus and method for incinerating rubbish and cleaning the smoke of incineration. 3,668,833, Cl. 55-7.000

Cahn, Jean, to MAR-PHA, Societe d'Etude et d'Exploitation de Marques. Anti-depressant pharmaceutical composition containing N-[3,4-di(alkoxycarbonyl) cinnamyl] iminodibenzyl as the active ingredient. 3,670,081, Cl. 424-244.

Cal-Val Co.: *See—*
Reese, James R., 3,669,143.

Calame, Jean Pierre; and Siddall, John B., to Zoecon Corporation. 10-oxo-11-alkylidene-337-dialkyl-2,6- alkadienoic acids and esters thereof. 3,669,997, Cl. 260-410.90r

Calame, Jean Pierre: *See—*
Siddall, John B.; and Calame, Jean Pierre,3,669,996.

Caldo, Cornelio; Danielli, Ezio; Iscollingo, Italo; and Protospataro, Francesco, to Montecatini Edison S.p.A. Paper and paper-like fibrous structures from mixtures of natural, artificial and synthetic fibers. 3,669,829, Cl. 162-146.

Callard & Bowser Limited: *See—*
Waters, Peter Donald, 3,669,030.

Calmic Limited: *See—*
O'Hara, James; and Gibbins, Charles Lewis, 3,668,716.

Caltagirone, Saverio, to General Electric Company. Apparatus for winding electrical coils. 3,669,380, Cl. 242-158.00r

Calusen, Victor H.; and Zweig, Arnold, to Simpson Timber Company. Apparatus for bonding continuous flexible strands coated with a thermoplastic adhesive to the surface of moving veneer strips. 3,669,804, Cl. 156-544.000

Calusen, Victor H.: *See—*
Jarvis, Richard L.; Kully, Walter; Calusen, Victor H.; Zweig, Arnold; and Engvoll, Sverre,3,669,803.

Calvino y Teijeiro, Benito Jose, to MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M., S.p.A. Blast orifice unit for self-blasting compresses gas electric circuit-breakers. 3,670,124, Cl. 200-148.00r

Calvino y Teijeiro, Benito Jose, to MAGRINI Fabbriche Riunite Magrini-Scarpa e Magnano M.S.M., S.p.A. Blast nozzle for self-blasting compressed gas electric circuit-breakers. 3,670,125, Cl. 200-148.00r

Cam Gears Limited: *See—*
Adams, Frederick J., 3,669,146.

Cambridge Chemical Products, Inc.: *See—*
Mauthner, Thomas, 3,670,072.

Cameli, Nazzareno; Longi, Paolo; Valvassori, Alberto; and Flisi, Umberto, to Goodrich, B. F., Company, The. Compositions comprising a mixture of sulfur- vulcanizable ethylene/propylene/dicyclopentadiene copolymers with sulfur vulcanizable ethylene/propylene/ butadiene copolymers. 3,670,055, Cl. 260-889.000

Camp, Albert T.; and McCone, Alan, Jr. Solid propellant rocket. 3,668,872, Cl. 60-207.000

Canadian Marconi Company: *See—*
Clegg, Keith C. M.; Haberl, John F.; Baumans, Hans W.; and Piibe, Rein, 3,670,329.

Candy, James Charles; Franke, Gladys Marie; and Mounts, Frank William, to Bell Telephone Laboratories, Incorporated. Redundancy reduction video encoding with cropping of picture edges. 3,670,096, Cl. 178-6.000

Canner, Herman M., to Sterling Detroit Company. Retrieval apparatus for die casting equipment. 3,668,941, Cl. 74-89.170

Cape, Arthur T., to Coast Metals, Inc. Ferrous base alloy. 3,669,653, Cl. 75-128.00d

Capellaro, David F., to Coulter Electronics, Inc., mesne. Liquid borne particle sensor. 3,669,542, Cl. 356-36.000

Capewell, William Kenneth: *See—*
Davies, Robin John; and Capewell, William Kenneth,3,669,024.

Capik, Robert J.; and Wright, Leon W., to Atlas Chemical Industries, Inc. Preparation of polyhydric alcohols from carbohydrates. 3,670,035, Cl. 260-635.00c

Cappel, Fred, to Republic Steel Corporation. Method of producing dicalcium ferrite sinter. 3,669,618, Cl. 23-51.00r

Carborundum Company, The: *See—*
Baughman, Davis L.; and Carpenter, James H., 3,668,912.
Cottis, Steve G.; Nowak, Bernard E.; and Economy, James, 3,669,738.
Sweet, Larrie H.; and Baker, Nelson H., Jr., 3,668,831.

Carides, James Nicholas: *See—*
Bagley, Brian G.; and Carides, James Nicholas,3,669,643.

Cariven, Andre Raymond Daniel. Manufacturing process for a file folder. 3,668,979, Cl. 93-1.

Carle, Jacques: *See—*
Thibault, Jean-Jacques; and Carle, Jacques,3,668,881.

Carlson, Kenneth G. Pallet loading apparatus. 3,669,282, Cl. 214-6.00p

Carlton Machine Tool Company, The: *See—*
Lehmkuhl, Robert, 3,669,556.

Carolina Narrow Fabric Company: *See—*
Woodall, Hubert C., Jr.; Freeman, Horace L.; and Goodman, Noah C., 3,669,157.

Carouge, Frithjof: *See—*
Meier, Hans; and Carouge, Frithjof,3,669,351.

Carp, Ralph W.: *See—*
Slavin, Michael; and Carp, Ralph W.,3,669,403.

Carpenter, James H.: *See—*
Baughman, Davis L.; and Carpenter, James H.,3,668,912.

Carr, Russell L. K.: *See—*
Dorfman, Edwin; Emerson, William E.; Bean, Claude T., Jr.; and Carr, Russell L. K.,3,669,941.

Carrandi, Artemio P.: *See—*
Clifton, Edward A.; and Carrandi, Artemio P.,3,668,752.

Carter, Alan, to Hydrovane Compressor Company Limited, The. Compressors. 3,669,579, Cl. 418-83.

Carter, J. Warne; and Neher, Martin Duane, to Ciba-Geigy Corporation. Pipe coupling device. 3,668,766, Cl. 29-237.000

Cartridge Television, Inc.: *See—*
Hathaway, Richard A., 3,669,384.

Cash, John H., Jr.; and Keene, Joe P., to Texas Instruments, Incorporated. R. F. discharge cleaning to improve adhesion. 3,669,861, Cl. 204-192.

Castelli, Luigi. Yarn feeding and tensioning apparatus. 3,669,328, Cl. 226-97.000

Castiglia, Ignatius F. Brace for articulated limbs. 3,669,105, Cl. 128-80.00c

Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A., to Celanese Corporation. Method for production of modified oxymethylene polymers. 3,670,050, Cl. 260-860.000

Castronovo, Francesco: *See—*
Cuffaro, Antonino; Castronovo, Francesco; Bruno, Achille; and Rancati, Gianluigi,3,670,060.

Catalano, Paul; and Bickel, John, to Retention Communication Systems, Inc. Combined endless loop film and endless loop magnetic tape cartridge. 3,669,374, Cl. 242-55.19

Caterpillar Tractor Company: *See—*
Gutman, Nathan; Moser, Raymond L.; Oldenburg, Dorrance; and Sunderlin, Donald E., 3,669,161.
Little, Joseph P.; and Clouse, Jerry A., 3,669,576.
Rohweder, Gerald D.; and Windish, Willis E., 3,669,232.
Smith, Donald L., 3,669,513.
Stedman, Robert N., 3,669,172.
Witzenburg, Martion J., 3,669,458.

Caterpillar Tractor Corporation: *See—*
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C.A.V. Limited: *See—*
Knight, Basil Edward, 3,669,360.

Cavalli, Feraando; and Cretti, Piero, to Eros Camponovo. Apparatus for manufacturing construction elements. 3,669,588, Cl. 25-41.00r

CCI Aerospace Corporation: *See—*
Marantz, Laurence B.; and Greenbaum, Michael A., 3,669,880.

Cebalo, Tony; and Alderman, John F., to Air Products and Chemicals, Inc. method for preparing 1,3,4-thiadiazole-2- ylureas. 3,669,982, Cl. 260-306.80d

Celanese Corporation: *See—*
Allman, William T., Jr.; Joseph, Charles W.; and Higgins, Ralph G., Jr., 3,669,788.
Annis, Darrell D.; Dodson, Keith D.; and Sykes, Paul M., 3,669,931.
Castner, Claire J.; Russo, Robert V.; and Berard, Raymond A., 3,670,050.
Champ, Antony E., 3,669,919.
Date, Raghunath V.; and Furness, George R., 3,669,938.

Celanese Corporation of America: *See—*
Epstein, Martin Eden; Rosenthal, Arnold Joseph; and Santangelo, Joseph Germano, 3,669,934.

Celotex Corporation, The: *See—*
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Centre Technique de l'Industrie des Papiers, Cartons et Celluloses: *See—*
Jacquelin, Guy, 3,669,011.

Ceskoslovenska akademie ved: *See—*
Emr, Antonin; and Pribil, Rudolf, 3,669,988.

Chalich, Clarles, to Taylor Manufacturing Company. Package accumulating conveyor. 3,669,241, Cl. 198-102.000

Champ, Antony E., to Celanese Corporation. Polyacryloaitrile process. 3,669,919, Cl. 260-29.6an

Champion Spark Plug Company: *See—*
Podiak, Richard S.; Mack, James M.; and Bretsch, Michael A., 3,668,749.

Chapman, Eric George Arthur, to Ilford Limited. Web-cutting apparatus. 3,668,962, Cl. 83-323.000

Charlton, Gregory G.; Hanratty, Robert J.; and Ohta, Hiram H., to International Telephone and Telegraph Corporation. Electronic technique for an all-electronic cylindrical array beacon antenna. 3,670,336, Cl. 343-106.000

Chase, Ascher, to General Foam Plastics Corporation. Pool structure with built-in externally supported step-slide. 3,668,715, Cl. 4-172.000

Chase Brass and Copper Company Incorporated: *See—*
Peters, John E.; and Rollfinke, Fred J., 3,669,634.

Cheavens, Thomas H.: *See—*
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Cheffers, Stanley John; and Glynn, Michael Harvey, to Siebe Gorman & Company Limited. Breathing apparatus. 3,669,109, Cl. 128-147.

Chemed Corporation: *See—*
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Chemetron Corporatinon: *See—*
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Chemical Construction Corporation: *See—*
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Cherry, Sidney J.; Bereza, Albert; and Wayland, Paul O., to Westinghouse Electric Corporation. Electrical contact members. 3,670,129, Cl. 200-166.00c

Cherry-Burell Corporation: *See—*
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Chevron Research Company: *See—*
Jaffe, Joseph; and Kittrell, James R., 3,669,873.

Chisholm, William A., to American Desk Manufacturing Company. Chair and seat and back unit therefor. 3,669,496, Cl. 297-445.000

Chisso Corporation: *See—*
Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya, 3,669,948.

Chiu, Thomas T.; Hock, Kenneth R.; and Nagle, Floyd B., to Dow Chemical Company, The. Solvent resistant alkenyl aromatic resinous shaped article. 3,669,718, Cl. 117-72.000

Cho, Young T. Honeycomb foundation. 3,668,724, Cl. 6-11.000

Christiaan Huygenslaboratorium N.V.: *See—*
Blommendaal, Ronald, 3,670,332.

Christian Rovsing A/S: *See—*
Nielsen, Lars Stig, 3,669,120.

Chrysanthis, Alex A.: *See—*
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Chrysanthis, Chris A.; and Kourtoglou, George Chris, 1/4 to Chrysanthis, Alex A., and 1/4 to Haidemos, Tony. Closure structure for paper bags. 3,669,254, Cl. 206-57.

Ciba Limited: *See—*
Nachbur, Hermann; Kern, Joerg; and Maeder, Arthur, 3,669,725.

Ciba-Geigy AB: *See—*
Preininger, Erich; and Ging, Dieter, 3,669,896.

Ciba-Geigy AG: *See—*
Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf, 3,669,608.

Ciba-Geigy Corporation: *See—*
Carter, J. Warne; and Neher, Martin Duane, 3,668,766.
Marand, Jean; and Rousselot, Felix, 3,669,313.

Cicatelli, Rodolfo, to Autovox S.p.A. Tape recording device. 3,669,455, Cl. 274-4.00e

Cincinnati Milacron Inc.: *See—*
Dever, Lewis A., 3,668,971.

Cities Service Company: *See—*
Levine, Ralph, 3,669,999.

Cities Service Oil Company: *See—*
Biederman, Edwin W., Jr., 3,669,701.

Clare, John Dickens; and Marsh, Stanley Bruce, to United Kingdom of Great Britain and Northern Ireland, Minister of Supply in Her Majesty's Government of the. Continuous wave radar systems. 3,670,327, Cl. 343-8.000

Clark, Alfred Charles. Preparation of artwork masters. 3,668,762, Cl. 29-203.00b

Clark, James T., to Clark-Feather Manufacturing Co. Automotive valve spring compressing tools. 3,668,765, Cl. 29-219.000

Clark-Feather Manufacturing Co.: *See—*
Clark, James T., 3,668,765.

Clarke, Fredric B.; and Lyons, John W., to Monsanto Company. Inhibiting agents, washing compositions and solutions containing the same, and processes for using the same. 3,669,893, Cl. 252-156.000

Clayson N.V.: *See—*
De Coene, Frans J.; and Strubbe, Gilbert J., 3,669,124.
DeCoene, Frans J., 3,669,291.
Clements, Richard F., to Environmental Control Products, Inc. Access door control apparatus for controlled emission incinerator. 3,669,040, Cl. 110-8.00a
Clifton, Edward A.; and Carrandi, Artemio P., to Dayco Corporation. Coating roller and method of manufacture. 3,668,752, Cl. 29-124.000
Clouse, Jerry A.: *See—*
Little, Joseph P.; and Clouse, Jerry A.,3,669,576.
Coast Metals, Inc.: *See—*
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Coats Company, Inc., The: *See—*
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Coder, William D., Jr.: *See—*
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Coelho, Norman C.; and Thompson, Brian, to Beckman Instruments, Inc. Gas and liquid inlet system for chromatography. 3,668,935, Cl. 73-422.0gc
Coffy, Rene Louis: *See—*
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Cogar, George R.: *See—*
Breslin, Mary Anne; Cogar, George R.; Lee, Charles A.; Neddenriep, Donald O.; Romeo, Albert J.; Sevilla, Ernesto G.; and Sekse, Torkjell,3,670,144.
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United States of America,National Aeronautics and Space Administration, Administrator, 3,670,241.
Cohen, Edward M.; Grabowski, Edward J. J.; and Aczel, Rezso, to Merck & Co., Inc. Germine-diacetate in the treatment of myasthenia gravis. 3,670,083, Cl. 424-256.000
Cohen, Joseph H. Device for filtering tobacco smoke. 3,669,128, Cl. 131-261.00b
Cole, Raymond A., to Riegel Paper Corporation. Reclosable composite package. 3,669,345, Cl. 229-51.0ts
Cole, Willie E. Portable collapsible work table. 3,669,031, Cl. 108-50.000
Coleman, Patricia A. Flat doll. 3,668,805, Cl. 46-151.000
Coleman, William R.; and Duffey, Thomas E., to Pet Chemicals, Inc. Control of hookworm larvae employing a mixture of certain phosphate esters. 3,670,078, Cl. 424-212.000
Coles, Roy D.; and Richardson, Edwin A., to Shell Oil Company. Heat-guided hydroxide plugging. 3,669,188, Cl. 166-270.000
Colin, Roger, to Societe Anonyme dite: Aquitaine-Organico. Filter changing device. 3,669,166, Cl. 146-174.000
Collins Radio Company: *See—*
McAllister, Lewis L.; and Popek, Wencil D., 3,668,750.
Colon-Morales, Miguel Angel. Uterine displacement device. 3,669,118, Cl. 128-361.000
Columbia Controls Research Corporation: *See—*
Vaccaro, Angelo, 3,669,543.
Columbia Gas System Service Corporation: *See—*
Teague, Walter Dorwin, Jr.; Montalbano, Anthony Philip; Oakes, Andrew A.; Osborne, Keith; and Susoy, Peter E., 3,668,784.
Columbia Ribbon and Carbon Manufacturing Co.: *See—*
Newman, Douglas A.; and Schlotzhauer, Allan T., 3,669,713.
Combe, Eugene E.: *See—*
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Combustion Engineering, Inc.: *See—*
Klumb, Ralph H., 3,669,834.
Communications & Systems, Inc.: *See—*
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Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Masscubre, Jean-Marie, 3,669,932.
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Cone Mills Corporation: *See—*
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Conley, Kurt H. Classifying apparatus with adjustable fines outlet. 3,669,265, Cl. 209-144.000
Conlon, Charles E.: *See—*
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Conn, Charles E., Jr.; and Neumann, Robert P., to North American Rockwell Corporation. Roll diffusion bonding method. 3,668,769, Cl. 29-421.000
Connerney, William R., to Raytheon Company. Waveguide hybrid junction wherein a wall of the E-arm is contiguous with a wall of the H-arm. 3,670,268, Cl. 333-11.000
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Dubner, Ben B. Automatic retracting hypodermic syringe. 3,669,111, Cl. 128-218.00p

Du Bois, John L.; and Grein, Louis F. Rotatable pointer driven and indexed by the rotor of an electronically controlled water having permanent magnet poles. 3,669,453, Cl. 273-141.00a

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Dunlap, Dennis L.; and Bryan, Darrel L., to Pacific Car and Foundry Company. Vehicle elastomeric suspension system. 3,669,467, Cl. 280-124.000

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Dupes, Fred W. Vacuum cleaner head for cleaning and combing shag carpeting. 3,668,735, Cl. 15-397.000

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Earp, Charles William; and Overbury, Francis Giles, to International Standard Electric Corporation. Radio navigation beacon utilizing a commutator which supplies radio frequency in succession to several aerials. 3,670,337, Cl. 343-108.000

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Ege, Hans Raymond; and Doctor, Walter L., Jr., to Underwriters Safety Device Co. Terminal block and terminal connector. 3,670,295, Cl. 339-198.00s

Eger, Helmut, to Siemens Aktiengesellschaft. Method of separating semiconductor chips from a semiconductor substrate. 3,668,774, Cl. 29-578.

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Elmore, Robert E., to Avco Corporation. Charged particle analyzer. 3,670,162, Cl. 250-41.9me

Elgorn, Bill; and Shroff, James R., to USV Pharmaceutical Corporation. N,N1disubstituted benzamidines. 3,669,974, Cl. 260-293.790

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Emelianenko, July Georgievich: *See—*
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Engelmann, Dieter; and Schroder, Rolf, to Agfa-Gevaert Aktiengesellschaft. Exposure controlling structure for photographic apparatus. 3,668,988, Cl. 95-11.00r

English, Geoffrey; and Mousatfield, Brian Arthur, to Imperial Chemical Industries Limited. Manufacture of foams. 3,669,910, Cl. 260-2.50n

English, Jack A., to CTS Corporation. Variable resistance control with end collector. 3,670,285, Cl. 338-175.000

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Eranosian, John. Vehicle attitude stabilization and control system. 3,669,409, Cl. 254-86.000

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Evans, William Robert, to AMP Incorporated. Torsion contact zero-insertion force connector. 3,670,288, Cl. 339-74.00r

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Folden, Virgil A., Jr.; and Miller, Johny, Jr., to United States of America, Navy. Undersea pressure sensitive actuator. 3,669,311, Cl. 222-3.000

Foley, Charles F.; and McCarthy, Charles D. Table game top insert for changing contour of table game surface. 3,669,452, Cl. 273-101.000

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Foster, James Bernard Turner. Pocket clip for ammunition. 3,669,249, Cl. 206-3.000

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Gueret, Herve, to Societe des Procedes Modernes d'Injection Sopromi. Electromagnetic fuel injectors for internal combustion engines. 3,669,361, Cl. 239-585.000

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Guttos, Henri; and Hugon, Jean Jacques, deceased0 (by Hugon, Simone Jeanne Georgette0Augarde, Marie Jeanne0Hugon, Emile; heirs). Method and device for radiating megametric radio waves. 3,670,247, Cl. 325-28.000

Guyton, David. Optical system for varying the power range and scale spacing in a lens measuring instrument. 3,669,529, Cl. 351-17.

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Hall, Joshua D. Portable steps for a vehicle or the like. 3,669,218, Cl. 182-97.000

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Hall, Roger P.; Pratt, Ivor; and Young, Richard A., to SCM Corporation. Adhering resins to substrates, especially metal, by radiation. 3,669,796, Cl. 156-272.000

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Hasegawa, Katsuji, to Kabushiki Kaisha Meinan Seisakusho. Contact roller in a sanding device. 3,668,753, Cl. 29-121.000

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Jensen, Arne, to Danfoss A/S. Speed and voltage control means for an alternating- current motor, particularly a polyphase induction motor. 3,670,224, Cl. 318-217.
Jensen, Harold R., to Western Electric Company, Incorporated. Pulse generator comprising serially connected make and break relays, timing circuit, flip-flop and monostable multivibrator. 3,670,209, Cl. 317-135.00r
Jephcott, William C.,: *See—*
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Jersey, Chester A.: *See—*
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Johnsen, Leif: *See—*
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Johnson, Gordon L.; and Gannoe, Thomas E., to Sylvania Electric Products, Inc. Multiple contact electrical connector. 3,670,294, Cl. 339-195.00m
Johnson, Gordon P.: *See—*
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Johnson, James C.; and Neider-Westermann, Winfried, to Westinghouse Electric Corporation. Air return scoop for air handling luminaires. 3,668,998, Cl. 98-40.0dl
Johnson, Keith O.; and Broadbent, Kent D., to MCA Technology, Inc. Electromagnetic transducer head having a bias frequency gap and an intelligence frequency gap. 3,670,114, Cl. 179-100.20c
Johnson, Kenneth R.: *See—*
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United States of America,National Aeronautics and Space Administration, Administrator, 3,670,168.
Johnston, James D.: *See—*
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Jones, Donald E., to Vann Industries, Inc. Tobacco heating and curing apparatus. 3,669,428, Cl. 263-19.00d
Jones, Doyle P.; Kohrn, Robert C.; and Perkins, Donald V., to Uniroyal, Inc. Mechanical and thermal damage protection and insulation materials usable therefor. 3,669,299, Cl. 220-10.
Jones, Duane A.; Fanta, George F.,; and Burr, Robert C., to United States of America, Agriculture. Flocculants from starch graft copolymers. 3,669,915, Cl. 260-17.4gc
Jones, James L., to United States of America, National Aeronautics and Space Administration. Stereoscopic television system and apparatus. 3,670,097, Cl. 178-6.500
Jones, Jerry J.; Keeson, Delbert L.; Morgan, William A.; and Lochridge, Joe C., to Brown & Root, Inc. Method and apparatus for laying pipelines. 3,668,878, Cl. 61-72.300
Jones, Malcolm D., to Kelsey-Hayes Company. Controller for a skid control system. 3,669,509, Cl. 303-21.00f
Jones, Michael Edward Benet: *See—*
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Josephart, David, 1/2 to Harris, Max. Lock for windows and doors. 3,668,906, Cl. 70-90.000
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Luehring, Elmer L., 3,670,123.
Joy, Ivan L. Railway train fluid suspension. 3,669,028, Cl. 105-157.000
Joyce, James M., to International Business Machines Corporation. Pulse width modulated voltage regulator. 3,670,234, Cl. 321-18.000
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Juda, Walter, to Prototech Incorporated. Fuel cell system. 3,669,750, Cl. 136-86.000
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Jung, Anton Ladislaus; and Ledwon, Erhard. Method of cleaning an oven with internal air circulation. 3,669,090, Cl. 126-21.
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Jurgens, Adolph C. Irrigation apparatus. 3,669,355, Cl. 239-177.
Juzvuk, Diomid Ilich; and Saparov, Valentin Vasilievich. Granular ceramic heat carrier and method for manufacture thereof. 3,669,889, Cl. 252-71.000
Kabushiki Kaisha Kokuei Kikai Seisakusho: *See—*
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Kado, Matayuki; and Mita, Masazo, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic oil winch. 3,668,973, Cl. 91-41.000
Kadowaki, Tatsusuke, to Kabushiki Kaisha Ricoh. Movie projector adapted to use both a film cartridge and an open reel. 3,669,383, Cl. 242-192.000
Kaganovsky, Frederik Isaakovich: *See—*
Budman, Moisei Izrailevich; Kaganovsky, Frederik Isaakovich; Kapitanov, Nikolai Ivanovich; Karnov, Jury Nikolaevich; Nadtochenko, Andrei Fedorovich; Slavetsky-Kotvitsky, Eduard Sebostyanovich; and Shorokhov, Leonid Pavlovich,3,668,921.

Kaha, Henry; and Hokama, Takeo, to Velsicol Chemical Corporation. Process for the production of alpha-methylstyrene polymer. 3,669,947, Cl. 260-93.50a

Kahn, Jay Dee C., to LTV Ling Altec, Inc. Speaker device for sound reproduction in liquid medium. 3,670,299, Cl. 340-8.00r

Kaiser Aluminum & Chemical Corporation: *See*—
Smith, Richard L., 3,669,855.

Kaiser, Friedrich, to Wyss, Escher Limited. Closure device on a pipe conduit. 3,669,404, Cl. 251-172.000

Kaiser Industries Corporation: *See*—
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Kallianides, Milton; and Klein, Gerhart P. Slot applicator means. 3,669,062, Cl. 118-9.000

Kalliomaki, Kalevi Juhani; Tiuri, Martti Eelis; and Vakkila, Seppo Matti, to Vaisala Oy. Electronic and automatic selector device connected to an antenna array formed by two or more antennas. 3,670,275, Cl. 325-370.000

Kamborian, Jacob S.; Typrowicz, Wladyslaw; and Anderson, Gordon S., said Typrowicz and said Anderson assors. to said Kamborian, Jacob S. Machine for disassembling a shoe from a last. 3,668,728, Cl. 12-15.100

Kameda, Nobuyuki: *See*—
Itaya, Nobushige; Kamoshita, Katsuzo; Mizutani, Toshio; Kitamura, Shigeyoshi; Nakai, Shinji; Kameda, Nobuyuki; Fujimoto, Keimei; and Okuno, Yositosi,3,669,989.

Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio, to Nippon Hoso Kyokai, and Tokyo Shibaura Electric Co., Ltd. Metal vapour discharge lamp. 3,670,195, Cl. 313-217.000

Kaminow, Ivan Paul, to Bell Telephone Laboratories, Incorporated. Time division multiplex optical communication system. 3,670,166, Cl. 250-199.000

Kamise, Tadaoki: *See*—
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Kanij, Johannes B. W.; and Noothout, Arend J., to Reactor Centrum Nederland. Method for the preparation of spherical particles. 3,669,632, Cl. 23-245.000

Kanoh, Tadao: *See*—
Kamegaya, Takeo; Imahori, Yutaka; Ohta, Akira; Kanoh, Tadao; and Ohara, Akio,3,670,195.

Kantorski, Joseph W.; La Marre, David A.; and Smith, Donald A., to American Optical Corporation. Laser structure. 3,670,263, Cl. 331-94.500

Kapitanov, Nikolai Ivanovich: *See*—
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Karr, Melvin R.; and Hodge, Dean E., to Ralston Purina Company. Feed intake limiting composition for cattle. 3,669,676, Cl. 99-7.000

Kartasuk, Ray; and Gloridso, Ray, to Wilton Corporation. Quick engaging and disengaging nut mechanism. 3,669,440, Cl. 269-181.000

Karzov, Jury Nikolaevich: *See*—
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Kasugai, Tsuzeo; and Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Method of making a photographic base material. 3,669,709, Cl. 117-34.000

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Kaufman, Arthur L.: *See*—
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Kaufmann, Morris; and Shultz, Bernard R., to International Business Machines Corporation. Method of making and using diced single crystal impurity source. 3,669,757, Cl. 148-1.600

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Kaye, Gordon E., to Mallory, P. R., & Co., Inc. Reserve cell, spring-controlled. 3,669,753, Cl. 136-114.000

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Kemmetmueller, Roland, to American Waagner-Bero Company, Inc. Apparatus for preheating scrap. 3,669,436, Cl. 266-13.000

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Keyl, Alex C.; and Brodie, Mary G., to Sherwin-Williams Company, The. High energy curing of photopolymerizable non-air inhibited polyester resin coatings. 3,669,716, Cl. 117-62.000

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Kim, Sang-Chul, to General Electric Company. Simplified diode circuit for sequentially flashing photoflash lamps. 3,669,607, Cl. 431-95.

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Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Pressure sensitive copying sheet. 3,669,710, Cl. 117-36.200

Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying paper. 3,669,711, Cl. 117-36.200

Kimura, Shiro; Kobayashi, Teruo; Ishige, Sadao; and Kiritani, Masataka, to Fuji Photo Film Co., Ltd. Pressure-sensitive copying papers. 3,669,712, Cl. 117-36.200

Kimura, Yoshio: *See*—
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Kincaid, Charles A., to Key Research and Development Company. Fastener for metal-wood structures. 3,668,966, Cl. 85-67.000

King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., to Monsanto Company. Thermally stable dyeable polyesters having improved dyed lightfastness. 3,669,925, Cl. 260-45.950

King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., to Monsanto Company. Thermally stable dyeable polyester fibers having inherent oil stain release properities. 3,669,933, Cl. 260-77.000

King, Henry L.; Ringwald, Eugene L.; and Randall, James C., to Monsanto Company. Thermally stable polyester fibers having inherent oil stain release properties. 3,669,935, Cl. 260-77.5sp

King, Jane E.: *See*—
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King, Leonard Tony. Food heating device. 3,669,003, Cl. 99-331.000

King, William R. Constant flow pumping system. 3,669,572, Cl. 417-390.000

Kinney, Alfred W., to Phillips Petroleum Company. Folded, one-piece, liquid-tight tray and blank for forming same. 3,669,340, Cl. 229-31.

Kinney, Alfred W.; and Marshall, Frederick P., to Phillip Petroleum Company. Container and closure therefor. 3,669,305, Cl. 220-60.00r

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Kinney, Selwyne P., to Kinney, S. P., Engineers, Inc. Industrial plant for recovering solids from liquids. 3,669,269, Cl. 210-122.000

Kino, Takayuki: *See*—
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Kinsel, Tracy Stewart, to Bell Telephone Laboratories, Incorporated. Optical time demultiplexer utilizing a single control pulse per frame. 3,670,165, Cl. 250-199.000

Kinsey, Robert E. Automatic disk cutter. 3,668,958, Cl. 83-88.000

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Kirk, Colin John. Fluid actuated piston valve. 3,669,137, Cl. 137-119.000

Kirkham, Thomas A.; Arnold, John W.; and Giufrida, Anthony J., to Ionics Incorporated. Electrolytic chlorination and pH control of water. 3,669,857, Cl. 204-151.000

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Kitaoka, Takashi; and Shirashoji, Akira, to Mitsubishi Denki Kabushiki Kaisha. System for braking electric motor vehicles. 3,670,225, Cl. 318-270.000

Kitta, Kenichi: *See*—
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Kittel, Hermann. Selective printer including settable resiliently driven type wheels. 3,669,016, Cl. 101-93.00c

Kittrell, James R.: *See*—
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Klaas, Donald L.; and Landahl, Carl D., to Institute of Gas Technology. Odorant replacement in gas streams. 3,669,637, Cl. 48-195.000

Klauke, Erich: *See*—
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Kleemann, Alois: *See*—
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Klein, Donald L.; Mac Intyre, Michael W.; and Rothman, Lawrence J., to International Business Machines Corporation. Cyclic polyisoprene photoresist compositions. 3,669,669, Cl. 96-91.00n

Klein, Gerhart P.: *See*—
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Kleiner, Willy. Device for the rinsing of body cavities. 3,669,101, Cl. 128-66.

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Kleitman, David; Russell, Lewis K.; and Grebene, Alan B., to Signetics Corporation. Method for integrated circuit mask fabrication and assembly used therewith. 3,669,666, Cl. 96-41.000

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Klingspor, Richard; and Alebrant, John, to Esselte AB. Numbering mechanism for automatic printing of order numbers or the like in letters. 3,669,015, Cl. 101-76.

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Klotzbach, Kurt; and Herzog, Johann. Rolling apparatus for the rolling together of curved glass sheets with interposed plastics sheets to form a laminate. 3,669,808, Cl. 156-582.000

Klug, Sigmund L.; Finkel, Gilbert; and Sherain, Monroe B., to DCA Food Industries Inc. Composition for producing fried coated comestibles. 3,669,674, Cl. 99-1.000

Klumb, Ralph H., to Combustion Engineering, Inc. Core plug for nuclear reactor and method of operating reactor. 3,669,834, Cl. 176-87.000

Klumpp, Ferdninand, Jr., to Heyman Manufacturing Company. Electric contact blade crimp. 3,670,298, Cl. 339-276.00t

Knight, Basil Edward, to C.A.V. Limited. Fuel injection nozzles. 3,669,360, Cl. 239-533.000

Knight, Michael Horace: *See*—
Haggis, Geoffrey Arthur; Jones, Michael Edward Benet; and Knight, Michael Horace,3,669,920.

Knight, Warner P. Quick dump grass catcher for lawn mower. 3,668,846, Cl. 56-205.000

Knowlen, Robert B.: *See*—
Hardy, Richard W.; Knowlen, Robert B.; Sandifer, Cecil W.; and Plake, William C.,3,670,164.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain N-dihalo-acetylcyclohexylamines. 3,670,019, Cl. 260-561.0hl

Knowles, Terence J.; and Eaton, Daniel A., to Zenith Radio Corporation. Method and apparatus for applying a film to a substrate surface by diode sputtering. 3,669,860, Cl. 204-192.000

Knox, John A.; Keeney, Bill R.; and Lasater, Reginald M., to Halliburton Company. Method for inhibiting sulfide cracking of metals with a hydrogen sulfide-aldehyde reaction product. 3,669,613, Cl. 21-2.700

Ko, Yung Ling: *See*—
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Kobayashi, Kazuhiko: *See*—
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Kobayashi, Kesanao: *See*—
Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo,3,669,658.

Kobayashi, Tadashi. Method and apparatus for drying wavily-running strip with hot blasts. 3,668,788, Cl. 34-156.

Kobayashi, Teruo: *See*—
Kimura, Shiro; Kobayashi, Teruo; and Ishige, Sadao,3,669,710.
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Yonezawa, Teruhiko; Kobayashi, Kesanao; and Kobayashi, Teruo,3,669,658.

Kobayashi, Tetsuji; Takayanagi, Seiichi; and Sugita, Toru, to Tokyo Shibaura Electric Co., Ltd. Catheter-type semiconductor radiation detector for insertion into a human body. 3,669,095, Cl. 128-2.10r

Kobayashi, Tsuyoshi: *See*—
Okamoto, Tadashi; Kobayashi, Tsuyoshi; and Yamamoto, Hisao,3,669,960.

Kobayashi, Yugoro, to Ricoh Co., Ltd. Automatic copying and binding machine. 3,669,537, Cl. 355-50.000

Kobe Steel Ltd.: *See—*
Masayasu, Atikawa; Motomi, Kano; Katsuro, Iio; and Toshio, Tanaka, 3,669,335.

Koberstein, Edgar; and Lakatos, Eduard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Catalyst for purification of exhaust gases from motor vehicles and industrial plants. 3,669,906, Cl. 252-465.000

Koch, George, Sons, Inc.: *See—*
Boost, Charles C.; Mitchell, William S.; and Horton, David M., 3,669,870.

Koehl, Harald: *See—*
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Koehler, Albert M., to Brown & Root, Inc. Offshore tower apparatus and method. 3,668,876, Cl. 61-46.5

Koehler, William F.: *See—*
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Koehring Company: *See—*
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Brown, Gaylord W.; Russell, Edward J.; Howe, Charles E.; and Schnepp, Bradley A., 3,669,594.
Brown, Gaylord W., 3,669,809.

Koester, Charles J.; and Swope, Charles Hermas, to American Optical Corporation. Controlled optical beam forming device. 3,670,260, Cl. 331-94.500

Koester, David W.: *See—*
Cornelius, Edward B.; and Koester, David W.,3,669,904.

Kogure, Akira: *See—*
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Kogure, Hiroshi: *See—*
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Kohashi, Tadao; and Tanaka, Kazunobu, to Matsushita Electric Industrial Co., Ltd. Semiconductive elements. 3,669,907, Cl. 252-518.000

Kohl, Ralph A.: *See—*
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Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Shintani, Sotokichi; Kawai, Kazuo; and Yanagidaira, Hidetaka, 3,670,251.

Koleske, Joseph Victor; Roberts, Rene Marie-Joseph; and Del-Giudice, Frank Paul, to Union Carbide Corporation. ABA block polymers of polylactones and polyethers. 3,670,045, Cl. 260-830.00r

Kolk, Stephen B.: *See—*
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Kollman Instrument Corporation: *See—*
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Kolonel, Arthur. Two-speed golf mat. 3,669,454, Cl. 273-176.00f

Kolyer, John McNaughton; and Kveglis, Albert Andrew, to Allied Chemical Corporation. Solvent resistant polyethylene containers. 3,669,827, Cl. 161-227.000

Komatsu, Koei; Okuya, Eitaro; Tomioka, Katsuyoshi; Sakai, Masato; Hayashi, Shigeki; Yasunaga, Hidetoshi; and Kogure, Akira, to Japan Synthetic Rubber Co., Ltd. Process for producing conjugated diolefin polymer with reduced cold flow. 3,669,943, Cl. 260-80.700

Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, to Kabushiki Kaisha Toyota Chuo Kenkyusho, and Aisin Seiki Company Limited. Process and apparatus for press-forming and quenching a steel stock. 3,668,917, Cl. 72-342.

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Kondo, Tatsuo; Nakajima, Hajime; and Nagasaki, Ryukichi, to Japan Atomic Energy Research Institute. Thermomechanical treatment for improving ductility of carbide-stabilized austenite stainless steel. 3,669,759, Cl. 148-12.300

Konecny, Charles R., to General Electric Company. Process for removing contaminants from zirconium surfaces. 3,669,758, Cl. 148-6.14

Konishiroku Photo Industry Co., Ltd.: *See—*
Iwama, Masakuni; Inoue, Imburo; Hanzawa, Teruo; Sakamoti, Kenro; and Endo, Takaya, 3,669,671.

Konno, Tsuyoshi; Nakazato, Katsuo; and Ise, Satoshi, to Matsushita Electric Industrial Company, Limited. High-speed pulse delaying circuit. 3,670,182, Cl. 307-293.

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Konotsune, Shiro; Kachi, Atsuyuki; Tonoike, Takao; and Mori, Kinya, to Chisso Corporation. Method for producing poly α-olefins. 3,669,948, Cl. 260-93.700

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Koppers Company, Inc.: *See—*
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Kosel, George E., to Hunt, Phillip A., Chemical Corporation. Liquid developer for electrostatography. 3,669,886, Cl. 252-62.1

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Kotkins, Henry L., to Skyway Luggage Company. Luggage construction. 3,669,228, Cl. 190-41.00r

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Kraft, John H., to Sesame, John Kraft, Corporation. Food composition prepared from whey and comminuted sesame. 3,669,678, Cl. 99-28.000

Krall, Heribert; Maag, Helmut; Herrmann, Otto; and Posl, Rudolf, to Siemens Aktiengesellschaft. Drive system for continuous casting plants. 3,669,176, Cl. 164-4.000

Kramer, Josef: *See—*
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Kramer, Vance M. Apparatus for making flexible tubing with annular corrugations. 3,669,586, Cl. 425-109.

Kratt, Kurt, to Honigstler, J., K.G. Reset error detecting pulse counter. 3,670,152, Cl. 235-144.0bc

Kraus, Helmut; and Fadler, Kurt, to Fichtel & Sachs AG. Simultaneously or alternatively engaged fluid clutches. 3,669,233, Cl. 192-87.110

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Krings, Josef. Shoring apparatus. 3,668,874, Cl. 61-41.00a

Krock, Richard H.; and Larsen, Earl I. Bonding of metallic members with alkali metals and alkali metal containing alloys. 3,668,758, Cl. 29-199.000

Krock, Richard H.: *See—*
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Krupp, Carroll P., to Goodrich, B. F., Company, The. Sealing closure. 3,668,745, Cl. 24-205.100

Krupp, Carroll P., to Goodrich, B. F., Company, The. Continuous strip molding apparatus. 3,669,585, Cl. 18-4.00b

Krzycki, Leroy J., to United States of America, Navy. Prepackaged liquid rocket powerplant feed system. 3,668,868, Cl. 60-39.480

Kubicek, Donald H.; and Zuech, Ernest A. Olefin conversion process using complexes of Ti, Zr and Hf with organoaluminum as olefin reaction catalysts. 3,670,043, Cl. 260-683.00d

Kuchens, Alexander; and Niehaus, Wolfgang. Control arrangement for fluid dispensers. 3,669,312, Cl. 222-70.000

Kuckens, Alexander. Liquid-dispensing apparatus having electromagnetically operated valve. 3,669,315, Cl. 222-148.000

Kuebler & Co., Firma: *See—*
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Kumada, Akio; Suzuki, Kenkichi; and Kitta, Kenichi, to Hitachi, Ltd. Switching condenser element for switching an alternation current. 3,670,211, Cl. 317-230.000

Kun, Zoltan K.; and Robinson, Robert J., to Zenith Radio Corporation. P-N junctions in ZnSe, Zns, or ZnS/ZnSe and semiconductor devices comprising such junctions. 3,670,220, Cl. 317-237.

Kundler, Walter; and Hingst, Gerd, to Anschutz & Co., G.m.b.H. Electrical automatic pilot. 3,670,227, Cl. 318-581.

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Laible, Ralph L. Electrical fence construction. 3,669,413, Cl. 256-10.000

Lainesse, Bruno. Apparatus for injection molding. 3,669,601, Cl. 425-249.

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Landoni, Gianaino. Multineedle quilting machine for the manufacture of padded upholstery. 3,669,045, Cl. 112-118.000

Landoni, Gianaino. Cover material feeding and forming apparatus for a quilting machine. 3,669,324, Cl. 223-32.000

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Lemaire, Irov P., to United States of America, Navy. Underwater imaging system for deep submergence vehicles. 3,668,986, Cl. 95-11.000

Leman, Marvin J., to Simpson Timber Company. Refuse burner for wood waste, bark residues, and other combustible solids. 3,669,039, Cl. 110-7.00a

Leman, Marvin J., to Simpson Timber Company. Pneumatic spreader stoker. 3,669,502, Cl. 302-19.000

Le Mire, Noel, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Vehicle seats. 3,669,397, Cl. 248-371.000

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Marantz, Laurance B.; and Greenbaum, Michael A., to United States of America, Health, Education, and Welfare. Treatment of dialysate solution for removal of urea. 3,669,878, Cl. 210-22.000

Marantz, Laurence B.; and Greenbaum, Michael A., to CCI Aerospace Corporation. Recirculation dialsate system for use with an artificial kidney machine. 3,669,880, Cl. 210-22.000

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McDevitt, James G. Reversible flooring. 3,669,817, Cl. 161-44.000

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Overy, Lester R., to Tokheim Corporation. Instrument drive system for fluid metering. 3,670,317, Cl. 340-198.000
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Owens, Roy L., Jr. Method and apparatus for introducing liquid into vehicle tires. 3,669,159, Cl. 141-1.000
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Page, Derrick J.; and Driver, Michael C., to Westinghouse Electric Corporation. Method of producing thin film transistors. 3,669,661, Cl. 96-36.200
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Parenti, Giorgio, to Bisi-Marchetti S.p.A. Fuel delivery system for a plurality of aircraft engines. 3,669,136, Cl. 137-113.
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Romanelli, Michael G., to Esso Research and Engineering Company. Preparation of unsaturated alcohols and ethers. 3,670,032, Cl. 260-614.0aa

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Taylor, Keith M., to Monsanto Company. Amloxidation of saturated hydrocarbons. 3,670,008, Cl. 260-465.300
Taylor, Keith M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,670,009, Cl. 260-465.300
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Tessler, Martin M.; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Builders for synthetic detergent compositions based on carboxyethyl derivatives of polyalcohols. 3,669,890, Cl. 252-89.000
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Thum, Egon, to Siemens Aktiengesellschaft. Ironless direct-current machine having a normal conducting rotor and a superconducting excitation system. 3,670,187, Cl. 310-10.000
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Zanner, Johann: *See—*
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Zeiss, Otto, to Benckiser, Joh A., G.m.b.H. Process of producing difficulty soluble metal gluconates. 3,670,000, Cl. 260-439.00r

Zellmer, Neale A.; and Johnson, Wayne B., to GTE Automatic Electric Laboratories Incorporated. DC to DC converter. 3,670,233, Cl. 323-17.000

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Zenz, Fred J., to Whirlpool Corporation. Electric heating unit for clothes dryers. 3,670,143, Cl. 219-375.000

Zimmermann, Walter. Apparatus for handling and processing currents of gas-borne dry soft powders. 3,669,503, Cl. 302-64.000

Zinck, Petersen, Jorgen; and Lundqvist, Bertil, to Allmanna Svenska Elektriska Aktiebolaget. Arrangement for supplying energy to devices as high potential, for example for operating purposes. 3,670,175, Cl. 307-64.000

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PATENTS WERE ISSUED ON THE 13TH DAY OF JUNE, 1972

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Butler, Michael B. N.: *See*—
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Davis, John A., Jr., and W. J. Kunzman, to Marathon Oil Company. Increasing the thermostability of micellar dispersions. Re. 27,387, 6–13–72, Cl. 166—252.

Geigy, J. R., A.G.: *See*—
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General Tire & Rubber Company, The: *See*—
Uelzmann, Heinz. Re. 27,388.

Hirata, Tadashi: *See*—
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International Standard Electric Corporation: *See*—
Sandbank, Carl P., and Butler. Re. 27,385.

Kunzman, William J.: *See*—
Davis, John A., Jr., and Kunzman. Re. 27,387.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Matsui, Masanao, Yamada, Uzu, Hirata, and Wakaki. Re. 27,384.

Marathon Oil Company: *See*—
Davis, John A., Jr., and Kunzman. Re. 27,387.

Matsui, Masanao, Y. Yamada, K. Uzu, T. Hirata, and S. Wakaki, to Kyowa Hakko Kogyo Co., Ltd. Acylated mitosenes. Re. 27,384, 6–13–72, Cl. 260—326.3.

Rafael, Hans: *See*—
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Sandbank, Carl P., and M. B. N. Butler, to International Standard Electric Corporation. Scanned line radiation source using a reverse biased P-N junction adjacent a gunn diode. Re. 27,385, 6–13–72, Cl. 317—235.

Soiron, Karl, H. Rafael, and W. Stockar, to J. R. Geigy, A.G. Process for aftertreatment of colored polyamide fibers. Re. 27,386, 6–13–72, Cl. 8—165.

Stockar, Walter: *See*—
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Uzu, Keizo: *See*—
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Wakaki, Shigetoshi: *See*—
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Yamada, Yasuhiro: *See*—
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9.5 3,670,186
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163 3,670,191
196 3,670,192
CLASS 312
351 3,669,520
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108R 3,670,193
109 3,670,194
217 3,670,195
CLASS 315
3.5 3,670,196
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12 3,670,200
13R 3,670,199
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CLASS 317
2R 3,670,203
18D 3,670,206
61.5 3,670,204
101CE 3,670,205
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135R 3,670,209
230 3,670,210
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234R 3,670,213
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235R Re.27,385
3,670,217
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237 3,670,220
238 3,670,216
65 3,670,221
261 3,670,222
CLASS 318
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345 3,670,226
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59 3,670,229
CLASS 321
10 3,670,230
12 3,670,231
14 3,670,232
18 3,670,234
3,670,235
27R 3,670,236
47 3,670,237
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CLASS 323
17 3,670,233
CLASS 324
37 3,670,239
52 3,670,240
57R 3,670,243
72 3,670,244
73R 3,670,245
79R 3,670,241
133 3,670,246
CLASS 325
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329 3,669,511
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CLASS 328
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CLASS 329
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CLASS 330
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3,670,263
113R 3,670,264
116M 3,670,265
CLASS 332
14 3,670,266
CLASS 333
1.1 3,670,267
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CLASS 335
112 3,670,272
204 3,670,273
260 3,670,274
CLASS 336
92 3,670,276
192 3,670,277
213 3,670,278
217 3,670,279
CLASS 337
21 3,670,282
111 3,670,280
112 3,670,281
354 3,670,283
360 3,670,284
CLASS 338
175 3,670,285
180 3,670,286
CLASS 339
12R 3,670,287
74R 3,670,288
75MP 3,670,290
91R 3,670,289
92M 3,670,291
143R 3,670,292
177MP 3,670,293
195M 3,670,294
198H 3,670,296
198S 3,670,295
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276T 3,670,298
CLASS 340
8R 3,670,299
40 3,670,302
52A 3,670,300
65 3,670,301
146.1C 3,670,303
146.1F 3,670,304
146.3P 3,670,305
172.5 3,670,306
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3,670,308

	3,670,309	18E	3,670,333	3	3,669,412	10	3,669,556	CLASS 418		CLASS 425	
	3,670,310	100SA	3,670,335	8	3,669,535	16	3,669,557	21	3,669,577	30	3,669,580
	3,670,311	106	3,670,336	40	3,669,536	43	3,669,558	45	3,669,578	34	3,669,581
174RC	3,670,314	108M	3,670,338	50	3,669,537	CLASS 415		83	3,669,579	72	3,669,584
174SR	3,670,312	108	3,670,337	64	3,669,539	10	3,669,559	CLASS 424		78	3,669,582
174TF	3,670,313	CLASS 350		67	3,669,538	41	3,669,560	3	3,670,072	109	3,669,585
174.1C	3,670,315	3.5	3,669,521	CLASS 356		90	3,669,561	47	3,670,073		3,669,586
	3,670,316	6	3,669,522	4	3,669,540	159	3,669,562	60	3,670,074	112	3,669,587
198	3,670,317	57	3,669,523	5	3,669,541	211	3,669,563	110	3,670,075	113	3,669,588
199	3,670,318	87	3,669,524	36	3,669,542	CLASS 416		157	3,670,076	116	3,669,589
244C	3,670,319	158	3,669,525	42	3,669,543	121	3,669,564	200	3,670,077	119	3,669,590
279	3,670,320	159	3,669,526	74	3,669,545	134	3,669,566	212	3,670,078	131	3,669,591
324A	3,670,322	189	3,669,527	85	3,669,544	185	3,669,565	241	3,670,079	155	3,669,592
324R	3,670,323	205	3,669,528	86	3,669,546	CLASS 417			3,670,080	186	3,669,593
347DA	3,670,326	CLASS 351		93	3,669,547	48	3,669,567	244	3,670,081		3,669,594
347SY	3,670,324	17	3,669,529	141	3,669,548	203	3,669,568	250	3,670,082	188	3,669,595
347P	3,670,325		3,669,530	152	3,669,549	222	3,669,569	256	3,670,083	192	3,669,596
384	3,670,321	CLASS 352			3,669,550		3,669,570	268	3,670,084	214	3,669,583
CLASS 343		31	3,669,531	197	3,669,551	341	3,669,571	270	3,670,085	216	3,669,597
7.4	3,670,334	78C	3,669,532	199	3,669,552	390	3,669,572		3,670,086	242	3,669,599
8	3,670,327	95	3,669,533	202	3,669,553	416	3,669,573	273	3,670,087	245	3,669,600
	3,670,328	CLASS 353		244	3,669,554	477	3,669,574	275	3,670,088	249	3,669,598
9	3,670,329	21	3,669,534	CLASS 402		555	3,669,575				3,669,601
11R	3,670,330	CLASS 355		8	3,669,555	571	3,669,576			317	3,669,602
	3,670,331			CLASS 406						326	3,669,603
16R	3,670,332									379	3,669,604
										398	3,669,605
											3,669,606
										CLASS 431	
										95	3,669,607

CLASSIFICATION OF DESIGNS

D 2—	276 223,791		44 223,808	D22—	19 223,825		24 223,841		6 223,859		223,875
	310 223,792		176 223,809		23 223,826	D34—	5 223,843	D56—	4 223,860		223,876
D 8—	11 223,793		177 223,810	D23—	4 223,827		223,844	D61—	1 223,861		223,877
	13 223,794		219 223,811		223,828		223,846		223,862	D85—	2 223,878
	107 223,795		287 223,812		42 223,829		15 223,842		223,863		6 223,879
	138 223,796	D13—	1 223,814		50 223,830		223,847	D64—	11 223,865	D86—	8 223,880
	140 223,797		223,815		51 223,831		223,848		18 223,864		10 223,883
	223,798	D14—	3 223,816	D26—	5 223,832	D42—	1 223,849	D70—	1 223,866		223,884
	223,799		223,817		14 223,833		223,850		223,867		223,885
	142 223,800		223,818		223,834		7 223,851	D71—	223,868		11 223,881
	223,801		6 223,819		223,835		223,852		223,869	D87—	1 223,882
	154 223,802		24 223,820		223,836		223,853	D74—	5 223,870		223,886
	228 223,803		223,821	D30—	95 223,845	D44—	1 223,854	D77—	1 223,871	D90—	20 223,887
D 9—	2 223,804		223,822	D33—	2 223,837	D48—	20 223,855	D80—	9 223,872		223,888
	10 223,805	D15—	1 223,813		7 223,838	D49—	13 223,856		223,873	D94—	3 223,889
	40 223,806		223,823		14 223,839	D52—	1 223,857	D83—	1 223,874		223,890
	42 223,807		223,824		19 223,840		4 223,858				

CLASSIFICATION OF PLANTS

P. —	69	3,205	P. —	3,206	P. —	3,207	P. —	3,208	P. —	3,209	P. —	3,210

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PATENTS

1 :	3,669,129	3,669,150	3,669,690		3,670,315		3,670,048	11 :	3,668,778		3,668,966
	3,670,084	3,669,171	3,669,716		3,670,316		3,668,778		3,669,393		3,668,975
	3,670,234	3,669,185	3,669,724		3,670,320		3,669,393		3,670,168		3,669,022
	3,670,290	3,669,189	3,669,737		3,670,326		3,670,168		3,670,202		3,669,034
4 :	3,669,127	3,669,190	3,669,755		3,670,328		3,670,202		3,670,241		3,669,036
	3,669,131	3,669,213	3,669,757		3,670,336		3,670,241		3,668,733		3,669,057
	3,669,646	3,669,223	3,669,758	7 :	3,668,926	12 :	3,668,733		3,668,777		3,669,058
	3,670,219	3,669,227	3,669,777	8 :	3,668,765		3,668,777		3,668,801		3,669,068
	3,670,306	3,669,237	3,669,790		3,668,880		3,668,801		3,668,803		3,669,073
5 :	3,669,195	3,669,240	3,669,820		3,669,018		3,668,803		3,668,815		3,669,083
	3,669,350	3,669,254	3,669,824		3,669,197		3,668,815		3,668,847		3,669,086
6 :	3,668,706	3,669,261	3,669,855		3,669,308		3,668,847		3,668,897		3,669,130
	3,668,708	3,669,263	3,669,873		3,669,396		3,668,897		3,669,020		3,669,152
	3,668,718	3,669,288	3,669,878		3,669,663		3,669,020		3,669,128		3,669,160
	3,668,722	3,669,296	3,669,879		3,669,746		3,669,128		3,669,180		3,669,161
	3,668,730	3,669,304	3,669,880		3,670,304		3,669,180		3,669,356		3,669,172
	3,668,731	3,669,316	3,669,900	9 :	Re.27,587		3,669,356		3,669,357		3,669,193
	3,668,769	3,669,322	3,669,901		3,668,723		3,669,357		3,669,392		3,669,194
	3,668,776	3,669,331	3,669,929		3,668,779		3,669,392		3,669,420		3,669,216
	3,668,805	3,669,362	3,669,954		3,668,800		3,669,420		3,669,454		3,669,224
	3,668,809	3,669,364	3,669,996		3,668,860		3,669,454		3,669,480		3,669,232
	3,668,841	3,669,384	3,670,010		3,668,936		3,669,480		3,670,074		3,669,247
	3,668,868	3,669,388	3,670,054		3,668,951		3,670,074		3,670,078		3,669,253
	3,668,879	3,669,394	3,670,058		3,668,968		3,670,078		3,670,150		3,669,274
	3,668,913	3,669,402	3,670,097		3,669,065		3,670,150		3,670,256		3,669,300
	3,668,932	3,669,406	3,670,102		3,669,104		3,670,256		3,670,257		3,669,323
	3,668,935	3,669,408	3,670,106		3,669,265		3,670,257		3,669,046		3,669,326
	3,668,949	3,669,409	3,670,107		3,669,310	13 :	3,669,046		3,669,306		3,669,343
	3,668,967	3,669,431	3,670,112		3,669,334		3,669,306		3,669,342		3,669,347
	3,668,976	3,669,433	3,670,114		3,669,365		3,669,342		3,669,386		3,669,353
	3,668,986	3,669,439	3,670,135		3,669,443		3,669,386		3,669,527		3,669,355
	3,669,003	3,669,460	3,670,148		3,669,545		3,669,527		3,669,779		3,669,380
	3,669,007	3,669,468	3,670,151		3,669,679		3,669,779		3,669,818		3,669,395
	3,669,026	3,669,472	3,670,155		3,669,683		3,669,818		3,668,704		3,669,422
	3,669,035	3,669,483	3,670,164		3,669,719	17 :	3,668,704		3,668,717		3,669,430
	3,669,038	3,669,492	3,670,189		3,669,834		3,668,717		3,668,720		3,669,440
	3,669,052	3,669,511	3,670,208		3,669,839		3,668,720		3,668,744		3,669,453
	3,669,056	3,669,526	3,670,218		3,669,894		3,668,744		3,668,794		3,669,458
	3,669,063	3,669,528	3,670,232		3,669,968		3,668,794		3,668,804		3,669,475
	3,669,069	3,669,542	3,670,233		3,670,022		3,668,804		3,668,822		3,669,512
	3,669,070	3,669,548	3,670,235		3,670,142		3,668,822		3,668,825		3,669,513
	3,669,072	3,669,550	3,670,245		3,670,228		3,668,825		3,668,826		3,669,532
	3,669,075	3,669,575	3,670,261		3,670,259		3,668,826		3,668,845		3,669,535
	3,669,094	3,669,610	3,670,262		3,670,274		3,668,845		3,668,852		3,669,561
	3,669,102	3,669,615	3,670,276	10 :	3,669,695		3,668,852		3,668,920		3,669,576
	3,669,107	3,669,626	3,670,281		3,670,013		3,668,920		3,668,925		3,669,598
	3,669,108	3,669,642	3,670,292		3,670,019		3,668,925		3,668,937		3,669,605
	3,669,116	3,669,649	3,670,301		3,670,023		3,668,937		3,668,943		3,669,614
	3,669,138	3,669,653	3,670,307		3,670,035		3,668,943		3,668,944		3,669,637
	3,669,142	3,669,666	3,670,309		3,670,039		3,668,944		3,668,963		3,669,652
	3,669,143	3,669,685	3,670,312		3,670,040		3,668,963				3,669,677

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

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PATENT OFFICE NOTICES

Claims Versus Abstracts for Publication in the Patent Official Gazette

Abstracts have been required for all patent applications filed since January 1, 1967. Subsequent to the requirement for abstracts, the Office began substituting abstracts for patent claims in the OFFICIAL GAZETTE. At the present time, abstracts are used exclusively in the OFFICIAL GAZETTE to describe the inventions for which patents issue each week.

Over the last several months, the Office has become increasingly aware of the disparity of views which exist regarding the merits of the publication of claims or abstracts in the OFFICIAL GAZETTE. The utilization of abstracts in the OFFICIAL GAZETTE was initially base on a desire to make that publication more useful to the non-patent community. However, it now appears that a significant portion of the patent community, especially in the chemical area, would prefer the publication of claims in the OFFICIAL GAZETTE as more useful than the publication of abstracts.

To assist the Office in resolving this issue, it is requested that interested parties submit their comments in writing prior to January 1, 1973. Such comments should be addressed to the Commissioner of Patents, Washington, D.C., 20231.

ROBERT GOTTSCHALK,
Commissioner of Patents.

May 22, 1972.

Solicitation of Public Views Concerning Changes in Patent Office Practices and Procedures

In the effort to continually improve operations and to respond to changing circumstances, the procedures and practices of the Patent Office are revised from time to time. While comments are requested and public hearings held on proposed changes in the Rules of Practice, changes in other practices and procedures of the Office have generally been implemented on the basis of informal and more limited liaison with our constituents. This has, on occasion, given rise to inquiries as to the reasons for and wisdom of certain of these changes, as well as to criticisms and proposals for further changes.

While all changes in procedure must take into consideration the efficient operation of the Patent Office, we have determined that on a trial basis, we will, where appropriate, solicit views and comments of the patent community so that they might be taken into account in shaping the procedures of the Patent Office. The solicitation of such views will focus primarily on proposed changes in practices and procedures of the Office which have substantial impact on individuals dealing with the Patent Office. Our first such effort involves the question of whether claims or abstracts are more appropriate for publication in the OFFICIAL GAZETTE, and this is the subject of a separate notice in this issue.

Whether this practice of public participation is continued will depend in large part upon the public response to notices of this nature. In the past, public response to the solicitation of views has been rather limited and has principally been from those who were opposed to proposed changes in rules and practices. Accordingly, it is requested that interested parties submit their views irrespective of whether they agree or disagree with the proposal under consideration.

ROBERT GOTTSCHALK,
Commissioner of Patents.

May 22, 1972.

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3,093,528, R. L. Reich, LABEL APPLYING MEANS, filed Dec. 22, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–3021–IH, *Compac Corporation* v. *John B. French, doing business as Better Built Engineering.*

3,093,545, Westfall and Lewis, THERAPEUTIC IRON-DEXTRON PREPARATIONS, filed Apr. 3, 1972, D.C., W.D. Mo. (Kansas City), Doc. 20238–3, *Armour Pharmaceutical Company* v. *Med-Tech, Inc.* Same, filed Apr. 4, 1972, D.C. Md. (Baltimore), Doc. 72–344–Y, *Armour Pharmaceutical Company* v. *John D. Copanos & Co., Inc.*

3,313,355, L. M. Pierce, APPARATUS FOR SUPPORTING AND CONTROLLING POWER FASTENER TOOLS AND THE LIKE, filed Oct. 24, 1969, D.C., N.D. Iowa (Cedar Rapids), Doc. 69–C–31–CR, *Clary Corporation* v. *Douglas, Inc., Henderson Metal Products, Inc., L. Merle Pierce, and James C. Cooper.* Stipulation and consent judgment, action by Clary Corp. against Henderson Metal Products, Inc. dismissed without prejudice. Action by Henderson Metal Products, Inc. against Clary Corp. dismissed without prejudice. Defendants have infringed and entered into a settlement agreement. All Claims, counterclaims and crossclaims are dismissed, Mar. 21, 1972.

3,484,835, Troustine and McCauley, EMBOSSED PLASTIC FILM, filed Apr. 11, 1972, D.C. Del. (Wilmington), Doc. 4363, *Clopay Corporation* v. *Associated Baby Services Incorporated, Blessings, Incorporated.*

3,522,701, W. G. Perry, AUDIBLE TIMING DEVICE, filed Apr. 5, 1972, D.C. Mass. (Boston), Doc. 72–1200–C, *Damon Corporation* v. *The Sippican Corporation and Eduquip, Inc.*

3,534,490, D. P. Herbert, SECTION FRAME, filed Jan. 5, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–24, *Structural Industries, Inc.* v. *Gerson Enterprises.* Action dismissed, Mar. 31, 1972.

3,552,154, B. G. Lesley, KNIT FABRIC, filed Mar. 28, 1972, D.C., W.D.N.C. (Statesville), Doc. ST–C–72–10, *Deering Milliken Research Corporation* v. *Beaunit Corporation.*

3,561,146, R. H. Dembar, PHOTOGRAPH DISPLAY APPARATUS, filed May 6, 1971, D.C., E.D. Mich. (Detroit), Doc. 36460, *Graphicana Corp.* v. *Baia Corp.* Order granting defendant's motion for summary judgment, Mar. 20, 1972.

3,594,964, W. T. Clark, PLANETARIUM PROJECTION DOME, filed Apr. 5, 1972, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 72–679, *Observa-Dome Laboratories, Inc.* v. *McGraw-Hill, Inc. and Spitz Laboratories, Inc.*

3,601,385, Senter and Johnson, ATTACHMENT FOR CHANGING REAREND SUSPENSION IN AUTOMOBILES, filed Sept. 29, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2346–HP, *Ansen Automotive Engineering, Inc.* v. *Roy H. Gammell et al.* Judgment by consent, defendants have infringed and are permanently enjoined, Apr. 3, 1972.

Certificates of Correction for the Week of June 20, 1972

3,459,553	3,620,270	3,629,426	3,639,992
3,475,561	3,620,326	3,629,575	3,640,075
3,479,168	3,620,724	3,630,469	3,640,114
3,508,885	3,620,954	3,630,673	3,640,281
3,522,687	3,621,106	3,630,741	3,640,360
3,540,283	3,621,204	3,630,805	3,640,461
3,541,937	3,621,374	3,630,844	3,640,562
3,552,961	3,621,396	3,631,044	3,640,585
3,552,962	3,621,470	3,631,045	3,640,743
3,552,963	3,621,851	3,631,154	3,640,760
3,552,964	3,621,913	3,631,168	3,640,765
3,552,965	3,622,630	3,631,397	3,640,885
3,553,121	3,622,971	3,631,675	3,640,923
3,568,922	3,623,069	3,631,876	3,641,067
3,573,222	3,623,330	3,632,373	3,641,147
3,575,522	3,623,718	3,632,408	3,641,168
3,582,708	3,623,772	3,632,539	3,641,191
3,584,386	3,623,866	3,632,563	3,641,222
3,585,040	3,624,113	3,632,704	3,641,382
3,585,216	3,624,117	3,632,778	3,641,775
3,585,965	3,624,480	3,633,574	3,642,017
3,590,219	3,624,574	3,634,404	3,642,469
3,592,530	3,625,085	3,634,416	3,642,583
3,592,870	3,625,414	3,634,429	3,642,667
3,593,689	3,625,423	3,635,230	3,642,714
3,596,359	3,625,751	3,635,956	3,642,796
3,597,412	3,625,847	3,636,112	3,642,962
3,598,294	3,625,896	3,636,190	3,643,061
3,600,108	3,626,035	3,636,262	3,643,135
3,600,610	3,626,036	3,636,447	3,643,382
3,600,964	3,626,313	3,636,559	3,644,176
3,601,813	3,626,576	3,637,641	3,644,295
3,603,089	3,626,816	3,637,703	3,644,420
3,605,610	3,626,864	3,637,737	3,644,506
3,608,694	3,626,965	3,637,763	3,644,529
3,609,125	3,627,048	3,638,402	3,644,573
3,609,377	3,627,057	3,638,424	3,644,648
3,612,951	3,627,061	3,638,559	3,644,909
3,613,878	3,627,351	3,638,603	3,645,140
3,615,388	3,627,469	3,638,833	3,645,489
3,615,794	3,627,512	3,639,004	3,645,745
3,616,088	3,627,751	3,639,126	3,645,770
3,617,124	3,627,811	3,639,319	3,645,810
3,617,600	3,628,116	3,639,346	3,645,969
3,618,099	3,628,615	3,639,561	3,645,997
3,618,103	3,628,639	3,639,585	3,646,452
3,619,123	3,628,867	3,639,670	3,646,743
3,619,306	3,629,092	3,639,772	3,647,019
3,619,766	3,629,265	3,639,801	3,647,770
3,620,015	3,629,375	3,639,974	3,651,437

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 16, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods: Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-09-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	9-21-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-11-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	3-01-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-19-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	3-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	5-21-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-18-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 600, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,709,806 to 2,712,130, inclusive
Plant Patents..... Numbers 1,396 to 1,403, inclusive

REISSUES

JUNE 20, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,390

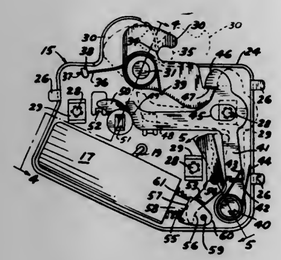
ELECTRIC LOCK RELEASE

Perry E. Allen, 4644 Round Hill Road, Birmingham, Mich. 48010

Original No. 3,504,511, dated Apr. 7, 1970, Ser. No. 710,136, Mar. 4, 1968. Application for reissue Nov. 18, 1970, Ser. No. 90,550

Int. Cl. E05b *65/19*

U.S. Cl. 292—201 12 Claims



The application discloses a trunk lock and a remotely controlled, electrically operated, lock release mechanism for an automobile. The invention resides in the particular construction and arrangement of the elements, which enables the entire assembly, except the control harness, to be specified by the automobile manufacturer, for manually self-contained and to be mounted within the limitations specified by the automobile manufacturer, for manually operated locks of the same kind.

27,391

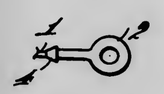
CONNECTOR FOR HOLDING ARTICLES TOGETHER

Francis G. Merser, Framingham, Mass., assignor to Dennison Manufacturing Co., Framingham, Mass.

Original No. 3,462,802, dated Aug. 26, 1969, Ser. No. 721,365, Apr. 15, 1968, which is a continuation of Ser. No. 684,685, Nov. 21, 1967. Application for reissue Oct. 12, 1970, Ser. No. 80,259

Int. Cl. A44b *9/00*; B65d *63/00*

U.S. Cl. 24—16 PB 5 Claims



A connector comprising a filament having a socket and a series of heads distributed along the filament to snap through the socket to form loops of different sizes.

27,392

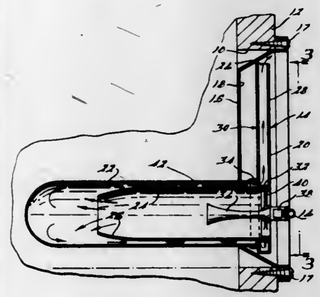
HEATER CONSTRUCTION

Donald E. Robinson, Northville, Mich., assignor to Mobil Temp, Inc., Dayton, Ohio

Original No. 3,353,528, dated Nov. 21, 1967, Ser. No. 514,358, Dec. 16, 1965. Application for reissue Dec. 18, 1970, Ser. No. 99,618

Int. Cl. F24c *3/00*

U.S. Cl. 126—91 A 50 Claims



A heater generally for domestic use and having a vertical vent tube and a horizontally extending heat exchanger tube and a flame tube located generally within the heat exchanger tube.

27,393

CONTROL APPARATUS FOR AN ELECTRICALLY OPERABLE DEVICE

Edward C. Aselman, Jr., High Ridge, Mo., assignor to T.N.E. Incorporated

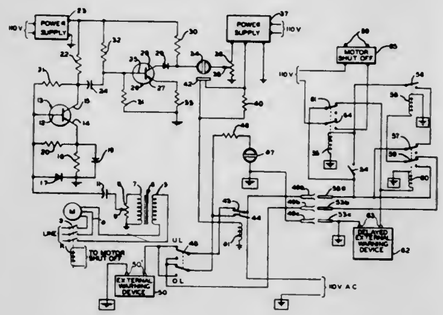
Original No. 3,435,289, dated Mar. 25, 1969, Ser. No. 516,206, Dec. 7, 1965. Application for reissue Mar. 24, 1971, Ser. No. 127,855

Int. Cl. H02h *7/06, 7/08, 7/10*

U.S. Cl. 317—13 R 23 Claims

[An electrical current sensor for operative connection to an electrical device such as a motor powered pump for sensing current input to the motor. The sensor includes a transformer to detect current input and an amplifier to increase the measured change in current level. The sensor produces an error signal when the current either falls below or exceeds a pre-established level, and a reference voltage signal for comparison with the error signal, in a summating circuit. A switch is connected to the summating circuit and causes energization of an alarm when the current input to the pump exceeds or falls below the pre-established value. An automatic disconnect device is optionally connected to the sensor and motor for automatically de-energizing the motor upon sensing of the undesirable current level.]

Control apparatus responsive to changes in the current supplied to an electrically energized device. Current sensing means provides an A.C. voltage signal whose magnitude is a function of the magnitude of the current. Circuit means is provided for supplying a pulsating D.C. signal whose magnitude is a function of the magnitude of the A.C. voltage signal. A triggerable glow discharge device is adapted for being triggered by the pulsating signal to provide a glow discharge upon the pulsating signal attaining a predetermined magnitude. Control means includes a light-sensitive transducer adapted to be illuminated by the glow discharge for supplying a control signal. Thus the control signal is supplied when the current reaches a predetermined magnitude. Preferably, the control means includes apparatus for automatic disconnection of the device after a predetermined time delay interval following supplying of the control signal.



27,394

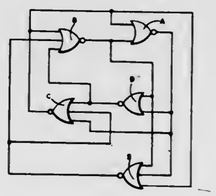
CLOSED LOOP LOGIC GATE MULTIPLE PHASE CLOCK SIGNAL GENERATOR

Gary L. Heimbigner, Anaheim, Calif., assignor to North American Rockwell Corporation

Original No. 3,539,938, dated Nov. 10, 1970, Ser. No. 787,719, Dec. 30, 1968. Application for reissue May 27, 1971, Ser. No. 147,556

Int. Cl. H03k *3/02*

U.S. Cl. 331—57 10 Claims



Output signals from the logic gates of an oscillator circuit represent sequential digital *states* [stagtes]. Output signals having certain related intervals are combined as inputs to the logic gates to produce multiple phase clock signals having a desired symmetry and relationship without the necessity for decode logic at the output of the oscillator.

27,395

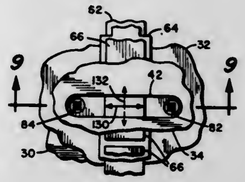
SOLID STACK MEMORY

Robert J. Bergman, St. Paul, and Le Roy A. Prohofsky, Minneapolis, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Original No. 3,435,435, dated Mar. 25, 1969, Ser. No. 504,543, Oct. 24, 1965. Application for reissue Dec. 22, 1969, Ser. No. 10,661

Int. Cl. G11c *11/14, 5/04*

U.S. Cl. 340—174 BC 26 Claims



An electrically-alterable, random-access memory system that uses mated-film elements as the memory cells with orthogonally oriented drive fields.

27,396

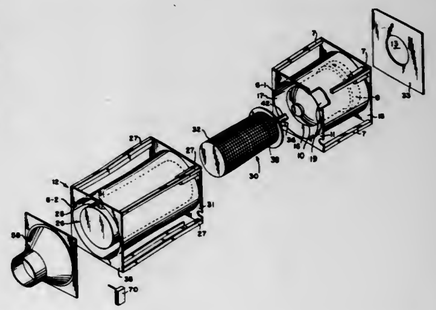
WARM AIR FURNACE WITH RADIANT BURNER

Raymond A. Hemmert, Columbus, Ohio, assignor to Columbia Gas System Service Corporation, New York, N.Y.

Original No. 3,507,481, dated Apr. 21, 1970, Ser. No. 708,691, Feb. 27, 1968. Application for reissue Jan. 6, 1971, Ser. No. 104,526

Int. F23l *15/04*

U.S. Cl. 263—20 11 Claims



A compact or miniaturized furnace is disclosed having very compact blower or fan and heating sections. A stream of air to be heated is drawn into an end of an elongated casing and is directed radially outwardly and thence longitudinally to the casing through an annular passageway which extends through the heating zone. Within the heating zone the air passes along the outside of the cylindrical primary heating surface and the air also passes around a spiral tubular flue for the exhaust or furnace gases. The primary heating surface receives heat from an infrared

radiant burner enclosed within the cylindrical wall and the exhaust gases flow through the spiral flue in countercurrent relationship to the direction of flow of the air being heated.

27,397

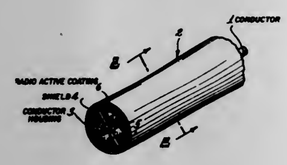
ELECTRICAL CONDUCTOR CONTAINING AN IONIZABLE GAS AND RADIOACTIVE MATERIAL TO IONIZE THE GAS

Raymond Babigan, 4804 45th St. NW., Washington, D.C. 20016

Original No. 3,361,866, dated Jan. 2, 1968, Ser. No. 446,889, Apr. 9, 1965. Application for reissue Dec. 31, 1969, Ser. No. 889,754

Int. Cl. H01b *1/00, 5/00, 9/00*

U.S. Cl. 174—9 F 17 Claims



A long distance electrical conductor comprises a metallic housing and a metallic wire within and spaced from the housing. A perforated metal member which may comprise an aluminum screen is positioned between the housing and wire. An ionizable gas may be included in the space between the housing and wire.

27,398

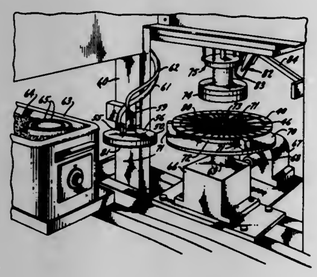
APPARATUS FOR FORMING WIRE CONTROL ELEMENTS

Maurice H. Brown, Palos Heights, Ill., assignor to Azonic Products Inc., Palos Heights, Ill.

Original No. 3,527,637, dated Sept. 8, 1970, Ser. No. 611,112, Jan. 23, 1967, which is a division of Ser. No. 347,725, Feb. 27, 1964. Application for reissue Oct. 7, 1970, Ser. No. 78,828

Int. Cl. B32b *31/18, 31/06*

U.S. Cl. 156—510 5 Claims



A wire impedance forming assembly wherein a turntable receives a first paper disc and the disc receives a sunburst-wound strand on a ring, a vacuum plate holds a second disc over an adhesive bath, an applicator element rises from the bath to apply adhesive to the second disc, a pressure nozzle on the plate is actuated to break any film of adhesive thus formed, the plate is pivoted over the turntable to place the second disc, adhesive side down, over the strand and first disc and a press moves onto the second disc to press the two discs and strand together as the turntable rotates, a cutter moving into the area adjacent the turntable to cut the strand from the ring.

27,399

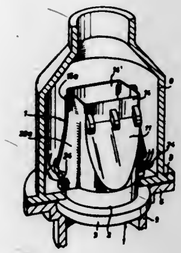
NONRETURN VALVES

Nicola D'Urso, Turin, Italy, assignor to A.M.I.S. Apparecchi E Macchine Idrauliche Speciali S.p.A., Turin, Italy

Original No. 3,556,138, dated Jan. 19, 1971, Ser. No. 748,881, July 30, 1968. Application for reissue May 19, 1971, Ser. No. 145,073

Int. Cl. F16k *15/00*

U.S. Cl. 137—512.15 6 Claims



A nonreturn valve for liquids has a tapered end formed by flexible inclined walls terminating in a slit which is defined between two flexible lips. A continuous raised rib is formed on the internal surface of one of the lips and makes linear sealing contact with a corresponding [force] *face* of the other lip inwardly of the slit effectively to cut off flow through the slit upon closure of the valve.

27,400

MOUNTING PEDESTAL FOR UTILITIES

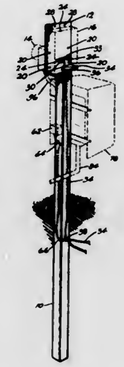
Anne D. Nickola, Diane Trailer Park, 6–6255 N. Saginaw Road, Mount Morris, Mich. 48458

Original No. 3,502,785, dated Mar. 24, 1970, Ser. No. 684,199, Nov. 20, 1967. Application for reissue Dec. 3, 1970, Ser. No. 95,002

Int. Cl. H02g *9/00*

U.S. Cl. 317—99 23 Claims

A mounting pedestal adapted to support an electrical power box, an electric meter, a telephone box, a television jack, and a gas meter operatively in a compact arrangement for providing utility services to a mobile home. A hollow, rectangular metal post is supported in an upright position in the ground, extending thereabove, and supports an L-shaped mounting bracket on the top thereof. The bracket provides the means for supporting the power box and the meter with the telephone box, television jack and gas meter carried by the post at positions below the bracket. A ground wire is disposed within the post to connect the box, the bracket and meter to an underground grounding means.



27,401

CROSS-LINKED HYDROPHILIC POLYMERS AND ARTICLES MADE THEREFROM

Otto Wichterle, Prague, and Drahoslav Lim, Senohraby, near Ricany, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

No Drawing. Original No. 3,220,960, dated Nov. 30, 1965, Ser. No. 77,278, Dec. 21, 1960, which is a division of Ser. No. 580,410 and Ser. No. 580,411, both Apr. 24, 1956. Application for reissue Aug. 5, 1970, Ser. No. 61,522

Int. Cl. C08f *15/16*

U.S. Cl. 260—2.5 R 23 Claims

A major portion of a monoester of acrylic or methacrylic acid with a bi-functional alcohol which has an esterifiable hydroxyl group and at least one additional hydrophilic functional group is copolymerized in aqueous solution with a small amount of a diester of these acids and of an alcohol which has at least two esterifiable hydroxyl groups until a shape retaining body is obtained.

27,402

APPARATUS FOR EXTRACTING STARCH AND GLUTEN FROM A DOUGH OF WHEAT FLOUR

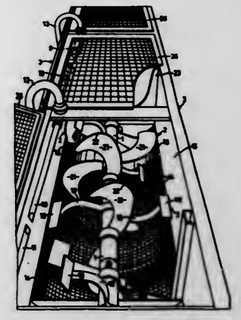
Erik Plaven, Scheelegatan 1, Stockholm, Sweden

Original No. 3,506,485, dated Apr. 14, 1970, Ser. No. 476,128, July 30, 1965. Application for reissue May 15, 1970, Ser. No. 37,578

Claims priority, application Sweden, Aug. 4, 1964, 9,412/64

Int. Cl. B03b *3/00, 11/00;* C13l *1/00*

U.S. Cl. 127—25 7 Claims



An apparatus for separating starch from and collecting gluten in a treating zone by repeatedly catching and pushing the gluten in the zone, lifting the lumps of collected gluten out of the zone, and dropping the lumps of gluten back to the treatment zone in an optionally repeated series *as by means of improved arrangements and forms of different pluralities of special treatment and working members within a tank-supported perforated trough into which a washing liquid is diffused and quickly drained away.*

PLANT PATENTS

GRANTED JUNE 20, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,211
EUONYMUS FORTUNEI SHRUB

M. Leslie Hancock, Cooksville, Ontario, Canada, assignor to Mourovia Nursery Company

Filed Oct. 12, 1970, Ser. No. 80,255
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—63 1 Claim

1. A new and distinct variety of *Euonymus fortunei* characterized by its compact growth and unusual range of foliage coloration, and by hardiness at below-freezing temperatures superior to plants most closely related to it.

3,212
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 12, 1970, Ser. No. 80,256
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct variety of chrysanthemum characterized particularly as to its uniqueness when compared with the cultivar Tuneful by its bright red bronze color which is darker than Tuneful, its greater resistance to fading, its larger flowers, ranging from ½" to 1" larger than Tuneful's, its performance as a cut flower where it is taller and far more productive than the Tuneful varieties, its performance as a pot mum where it establishes itself and is ready for pinching earlier thereby providing a more prolific, fuller pot plant with a greater responsiveness to growth regulators.

3,213
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 12, 1970, Ser. No. 80,258
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly in uniqueness when compared to the parent cultivar Sunstar by its clear, light shade of yellow color, with no bronze tinging when exposed to cool temperatures in the range of 52°–58°.

3,214
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 14, 1970, Ser. No. 80,822
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly to the uniqueness as compared with the parent cultivar Orange Bowl by its smaller flowers by approximately 1", more formal flowers, with fewer spooned petals, broader petals, more deeply keeled, deeper color, shorter habit, smaller, darker foliage, 30 percent more breaks, 3 days earlier and more uniform response, rudimentary stipules, and a year round flowering period in the north and northwest.

3,215
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 14, 1970, Ser. No. 80,823
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the cultivar Neptune, by its 1"–1½" larger flowers, petals approximately ¾" wider, less upright growth habit with about 3" additional spread when comparing single plants, non-pinking of the flower with cool finish of 60° F. or less, lighter foliage, approximately 1" longer leaves, flatter petal during high light, high temperature periods, with no longitudinal roll as the flower matures providing a less aged appearance, greater spread, one week later response, and its 3" more vigor when both grown under the same long day treatment.

3,216
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 14, 1970, Ser. No. 80,824
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness in comparison with the parent cultivar Stingray, by its lighter, more orange-bronze color, a two to three day earlier response period, and a more uniform response within a flowering block.

3,217
PEACH TREE

Lester P. Pratt, Wenatchee, Wash., assignor to Van Well Nursery, Inc., Wenatchee, Wash.

Filed Nov. 16, 1970, Ser. No. 90,163
Int. Cl. A01h *5/03*

U.S. Cl. Plt.—43 1 Claim

As a mutation of Redhaven, a new peach tree variety is disclosed which is characterized by its semidwarf nature and the vigorous growth of the lateral buds near the base of its terminal shoots.

3,218
CHRYSANTHEMUM PLANT

Paul A. Vogel, Encinitas, Calif., assignor to Manatee, Incorporated, Encinitas, Calif.

Filed Nov. 19, 1970, Ser. No. 91,228
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 1 Claim

1. A new and distinct variety of chrysanthemum plant of the incurved type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a straight, upright, strong and free habit of growth, a large flower size, a distinctive and attractive flower color generally corresponding to near Chianti Antique Ruby on the inside of the petals and near Martius Yellow on the reverse side of the petals, good hardiness, both outdoors and in the greenhouse, and a suitablity for year around blooming in southern latitudes.

3,219
DRACAENA CELES

Charles Frederick Pennock, San Juan, Puerto Rico, assignor to Cerro Gordo Nursery, Inc., Durado, Puerto Rico

Filed Dec. 16, 1970, Ser. No. 98,969
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—88 1 Claim

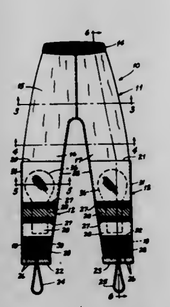
1. The new and distinct variety of Dracaena plant substantially as herein shown and described, characterized particularly by small narrow lanceloate leaves, including the prominent petiole, the leaves being compactly grouped and erect, the texture thereof being hard and the leaves regularly spaced along the full length of the cane and the distinctive color pattern of its leaves with a narrow striping thereof represented by a single, narrow whitist marginal stripe, lengthwise through the center and margined with dark green on the upper surface and gray green on the bottom surface.

PATENTS

GRANTED JUNE 20, 1972

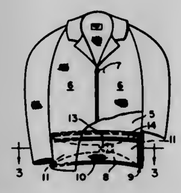
GENERAL AND MECHANICAL

3,670,339
HOCKEY UNIFORM GARMENT
Barbara T. Cooper, 4 Benwood, St. Louis, Mo.; Lynn F. Polak, 31 Ben Hills Drive, St. Louis, Mo., and Penny W. Kodner, 57 Pricewoods Lane, St. Louis, Mo.
Filed Dec. 28, 1970, Ser. No. 101,600
Int. Cl. A41d *13/06*
U.S. Cl. 2—22 6 Claims



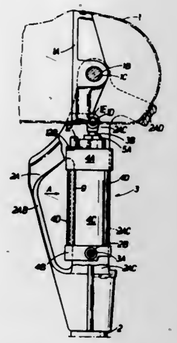
An athletic uniform garment integrating socks with underpants and eliminating separate socks held up by garter belts. Knee and shin guard pockets in the integrated garment.

3,670,340
COMBINED BELT AND SKI JACKET
Marvin Walker, Hampstead P. Q., Canada, assignor to Ski-Doo Sports Ltd., Montreal, Quebec, Canada
Filed Nov. 25, 1970, Ser. No. 92,688
Claims priority, application Canada, Nov. 27, 1969, 068,567
Int. Cl. A41d *1/00, 27/20*
U.S. Cl. 2—93 3 Claims



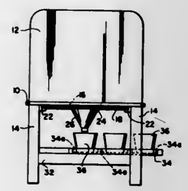
This invention relates to a garment of the type which folds away into a pocket of the garment to form a collapsed package. Garments of this type are insufficient in that they are still relatively bulky when in the collapsed or carrying state and cannot be readily pocketed, when not in use, by the person carrying it. The garment of the present invention comprises, in its wearing mode, a back panel, a pocket panel secured to the back panel along two opposing seams and a third seam to form a pocket. The garment is rolled and the pocket everted so that it is contained in the pocket in the carrying mode. By providing a body-encircling strap attached to the interior of the pocket in the wearing mode which is thus exterior in the everted position, the user may secure the garment in its carrying position about his waist thereby leaving his hands free for other tasks.

3,670,341
FLUID PRESSURE CONTROL DEVICE FOR AN ARTIFICIAL LEG
Frank Allan Webb, Farnham, and John Jeffrey Shorter, East Oakley, both of England, assignors to Chas. A. Blatchford & Sons Limited, Hampshire, England
Filed Dec. 1, 1969, Ser. No. 881,100
Claims priority, application Great Britain, Dec. 2, 1968, 57,061/68
Int. Cl. A61f *1/00, 1/08*
U.S. Cl. 3—1.2 7 Claims



A fluid pressure control device has a piston and cylinder. The cylinder includes a cylindrical wall and a pair of end parts. The piston rod extends slidably through one end part, which end part is adjustably axially movable for varying the piston stroke length. The device is of especial interest in the control of flexion and extension motions of an artificial leg.

3,670,342
CHAIR FOR MEASURING URINARY FLOW RATE
David T. Mahony, c/o Mahony Urology Assc., Inc., 966 Park Street, Stoughton, Mass.
Filed March 10, 1971, Ser. No. 122,922
Int. Cl. A47k *1/04*; A61g *7/02*
U.S. Cl. 4—134 6 Claims



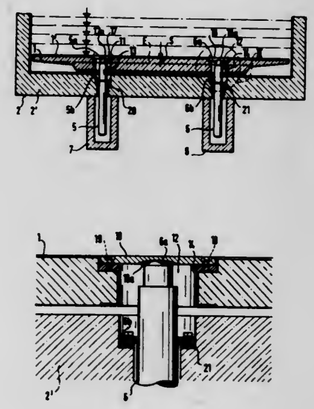
A chair for measuring a patient's urinary flow rate has an opening in the seat on which the patient sits. The opening is

elongated in the front to back direction. A funnel is mounted on tracks directly below the opening so that it can be moved forwardly or rearwardly with respect to the opening to suit the particular patient. A tray is situated directly below the seat. The tray is movable from side-to-side and is also adjustable on runners forwardly and rearwardly so that the midplane of the tray can be adjusted to correspond to the position of the funnel. A transverse array of compartments or depressions are formed in the tray to retain containers. By moving the tray sideways, then, the containers can be moved, in turn, past the funnel for the collection of a succession of voided fluid specimens.

ERRATUM

For Class 4—236 see:
Patent No. 3,670,441

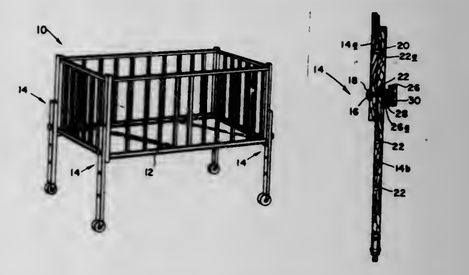
3,670,343
SWIMMING POOL CONSTRUCTION
Emil Ganslosser, Grazer Strasse 26, Hannover, Germany
Filed June 16, 1970, Ser. No. 46,645
Claims priority, application Germany, June 25, 1969, G 69 25 223.9
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.13 8 Claims



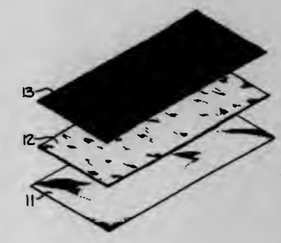
An adjustable swimming pool having a floor which can be raised and lowered to either provide a uniform depth or a variable depth. Jacks are distributed beneath a platform constituting the apparent bottom of the pool and are arranged for operation in unison or in groups to adjust the platform position and attitude.

3,670,344
HEIGHT-ADJUSTABLE CRIB
Alban M. Boudreau, Bedford, Pa., assignor to Hedstrom Company, Bedford, Pa.
Filed Jan. 6, 1971, Ser. No. 104,283
Int. Cl. A47c *7/03, 17/14*
U.S. Cl. 5—11 2 Claims

A height-adjustable crib has four legs composed of upper and lower sections. A laterally extending screw and pin are spaced apart on one section. These engage in adjacent holes spaced along the length of the other leg section. The pin extends only part way through the other section, while the screw extends all the way through so that a nut can be turned down on the screw to lock the two sections together. An end hole in the lower section is arranged so that it can only receive the pin in order to ensure that there is always a two-point connection between the two leg sections.



3,670,345
PATIENT UNDERPAD
Martin Doll, and Frank Von Drohle, both of Patterson, N.C., assignors to Cellu Products Company, Patterson, N.C.
Filed Feb. 2, 1970, Ser. No. 7,442
Int. Cl. A61g *7/04*
U.S. Cl. 5—91 10 Claims

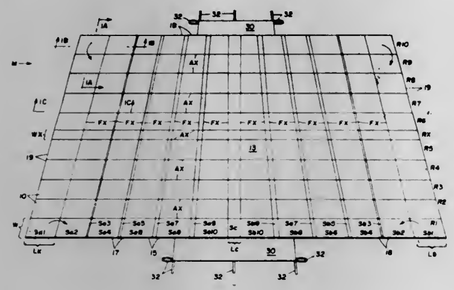


A patient underpad characterized in its ability to provide cushioning for a patient and to readily absorb large volumes of liquid in a manner such that the liquid absorbed does not thereafter irritate the patient. The underpad includes a moisture-impervious bottom layer, a moisture-absorbing layer covering the bottom layer and a closed cell, expanded thermoplastic top layer covering the moisture-absorbing layer and having perforations or openings therethrough of sufficient number and size to permit liquids, such as body excretions, to freely pass therethrough to be absorbed by the moisture-absorbing layer while supporting the patient in spaced relation from the liquid absorbed by the moisture-absorbing layer.

3,670,346
MAT FOR FREE EXERCISE AND THE LIKE
George P. Nissen, Cedar Rapids, Iowa, assignor to Nissen Corporation, Cedar Rapids, Iowa
Filed March 4, 1971, Ser. No. 120,935
Int. Cl. A47g *9/00*
U.S. Cl. 5—344 16 Claims

A large rectangular floor mat having an integral cover providing a substantially smooth, unbroken top surface is constructed in the form of individual sections permanently connected together only by an overall top sheet constituting a part of the cover and arranged so that the entire mat can be readily "roll-folded" inwardly from its two ends to form a long narrow stack of mat sections on the floor which can then be moved

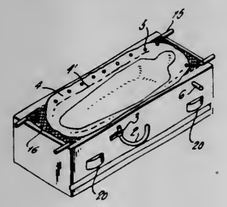
away to one side, all without requiring any disassembly of the mat. A separate sheet or "skid" beneath the mat is also provided so that after the mat is folded the skid can serve as a handy means by which the folded mat can be dragged across



the floor. Additionally, the mat is constructed so that it can also be folded inwardly from its sides in order readily to remove shock absorbing material within the mat sections without requiring any disassembly of the cover.

3,670,347
THERAPEUTIC BED AND BATH
Bernard Weinstein, Spring Valley, N.Y., assignor to DePuy, Inc., Warsaw, Ind.
Filed July 26, 1965, Ser. No. 474,617
Int. Cl. A61g 7/10; A47c 27/08, 27/18
U.S. Cl. 5—348 **8 Claims**

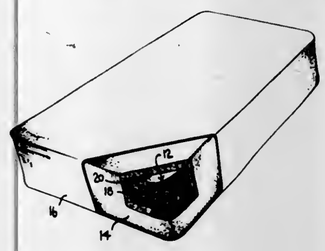




A bed for reducing the effective weight of a body is disclosed having a cavity contoured to the approximate shape of the body of a person to occupy the bed. The bed includes a fluid within the cavity and may have a fluid impervious sheet draped over the cavity upon which the person lies and is floated.

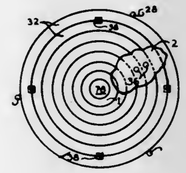
3,670,348
RESILIENT, FIRE-RESISTANT ARTICLE
Winfield T. Irwin, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed May 13, 1968, Ser. No. 728,490
Int. Cl. A47c 23/00; B29h 17/28
U.S. Cl. 5—345 **1 Claim**

This relates to a safety mattress, pillow, cushion, upholstered article and the like, comprising a layer of flexible sheet material covering an incombustible, resilient, low-bulk, high-density mass of interlocked segments of fiber glass filaments that are free of organic binder and have a permanently



distorted shape extending in a plurality of directions when said filaments are substantially free of tension.

3,670,349
LIGHT WEIGHT ARTICLE
Alvin E. Moore, 916 Beach Boulevard, Waveland, Miss.
Continuation-in-part of Ser. No. 531,564, March 3, 1966, Pat. No. 3,503,825. This application March 30, 1970, Ser. No. 23,789
Int. Cl. B63c 9/30
U.S. Cl. 9—12 **32 Claims**

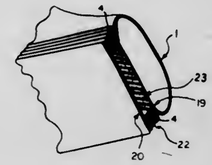


A lifesaving device having: (1) at least one set of flatwise, doughnut-shaped tubes of rubber, other plastic or thin metal, inflated with gas preferably at a pressure well above that of the atmosphere, having peripheries that are bonded together and tied by bands, cords or wire; (2) skin means comprising joined skins of plastic-impregnated fabric, plastic sheeting, plywood, thin metal or the like; (3) in some cases foamed plastic within the doughnut-shaped holes; (4) optionally, helium balloons in the foamed plastic; and, where the device serves as an article of furniture (table, chair or bed) until its use in life-preserving, (5) lower framework, comprising stacked doughnut-shaped tubes and a survival-kit storage container in this framework. The article of furniture may be inverted and floated as a life preserver. The structure of the invention also may be used as a life buoy or other buoy, a floatable mattress or part of a boat.

3,670,350
FOOTWEAR
Curt E. Kaufman, Waynesville, N.C., assignor to Ro-Search, Incorporated, Waynesville, N.C.
Division of Ser. No. 846,019, July 30, 1969, Pat. No. 3,577,858, and a continuation-in-part of Ser. No. 794,333, Jan. 27, 1969, Pat. No. 3,562,930, which is a division of Ser. No. 521,247, Jan. 14, 1966, Pat. No. 3,473,178. This application April 22, 1970, Ser. No. 38,634
Int. Cl. A43d 9/00
U.S. Cl. 12—142 RS **1 Claim**

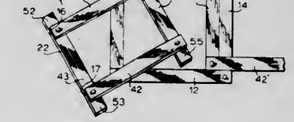
Footwear such as shoes, boots, etc. having a welt at its lower margin to which a prepared sole, usually of sheet stock, is fastened having a ribbon of elastomeric material molded and

cured in situ along the inner perimeter of the welt so as to provide a stepless transition inside of the shoe from the upper to the sole. Such shoes having soles of soft material, such as micro-cellular elastomer, and also a stabilizing insert and the ribbon of elastomer is molded to secure the insert in its desired location to provide the stepless transition from the inside of



the upper to the sole. The method of manufacture of such footwear by holding the pre-welted upper under tension on the last of a sole laying device until after closing of the side frame of said device so that by releasing said tension, the welt is forced into sealing engagement with the side wall of said side frame.

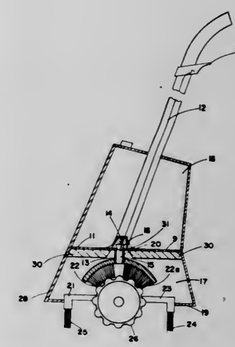
3,670,351
STRUCTURAL SPAN
William R. Drury, 3716 Woodland Circle, Falls Church, Va.
Filed Jan. 18, 1971, Ser. No. 107,159
Int. Cl. E01d 1/00
U.S. Cl. 14—1 **9 Claims**



A system for constructing a structural span comprising two types of structural components. The components of the first type each comprise a pair of first longitudinal members parallel to each other, and a pair of first transverse members connected to the bottom of the first longitudinal members. The components of the second type each comprise a pair of second longitudinal members parallel to each other and spaced to lie inside of and parallel to the first longitudinal members; and a pair of second transverse members connected to the bottom of the second longitudinal members. The second transverse members are adapted to extend underneath the first longitudinal members. The first longitudinal members and the first transverse members define an opening of a size to permit the passage of the second transverse members of each of two structural components of the second type in order to permit assembly of the span from its components.

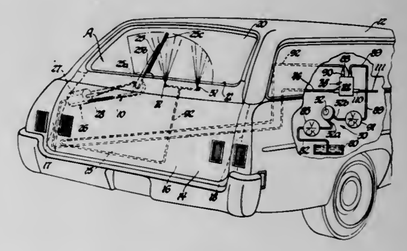
3,670,352
FOAM GENERATING FLOOR CLEANSING DEVICE
Earnest Robert Ballantyne, Columbus, Ohio, assignor to Ballantyne Manufacturing Company, Columbus, Ohio
Filed Sept. 11, 1970, Ser. No. 71,298
Int. Cl. A47l 13/12
U.S. Cl. 15—4 **8 Claims**

A floor covering cleansing device manually or electrically operable of the detergent foam generating type and specifically a corrugated roller in engagement with a brush for



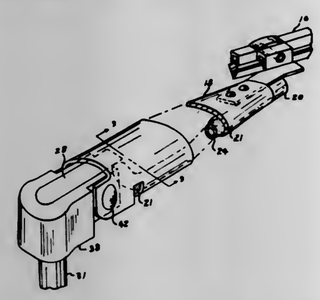
generating the foam. The corrugated roller and other brushes are further utilized to work the foam into the floor covering.

3,670,353
DEMAND VACUUM ACTUATED TAILGATE WIPER SYSTEM
Loren R. Gute, and George W. Jackson, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 27, 1970, Ser. No. 84,310
Int. Cl. B60s 1/02
U.S. Cl. 15—250.02 **9 Claims**



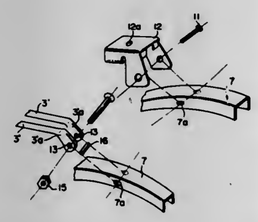
In a preferred form, this disclosure relates to a window cleaning system for cleaning a tailgate window of a station wagon vehicle. The window cleaning system includes a wiper unit having a window wiper which is supported by the tailgate for oscillatory movement across the outer surface of the window through inboard and outboard strokes and a drive means for moving the wiper through its strokes. The drive means includes a fluid motor for moving the wiper through its outboard stroke when fluid pressure is communicated thereto and a spring means for moving the wiper through its inboard stroke when fluid pressure is not communicated to the fluid motor. The window cleaning system also includes a washer unit having a washer nozzle for directing the washer fluid against the window and a manually actuatable pump means for delivering washer fluid under pressure to the washer nozzle. The window cleaning system further includes a coordinator means which is responsive to pressurized fluid being delivered by the pump means to cause a source of fluid pressure to be communicated to the fluid motor whereby actuation of the pump means causes the wiper to be actuated through its outboard stroke and washer fluid to be squirted against the window.

3,670,354
LOW PROFILE WIPER-WASHER ASSEMBLY
Alexander F. Weber, 6310 Marshall Road, Centerville, Ohio
Filed Dec. 16, 1970, Ser. No. 98,643
Int. Cl. B60s 1/46
U.S. Cl. 15—250.04 1 Claim



A windshield washer and wiper assembly having a hollow drive shaft for the wiper arm with fluid for the windshield being supplied through the shaft to a fluid transmission element. A tubular member connected to the fluid transmission element passes through the windshield wiper arm to a nozzle. A substantially circular shaped channel is provided in the windshield wiper arm to retain the tubular element within the wiper arm.

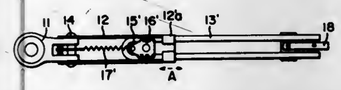
3,670,355
WIPER ASSEMBLY FOR VEHICLES
Kashira Sakamoto, 12, Tennocho-7-chome, Kariya, Japan
Filed Feb. 4, 1971, Ser. No. 112,677
Claims priority, application Japan, March 23, 1970, 45/27738
Int. Cl. B60s 1/40
U.S. Cl. 15—250.32 3 Claims



A wiper assembly in which an arm piece consisting of two rods combined with each other, and a blade element are pivotably connected with each other by means of a pivot pin extending through holes formed in the flat portions at the end extremities of said rods and holes formed in a connector for attaching said blade element to said arm piece.

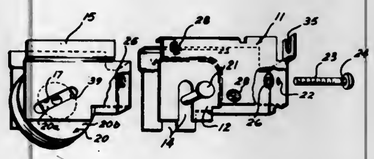
3,670,356
WIPER ARMS
Kashira Sakamoto, 12, Tennocho-7-chome, Kariya-shi, Japan
Filed Feb. 4, 1971, Ser. No. 112,675
Claims priority, application Japan, March 19, 1970, 45/26406; March 19, 1970, 45/26407
Int. Cl. B60s 1/32
U.S. Cl. 15—250.35 3 Claims

A wiper arm in which a wiper arm consisting of a U-shaped rod is secured to a retainer at the U-shaped end and also at the two rod sections thereof. The U-shaped end of the wiper arm is secured to the retainer in the detachable fashion, while the two rod sections thereof are secured to the retainer in the lon-



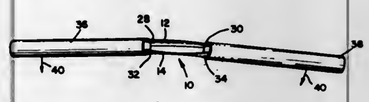
gitudinally slidable fashion relative to the latter, whereby the length of the wiper arm is adjustable.

3,670,357
ADJUSTABLE ROLLER DEVICE FOR SLIDING CLOSURES
Joseph F. Steigerwald, 3240 East 59th Street, Long Beach, Calif.
Continuation-in-part of Ser. No. 484,065, Aug. 31, 1965, abandoned. This application June 10, 1970, Ser. No. 44,993
Int. Cl. E05d 13/02
U.S. Cl. 16—105 2 Claims



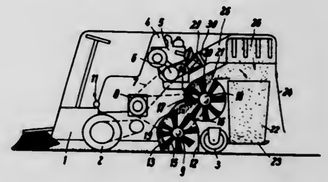
A stationary outer frame member is attached to the bottom portion of a sliding closure, this outer frame having a pair of oppositely positioned vertical slots formed therein. An inner frame member having a pair of oppositely positioned canted slots formed therein is slidably mounted in the outer frame member. A roller wheel is mounted for rotation within the inner frame member on a pin which passes through the slots of both the inner and outer members, this pin holding these members and the wheel together. Vertical adjustment of the wheel without any lateral movement thereof is provided by means of an adjustment screw which causes the inner frame member to move relative to the outer frame member thereby causing vertical motion on the pin in the vertical slots formed in the outer frame member.

3,670,358
SELF ACTUATING SELF LOCKING FLEXIBLE HINGE
Seymour S. Schwartz, and Charles P. Rubin, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed April 29, 1970, Ser. No. 32,945
Int. Cl. E05d 7/11
U.S. Cl. 16—150 3 Claims



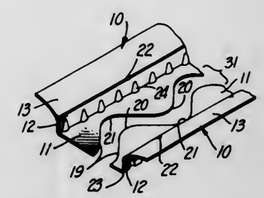
The hinge is capable of twisting and bending about at least two axes and comprises a pair of strips having a transverse curvature. The strips are secured at their ends to a pair of rigid tubes, beam parts, supports, and the like, which are thereby joined together. The strips are preferably mounted facing one another with their centers of curvature lying inward. In bending the hinge, the strips are caused to flatten out and the inner strip is compressed thus developing the actuation force. Rubber pads or the like may be placed between the metal strips in order to increase the stored spring energy and to improve the hinge's folding characteristics.

3,670,359
FLOOR SWEEPING APPARATUS
Walter Gutbrod, Bubingen, Saar, Germany, assignor to Wolfgand Gutbrod, a part interest
Filed Feb. 11, 1970, Ser. No. 10,489
Int. Cl. A47l 9/10
U.S. Cl. 15—348 6 Claims



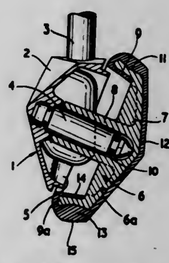
A sweeping apparatus driven by a fuel burning engine, the sweeping mechanism including first and second counter-rotating brushes, the first and lower brush being in contact with the surface to be swept and rotating counter to the direction of travel and the second brush being mounted above and to the rear of the first brush in a direction away from the direction of travel. The apparatus includes housing elements for enclosing the two counter-rotating brushes and a blower driven by the engine for directing suction air, from the surface being swept, upwardly through the two brushes to a filter element disposed immediately above a container for collecting the swept up debris. The finer dust particles are collected by the filter and subsequently drop into the container and the heavier dust particles are guided directly into the container.

3,670,360
CARPET BINDER BAR
Harvey J. Hill, Monterey Park, Calif., assignor to Roberts Consolidated Industries, Inc., Industry, Calif.
Filed June 15, 1970, Ser. No. 46,019
Int. Cl. A47g 27/04
U.S. Cl. 16—16 10 Claims



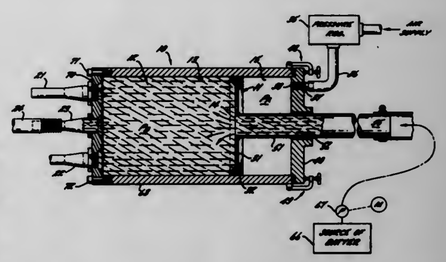
A concealed carpet binder bar used in conjunction with a tackless carpet strip for securing and concealing the raw edge of a carpet. The bar has a horizontal base portion, a substantially vertical portion upwardly extending from the inner edge of the base portion, the vertical portion being embossed with a plurality of vertical gussets along the length of the bar, each gusset extending from the inner edge of the base portion, and a flange portion laterally extending from the upper edge of the vertical portion. The carpet is anchored on the tackless strip, the edge is folded around the outer edge of the flange portion, and the flange portion is bent downwardly to secure and conceal the carpet edge. In another embodiment of the bar, the outer edge of the base portion is scalloped to provide alternating areas of maximum width and minimum width. In still another embodiment of the bar, the flange portion is convexly curved across its width.

3,670,361
CASTORS
Harry Brassington, Sedgley, near Dudley, and Jack Ralph Aston, Dudley, both of England, assignors to Joseph Gillott & Sons Limited, Dudley, England
Filed Nov. 4, 1970, Ser. No. 86,744
Claims priority, application Great Britain, Nov. 15, 1969, 56,033/69
Int. Cl. B60b 33/00
U.S. Cl. 16—18 2 Claims



The invention relates to a furniture or like castor comprising a body part rotatable about a vertical axis, and a metal roller which is pivotally mounted upon the body part in a position to one side of the latter and which has a peripheral rear flange having an outer face provided with recess means, for example an annular recess, therein. A covering of non-metallic material, for example of polyurethane, is moulded on the roller and keys with the recess means, and has lip means engaging an inner face of the flange, the lip means and recess means constituting means for retaining the covering on the roller. That part of the lipped covering which covers the recessed outer face of the flange constitutes a contact surface for engaging and rolling on the floor.

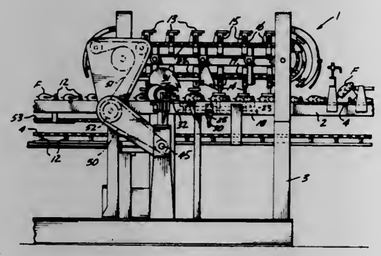
3,670,362
STUFFING APPARATUS FOR SAUSAGE BATTER AND THE LIKE
Alvin W. Hughes, 4N 194 Church Road, Bensenville, Ill.
Filed Nov. 18, 1970, Ser. No. 90,495
Int. Cl. A22c 11/06
U.S. Cl. 17—39 5 Claims



Improved apparatus for continuously stuffing sausage batter, or a like substance, at a uniform rate of discharge into

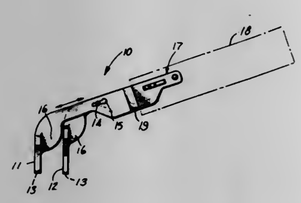
casings. In the illustrative embodiment, a single cylinder and piston arrangement maintains a constant pressure upon the sausage batter within the cylinder by means of controlled fluid pressure upon the piston with the sausage batter entering the cylinder continuously through an aperture in the piston and at a pressure approximately equal to that acting upon the piston.

3,670,363
FISH-BEHEADING AND CLEANING APPARATUS
Elmer R. Hogan, Bellevue, and John I. Simpson, Seattle, both of Wash., assignors to Smith-Berger Manufacturing Corporation, Seattle, Wash.
Filed March 13, 1970, Ser. No. 19,162
Int. Cl. A22c *25/08*
U.S. Cl. 17—55 **4 Claims**



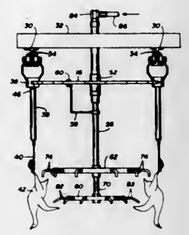
The stroke required for reciprocable hold-downs on a beheading table is reduced by providing auxiliary rails for elevating smaller fish, and the fish are moved along the feed table by fabricated angle flight links. A tail-receiver lifted by a cam wheel rotating about a horizontal axis transfers the fish from the feed table to tail-impaling pins of the fish-cleaning bull wheel. In a common drive for the bull wheel and the beheading table an automatic satellite gear train throw-out will disengage a holding lever to disconnect the drive for the means feeding the cleaning mechanism if such feeding means becomes overloaded. A parallel-link control maintains the belly-fin cutter in proper angular relationship to the bull wheel and a more direct and simplified drive arrangement is provided for the rotary cleaning scrapers and brushes alongside the bull wheel.

3,670,364
ELECTRICAL FISH SCALER
George M. Bradley, 3451 Hanover Drive, Kent, Ohio
Filed May 21, 1970, Ser. No. 39,413
Int. Cl. A22c *25/02*
U.S. Cl. 17—66 **1 Claim**



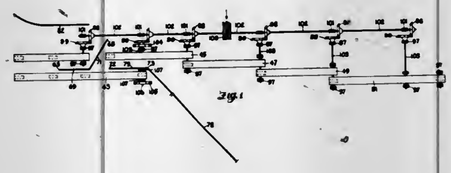
A fish scaling device for fast and easy removal of scales from the fish. This device incorporates a pair of toothed blades which slide against each other in an oscelating fashion. The device includes also a handle which will contain a battery and motor for the operation of the blades or the handle will have cord means and plug means for plugging it into an electrical outlet.

3,670,365
SYNCHRONIZED PIN POINT SPRAY FLUID APPLICATOR
Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.
Filed June 15, 1970, Ser. No. 46,263
Int. Cl. A22c *21/04*
U.S. Cl. 17—11.2 **12 Claims**



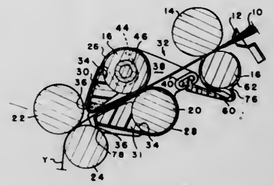
In a vaporizing spray system for the treatment of slaughtered animals, a synchronized fluid applicator is located at a curved portion or turning point of a conveyor utilized therewith. The fluid applicator has spaced nozzles for delivering a fluid stream upon a preselected localized portion of an animal carried by the conveyor. The nozzles are mounted, preferably in a circular pattern, and synchronized with the motion of the conveyor to travel along the path of the animal being conveyed around the curved portion of the path, thus applying a fluid such as steam to a portion of the animal.

3,670,366
AUTOMATIC STRIPPING MACHINE FOR ABACA AND ALLIED FIBER BEARING PLANTS
Juan T. Villanueva, and Jesus T. Villanueva, both of 105 Apo Street, Sta Mesa Heights, Quezon City, Philippines
Filed June 4, 1969, Ser. No. 830,449
Claims priority, application Philippines, June 4, 1968, 9282
Int. Cl. D01b *1/10*
U.S. Cl. 19—12 **9 Claims**



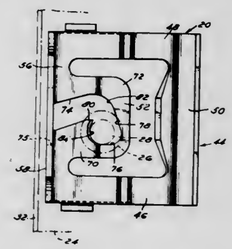
A method and apparatus for defibering sheaths of fibrous material, particularly Manila hemp, by conveying the sheaths past several stationary blades arranged in the path of travel of the sheaths whereby the edges of the blades separate the fibrous parts of the sheaths from the pulpy parts.

3,670,367
DRAFTING APPARATUS
Robert M. Ingham, Jr., Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 809,867, March 24, 1969. This application April 2, 1970, Ser. No. 29,362
Int. Cl. D01h *5/88*
U.S. Cl. 19—255 **12 Claims**



Method and apparatus to stop the supply of roving to a drafting system when an end breaks to prevent lap damage to the drafting system by physically rotating a serrated member into the path of flow of the roving supply.

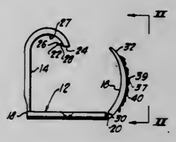
3,670,368
FASTENER
Engelbert A. Meyer, Union Lake, Mich., assignor to USM Corporation, Warren Division, Mount Clemens, Mich.
Filed May 6, 1970, Ser. No. 35,056
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 **2 Claims**



A fastener or adapter for attaching a molding member or the like to a panel surface having a headed button upstanding therefrom, comprising a panel engaging body having means for retaining the molding member tensioned against the panel and an inclined ramp tensioned against the underside of the button head, with a slot in the ramp accommodating the button shank and having a seat portion spaced laterally from the slot axis to prevent dislodgment of the fastener from the button once the molding is assembled on the fastener. An arcuately shaped edge on the slot serves to cam the button into the slot seat as the fastener is slid onto the button.

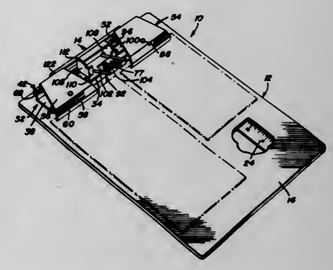
3,670,369
ADJUSTABLE CLAMP FOR ELONGATED ARTICLES WITH TRANSVERSE LOCKING MEANS
Peter McIlroy, II, Pittsburgh, Pa., assignor to Robroy Industries, Verona, Pa.
Filed March 9, 1971, Ser. No. 122,352
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **5 Claims**

A releasable clamp for securing elongated objects such as wires to a supporting structure that includes a substantially rigid base member, a substantially rigid inverted J-shaped locking member and a deformable tab member. The J-shaped locking member and deformable tab member extend upwardly from the end portions of the base member and have cooperating locking means thereon. The locking means includes an inwardly extending projection adjacent the free end portion of the J-shaped locking member and a plurality of transversely extending spaced locking projections on the outer surface of the deformable tab member. The inwardly extending projection of the J-shaped locking member is adapted to engage one of the spaced locking projections on the deformable tab



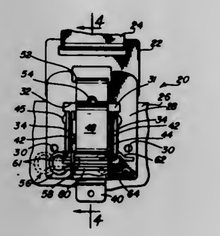
member. The projections on the tab member have a generally triangular configuration in cross-section with a vertical locking shoulder and an adjacent inclined face. The transverse locking means includes a plurality of protuberances projecting upwardly from the tab member on opposite ends of each spaced projection on the tab member. The protuberances are positioned between the spaced locking projections so that the inwardly extending projection of the J-shaped locking member, when engaged to the vertical locking shoulder of a locking projection on the tab member, is restrained from transverse movement by the upwardly extending protuberances.

3,670,370
CLIP BOARD WITH PENCIL HOLDER
Charles M. Goodwin, Route 2, Mount Vernon, Ohio
Division of Ser. No. 705,984, Feb. 16, 1968, abandoned. This application March 13, 1971, Ser. No. 120,678
Int. Cl. A44b *21/00*; B42f *1/02*
U.S. Cl. 24—67.7 **7 Claims**



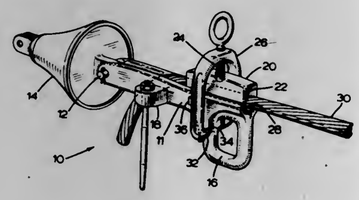
A clip board comprising a clamping unit affixed to one end of an enlarged rectangular board. The clamping unit includes a pair of laterally spaced pressure arms individually operable or simultaneously operable at the option of the user of the clip board for the releasable clamping of sheets of paper or the like to the board. Each pressure member is operated through its individual lift arm against the action of a spring resiliently biasing the pressure member closed.

3,670,371
CATCH WITH ANTI-RELEASE LATCH
Gunnar E. Swanson, Middletown, Conn., assignor to The Nielsen Hardware Corporation, Hartford, Conn.
Continuation of Ser. No. 790,130, Jan. 9, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 118,552
Int. Cl. A43c *11/00*
U.S. Cl. 24—68 T 22 Claims



A catch for releasably connecting two separable parts and having a base adapted for attachment to one part and an operating lever operable to move a latch into engagement with a strike attached to the other part. A manually releasable resilient generally U-shaped locking element acts between the operating lever and another part of the catch to automatically lock and releasably retain the catch in its closed or strike engaging position when the catch is moved to the latter position.

3,670,372
CABLE CLAMP
Noble W. Crosby, Trenton; Robert C. Walker, Newmarket, and Gordon J. Clarke, Bramalea, all of Ontario, Canada, assignors to Local Industries Limited, Newmarket, Ontario, Canada
Filed July 9, 1970, Ser. No. 53,472
Int. Cl. F16g *11/06*
U.S. Cl. 24—125 N 2 Claims



This application deals with a clamp that has a body formed with a trough, a shoe having a back and being formed with a trough on its bottom, a stirrup pivotally anchored to the body, support means carried by the stirrup pitovally engaging the back of said shoe to support said shoe in a selected spaced relation with respect to the stirrup with the open top of the trough of the body and the open top of the trough of the shoe in opposed relation to receive a cable therebetween.

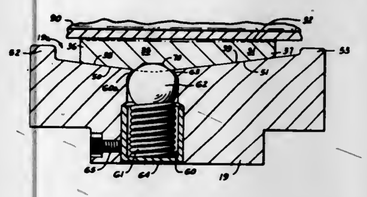
3,670,373
BRACELET CONNECTOR
Morris D. Gandelman, East Providence, R.I., assignor to Pale Corporation, Providence, R.I.
Filed Jan. 26, 1971, Ser. No. 109,862
Int. Cl. A44c *5/18*; A43c *11/08*
U.S. Cl. 24—265 SH 9 Claims

A connector, for coupling the end of a bracelet to another member, comprising a base member and a latching arm mounted thereupon, the base member being formed from stamped sheet metal and including a floor having an end portion which is upwardly bent from the remainder of said floor,



the latching arm being pivotally mounted upon a wall portion of the base member and having retaining means, which, in an operative position of the arm, is resiliently engaged with the end portion of the floor.

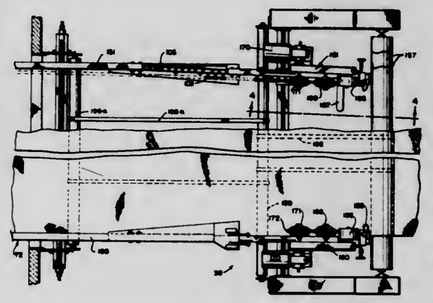
3,670,374
DOUBLE ACTING SLIPS
Thomas J. Hayes, Jr., Houston, Tex., assignor to Anbeck Corporation, Houston, Tex.
Filed June 8, 1970, Ser. No. 44,384
Int. Cl. E21b *19/06*
U.S. Cl. 24—263 DA 11 Claims



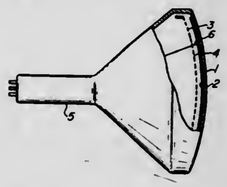
A unitary, double acting slip is disclosed having a first surface adapted to fit against the wall of a cylindrical member, such as a pipe, and a second surface adapted to be forced against the adjacent surface of a bowl member so that the slip is wedged between the cylindrical member and the bowl after limited movement of the pipe. The second surface of the double acting slip has a thicker section intermediate its length and tapers from the thickest section to the ends of the slip thereby forming two tapered wedging areas. The second surface of the double acting slip may include a recess and the bowl may have a radial opening extending to the slip. A bearing member may be resiliently mounted in this opening to engage the recess in the second surface of the slip in order to aid in alignment of the slip.

3,670,375
APPARATUS AND METHOD FOR TENTER PROCESSING OF OPEN WIDTH FABRIC
Eugene Cohn, Great Neck; Andrew P. Cocuzzo, Valley Stream, and Robert Frezza, Carle Place, all of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.
Division of Ser. No. 698,899, Jan. 18, 1968, Pat. No. 3,551,970. This application Sept. 1, 1970, Ser. No. 68,646
Int. Cl. D06c *3/02*
U.S. Cl. 26—57 A 6 Claims

The invention is directed to a fabric tenter apparatus and related method, intended especially for the processing of geometrically distortable fabrics in flat, open width form. The apparatus includes opposing sets of tenter chains for engaging the fabric margins, and the chains are divergently related at the entry end section and arranged in parallel relation along a processing section located downstream of the entry end. Means are provided for overfeeding of the fabric edge margins onto the tenter chains at the entry end. Additionally, as a unique feature of the combination, controllably driven web-supporting elements (e.g., tapes) are provided to support the center portions of the fabric web. These web-supporting elements engage the web commencing at a point upstream of the entry end section and extending well downstream therefrom, usually well into the processing section of the tenter. The supporting elements are driven at a controlled "overfeeding" or an "underfeeding" rate, so that the center portions of the fabric continue to be advanced at the controlled rate even after the fabric has been engaged by the slower moving tenter chains. The apparatus and the related process provide for an advantageous degree of control over the geometry of the cross lines of the fabric.

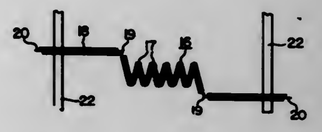


3,670,376
METHOD OF MANUFACTURING COLOR PICTURE TUBE
Atsuyoshi Uchida, and Yoshihiko Miyata, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 27, 1970, Ser. No. 84,272
Claims priority, application Japan, Dec. 24, 1969, 44/103372
Int. Cl. H01j *9/00*
U.S. Cl. 29—25.17 19 Claims



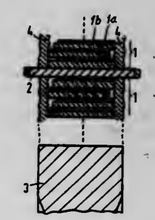
A method of manufacturing color picture tubes, comprising the steps of forming resinous lenses in openings or electron-beam permeating apertures of a color selective electrode of the color picture tube, exposing to light through this color selective electrode a phosphor screen formed on the inner surface of a face plate in a panel portion of said tube, and removing said resin-made lenses after the exposure step.

3,670,377
METHOD OF MANUFACTURING AN ELECTRIC LAMP FILAMENT HAVING A COILED-COIL BODY PORTION WITH ORIENTED OFF-SET LEGS
Jacob F. Michael, Paramus, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 648,430, June 23, 1967, Pat. No. 3,588,579. This application May 12, 1970, Ser. No. 36,601
Int. Cl. H01j *9/16*, *9/44*
U.S. Cl. 29—25.18 3 Claims



A coiled-coil filament of refractory metal wire having longitudinally depending legs at each end that are joined to the coil barrel by open primary turns which are permanently bent through predetermined angles. The filament is initially wound as a continuous coil and, after the second coiling operation has been completed and the primary and secondary mandrels have been removed, selected primary turns in each of the then transversely extending legs are bent around an abutting stationary anvil to reposition the legs in the desired off-set relationship with the coil barrel.

3,670,378
PROCESS FOR THE PRODUCTION OF CAPACITORS
Reinhard Behn, Munich; Heinrich Gottlob, Regensburg; Hans Hald; Gerhard Heyler, both of Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 18, 1969, Ser. No. 834,405
Claims priority, application Germany, June 24, 1968, P 17 64 541.9
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 18 Claims

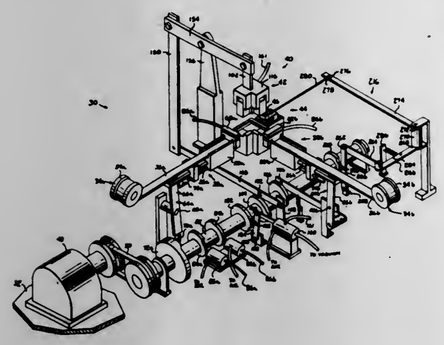


Capacitors are manufactured by winding a number of parent or master windings one upon another, coating the windings in common with metal on the face sides thereof by a metal spraying process and separating them one from the other. In one instance, the master windings are separated one from the other by the provision of inactive layers which project at the face sides or ends of the windings to prevent contacting of the layers of the windings during metal spraying. In another embodiment the interlayers are dimensioned as wide as the capacitively active layers and the face-side zones of the interlayers are masked during the application of the metallic layers. In yet another embodiment the inactive layers are completely metal coated and separation is provided by sawing or cutting in the zone of the interlayers. In this case, the interlayers remain on the finished partial capacitor as cover layers.

3,670,379
METHOD FOR FABRICATING MULTILAYER ELECTRICAL COMPONENTS

Martin L. Zeleznz, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc.

Division of Ser. No. 801,115, Feb. 20, 1969, Pat. No. 3,597,816. This application Jan. 11, 1971, Ser. No. 105,541
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 2 Claims

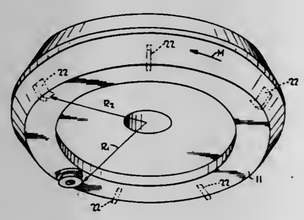


Method and apparatus for forming thick film electrical capacitors. Strips of electrically conducting and electrically insulating material are fed in an overlapping manner to a cutting area. The strips are cut under sufficient pressure to form a bonded pair which is then transported to a remote position. Alignment between the bonded pair and a receptacle is achieved and the bonded pair is deposited therein. The cycle is repeated with the receptacle being rotated 180°. The rotation of the receptacle between cycles allows an interleaved capacitor of any desired size to be built up. When this is achieved, the receptacle may be removed to a die where sufficient pressure is applied to achieve adherence of all bonded pairs into a compact unit. This unit is then fired at selected temperatures to produce the capacitor.

3,670,380
FACE MILLING TOOL

Arthur Ivan Walter Moore; John Howard Porter; Richard Frank Vearncombe, and Edward Karl Reiber, all of Staveley Lodge, Melton Mowbray, Leicestershire, England

Continuation-in-part of Ser. No. 533,107, Jan. 24, 1966, abandoned. This application Jan. 10, 1969, Ser. No. 17,354
Claims priority, application Great Britain, Jan. 24, 1965, 34,571/64
Int. Cl. B26d 1/00
U.S. Cl. 29—105 8 Claims

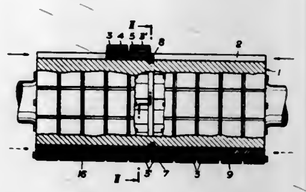


A face milling tool comprises a holder and a bit of slice-like form of circular or lobed outline detachably secured on a seating by a screw or the like traversing a central aperture and presented so that the side wall is the rake face and the end face is the clearance face. The bit can be indexed on the securing means. A lobed bit has convex cutting edges of much larger radius than the average radius of the bit.

3,670,381
ROLLS AND ROLLERS PARTICULARLY FOR CONTINUOUS CASTING PLANTS, BAR DEFORMATION PLANTS AND FOR HOT ROLLING MILLS OPERATED AT LOW ROLLING SPEEDS

Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Osterreichische Eisen-Und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 17, 1970, Ser. No. 55,830
Claims priority, application Austria, July 25, 1969, A 7189
Int. Cl. B21b 31/08
U.S. Cl. 29—124 12 Claims



The invention proposes rolls and rollers, particularly for continuous casting plants, bar deformation plants and hot rolling mills operated at low rolling speeds, in which the improvement resides in that the working body of the rolls or rollers, respectively, is formed by a plurality of segments arranged side by side with play, which segments are provided with key-like projections engaging with correspondingly formed guiding grooves arranged at the roll or roller core. The core may be made of material of high strength, capable of absorbing great bending stresses, and the segments may be made of material resistant to heat and wear. Owing to the division of the working tools into two units and the provision of play between segments, heat cracks and ruptures are precluded.

3,670,382
METHOD FOR PRODUCING A REINFORCED RESINOUS IMPELLER AND PRODUCT

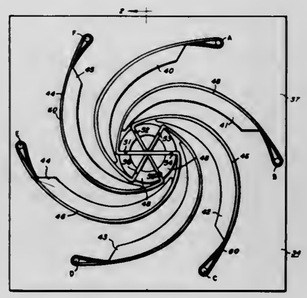
Donald J. Keehan, 31012 Huntington Woods Parkway, Bay Village, Ohio

Filed Jan. 5, 1970, Ser. No. 570
Int. Cl. B21k 3/04; B23p 15/02, 15/04
U.S. Cl. 29—156.8 CF 5 Claims

A method of making an impeller which is particularly adapted for use in a centrifugal pump and which has generally spirally extending vanes which extend outwardly from a central portion which method comprises the steps of selecting an elongated reinforcing member and winding the reinforcing member along the path of a vane and extending it to the central portion and then along the path of another vane and back to the central portion and so on, until there is built up a reinforcing structure having vane reinforcing walls which extend in basically the same direction as the vanes. The next step in the process is to apply tension to the wound reinforcing member and in the embodiment illustrated herein, this tension is applied by rotating a hub to which each of the reinforcing walls is attached which causes the same to be tensioned. The elongated reinforcing member preferably has resin applied thereto prior to winding the same; however, the resin may be applied after it is wound. In either event, the wound resin-wetted reinforcing member is then cured while the tension is maintained on the individual reinforcing walls. The cured reinforcing structure is next placed into a mold having the

shape of the finished impeller and the reinforcing walls of the reinforcing structure occupy positions in the mold which correspond to the vanes of the impeller. The next step is to introduce a curable resin into the mold which resin assumes the shape of and forms the finished impeller. The resin is next cured and the formed impeller is removed from the mold.

Also included as part of the disclosure herein is the winding mold for producing the reinforcing structure for the impeller. The winding mold comprises a plate which has a plurality of circumferentially spaced and generally radially extending form members secured thereto. These form members generally assume the contour of the finished impeller. A hub member is located generally centrally of the form members in a central opening in the plate and pins are positioned in the plate outwardly of the ends of the form members. The hub member in this embodiment is provided with a plurality of



diametrically extending slots which are adapted to receive the elongated reinforcing member which is wound on the winding mold.

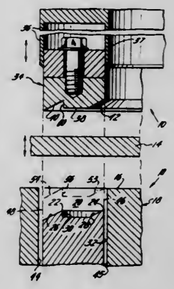
The finished product is an impeller which includes in combination a composite resinous mass molded into the impeller shape which shape has and includes a plurality of circumferentially spaced and generally radially extending vanes extending from a central hub portion. A composite reinforcing structure is imbedded in the resinous mass and includes a hub member imbedded at the central hub portion and vane reinforcing walls secured to the hub member and imbedded in the respective vanes. Each of the vane reinforcing walls comprises an elongated reinforcing member secured to the hub member and arranged in the shape of the vanes. Each of the vane reinforcing walls is wetted with resin at some stage of its construction which resin is cured while each of the vane reinforcing walls is maintained under tension.

3,670,383
METHOD OF MANUFACTURE OF AN OIL SEAL RING HAVING DUAL SCRAPER ELEMENTS FOR ROTARY PISTON MECHANISMS

Michael T. Gavrun, Bayonne, N.J., assignor to Curtiss-Wright Corporation

Filed April 26, 1971, Ser. No. 137,284
Int. Cl. B23p 15/06
U.S. Cl. 29—156.61 4 Claims

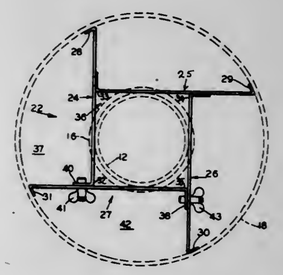
The method of fabricating an oil seal ring, having dual, concentrically spaced, scraper edges, for use in a rotary piston mechanism, comprises the step of placing a metal blank in a combination coining and punching device and thereafter actuating the latter to engage and deform the sheet material and substantially simultaneously punch out concentric, spaced portions of the sheet to form the inner and outer peripheral surfaces of the ring and an inner annular scraper edge and an outer annular scraper edge defined by a partial shearing of the metal blank.



3,670,384
BRACKET FOR CENTERING CAPPED PIPE IN MANHOLES

August Milo, 1015 Schlefer Road, Hillside, N.J.

Filed Jan. 26, 1971, Ser. No. 109,772
Int. Cl. B23p 19/00
U.S. Cl. 29—200 J 2 Claims



A centering bracket mountable in a manhole body for centering a pipe end smaller than the body and having a cap wider than the pipe, comprises four arms connected laterally to form a square having a size just adequate to accommodate the pipe end. Each of the arms has an extension of even length terminating in a bent portion designed to fit in frictional contact against the manhole body. One of the arms is removable so as to enable insertion of the pipe end cap in the larger space between the opened square and the body. Connecting means, such as thumb screws, are provided to connect the removable arm to form the square after the pipe cap has been passed through and the pipe end has been centered in the square.

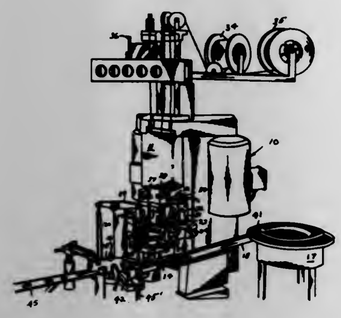
3,670,385
ASSEMBLY MACHINE

David I. Cropp, 501 Chestnut St., Meadville, Pa.

Filed June 8, 1970, Ser. No. 44,266
Int. Cl. H05k 13/04; B23p 19/04
U.S. Cl. 29—203 R 18 Claims

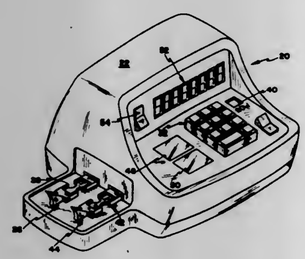
The specification describes a machine for inserting several pieces of wire of a predetermined length through a small disk which may be of plastic material at a high rate of production.

The wire is taken from rolls, straightened, measured to length, cut off, and forced through the holes in the disk and the disks



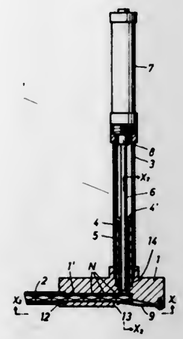
with wire inserted in them are moved along a trough conveyor where they can be visually inspected.

3,670,386
ENCODING AND VERIFYING INFORMATION
Louis E. Davis, Bountiful; Billy M. Jensen, Sandy; Floyd L. Larson, Granger; Rainer F. Huck, and Stephen L. Stumph, both of Salt Lake City, all of Utah, assignors to Bio-Logics, Inc.
Filed Aug. 18, 1969, Ser. No. 850,978
Int. Cl. B23q 7/10; B23p 19/04; G06k 1/00
U.S. Cl. 29—211 R 13 Claims



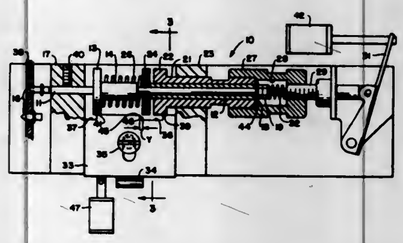
Method and apparatus for encoding a device presenting rows of encodable sites and for verifying the correctness of the encoding of such a device, the apparatus including a ram assembly for press-fitting balls or the like, received from a ball-feeder assembly, into selected ones of the encodable sites, which sites take the form of blind cavities. The encodable device is light-transmitting and, after being encoded, the rows of sites are successively sensed by an optical reader to verify the accuracy of the encoding procedure. Electrical signals, derived from optical signals generated by the reader and representing the code of each row, are converted to Binary Coded Decimal (BCD) data format and stored in a circulating shift register in a row-by-row fashion so that the stored information can be subsequently converted into human readable form.

3,670,387
NUT AND WASHER FEEDING DEVICE
Tetsuya Nagao, 23, 2-chome, Kitadori, Minamiterakata, Moriguchi, Japan
Filed Dec. 16, 1970, Ser. No. 98,609
Int. Cl. B23q 7/10
U.S. Cl. 29—211 R 1 Claim



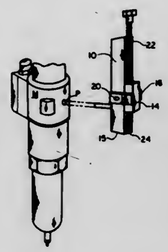
An automatic feeder of nuts and washers, having a long slim spindle slidably inserted in a sleeve in a relation to have the sleeve reciprocate together with the spindle as the latter reciprocates in connection with driving means, so that nuts or washers are shot by the sleeve and guided along the spindle down to a given processing position one after another continuously.

3,670,388
SELF-TESTING INSERTION TOOL AND METHODS OF INSERTING WORKPIECES
Ronald H. Jack, Rolling Meadows, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 29, 1969, Ser. No. 888,730
Int. Cl. B23p 19/04
U.S. Cl. 29—244 11 Claims



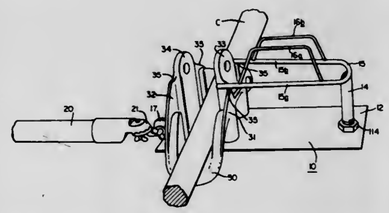
A workpiece insertion tool includes a shaft for engaging the workpiece, a housing slidably mounted on the shaft, a spacer integrally attached to the shaft, an elastic member between the housing and the spacer, and a blocking member. To insert a workpiece into a workpiece-receiving member a force is applied to the housing. The elastic member initially operates to transmit the force to the spacer and therefore to the shaft so as to apply a gradually increasing force tending to insert the workpiece. Failure of the elastic member to compress to a predetermined extent, before a predetermined movement of the workpiece into the receiving member occurs, operates to bring the blocking member into engagement with the housing to immobilize the tool and to prevent complete insertion of the workpiece. Whenever the elastic member does compress sufficiently, further force is applied to the housing and shaft to complete the insertion.

3,670,389
TOOL FOR REMOVING FUEL INJECTORS
Joseph F. Shepanski, 216 Huffman Mill Road, Burlington, N.C.
Continuation-in-part of Ser. No. 822,960, May 8, 1969, abandoned. This application Dec. 15, 1970, Ser. No. 98,467
Int. Cl. B23p 19/04
U.S. Cl. 29—256 8 Claims



A tool for quickly and easily removing a fuel injector from the cylinder head by means of a bearing pin extending from a vertically elongated thrust bar into the overflow port of the injector. A threaded shaft bears against the cylinder head and, upon rotation, raises the thrust bar and exerts an upward force on the pin to free the injector.

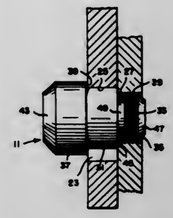
3,670,390
TOOL FOR APPLYING SUSPENSION CLAMPS TO POWER LINES
Leonard M. Brzoska, 627 Old Elm St., Conshohocken, Pa.
Filed Sept. 4, 1970, Ser. No. 69,869
Int. Cl. B25b 27/14
U.S. Cl. 29—271 6 Claims



A special tool at the end of an elongated insulated pole manipulates the suspension clamp and facilities installation thereof on high voltage electric power line conductors without de-energizing the lines. A cotter key tool facilitates inserting the cotter key in the clevis pin.

3,670,391
PILOT PIN FOR MOUNTING AUTOMOBILE WHEELS
Robert J. Cahill, 913 Rittenhouse Street, Philadelphia, Pa.
Filed May 6, 1970, Ser. No. 35,119
Int. Cl. B25b 27/14; B23p 19/00
U.S. Cl. 29—273 6 Claims

A pilot pin for assisting in mounting an automobile wheel on a wheel drum, which pilot pin properly aligns selected wheel disk holes with corresponding brake drum holes and holds them in alignment while bolts are inserted and screwed into the remaining aligned holes. The pin includes a body, a threaded stud at one end of the pin adapted to turn into the threads of the brake drum hole, the body being of larger diameter than the brake drum hole and having a body shoulder that contacts the rim of the brake drum hole to form



a stop for limiting the penetration of the threaded stud into the drum hole, a head at the other end of the pin which is of larger diameter than the body and of smaller diameter than the wheel disk hole, and a head shoulder on the head for catching and holding a rim of a wheel disk hole to support the wheel disk on the brake drum while the bolts are being inserted into the aligned holes and screwed therein.

3,670,392
METHOD OF MAKING FLEXIBLE BRAKE BANDS
Charles H. Haas, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Dec. 29, 1970, Ser. No. 102,476
Int. Cl. B23p 17/00
U.S. Cl. 29—411 14 Claims

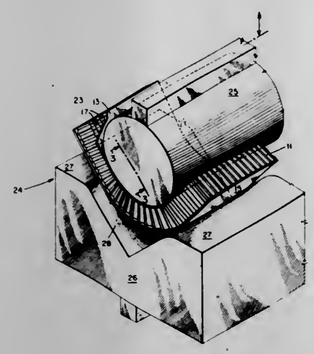


This application discloses a method of making flexible brake bands from a continuous sheet of band material, such as thin stainless steel or high carbon steel and sheet lining by providing band end lugs near the side edges, integrally on the sheet by rolls or dies, or by welding on lug strips, applying lining from a continuous sheet, and cutting bands in unit lengths from the composite sheet.

3,670,393
METHOD OF FORMING HONEYCOMB PANEL
Elmer C. Almond, Lansdale, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed April 9, 1970, Ser. No. 26,921
Int. Cl. B23p 17/00
U.S. Cl. 29—423 3 Claims

A method of forming honeycomb panels of high strength material whereby the panel to be formed is positioned between an inner metallic cover sheet and an outer sheet of resilient material. The sandwich pack so formed is disposed between die set members which are moved relative to each other to deform the pack. During the forming operation, the

edge portions of individual honeycomb cores bite into the bonding surface of the resilient cover sheet material which functions as a structural restraint to minimize dimensional



failure by preventing the spreading apart of adjacent cores one from another on the tension side of the bend. All of the bending of the panel is taken in uniform deformation on the compression side of the panel.

3,670,394

METHOD OF CONNECTING METAL CONTACT AREAS OF ELECTRIC COMPONENTS TO METAL CONDUCTORS OF FLEXIBLE SUBSTRATE

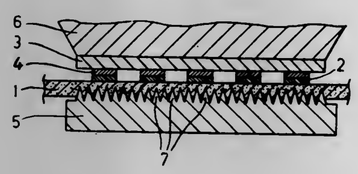
Hendricus Petrus Cornelis Daniels; Theodorus Johannes Van Der Ven, and Hans Gerard Karel Tates, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,472

Claims priority, application Netherlands, Nov. 13, 1969, 6917128

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 5 Claims



The metal contact areas of electric components, for example, semiconductor bodies, are connected to metal conductors of a flexible substrate by orienting the contact areas relative to the conductors, pressing the contact areas and the conductors against each other, temporarily reinforcing the flexible substrate by causing projections of a pressure member to penetrate into the foil as a result of ultrasonic vibrations, and subsequently ultrasonically welding the contact areas to the conductors of the flexible substrate.

3,670,395

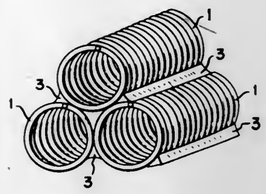
METHOD OF MAKING A HONEYCOMB BLOCK COLLIMATOR

Isamu Abe, Kawasaki; Hideo Yashiro, Tokyo; Naoyuki Sori, Tokyo; Sotaro Hatano, Tokyo; Tomiyasu Katsumoto, Tokyo, and Tadao Suzuki, Ichikawa, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 726,041, Sept. 18, 1970, abandoned. This application Sept. 18, 1970, Ser. No. 73,573

Int. Cl. G21f *5/02*; H01j *35/16*

U.S. Cl. 29—471.1 10 Claims



A honeycomb block is made by winding a tungsten metal wire compactly around a core and then removing the core, thereby fabricating a compactly wound coil member. The coil members are arranged side by side and are bonded together with a metal paste bonding agent to form the honeycomb block.

3,670,396

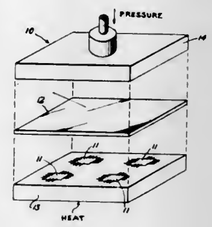
METHOD OF MAKING A CIRCUIT ASSEMBLY

Frank A. Lindberg, Linthicum, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 12, 1971, Ser. No. 132,940

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.3 6 Claims



To bond the beam leads of a plurality of integrated circuit chips to a metallization layer on a transparent compliant film, the chips are first registered in matching etched holes on a flat ground steel block. The flat beam leads lie on the surface of the block and support the chips. The film is arranged on top of the etched block with its metallization pattern in alignment with the corresponding beam leads. At room temperature the film is pressed downwardly on top of the exposed beam leads by an opposing flat ground block. Heat is then applied for bonding, and pressure is maintained until the assembly cools to prevent misregistration.

3,670,397

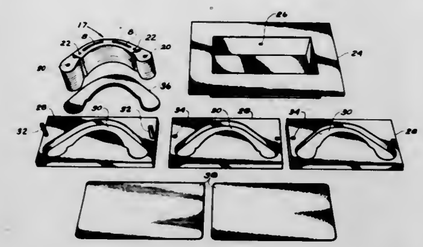
METHOD OF FABRICATING A LAMINATED METAL MEMBER

Joseph C. Lewis, Pasadena, Calif., assignor to North American Rockwell Corporation

Continuation-in-part of Ser. No. 604,270, Dec. 23, 1966, abandoned. This application Feb. 24, 1970, Ser. No. 13,743

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.3 4 Claims



A laminated, relatively massive metal member requiring a minimum of finish machining is made by cutting a number of thin metal laminae in the shape of the final member. The laminae are stacked into the shape of the member, and held therein by suitable restraining means. The laminae stack is then diffusion bonded together at an elevated temperature and pressure in a non-oxidizing environment.

3,670,398

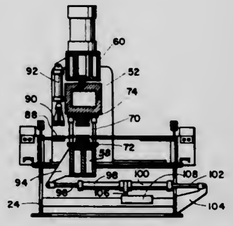
METHOD AND APPARATUS FOR JOINING STRIP ENDS EMPLOYING A STITCHER ASSEMBLY

Carl H. Minton, c/o ADS Machinery Corp. P.O. Box 1027, Warren, Ohio

Filed Feb. 13, 1970, Ser. No. 11,205

Int. Cl. B21d *39/00*

U.S. Cl. 29—505 10 Claims



A method of joining lengths of strip in which the trailing and leading ends, respectively, of successive coils of strip are clamped in overlapping relationship, subjected to a punching operation to provide a series of deformed portions along a line perpendicular to the center line of the strip, subjected to a flattening operation along said series of deformations to effect the tight interengagement of the strip ends along the deformations, and subsequently subjected to a second punching and flattening operation to form a second series of interengaging deformations a spaced distance from the first deformations, all while the strips are clamped in fixed position. The strip stitcher assembly has a fixed base on which are mounted the entry and exit clamps. A punch and die assembly and a flattener assembly are mounted on a subframe slidable on the fixed frame of the stitcher along the center line of the strip. A pair of hydraulic cylinders mounted in back-to-back relationship are employed to index the subframe of the stitcher, actuation of the first cylinder moving the subframe a distance equal to the separation between the center line of the punch and die assembly and the center line of the flattener assembly and subsequent actuation of the second cylinder moving the subassembly a further equal distance in the same direction.

3,670,399

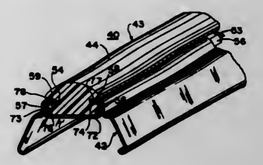
METHOD OF FORMING TRIM MEMBER

Billy George, Cincinnati, Ohio, assignor to Textron, Inc., Providence, R.I.

Division of Ser. No. 726,729, May 6, 1968, Pat. No. 3,565,478. This application Oct. 7, 1970, Ser. No. 78,788

Int. Cl. B21d *39/00*; B23p *11/00*

U.S. Cl. 29—509 3 Claims



An elongated metal strip provided with spaced lengthwise doubled flanges therein and wing members extending outwardly of the doubled flanges, is assembled with a rubber-like resilient facing by swinging the wing members outwardly to cause the doubled flanges to swing inwardly into engagement with opposite faces of the facing to attach the facing to the body with a portion of the facing exposed.

3,670,400

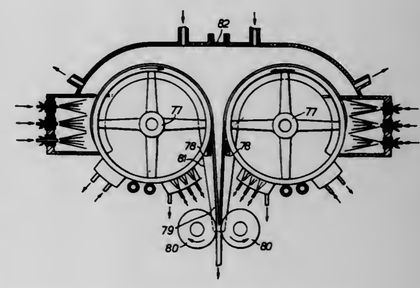
PROCESS AND APPARATUS FOR FABRICATING A HOT WORKED METAL LAYER FROM ATOMIZED METAL PARTICLES

Alfred Richard Eric Singer, Swansea, Wales, assignor to National Research Development Corporation, London, England

Filed May 9, 1969, Ser. No. 823,283

Int. Cl. B23k *19/00*; B23p *17/00*

U.S. Cl. 29—527.5 31 Claims



A process for the fabrication of metal in shapes of long length and relatively thin cross section by deposition of molten metal on to a substrate and subsequent removal of the shaped metal article therefrom, in which a stream of gas-atomized particles of molten metal is directed on to a substrate, and caused to coalesce and form a coherent layer which is subjected while still hot to hot working, hot working being carried out either (a) before or after removal from a non-deformable substrate or (b) after removal from a deformable substrate.

3,670,401
METHOD OF FABRICATING ALUMINUM ALLOY ROD

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

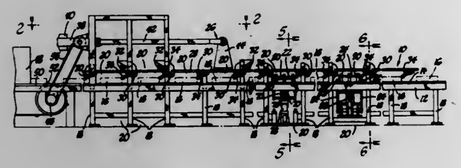
Division of Ser. No. 814,183, April 7, 1969, Pat. No. 3,512,221, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 730,933, May 21, 1968, abandoned. This application April 1, 1970, Ser. No. 31,461
Int. Cl. B22d ; B23p *17/00*
U.S. Cl. 164—76 13 Claims

An aluminum alloy wire having an electrical conductivity of at least 61 percent based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional aluminum alloy wire of the same tensile strength. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron to an alloy mass containing less than about 99.70 weight percent aluminum, no more than 0.15 weight percent silicon, and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least 61 percent of the International Annealed Copper Standard, and increased bendability and fatigue resistance.

3,670,402
MULTI-STATION MACHINE FOR AUTOMATIC PERFORMANCE OF SEQUENTIAL OPERATIONS

Chauncey L. Dirks, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,167
Int. Cl. B23q *7/04*; B65g *25/08*
U.S. Cl. 29—563 2 Claims

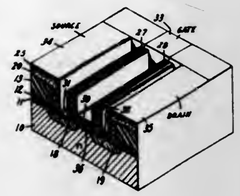


In preferred form, a cylinder head casting defining machine having a plurality of work stations through which the cylinder head castings are moved on guide rails by a crank operated harmonic transfer mechanism which combines fast transfer from station to station with slow initial and terminal portions of the movement so that excessive shocks and part overrun are avoided. A pneumatic tool actuating mechanism is mechanically interconnected with the transfer means to positively time operation of the definning tools to occur during the return stroke of the transfer mechanism.

3,670,403
THREE MASKING STEP PROCESS FOR FABRICATING INSULATED GATE FIELD EFFECT TRANSISTORS

Howard Lawrence, Lafayette, and Peter C. Schaefer, Syracuse, both of N.Y., assignors to General Electric Company

Filed March 19, 1970, Ser. No. 21,161
Int. Cl. B01j *17/00*; H01g *13/00*
U.S. Cl. 29—571 4 Claims

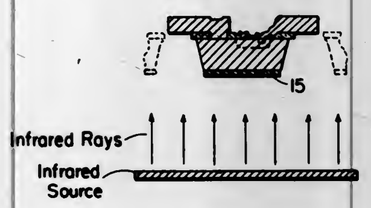


A three resist-masking step process produces lower cost monolithic integrated circuit insulated gate field effect transistors with improved electrical characteristics. To fabricate a metal-nitride-oxide-silicon device, layers of grown oxide, silicon nitride, and field oxide are deposited on a wafer, and the first mask facilitates etching of source and drain openings. After depositing activator impurity and glass, and diffusing, the second mask is used in simultaneously etching contact holes and a gate opening using the silicon nitride as an etch stop. The third mask delineates the contact metallizations.

3,670,404
METHOD OF FABRICATING A SEMICONDUCTOR

Mototaka Kamoshida, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 6, 1969, Ser. No. 831,041
Claims priority, application Japan, June 10, 1968, 43/40071
Int. Cl. B01j *17/00*; H01l *7/00*
U.S. Cl. 29—574 6 Claims

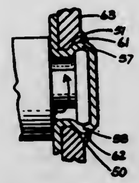


Individual small semiconductor elements are fabricated and the front and back surfaces of the elements aligned by utilizing the difference in penetration of infrared rays as viewed from the other side of the elements by an infrared optic system. The difference is afforded by providing the reverse side of the semiconductor element with an irregularity in the thickness of either an insulating film, a photoresist film, the density of a doped impurity, or irregularities in the underside surface of the semiconductor element itself.

3,670,405
METHOD OF MAKING A DYNAMOELECTRIC MACHINE HAVING IMPROVED HOUSING, BEARING AND SUPPORT STRUCTURE

Richard W. Dochterman, Fort Wayne, Ind., assignor to General Electric Company

Filed Jan. 29, 1970, Ser. No. 6,664
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 1 Claim

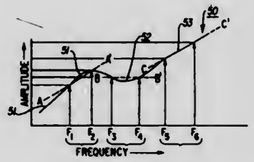


A stator assembly is pressed into a housing member having an end frame and bearing receiving chamber. Bearing means sized to close tolerances have angularly spaced apart surface areas secured to an interior wall of the bearing receiving chamber and define lubricant transmitting channels therewith. The bearing means are slidably received in the chamber and secured therein by an interference fit or structural adhesive material. An oil cover is mechanically secured to an end frame by fasteners expanded in openings in the frame. The openings may be used, prior to securement of the oil cover, to permit removal of rotor centering shims from the machine air gap. In a preferred arrangement, the fasteners are secured to the frame without the application of substantial resultant forces to the end frame and bearing means.

3,670,406
METHOD OF ADJUSTING INDUCTIVE DEVICES

Roger L. Weber, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 671,697, Sept. 29, 1967, Pat. No. 3,548,492. This application Feb. 4, 1970, Ser. No. 12,510
Int. Cl. G01r ; G05f ; H01h
U.S. Cl. 29—593 5 Claims

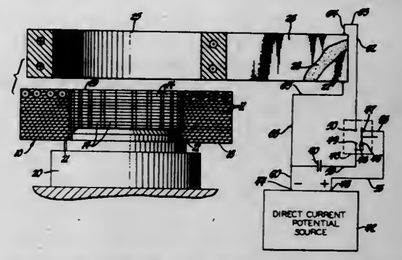


Disclosed is a method of using a flow of abrasive-filled air to adjust an inductive device having a solid core by removing a portion of the core. The dimensions of the resulting air gap thus determine the final value of the device. The inductive device is adjusted after being connected in a circuit to provide the desired frequency response characteristic of the circuit by comparing the actual voltage amplitudes of selected frequency pairs with the desired voltage amplitudes of the same frequency pairs.

3,670,407
METHOD OF REDUCING IRON LOSSES IN THE STATOR CORES OF ALTERNATING CURRENT MACHINES

Albert B. Mewhinney, and Ellwood P. Herzog, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed March 9, 1970, Ser. No. 17,378
Int. Cl. H02k *15/02*, *15/12*
U.S. Cl. 29—596 1 Claim

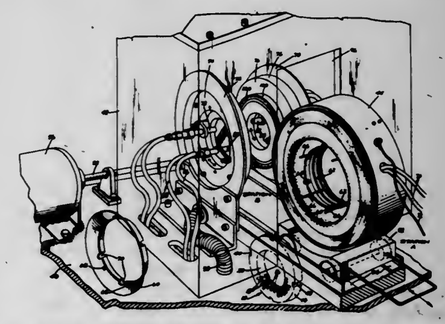


A method for reducing eddy current losses in the laminated stator cores of alternating current machines. The core is supported only on the tooth tips by the ledge portion of a support member of circular cross-section which engages only the tips of the teeth around the circumference of the bore at its termination at one end surface of the core. A single turn electrical coil is placed adjacent the opposite end surface of the core with the axis of the coil in the same direction as the axis of the core and a surge of electrical current is passed through the coil by discharging a capacitor or a bank of capacitors therethrough. The magnetic fields produced by the flow of current through the coil and the resulting induced currents flowing on the face of at least the end lamination of the stator core adjacent the coil interact to produce a circumferentially uniform, axial magnetic force which flexes the unsupported portion of the stator core in a direction away from the coil, thereby deflecting the laminations to produce a circumferentially uniform, radial slip-shear movement between adjacent laminations to interrupt any electrical circuits which may be present between adjacent laminations.

3,670,408
METHOD OF MAINTAINING A LAMINATED ARTICLE UNDER COMPRESSION DURING A PART OF ITS MANUFACTURE

Marion W. Sims, Fort Wayne, Ind., assignor to General Electric Company

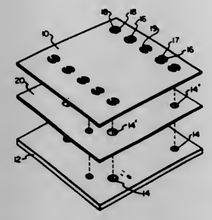
Division of Ser. No. 802,934, Feb. 27, 1969, Pat. No. 3,616,056. This application July 2, 1970, Ser. No. 51,759
Int. Cl. B29f *5/00*; H01f *7/06*; B25b *11/00*
U.S. Cl. 29—602 9 Claims



Method for magnetically clamping together selected regions of a laminated article during at least part of its manufacture,

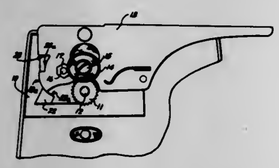
especially effective in the manufacture of magnetic cores for use in inductive devices. A predetermined magnetic field is applied to the article or established in such a way that selected regions, such as extremities which tend to flare apart, are magnetically clamped. Under certain circumstances, the magnetic field may also be used to inductively heat the selected regions of the laminated article, for example, when heat-hardenable bonding material in unhardened form is disposed between adjacent laminations in the vicinity of the regions for hardening the bonding material.

3,670,409
PLANAR RECEPTACLE
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 19, 1970, Ser. No. 90,951
Int. Cl. H01r 9/12; H05k 3/00
U.S. Cl. 29—625 **8 Claims**



A planar receptacle for pluggable mounting of electronic component leads therein which is formed by applying a resilient, electrically conductive material over an apertured base, and forming a pattern of planar cuts in said resilient layer over each aperture in the base such that when an electronic component lead is pressed onto the resilient layer over an aperture, the resilient layer will deform into the aperture to form at least one contact apron capable of supporting said electronic component lead and capable of making electrical contact with said lead.

3,670,410
CAN OPENER WITH A HAND LEVER REMOVABLE FROM THE FRAME BY THE POSITION OF SAME
Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed July 6, 1970, Ser. No. 52,549
Int. Cl. B76b 7/38
U.S. Cl. 30—4 R **4 Claims**

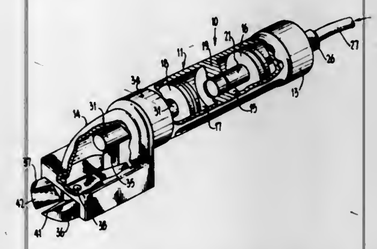


An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to the upright frame of the can opener by a pin member which extends from the lever through an aperture in the frame. The hand lever has an edge surface contacting an embossed surface of the frame to maintain the hand lever in an operative position with respect to the can feed wheel and to permit an annular groove in the pin member to engage a portion of the frame adjacent the aperture therein.

A suitably sized notch is located in the hand lever adjacent the frame boss contacting edge of same thereby permitting the lever notch to be aligned with the boss, the hand lever moved downwardly so that it is no longer in secured engagement with the can opener frame. This movement enables the hand lever and associated pin member to be withdrawn from the aperture within the frame.

A second embodiment utilizes cooperating bosses respectively extending from the can opener frame and from the inner surface of the hand lever to both allow operative hand lever movement and yet to permit separation and removal when the hand lever is moved to cause disengagement of the respective bosses.

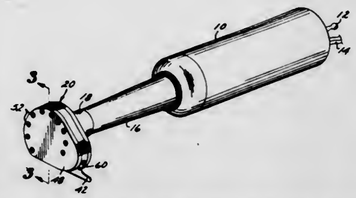
3,670,411
PIN CUTTER
Rudolph W. Peters, 927 West MacArthur Blvd., Oakland, Calif.
Continuation-in-part of Ser. No. 799,383, Feb. 14, 1969, abandoned. This application March 17, 1971, Ser. No. 125,226
Int. Cl. B26b 17/00
U.S. Cl. 30—180 **12 Claims**



Two embodiments of a power-actuated cutter for severing metal pins or bars are described. The first embodiment is designed for severing, for example, orthopedic pins substantially flush with the surfaces of the bone in which they are embedded without significantly moving or otherwise disturbing such pins and the surrounding bone structure. The cutter includes a pair of blade-equipped cutter jaws selectively movable between open and closed positions, and a ram operative to force such jaws toward their closed position. A reciprocable piston having its power stroke energized by the application of compressed gas thereto is coupled to the ram by force multiplier structure operative to transmit to the ram an increased multiple of the force association with movement of the piston through the power stroke thereof. The second cutter embodiment is especially designed for severing concrete reinforcing bars or the like and includes an axially rotatable, cylindrical drum which has a wedge-shaped projection wrapped around its cylindrical surface for engaging the cutting jaws and forcing them towards their closed position upon rotation of the drum. A reciprocable piston having its power stroke energized by the application of compressed gas is also provided in this embodiment. The reciprocable piston drives a rack which in turn rotates the drum to thereby force the jaws toward their closed position.

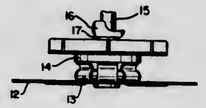
3,670,412
POWER CUTTER
Frank W. Cunningham, 23151 Doris Way, Torrance, Calif.
Filed Sept. 28, 1970, Ser. No. 76,044
Int. Cl. B26b 25/00
U.S. Cl. 30—276 **6 Claims**

A power cutter for cutting deformable material and including a frame which has upper and lower jaws for receiving the material to be cut. The lower jaw includes a recess within which a cutting disc is rotatable by an associated power drive. The upper jaw is formed with depending cheek portions located on opposite sides of the cutter means to define side passages. The cheek portions extend forwardly of the cutter disc in overlying relation to a projecting guide shoe portion of the lower jaw to thereby define a frontal passage ahead of the cutting disc. The access openings to the frontal passage and



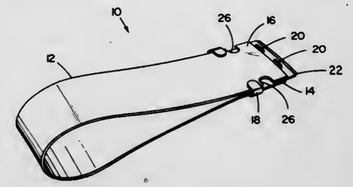
the side passages are made sufficiently large that the material to be cut can pass therethrough, but sufficiently small that a person cannot inadvertently insert his finger and become cut by the cutting disc. The recess within which the cutter is rotatable and which is defined by the frame upper and lower jaws is of inverted U-shape to make accidental insertion of a finger even more difficult, the material to be cut deforming into a corresponding U-shape for entry and cutting thereof.

3,670,413
COUPLING FOR TOOL ELEMENT
Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Aug. 21, 1970, Ser. No. 65,953
Int. Cl. B26b 25/00
U.S. Cl. 30—276 **3 Claims**



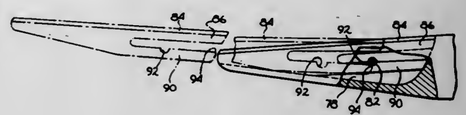
An electric grass trimming device comprising a handle including a grip and trigger switch at one end and an electric motor at the other end, the motor being arranged to drive a cutting blade mounted beneath the motor. An improved coupling arrangement between the blade and the motor shaft is described.

3,670,414
PAINT SCRAPER
Merrick C. Stecker, Rte. 1, Box 645, Baltimore, Md.
Filed Feb. 17, 1971, Ser. No. 115,975
Int. Cl. B26b 21/16
U.S. Cl. 30—338 **2 Claims**



A paint scraper is provided which consists of resilient sheet metal strip which is bent back on itself so that its two opposite ends are positioned adjacent to and in a juxtaposition to one another. One of the ends of the strip is formed with at least two spaced tabs which are bent substantially angularly thereto and extending past the other end of the strip. A scraping blade is provided which has spaced slots corresponding to the spaced tabs on the end of the strip and it is positioned with the spaced tabs engaging in the slots. The blade is held in position between the ends of the strip. A latch bar is provided for locking the ends of the strip in position adjacent to each other to maintain the blade in an operative position.

3,670,415
SURGICAL INSTRUMENT
Anthony T. Rose, 603 Hudspeth Ave., Simi, Calif.
Filed June 12, 1970, Ser. No. 45,803
Int. Cl. B26b 13/04
U.S. Cl. 30—349 **3 Claims**

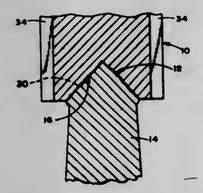


A construction of surgical scissors with replaceable blades wherein the pivotal connection between the scissor shanks includes a first fastener threadingly binding together the shanks, a second fastener cooperating with the first fastener causing an expansion of the first fastener into tighter cooperation with the shanks. A nonmetallic, hard surface, low friction, bearing surface element is located between the shanks adjacent the pivotal connection. A first embodiment of replaceable blade structure wherein a longitudinal dovetail projection is formed upon the blade which is to cooperate with a dovetail recess located within the cutting edge portion of the shank. A slit is provided within the shank to effect resilient movement of the shank about the dovetail. A set screw is provided within the shank to clamp together the shank about the dovetail when the blade is positioned as desired. In a second embodiment of the replaceable blade structure, the blade has a longitudinal access slot within the body portion of the blade. A recess is located upon the lower edge of the slot approximately at the mid-point of the slot length. The recess is to cooperate with a pin fixedly located within the shank of the scissors. In a third embodiment of the replaceable blade structure, a screw, located within the shank, within an eccentric section is to be rotatable into frictional abutting contact with the blade to retain the blade in position with the shank. In a fourth embodiment of the replaceable blade structure, a shoulder upon the set screw which is located within the shank is to cooperate with a recess located within the body portion of the blade.

3,670,416
CONNECTING METAL ELEMENTS AND PRODUCTS THEREOF
Ernest A. Kroder, Hellam, Pa., assignor to Deutsply Research & Development Corp., Wilmington, Del.
Filed June 29, 1970, Ser. No. 50,444
Int. Cl. A61c 3/02
U.S. Cl. 32—48 **5 Claims**

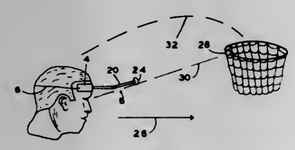
A method of connecting metal elements by a resistance welding process to produce a high strength joint and particu-

larly to connect a refractory type pre-formed carbide head to



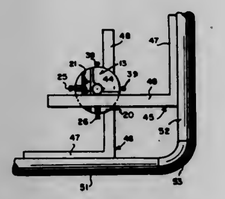
a shank of a dental bur formed from steel, and the product formed by such method.

3,670,417
SHOT SPOTTER
Kathryn C. Rogers, 1410 S. 15th St. Hbg. Park Apts. 0202, Harrisburg, Pa.
Filed Jan. 28, 1971, Ser. No. 110,680
Int. Cl. A63b 69/00
U.S. Cl. 33—46 2 Claims



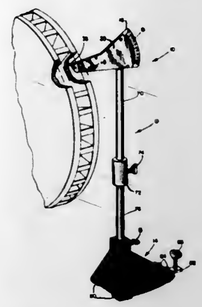
A head mounted device is used to train the shooter in basketball shooting. The device is mounted on the forehead of the user and has a flexible pointer which is adjusted relative to the basket rim to indicate the line-of-shot. With the line-of-shot now indicated, the shooter now gives the basketball the required impetus and accuracy to reach the basket.

3,670,418
ANGULARLY ADJUSTABLE SQUARE HOLDER
David G. Hamilton, Jr., 911 N. Beach St., Daytona Beach, Fla.
Filed Aug. 4, 1970, Ser. No. 60,827
Int. Cl. B43l 7/06
U.S. Cl. 33—75 R 6 Claims



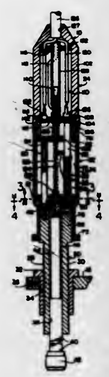
A holder composed of rotatively adjustable sections or halves each adapted to detachably support a square, such as a framing square, and combining with the two squares to provide a protractor-like instrument capable of supporting the blades of the squares at different desired angles relative to one another for use in accurately lining up pipes preparatory to joining the pipes by welding. An outer side of each holder half is grooved to adjustably receive a blade of one of the squares which is clamped therein. The holder halves are capable of being clamped together in different rotatively adjusted positions for accurately positioning the other blades of the two squares at desired angles relative to one another.

3,670,419
RUN OUT INDICATOR FOR DISC BRAKE
Frederick R. McFarland, and Walter L. Diffenderfer, both of Lancaster, Pa., assignors to K-D Manufacturing Company, Lancaster, Pa.
Continuation of Ser. No. 840,706, July 10, 1969, abandoned.
This application May 5, 1971, Ser. No. 140,383
Int. Cl. G01b 3/22, 5/00
U.S. Cl. 33—172 B 1 Claim



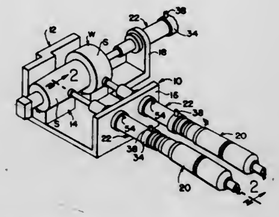
An indicator is adjustably mounted on a vertical support rising from a heavy base. Adjustment means are provided on the base for pivotally moving it in a vertical plane once it is positioned, to position the indicator with respect to the surface of a disc brake rotor. Through pivoted arms the indicator senses the run out of the rotor, as it is rotated, and indicates readings on a scale.

3,670,420
GAGING HEAD CONSTRUCTION
Frank M. Klewicz, Detroit, and Paul R. Zink, Farmington, both of Mich., assignors to Inspection Engineering and Equipment, Inc., Royal Oak, Mich.
Filed Jan. 4, 1971, Ser. No. 103,592
Int. Cl. G01b 7/12, 7/14
U.S. Cl. 33—174 L 14 Claims



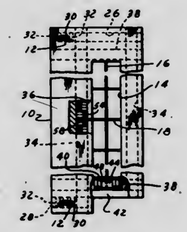
A work piece gaging head functioning in association with an electronic circuit, comprising an electrical switch-type gaging structure embodying features providing adjustable positioning to very substantial tolerances and having an indicator point and stem not only adapted to contact a work piece surface for gaging but also being substantially retractable from such surface to allow for excesses of work piece material in the gaging area. The gaging head embodies circuitry components designed to signal the presence of an undersized or an oversized dimension, and to indicate the "go" dimension which lies within the predetermined high and low limits of the gaging system.

3,670,421
GAGING DEVICE
Frank M. Klewicz, Detroit, and Paul R. Zink, Farmington, both of Mich., assignors to Inspection Engineering and Equipment, Inc., Batavia Royal Oak, Mich.
Filed Jan. 4, 1971, Ser. No. 103,593
Int. Cl. G01b 7/12, 7/14
U.S. Cl. 33—174 L 11 Claims



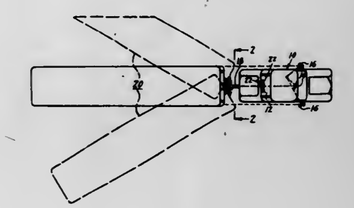
A gaging device for automatically signalling the presence of dimensions in a work piece removably placed in the device for gaging, wherein gaging heads are positioned at one or more sites of the device for contact with the work piece. Pneumatic or hydraulic means are associatedly conjoined to the gaging head for rapid and automatic advance of an indicator pin which touches the work piece at a pre-determined position to signal an undersize, within tolerance, or oversize dimension through an electronic circuit system to a visual signal. The pneumatic or hydraulic means for advancing the gage head indicator pin to the work piece also includes means for retracting the indicator pin. The latter is normally and initially positioned in retracted attitude when the work piece is placed in the gaging fixture. After the measurement has been made, the gage head indicator pin is automatically retracted to permit facile removal of the work piece from the fixture.

3,670,422
MULTIPLE SIGHT FOR ACHER'S BOW
Herve A. Stebbins, and John A. Stebbins, both of 400 Cooley St., Springfield, Mass.
Filed March 8, 1971, Ser. No. 121,741
Int. Cl. F41g 1/00; F41b 5/00
U.S. Cl. 33—265 6 Claims



Multiple sight for an archer's bow having a vertically elongated window in which are disposed a vertical cross-hair wire and a plurality of horizontal cross-hair wires, the ends of said wires being carried by mounting means individually adjustable for a "fine" setting of each wire. Threaded passages along the sides of the window are provided in the body of the sight and each wire end mounting and holding means is threaded therein. The horizontal wire holding elements further include means engageable by the working tip end of a turning tool and said engageable means also permits passage of a reduced shank of the tool through the holding elements for access to and adjustment of other elements in the same passage.

3,670,423
VEHICLE BACKING GUIDANCE DEVICE
Don Leber, 733 Oak St., Colusa, Calif.
Filed Jan. 6, 1970, Ser. No. 920
Int. Cl. G01c 1/00
U.S. Cl. 33—286 1 Claim



A horizontal scale is attached to the rear window of a motor vehicle to align either with a particular element on a towed vehicle or with a scale attached to such vehicle so that the driver can accurately back the towing vehicle for hooking-up with the towed vehicle and for backing the latter in a straight line or at an angle as indicated by the scale. Similar scales are also attachable to an inside rear view mirror or to the outside rear view mirrors of a tractor to provide guide means for the same purposes.

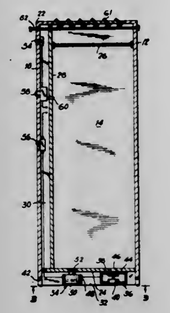
3,670,424
RECOVERY OF ADSORBATE FROM ACTIVATED CARBON
Lawrence John Edward Hofer, Pittsburgh, Pa., and Milton Manes, Kent, Ohio, assignors to Calgon Corporation, Pittsburgh, Pa.
Filed March 15, 1971, Ser. No. 124,535
Int. Cl. F26b 5/00
U.S. Cl. 34—009 10 Claims

The removal of an adsorbate from activated carbon in order to use or further process the adsorbate is accomplished by (1) the use of a displacing medium having a refractive index of at least 1.5 and which is greater than the refractive index of the adsorbate, or (2) the use of a displacing medium having a refractive index greater than or of at least 1.5 together with or followed by a solvent for the adsorbate. The adsorbate is recovered in the form of a solution in the solvent.

3,670,425
CLOTHES REJUVENATOR
Rose Ellen Benjamin, 48 Marshall Road, and Ann Hudis, 63 Ridge Drive, both of Yonkers, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,620
Int. Cl. F26b 21/06
U.S. Cl. 34—46 4 Claims

A steamer-dryer and clothes rejuvenator for clothes comprises an enclosure for a blower-heater and a vaporizer which are operable to admit steam and a heated current of air to a cabinet. A control enclosure is also provided in the cabinet

housing controls which automatically control the operation of the heater-blower and the vaporizer. The steam from the

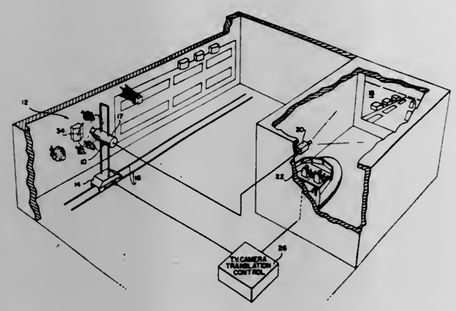


vaporizer steams out creases as garments hang in the cabinet while the heated current of air dries and sanitizes damp, limp, and musty clothing.

ERRATUM

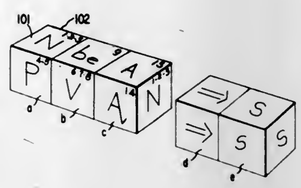
For Class 35—8 A see:
Patent No. 3,670,472

3,670,426
OPTICAL PROBE
Donald J. Horowitz, Santa Clara, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Aug. 17, 1970, Ser. No. 64,224
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 N **6 Claims**



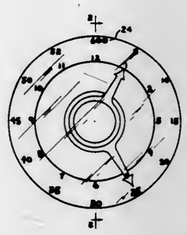
An optical probe having simplified and optically improved means for obtaining movement of the field of view attitude and perspective. High light efficiency, optical resolution and depth of focus are provided, together with a substantial reduction in the number of optical and mechanical elements as compared to conventional visual flight simulation systems. A television camera has its field of view through a minor portion of the field of view of an extremely wide angle lens, and relative movement between the lens and the television camera provides a viewing attitude and perspective change without requiring tilting of the television camera or lens.

3,670,427
LANGUAGE TEACHING APPARATUS AND METHOD
Beulah Harris Stolpen, 282 North Ave., Westport, Conn.
Continuation-in-part of Ser. No. 774,949, Nov. 12, 1968, abandoned. This application Feb. 17, 1971, Ser. No. 116,042
Int. Cl. G09b 1/34
U.S. Cl. 35—35 J **14 Claims**



Apparatus and method for teaching the system of language, its sounds and structure, including a plurality of structured, multi-faceted or facially incremented units, bearing on at least one surface or increment indicia representative of a pattern element comprising functional labels of the parts of speech, a morpheme element comprising semantic and syntactic factors of the language, a phonogram element comprising letters and combinations of letters, a phonemic alphabet and corresponding graphemes, each element being cross-referenced and interrelated to another element; and structured exercises, structured cards, structured games, and structured audio-devices cross-referenced to elements of the multifaceted units.

3,670,428
CLOCK SCALE DEMONSTRATOR
Maurice B. Hall, Boulder, Colo., assignor to Harold F. Bowling, Ft. Collins and Edward E. Gitlin, Longmont, Colo.
Filed Dec. 28, 1970, Ser. No. 101,506
Int. Cl. G09b 19/12
U.S. Cl. 35—39 **6 Claims**



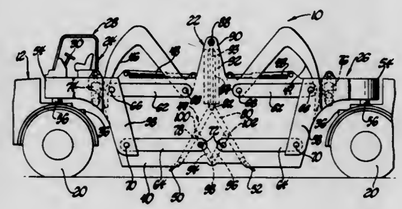
A clock scale demonstrator especially useful for teaching children to tell time. Separable hour and minute dials, each having a manually movable hand, enable the instructor to demonstrate and explain hour and minute readings separately. The two dials may be mounted in aligned superposed relationship with each other to demonstrate how the two individual readings are then combined with each other, one of the dials being constructed of a transparent material so that the scale and hand of the second dial can be observed when the two dials are superposed.

3,670,429
SOLE FOR FOOTWEAR HAVING MEANS TO VENTILATE THE FOOTWEAR INTERIOR
Raphael-Pierre Androsiglio, Parc "La Castorette"-Villa II Traverse de la Jarre 13, Marseille 9 eme, France
Filed June 25, 1970, Ser. No. 49,821
Claims priority, application France, June 25, 1969, 6922092
Int. Cl. A43b 7/06
U.S. Cl. 36—3 B **8 Claims**



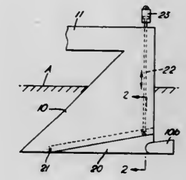
A sole for an article of footwear comprises a heel portion composed of resilient material and a toe portion. A cavity is provided in the resilient heel portion and air passages extend interiorly of the sole from the heel portion to the toe portion and open at the heel end into the cavity. A series of toe openings are provided in the toe portion of the sole communicating the interior toe area of the footwear article with the air passages and a series of heel openings are provided in the heel portion of the sole communicating the interior heel area of the footwear article with the air passages whereby alternate compression and expansion of the resilient heel portion occurring during normal use of the footwear article alternately forces air out and into the cavity via the toe and heel openings to accomplish ventilation of the footwear article.

3,670,430
SCRAPER
Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 18, 1970, Ser. No. 90,624
Int. Cl. E02f 5/00, 3/62
U.S. Cl. 37—127 **3 Claims**



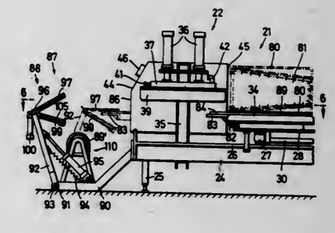
An earthmoving scraper having a front drive unit and a rear drive unit and a scraper bowl located therebetween. Both the front and rear drive units are steerable about vertical axes and the scraper bowl is open at opposite ends so that the scraper can be driven in either direction for loading the bowl. An ejector system is provided which serves to discharge material out of the bowl by gravity.

3,670,431
MOLE PLOUGH DEPTH CONTROL MECHANISM
Ainsley Neville Ede, Cambridge, England, assignor to Hudswell Yates Developments Limited, Leeds, Yorkshire, England
Continuation-in-part of Ser. No. 715,469, March 8, 1968, abandoned. This application Sept. 25, 1970, Ser. No. 75,720
Claims priority, application Great Britain, March 10, 1967, 11,287/67
Int. Cl. E02f 5/18
U.S. Cl. 37—193 **7 Claims**



A mole plough having a plough blade rigidly secured to a support pivotally connected to a tracked carriage about a transverse horizontal axis, the blade having a rigid forward portion and a trailing foot portion pivotally connected thereto and means for tilting the foot portion relative to the remainder of the blade whereby the alteration of the angle of the undersurface of the foot portion and the reaction of the foot portion against the ground below the blade effects a change in the operating depth of the blade.

3,670,432
PRESSING MACHINE FOR GARMENTS
Wilhelm Engelbart, Heilbronn, Germany, assignor to Rheem International Inc., New York, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,924
Claims priority, application Germany, Dec. 13, 1969, P 19 62 611.0
Int. Cl. D06f 71/08
U.S. Cl. 38—22 **3 Claims**

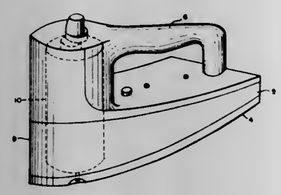


A pressing machine for garments in which at least two conjointly operated and aligned pressing forms are moveable between at least one pressing station and at least one mounting station so that while a garment is being pressed on one of the forms at the pressing station, an already pressed garment can be removed from the other form and a garment to be pressed mounted thereon at the mounting station.

3,670,433
AEROSOL CARTRIDGE FOR PRESSING IRONS

Peter D. Hardwick, Baboosic Lake Road, RFD #1, Amherst, N.H., and John J. Trombetta, 57 Plattsville Ave., Norwalk, Conn.

Filed Oct. 19, 1970, Ser. No. 81,668
Int. Cl. D06f 75/06
U.S. Cl. 38—77.3 1 Claim

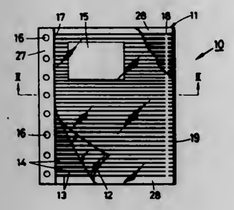


The aerosol cartridge is a cylindrical container adapted to be inserted into a recess in a pressing iron and having at its one end downwardly and outwardly directed tubes which communicate through passages in the pressing iron leading to the material being pressed, and having means at its other end for operating the aerosol container.

3,670,434
ADHESIVE DEVICE

Ryuji Shibata, and Seiichi Shibata, both of 45, 3-chome, Higashi, Takasi-cho, Higashi Sumiyoshi-ku,, Japan

Filed June 15, 1970, Ser. No. 46,285
Claims priority, application Japan, Oct. 8, 1969, 44/95463; Oct. 8, 1969, 44/95464; Oct. 9, 1969, 44/95886
Int. Cl. G09f 1/06
U.S. Cl. 40—104.18 17 Claims

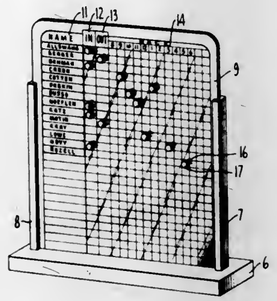


An adhesive sheet device for mounting photographs and other display items in albums, scrapbooks and the like, is provided including a relatively thick backing sheet and a relatively thin film of pressure-sensitive adhesive coating one surface of the backing sheet. A substantially uniplanar cover sheet of transparent material is disengageably adhered to the coated surface of the backing sheet for insertion of an item beneath the cover sheet for clear viewing of the item through the transparent cover sheet. The backing sheet is provided with means for eliminating the tendency of the sheet to buckle or warp when the cover sheet is repeatedly engaged with and disengaged from the backing sheet under pressure.

3,670,435
MAGNETIC IN AND OUT BOARD

William A. Steward, Somerset, Calif., assignor to Wm. A. Steward Company

Filed Oct. 27, 1970, Ser. No. 84,339
Int. Cl. G09f 19/02
U.S. Cl. 40—106.45 1 Claim

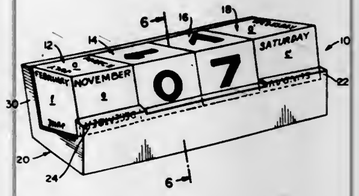


An "in and out" device is provided for indicating the whereabouts of the various personnel such as their availability on the premises or when they will return.

3,670,436
CUBE CALENDAR

Joel Weissman, Passaic, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.

Filed April 17, 1970, Ser. No. 29,407
Int. Cl. B42d 5/04
U.S. Cl. 40—107 2 Claims



A calendar consisting of a plurality of cubes supported by a holder having date, month and day indicia marked on the sides of the cubes. The holder partly masks the outwardly facing sides of the month marked cube and the day marked cube so that only a single month and a single day appear on the calendar face.

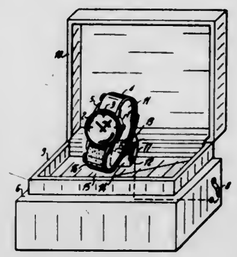
3,670,437
WATCH DISPLAY CASE

Andre Brien, Rue Germain, 3110, Fabreville, Ville de Laval, Quebec, Canada

Filed June 23, 1970, Ser. No. 49,060
Claims priority, application Switzerland, July 8, 1969, 10384/69
Int. Cl. G09f 19/00
U.S. Cl. 40—126 B 4 Claims

A display case for a wrist watch provided with dial illuminating means comprises a pedestal which houses means,

such as an electronic multivibrator circuit, for intermittently

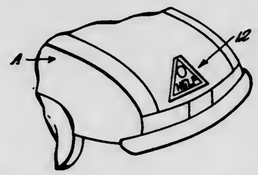


actuating the dial illuminating means. The watch can be pivotally supported in a case on the pedestal.

3,670,438
AUTO TRAVEL TROUBLE SIGN

John Robert Carroll, 332 Arlington; John Michael Kinzy, 107 Maple Drive, both of Satellite Beach, and Anthony Finazzo, 108 Snead Road, Indian Harbour Beach, all of Fla.

Filed June 29, 1970, Ser. No. 50,680
Int. Cl. G09f 7/00
U.S. Cl. 40—129 C 1 Claim

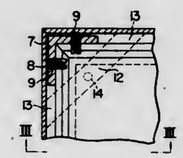


Sign means including a plastic sign plate emboss formed of thin sheet plastic and having raised luminescent lettering forming a word for communicating a message of distress or information. The sign means includes a permanent magnet strip fixed to the backside of the sign plate for temporary attachment thereof to the exterior surface of a wrecked or stalled automobile on a highway or thoroughfare.

3,670,439
DEVICE FOR FIXING ARTICLES IN FRAME STRUCTURES

Akira Shimizu, Hiratsuka, Japan, assignor to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 25, 1970, Ser. No. 66,709
Claims priority, application Japan, Aug. 26, 1969, 44/81425
Int. Cl. G09f 1/12
U.S. Cl. 40—156 7 Claims

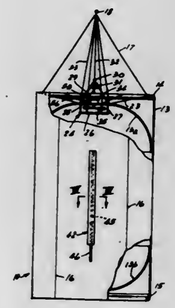


A number of parallel grooves are formed in the inner wall surfaces of the side members of a frame, the grooves being parallel to the side members and being, in cross sectional view, in a row perpendicular to the plane of the frame, and a cross member is inserted at its ends in these grooves at each frame corner in a gusset-like manner and supports pressing means such as a tightening screw or a spring which presses against an article such as a picture thereby to hold and fix the same in the frame.

3,670,440
INFLATABLE DISPLAY

Paul E. Yost, 1000 Tomar Lane, Sioux Falls, S. Dak.

Filed Feb. 25, 1970, Ser. No. 14,014
Int. Cl. G09f 21/12
U.S. Cl. 40—215 20 Claims



An inflatable display employs apparatus for continuously blowing air into a bag-like member on which may be carried a selected advertisement. The blower apparatus and the bag-like member may be connected to a frame structure at the upper end of the tube, the frame structure being adapted for connection to a tow-line of an airborne vehicle. The shape of the member forms a part of the advertisement, such as a can, a bottle, or character and in one embodiment includes an inner liner spaced from the ends of the tube so that the ends of the tube may retain the definite selected shape thereof and are prevented from taking on a ballooning appearance. The liner balloons within the tube but does not change the exterior shape thereof. In another embodiment the blower apparatus is connected to a manifold for distributing a flow of air to a plurality of side-by-side connected open-ended tubes which form a three-dimensional display. As a static display the inflated member is anchored to the ground to prevent movements which may be effected by the wind.

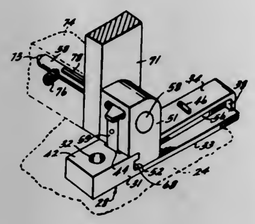
3,670,441
HINGED COVER CONSTRUCTION FOR A WATER CLOSET

George W. Blount, Middletown, Ohio, assignor to New Century Products, Inc., Middletown, Ohio

Continuation-in-part of Ser. No. 887,129, Dec. 22, 1969, abandoned. This application Jan. 22, 1971, Ser. No. 108,844
Int. Cl. A47k 13/12
U.S. Cl. 4—236 6 Claims

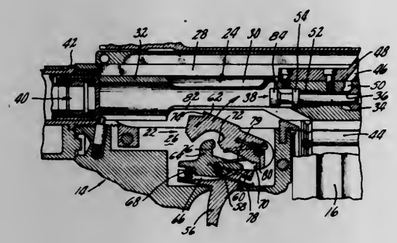
A hinged cover construction for a water closet in which stationary brackets mounted adjacent the bowl are provided with tracks extending between the tank and the bowl, hinge supports move on the tracks toward and away from the tank between a normal position adjacent the tank and an advanced position spaced from the tank and can be held in both positions. A lower cover and an upper cover are pivotally mounted on the hinge supports. A resilient cushion is mounted on the lower cover. The covers swing between a lowered position in which the bottom cover is supported on an upper edge of the

bowl and the upper cover rests on the cushion and a raised position in which the covers lean against the tank in stable position when the hinge supporting brackets are in advanced position. Slots in the tracks permit removal of the hinge sup-



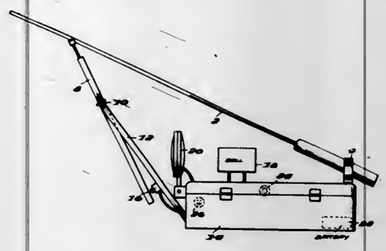
ports and covers from the bowl. Lock slide members are provided on the hinge supporting brackets for selective engagement with lock slots on the tracks to hold the hinge support in either the normal position or the advanced position.

3,670,442
SAFETY DEVICE FOR FIREARMS
Ralph C. Kennedy, Wapping; Paul A. La Violette, Haven, both of Conn., and Henry M. Stromberg, Ellicott City, Md., assignors to Colt Industries Operating Corp., New York, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,653
Int. Cl. F41c 17/08, 17/00
U.S. Cl. 42—70 F **7 Claims**



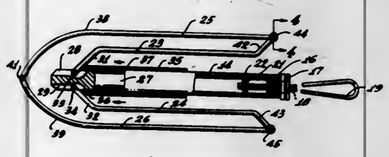
A firearm has a receiver incorporating a longitudinally reciprocatable bolt assembly which is movable between retracted or recoil and battery positions in the receiver. A trigger, including a sear, is pivotally mounted in the receiver. A hammer is pivotally mounted in the receiver in such a manner that movement of the bolt from the battery position to the recoil position urges the hammer into a cocked position. The hammer includes a first sear abutment to engage a sear on the trigger, a second sear abutment and a bolt stop sear abutment. A disconnector is pivotally mounted on the trigger pin. A compression spring is interposed between the rearward extremities of the disconnector and the trigger to urge the forward portion of the disconnector into contact with the top surface of the trigger. The disconnector includes a hook sear abutment on an intermediate portion which is adapted to engage the second sear abutment on the hammer when the trigger is in a depressed position. Should the disconnector or hook sear be removed from the firearm, the bolt stop sear abutment on the hammer is adapted to engage the bolt assembly during movement from the recoil position to the battery position for preventing the conversion of the firearm into a machine gun.

3,670,443
ALARM HOLDER FOR FISHING RODS
Richard G. Federline, Thurmont, Md., assignor to Don Eugene Webb, Thurmont, Md., a part interest
Filed Nov. 2, 1970, Ser. No. 86,157
Int. Cl. A01k 97/12
U.S. Cl. 43—17 **5 Claims**



An arm extending upwardly at an acute angle from the end wall of a tackle box has pivoted on it, with slight frictional engagement, a bar which extends on both sides of the pivot. The hinged top of the box carries at its end remote from the arm a clamp for holding the butt of the rod. The bar normally occupies a position at a slight angle to the angle of the support, and at its upper end has a fork which is adapted to engage the stem of a fishing rod. Opposite the lower end of the bar, and carried by the support, is a microswitch or the like which when pressed closes an electrical circuit. Closing of the electrical circuit, which occurs when a fish has hooked onto the line, rings a bell and simultaneously lights a light.

3,670,444
FOLDING HAND TROUT NET
Frank L. Dieterich, Los Angeles, Calif., assignor to James A. Barnett, Los Angeles, Calif., a part interest
Filed July 13, 1970, Ser. No. 54,375
Int. Cl. A01k 77/00
U.S. Cl. 43—12 **13 Claims**

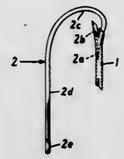


A folding hand fish landing net, including a handle and frame arms, pivotedly connected together and to the handle so as to be foldable at opposite sides of the handle into a compact unit about which the bottom of the net may be wrapped for easy carrying and storage. The frame arms open out into a frame loop to which the top of the net is attached. The handle is provided with a spring-biased, manually retractable locking sleeve on its forward end, and the frame arms pivoted to the handle are disposed in slots in the forward end thereof when the frame is extended, the sleeve being automatically moved by its spring past the arm pivots into locking position.

3,670,445
FISH HOOK GUARD
George Frederick Borger, 308 W. 49th St., New York, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,939
Int. Cl. A01k 97/06
U.S. Cl. 43—42.4 **8 Claims**

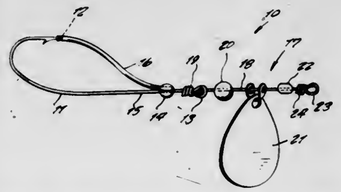
A guard for a barbed fish hook comprises a length of clear vinyl tubing having an internal diameter slightly less than the

maximum cross sectional dimension of the hook at the point of the barb. The ends of the tubing are cut off at an angle of



about 35° and slits are provided in opposite sides of the end portion midway between the high and low parts of the inclined end surface.

3,670,446
WEEDLESS HOOK AND LURE
Daniel B. Wheeler, 271 Remsen Ave., New Brunswick, N.J.
Filed April 7, 1970, Ser. No. 26,310
Int. Cl. A01k 85/00
U.S. Cl. 43—42.19 **6 Claims**



An improved fishing tackle comprising a weedless hook incorporating a flexible guard with braided filament core and an outer skin or coating of plastic, having an end thereof receivable over a hook tip and a lure comprising a weedless spinner, the spinner being fixed whereby a fish may not be able to set off the weed guard thus slipping the end thereof off the hook tip.

3,670,447
NON-SNAGGING FISHING DEVICE
Michael J. Wohead, R. R. 2, Box 12, Naperville, Ill.
Filed May 18, 1970, Ser. No. 38,314
Int. Cl. A01k 95/00
U.S. Cl. 43—43.14 **5 Claims**



A non-snagging fishing device for use as a sinker for a fishing line characterized by an elongated tubular body having a flotation portion adjacent one end and the weight concentrated adjacent the other end so that it assumes a substantially upright position in the water. The device is preferably provided with a chamber adjacent the weighted end to receive additional weight to increase the weight of the device. In one embodiment, the body portion is provided by a pair of plastic tubular sections interconnected by a coupling device to enable breakdown for storage and transportation.

3,670,448
FISH HOOK LOCATOR-EXTRACTOR
Thomas R. Wehmeyer, 639 10th Ave., New York, N.Y.
Filed Feb. 17, 1971, Ser. No. 116,062
Int. Cl. A01k 97/00
U.S. Cl. 43—53.5 **10 Claims**



A fish hook locator-extractor for locating and extracting a fish hook that has been swallowed by a fish comprises an elongated shank having a rounded pear-shaped handle at one end. The opposite end portion of the shank is hollow and terminates in a plurality of longitudinally extending, circumferentially spaced rounded projections separated by sharp V-shaped recesses. A longitudinal slot opens into said hollow in alignment with one of said recesses and a groove extends longitudinally along the shank from the slot to and over the end of the handle. A removable cross bar extends through a transverse bore in the handle portion.

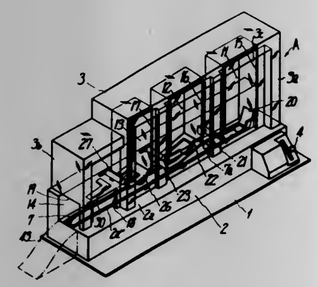
3,670,449
CONSTRUCTION ELEMENT TOY
Jack L. Lemkin, Cincinnati, Ohio; Gerard K. Leistikow, Hermosa Beach, Calif.; Russell C. Edmisson, Manhattan Beach, Calif., and John T. Benson, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed March 4, 1971, Ser. No. 121,053
Int. Cl. A63h 33/04
U.S. Cl. 46—23 **12 Claims**



Toy construction elements including a cone-shaped element and block-shaped element that can be readily joined into in-

teresting shapes. Both the narrow and wide ends of the cone-shaped element have projections, and have recesses for receiving projections, the recesses at the wide end being formed by a pair of concentric flanges. The block-shaped element is formed from a substantially flat member divided by living hinges into six face portions that can be folded into a block. Each free edge of a face portion has an inwardly-extending rib and a stepped recess so that when the pair of ribs of adjacent edges are received in corresponding recesses the face elements are locked together.

3,670,450
TOY ASSEMBLY PLANT FOR VEHICLE
Teruo Morosawa, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,649
Claims priority, application Japan, Dec. 26, 1969, 44/656
Int. Cl. A63h *33/30*
U.S. Cl. 46—40 **9 Claims**



A toy comprising, in combination, an assembly plant and elements so constructed as to be assembled into a vehicle in superimposed relationship by the assembly plant. The assembly plant is equipped with a motor-driven conveyor for conveying the elements to the delivery side thereof and also with devices capable of automatically assembling the elements into a vehicle in co-operation with the moving conveyor in the course of conveyance of the elements.

3,670,451
ADJUSTABLE HAIR DOLL
Sydney L. Groves; Frank J. Kuchta, both of Redondo Beach; J. Stephen Lewis, Pacific Palisades; Donald J. Maurer, Torrance; Richard L. May, Manhattan Beach; John W. Ryan, Los Angeles, and Colin Vowles, Santa Monica, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 9, 1970, Ser. No. 9,708
Int. Cl. A63h *11/00*
U.S. Cl. 46—135 **18 Claims**

A fashion doll with a fall-type hairpiece which can be adjusted in length without the necessity for knobs, buttons, or the like on the outside of the doll. The apparatus includes a string having an inner end wound on a wheel within the doll and an outer end tied to an end of the hairpiece which is within the doll. A spring urges the wheel to rotate in a direction to shorten the apparent length of the hairpiece. The wheel has several recesses spaced about its axis of rotation, and a ball is normally disposed partially within a recess on the wheel and another recess on a wheel-supporting frame, to lock the position of the wheel when the doll is up-right. However, turning of the doll to a face down position causes the ball to fall completely into the frame recess, to release the wheel so it can retract the hairpiece into the head as far as it is allowed to retract by a child who holds the outer end of the hairpiece. The wheel which winds up the string is located in the chest of



the doll, and the string extends downwardly therefrom, around a second wheel in the abdomen portion of the doll and upwardly to the hairpiece, to enable a long hairpiece to be received in a small doll without tangling.

3,670,452
TURKEY CALL
William A. Turner, 205 Sycamore Road, Franklin, Va.
Filed March 19, 1971, Ser. No. 126,047
Int. Cl. A63h *5/00*
U.S. Cl. 46—178 **1 Claim**

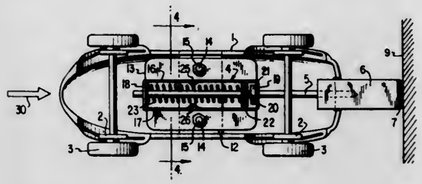


A turkey call including a tubular stem element formed of hard plastic and having a rounded end as well as including a hard plastic bell element integrally interconnected with the other end of the stem element; the hollow interiors of the stem element and the bell element of the call being in communication. A reinforcing shoulder element is externally integrally provided at the point of connection of the stem and bell elements of the turkey call.

3,670,453
TOY AND DELAYED RELEASE PROPELLING MECHANISM THEREFORE
Enrique A. Cosp, Jeju 438, Asuncion, Paraguay, South America
Filed Sept. 4, 1970, Ser. No. 69,812
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **4 Claims**

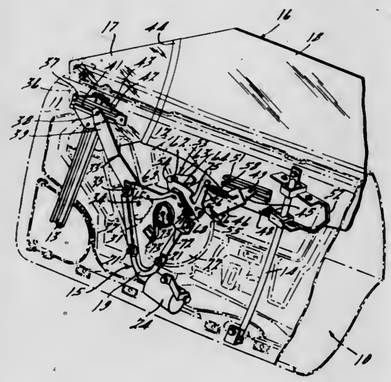
A toy having a spring driven propelling mechanism including an axially movable rod which is propelled to the rear of the vehicle by the spring and which, when the vehicle is placed

against a vertical barrier, propells the vehicle forward by reaction force. The delayed release mechanism includes a frame having parallel sides and end walls in which the rod is journaled for axial movement. The sides have indentations which extent inwardly toward, but do not contact, the rod and its surrounding spring. The rod carries an elastic member which is



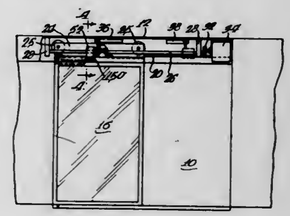
pushed forwardly of the indentations when the spring is compressed. The spring gradually forces the elastic member past the indentations and, when the elastic member is clear of the indentations, the spring is permitted to rapidly expand, suddenly causing the rod to move toward the barrier, causing the vehicle to rapidly move forward.

3,670,454
VERTICAL DROP VENT WINDOW SYSTEM
Harold C. Gebhard, Livonia, and William B. Schueren, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 3, 1971, Ser. No. 139,479
Int. Cl. E05f *5/10*
U.S. Cl. 49—103 **16 Claims**



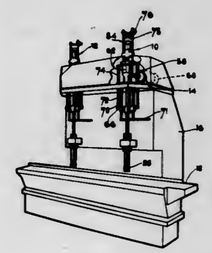
A window regulator mechanism for raising and lowering in a window opening in a vehicle body structure a window panel vertically divided into a ventilation section and a visibility section. The window regulator mechanism may be manually or power operated to function to raise or lower both panel sections in controlled sequence. With the window panel in raised condition, actuation of the window regulator mechanism results in the ventilation or smaller panel section being lowered into the body structure to provide a ventilation exhaust opening. During the travel of the ventilation section into the body structure, the visibility or larger panel section remains locked in a fully raised position by a latch mechanism. When the smaller panel section reaches a predetermined down position, the latch mechanism is released allowing the larger panel section to travel to a full down position. Upon movement of the window panel from its lowered position to a raised position, a reverse sequence occurs during which the larger panel section again first becomes locked in a fully raised position as the smaller panel section continues to move out of the body structure into its fully raised position.

3,670,455
SLIDING DOOR OPERATOR
Loren E. Slaybaugh, Arlington Heights, Ill., assignor to Republic Industries, Inc., Chicago, Ill.
Filed March 15, 1971, Ser. No. 124,239
Int. Cl. E05f *15/14*
U.S. Cl. 49—360 **19 Claims**



A sliding door operator incorporating a rotating shaft and means on the door to be moved including opposing rollers engaging the shaft with their axes parallel to the shaft when the door is stationary and with their axes displaced from their parallel position in either direction to effect a helical engagement of the rollers on the shaft for door movement in either direction.

3,670,456
HONING TOOL ARRANGEMENTS
Anthony James Harratt, Werrington, England, assignor to Hi-Ton Machine Tools Limited, Selly Oak, Birmingham, England
Filed Jan. 18, 1971, Ser. No. 107,034
Int. Cl. B24b *7/00*
U.S. Cl. 51—34 D **14 Claims**



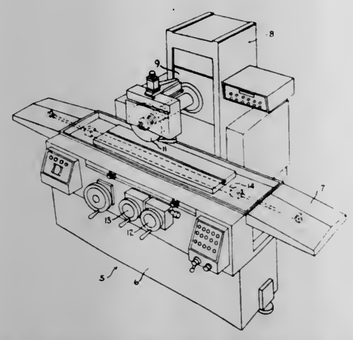
A honing tool arrangement which includes a tubular shaft to one end of which can be attached a honing tool and the tubular shaft and the honing tool are capable of being reciprocated and rotated, a control rod in the tubular shaft and associated with a piston and cylinder device to cause fast feed longitudinal movement of the control rod relatively to the tubular shaft to cause fast increase and decrease of the effective cutting diameter of the honing tool and disengageable screw means between the tubular shaft and the control rod and rotational brake means associated with the control rod and capable of "braking" the rotation of the control rod relative to the tubular shaft when the screw means is engaged to cause slow feed longitudinal movement of the control rod relative to the

tubular shaft and thus to cause a slow increase and decrease of the effective cutting diameter of the honing tool.

3,670,457
ADJUSTABLE TRAVERSE CONTROL FOR SURFACE GRINDER

Gordon Berkholcz, Bloomington, Minn., assignor to Continental Machines, Inc., Savage, Minn.

Filed April 21, 1970, Ser. No. 30,520
Int. Cl. B24b *47/06*
U.S. Cl. 51—92 R **7 Claims**

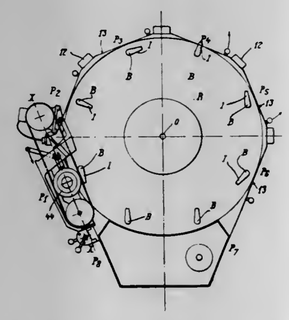


The stroke of reciprocation of a workpiece carrying table for a surface grinder is controlled by a pair of stationary control elements connected with the power drive for the table and adjustable in the directions of table motion, and a cooperating element fixed on the table. Proximity responsive control systems are disclosed. In one, each stationary element comprises a reed switch normally held closed by a magnet, and an iron vane carried by the table comes between the magnet and the reed switch at the end of the stroke.

3,670,458
PROGRAMMED CONTOURING MACHINE FOR MACHINING, BY TOOL HEADS, IRREGULARLY SHAPED WORKPIECES

Robert Faure, La Garde-Freinet, France, assignor to ACME Maschinenfabrik GmbH, New Isenburg, Rathenaustr, Germany

Filed Jan. 28, 1971, Ser. No. 110,495
Int. Cl. B24b *5/00, 29/00*
U.S. Cl. 51—135 R **16 Claims**

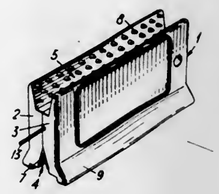


A turret table, indexed by an indexing mechanism, carries along its circumference a plurality of work piece spindles on which work pieces, to be shaped, may be mounted. Fixed beneath the turret are a plurality of cams, one group of cams for each work station, which are revolved synchronously. A cam follower on one cam acts to deflect track portions of a roughly circular, articulated endless track. Each spindle is linked to a runner, running on the track which, as it is deflected by the cam follower, transfers deflecting motion to the spindle to present the work piece in predetermined attitudes to the machine tool head. Additional cam means can be provided at each station to selectively and in accordance with the programmed rotation of the cam, twist, start or otherwise orient the work piece head, such as a grinding belt or the like, with respect to the work piece.

3,670,459
COMBINED ABRADING, SCRAPING AND POKING IMPLEMENT

Derek Edwin Welton, Sittingbourne, England, assignor to Waso Limited, Sittingbourne, Kent, England

Filed April 2, 1971, Ser. No. 130,614
Claims priority, application Great Britain, April 3, 1970, 16,008/70
Int. Cl. B24d *15/02*; **B60s** *1/04*
U.S. Cl. 51—181 R **5 Claims**



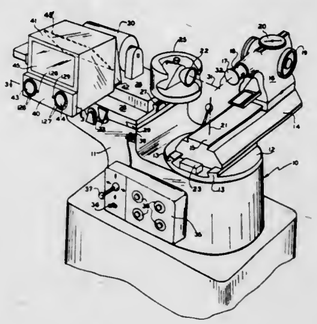
The invention concerns an aid for the user of a vehicle, the aid comprising a hand tool having an abrasive surfaced channel for treating a wiper blade and further having means suitable for cleaning dirt from a washer nozzle, the means comprising a wire carried by a slider movable between an operational position where an end portion of the wire protrudes from the tool and a stowed position within the confines of the tool and vice versa.

3,670,460
TOOL POSITIONING MEANS FOR LENS GRINDER

Andrew H. Oldfield, Waterloo, N.Y., and Arthur F. Trott, Richmond Hill, Ontario, Canada, assignors to Senoptics, Inc., Waterloo, N.Y.

Filed June 1, 1970, Ser. No. 42,125
Int. Cl. B24b *49/12*
U.S. Cl. 51—165.71 **9 Claims**

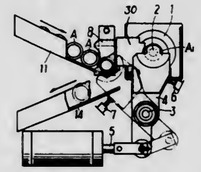
A toric lens grinding machine has means for swinging a lens blank past a cup-shaped grinding wheel and in contact therewith, the wheel being mounted on crossed slides. A computer device secured to the wheel carrying slide has a transparent portion overlying an upward beam of light fixed on the machine base. The computer has first dial means marked in diopters for setting an aiming tube so as to be movable along a straight line calculated to determine the base curve of the ground lens. Second dial means marked in diopters are provided for moving the aiming tube along the straight line a calculated distance for determining the cylinder curve of the ground lens. A valve connected to hydraulic motor means for moving the crossed slides has a single lever for moving both slides so that the wheel is moved in a single direction determined by the direction the lever is moved so that the aiming tube and beam of light may be quickly aligned to position the wheel in the machine for grinding the toric lens set on the dials. The aiming tube is illuminated and a mirror overlying the computer device projects images of the tube and light beam on a translucent screen at the side of the machine.



3,670,461
FEEDING DEVICE FOR MACHINE TOOLS

Takashi Hori, Nakayamadera, Japan, assignor to Osaka Seiki Works, Ltd., Osaka, Japan

Filed Sept. 18, 1970, Ser. No. 73,383
Int. Cl. B24b *47/20*
U.S. Cl. 51—215 HM **6 Claims**



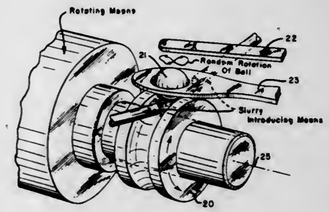
This invention is to provide a simple and accurate device for automatically feeding workpieces one by one in order in a systematic manner to an operating part on one of the various kinds of machine tools, such as, the grinding machine, the super-finishing machine, the honing machine, lapping machine and so forth, and for delivering the finished workpieces to a predetermined place.

3,670,462
LAPPING OF BALL BEARING RACEWAY

John F. Robinson, Newport Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 746,575, July 22, 1968, abandoned. This application Sept. 2, 1970, Ser. No. 69,096
Int. Cl. B24b *1/00*
U.S. Cl. 51—291 **4 Claims**

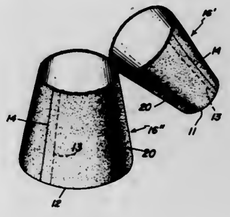
A method and apparatus for randomly lapping a ball bearing race and removing the deviations from a smooth cross race curvature wherein the bearing race is rotated about its nominal center, a conforming ball in a slurry of fine abrasives is rotated in a highly random manner in the race thus transferring the uniform radius and finish of the ball to the bearing race surface.



3,670,463
COATED ABRASIVE CONES

Warren E. Christian, Troy, N.Y., assignor to Norton Company, Troy, N.Y.

Filed March 8, 1971, Ser. No. 121,918
Int. Cl. B24d *17/00, 11/00*
U.S. Cl. 51—394 **7 Claims**

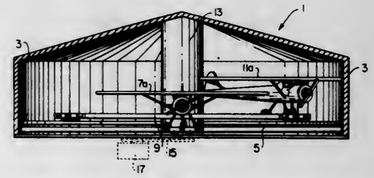


A flexible abrasive tool having a conical shape is provided with tear means whereby the tool can be separated, if desired, into two or more abrasive tools of the same conical shape but of lesser desired vertical height.

3,670,464
AIRCRAFT HANGARS

Robert C. Cutter, Box 1074, Glenwood Springs, Colo.

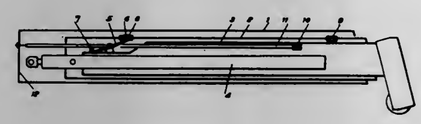
Filed May 6, 1970, Ser. No. 35,067
Int. Cl. E04h *6/16*
U.S. Cl. 52—30 **19 Claims**



A circular hangar for aircraft with at least two decks having a central rotating support pillar supporting the decks for rotation. The decks are support tracks extending radially from the pillar, with the tracks for adjoining decks close together, but staggered vertically an amount sufficient for the wings of air-

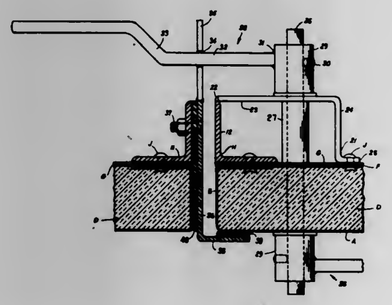
craft on the decks to clear. A clustered assembly includes two of the hangars with a single elevator positioned between them so as to serve both. The hangars closely pack the aircraft, providing increased and efficient land use without undue height of the hangars.

3,670,465
TELESCOPIC JIBS
Bernard J. Chese, Montceau-les-Mines, France, assignor to Potain Poclain Materiel, Saone-et-Loire, France
Filed April 21, 1970, Ser. No. 30,523
Claims priority, application France, April 21, 1969, 6912472
Int. Cl. E04h 12/34
U.S. Cl. 52—115 4 Claims



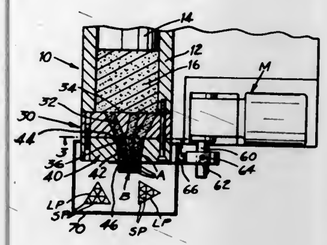
This invention relates to a locking device for a telescopic jib constituted by at least three sections and by a motive member connected between the first and second sections, and comprising at least one bolt capable of integrating the second and third sections in their relative end positions, wherein this bolt is arranged on the rear end of the third section and may be selectively inserted into at least three catches, said catches being respectively unitary with the rear end of the second section, with an element unitary with the first section and with the front end of the second section, whilst the second catch is arranged near the front end of the first section.

3,670,466
INSULATED PANEL
Earl D. Lynch, Greenville, S.C., assignor to Metal Products Corporation, Greenville, S.C.
Filed Aug. 3, 1970, Ser. No. 60,665
Int. Cl. E04b 1/76
U.S. Cl. 52—204 2 Claims



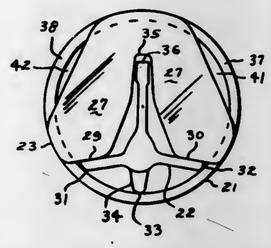
An insulated panel for use in fabricating building structures wherein fastening strips are utilized in combination with rivets to create a panel that is rigid and has no metal to metal contact between a metallic inner wall and a metallic outer wall.

3,670,467
METHOD AND APPARATUS FOR MANUFACTURING TUMBLING MEDIA
Robert H. Walker, 72 Tory Fort Lane, Worcester, Mass.
Division of Ser. No. 701,310, Jan. 29, 1968, Pat. No. 3,568,251. This application April 27, 1970, Ser. No. 32,201
Int. Cl. C08g 51/12; B24d 3/00
U.S. Cl. 51—298 5 Claims



Extruding a plastic abrasive mix through a multi-hole die adapted to combine emerging strands of the mix into a single strand whereby the strands move at the same linear rate. The single strand is cut into large pellets of uniform length, after which they are divided into smaller pellets corresponding to the original number, size, and shape of each of the combined strands and cured.

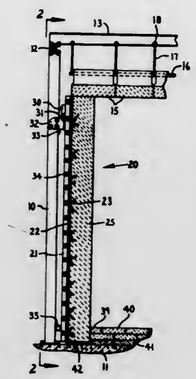
3,670,468
WEDGE AND SUPPORT FOR A TEMPORARY FENCE
Hubert Cordell, Sr., 946 Fife Ave., Wilmington, Ohio
Filed Oct. 19, 1970, Ser. No. 81,944
Int. Cl. E02d 27/42
U.S. Cl. 52—298 3 Claims



A removable wedge for inserting in the end of a pipe in engaging relationship with a removable conventional "T" fence post secures and aligns the post in the pipe.

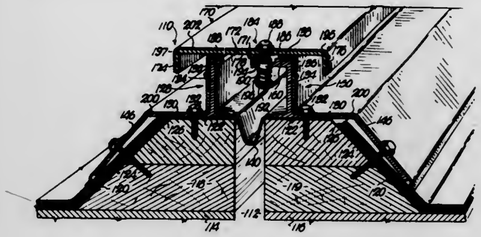
3,670,469
HANGING WALLS FOR FURNACE
Allen J. Jones, Fall Creek, Oreg., assignor to Michel Lumber Company, Lake Oswego, Oreg.
Filed July 20, 1970, Ser. No. 56,447
Int. Cl. E04c 1/40; E04b 1/94
U.S. Cl. 52—285 2 Claims

Wall panels are made of refractory material precast on metal frames. Hooks on the backs of the panels at their upper ends suspend the panels from rails in an exterior steel supporting frame. All of the vertical expansion of the panels from the heat of the furnace occurs in a downward direction without disturbing the roof of the furnace. The lower ends of the wall panels are free to expand and contract vertically alongside the



edges of the furnace floor. All metal parts are maintained relatively cool by exposure to atmosphere on the outside of the furnace.

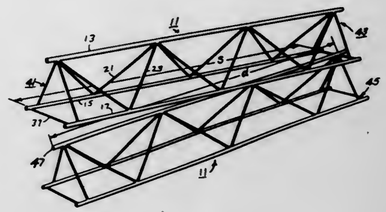
3,670,470
ROOF JOINT COVER ASSEMBLY
Wessel W. Thom, Wichita, Kans., assignor to Architectural Art Mfg., Inc., Wichita, Kans.
Filed Dec. 18, 1970, Ser. No. 99,363
Int. Cl. E04d 3/38; E04f 15/14
U.S. Cl. 52—395 15 Claims



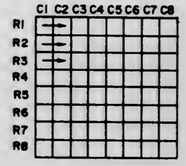
An expansion joint cover for effectively sealing the joint between two shiftable roof sections while permitting the natural expansion and contraction of the latter which employs a cover plate resiliently mounted on one of a pair of support members on opposite sides of the joint with a bolt and coil spring therearound so as to bias the cover into a sealing position on both supports, the bolt and spring being positioned proximal to the joint between the two sections and providing a balanced sealing action on the respective supports.

3,670,471
SECTIONAL TOWER STRUCTURE
Van Z. Smith, Mineral Wells, Tex., assignor to All Products Company, Mineral Wells, Tex.
Continuation of Ser. No. 746,454, July 22, 1968, abandoned. This application May 12, 1970, Ser. No. 37,415
Int. Cl. E04h 12/10; E04b 1/343
U.S. Cl. 52—638 1 Claim

Readily transportable sectional tower structure of triangular transverse section, having three column members disposed in juxtaposed spaced relation, with brace systems permanently fixed between each of two of the column members and the other one, forming two sides of the section and constituting a V-trough-like configuration. Detachable brace members are provided to make up a brace system for a third side, when assembled. With detachable brace members removed, tower sections can be stacked in nested relation. End brace members extending transversely of the two columns on the third side of the section may be used and are disposed so as not to interfere with stacking of the sections in nested relation.



3,670,472
AUDIO-VISUAL CONCENTRATION DRILL AND PUZZLE PROCESS
Daniel Clifford, 7631 Eastlake Terrace, Chicago, Ill.
Filed May 7, 1970, Ser. No. 35,355
Int. Cl. G09b 5/04
U.S. Cl. 35—8 A 14 Claims

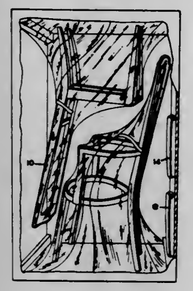


A method of inducing concentration of a listener being adaptable for learning or entertainment purposes, the method comprising a producing of a continuing display of audible and apprehensible matter translatable into numbers, letters, or other symbols, and superimposing thereon distracting sounds effective to particularly mask and obscure such matter, the listener being required to transcribe a translation of the matter into an array in a preselected manner which will indicate a level of concentration obtained by the listener.

3,670,473
METHOD OF PACKING CHAIR SEATS
Paul D. Bobb, High Point, N.C., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Dec. 30, 1970, Ser. No. 102,600
Int. Cl. B65b 5/08
U.S. Cl. 53—37 2 Claims

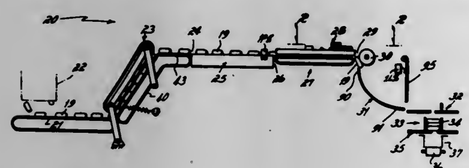
A chair pack is provided for storage of chairs and their protection during shipping. Initially, chair seats are not stored with the chairs since the seats will come with a number of dif-

ferent fabrics for each chair design. A flap opening is provided in the chair pack to permit the insertion of the chair seat into



the chair pack just prior to shipment of the unit to the consumer.

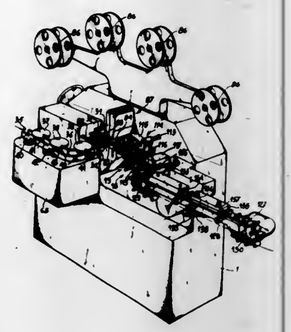
3,670,474
BAG PACKER
John W. Vleson, and William A. Baker, both of Cincinnati, Ohio, assignors to R. A. Jones & Co., Inc., Covington, Ky.
Continuation-in-part of Ser. No. 808,831, March 20, 1969, abandoned. This application March 3, 1971, Ser. No. 120,518
Int. Cl. B65b *57/02, 57/10*
U.S. Cl. 53—55 9 Claims



A bag packing apparatus is capable of varying the number and configuration of bags packed into a case. The packer is three-dimensionally variable so that it can be s et up to pack combinations of a variable number of layers of bags, a variable number of rows of bags in each layer or a variable number of bags in each row. A control circuit is variably switched to a desired condition to select the number of layers and the number of rows in each layer and a channelizer, movable guides and check and release units are adjusted to accommodate a desired number of bags in each row. Electronic variable timers are provided in the control circuit to time the operation of the various movable elements of the apparatus and may be adjusted to attain optimum performance. Detecting devices are utilized to sense the presence of the bags and the cases in their various positions and are connected so as to prevent malfunctions in the event that bags or cases are not in their predetermined positions at the proper time or in the event that the bags back-up beyond a predetermined point.

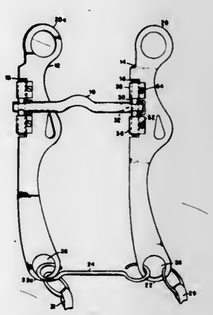
3,670,475
MACHINE FOR FORMING AND WRAPPING UP INDIVIDUAL ARTICLES SUCH AS CANDIES
Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli, Bologna, Italy
Filed Jan. 13, 1970, Ser. No. 2,640
Claims priority, application Italy, Jan. 15, 1969, 1509 A/69
Int. Cl. B65b *11/32, 11/42*
U.S. Cl. 53—234 2 Claims

An intermittently rotating radial section wheel transfers articles along a guideway from a first stop station to a second stop station. Lengths of wrapping material are successively and intermittently fed transversely of said guideway. At the second stop station an intermittently rotating radial pliers of a wrapping wheel bends the wrapping material in U-shape about



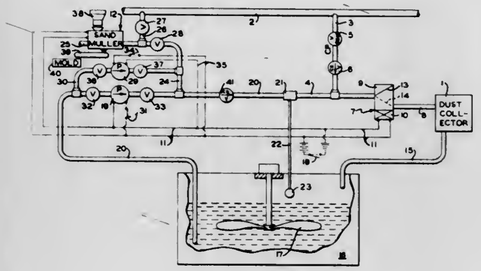
an article. During movement to an outlet station, the wrappings are folded over the article by wrapping members. Different types of wrapping can be carried out with different wrapping members.

3,670,476
BRIDLE BIT HAVING IMPROVED MOUTHPIECE MOUNTING
James W. Parry, 373 Dominion Circle, Concord, Tenn.
Filed Dec. 18, 1970, Ser. No. 99,538
Int. Cl. B68b *01/06*
U.S. Cl. 54—8 3 Claims



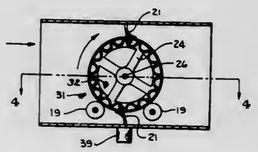
Improved mouthpiece mounting for a bridle bit including flat, elongated cheek pieces adapted to lie along the opposite cheeks of a horse or like animal and having a mouthpiece disposed transversely therebetween. A pin on each end of the mouthpiece is received within a T-shaped opening on each cheek piece, and rigid U-shaped clips engage the pins within these openings and connect opposite ends of the mouthpiece to the cheek pieces thereby permitting interchange of mouthpieces in the bridle bit. The clips maintain the pins in general alignment with the longitudinal axis of each cheek piece and also permit partial rotation of each cheek piece about the longitudinal axis of each pin. Means are provided for releasably joining the rigid clips to the cheek pieces.

3,670,477
SLUDGE RETRIEVAL APPARATUS FOR AIR POLLUTION CONTROL SYSTEMS
Jerry A. Carbo, Irwin, and Dennis F. Grady, Pittsburgh, both of Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed May 7, 1970, Ser. No. 35,325
Int. Cl. B01d *46/04, 23/00*
U.S. Cl. 55—227 6 Claims



Apparatus for removing pollutants from pollutant-laden water discharged from a water type dust collector device, such polluted water being pumped from a collecting tank, where the pollutants are held in solution in the water by a mixer, to a water-using device, such as a foundry sand muller, which does not require pollution-free water and which, by its nature of operation, that is, when the pollutant-laden water is passed through the sand, effects removal of pollutants from the water thus discharging the water in a cleaner state than when it entered the muller.

3,670,478
SELF-CLEANING AIR FILTER
Clarke T. Welsh, and Billy M. Brumett, both of 611 Erie Ave., Logansport, Ind.
Continuation of Ser. No. 713,108, March 14, 1968, abandoned. This application June 24, 1970, Ser. No. 56,043
Int. Cl. B01d *29/02*
U.S. Cl. 55—242 7 Claims



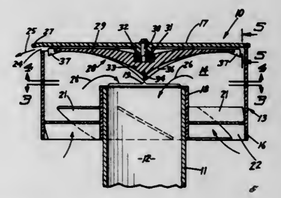
An air duct section with a cylindrical drum of washable filter material therein cradled on rollers and rotatable by a drive motor, but normally at rest. Upper and lower seal brushes are mounted to the duct and engage the drum, and water spray nozzles are provided inside and outside the drum, with timer controls on the motor and supply to the spray nozzles for rotating and spraying the drum at selected intervals, to wash accumulated deposits from the filter to a drain.

3,670,479
MOMENTUM SLOT CENTRIFUGAL TYPE SEPARATOR
Lee H. Tomlinson, Schenectady, N.Y., assignor to General Electric Company
Continuation of Ser. No. 827,338, May 23, 1969, abandoned, and a continuation-in-part of Ser. No. 627,107, March 30, 1967, abandoned. This application Dec. 14, 1970, Ser. No. 98,098
Int. Cl. B01d *45/12*
U.S. Cl. 55—416 3 Claims



The main passageway has an annular extraction passageway in the wall thereof. The upstream surface of the annular passageway is contoured so that any fluid entering the annular passageway continues with its momentum unaltered to the exit end thereof. Such a surface is formed by the revolution about the axis of the main passageway of a straight line which is coincident in direction with the momentum of an element of fluid as it enters the annular passageway.

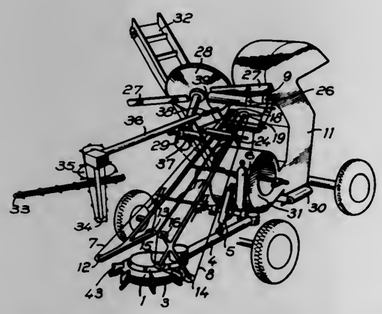
3,670,480
CLEANER
Ross K. Petersen, 3116 Girard Avenue South, Minneapolis, Minn.
Filed July 30, 1970, Ser. No. 59,445
Int. Cl. B01d *45/12*
U.S. Cl. 55—430 14 Claims



An apparatus for separating particulates, as dust, dirt, sand, snow and the like, from air being directed to an air cleaner of an internal combustion engine. The apparatus has a cylindrical housing surrounding a separation chamber. Located within the housing is a sleeve having a central outlet passage for carrying cleaned air from the chamber. A plurality of circumferentially spaced vanes attach the sleeve to the housing and provide an inlet passage open to the chamber for directing the air and particulates into the chamber. An impeller rotatably mounted on the top wall of the chamber has a plurality of circumferentially spaced blades. The blades are located in a contiguous relationship with respect to a second opening in the housing. Movement of air through the chamber causes the disc to rotate, whereby the blades pump air and particulates

out of the second opening. The rotating impeller produces a positive pressure at the point of discharge of the second opening to insure a flow of air carrying the particulates through the discharge opening.

3,670,481
MACHINE FOR HARVESTING SUGAR CANE
Albert Gustave Minet, Bellevue, rue Bir-Hakem 77, Le Mee sur Seine, France
Filed Sept. 30, 1968, Ser. No. 763,825
Claims priority, application France, Oct. 12, 1967, 67124293
Int. Cl. A01d *41/08*
U.S. Cl. 56—10.4 10 Claims



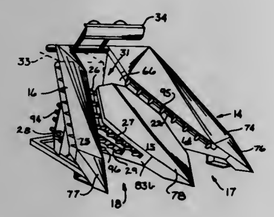
A machine to harvest sugar cane comprising a cutting disk to cut the standing cane. The disk is mounted on a convex shaped member gliding on the ground.

A chain assembly seizes the cut cane to lead it between two belts which introduce it in an airblast column.

At the entry of the airblast column, the cut cane is sliced sideways in the sense of movement of the cane.

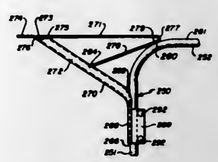
In the airblast column the cane is stripped and then loaded in a pick-up cart while the wastes are left on the ground.

3,670,482
TWO ROW, ROW CROP ATTACHMENT WITH LOWER CROP GATHERING MEANS AT THE CENTER RATHER THAN AT THE SIDES
Allison W. Blanchine, R.D. 03, Lititz, Pa., and Richard A. Pacher, 57 Melvin Drive, Leola, Pa.
Filed Aug. 17, 1970, Ser. No. 64,432
Int. Cl. A01d *45/02*
U.S. Cl. 56—98 5 Claims



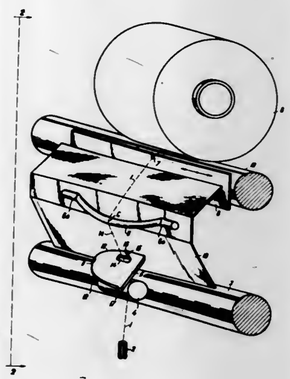
The top center crop gathering chains and lugs are lower at the rear than the respective top side crop gathering chains and lugs and the top fender of the center is lower than the top fenders of the sides to cause the cut stalk crops to tilt inwardly. The rear center plate is tilted downwardly to horizontally feed the inwardly tilted crops for a smoother operation of the attachment.

3,670,483
TALL CROP DIVIDER
Guy O. Tufts, Phoenix, Ariz.; Thomas J. Scarnato, Barrington, and Peter J. Peacock, Western Springs, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 9,019
Int. Cl. A01d *63/00*
U.S. Cl. 56—314 9 Claims



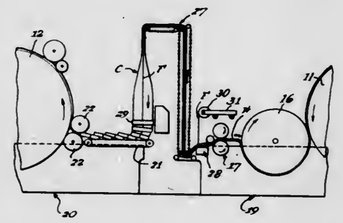
A divider for attachment to the transverse member of a pushover bar assembly of a forage harvesting machine. The divider is a triangular structure having one leg alignable with the cropward side of the machine and a diagonal leg which is angled toward the center of the harvester. The legs are interconnected at their forward ends and form a divider point. The divider is pivotally mounted on the crossbar and is adjustable about a horizontal axis to optimum position. The one leg is resilient and is flexed against the pushover bar assembly to hold the parts tight. The structure of the one leg and rimforcing brace prevents hairpinning of the crops.

3,670,484
MECHANISM FOR WITHDRAWING AND WINDING YARN IN SPINNING UNITS
Ladislav Brazda, deceased, late of Cerveny Kostelec (by Drahuska Brazdova, Dagmar Brazdova, Heirs); Miloslav Prochazka, Nachod; Vladimir Kuhn, Velke Svatonovice; Josef Ondian, Cerveny Kostelec, and Rudolf Benes, Trubejov U Nachoda, all of Czechoslovakia, assignors to Elitex, Zavody textilniho strojirenstvi, Liberec, Czechoslovakia
Filed Feb. 26, 1970, Ser. No. 14,531
Claims priority, application Czechoslovakia, March 7, 1969, 1676/69
Int. Cl. D01h *13/04, 15/00*
U.S. Cl. 57—34 R 6 Claims



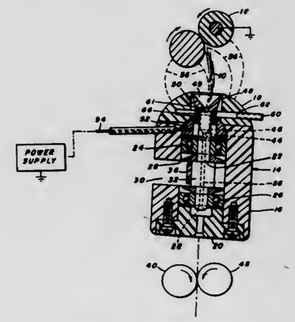
Mechanism for withdrawing and winding yarn from spinning units, said mechanism having a novel combination of elements including a self-threading yarn guide. The mechanism includes in that order a pair of rollers for withdrawing yarn from the outlet of the spinning unit, a self-threading guide, a tension compensator, and a means for winding a bobbin including a yarn traverse and laying mechanism. The configuration and placement of the self-threading guide are such that after breakage or depletion of the yarn, yarn delivery may be resumed with yarn traveling from the outlet of the spinning unit past the self-threading guide to the yarn traverse, without passing between the yarn withdrawing rollers. Continued yarn traverse and take-up by the bobbin automatically threads the yarn through the self-threading guide and introduces it between the yarn withdrawing rollers.

3,670,485
METHOD OF AND APPARATUS FOR FORMING METAL FIBER TEXTILE BLEND AND METAL FIBER TEXTILE PRODUCT
Perry H. Brown, Acton, and Harold H. Webber, Groton, both of Mass., assignors to Brunswick Corporation
Division of Ser. No. 643,983, June 6, 1967. This application Feb. 14, 1969, Ser. No. 799,426
Int. Cl. D01g *1/06, 13/00*
U.S. Cl. 57—50 15 Claims



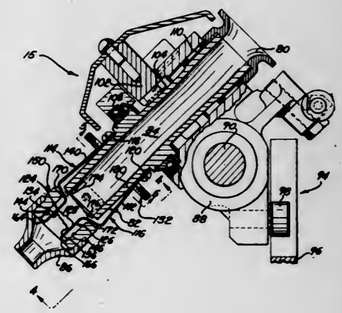
A method of and apparatus for blending conductive metal filament material with nonconductive textile material wherein the textile material is partially carded and the metal filament is delivered to the partially carded material and subsequently carded with said material to break the filament into short metal fibers and blend the metal fibers substantially uniformly with the conductive textile material.

3,670,486
ELECTROSTATIC SPINNING HEAD FUNNEL
George L. Murray, Jr., Milford, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Dec. 9, 1970, Ser. No. 96,402
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 2 Claims



An open end electrostatic spinning head apparatus for textile fibers having stationary housing with a throughbore therein; a hollow spindle means rotatably mounted in said housing, the spindle means further comprising a fiber-collecting funnel at the upper end of the spindle means whereby a narrow space bounded by the outer wall of said funnel and said housing throughbore is defined, this funnel having a dielectric shank portion attached to the upper end of the spindle means and electrode means mounted within said housing for electrostatically attracting charged fibers to said collecting funnel. A conductive sleeve means is mounted to and covers the outer surface of the shank portion whereby stray charged fibers entering said space reverse their charge and are repelled from said electrode means upon coming in contact with the conductive sleeve means.

3,670,487
TWISTER DEVICE
Myron Dragisich, Fairview Park, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 14, 1970, Ser. No. 71,974
Int. Cl. D01h *7/92*
U.S. Cl. 57—77.3 7 Claims

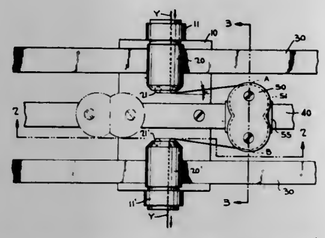


An improved twister device for imparting a twist to sliver as it is fed to a balling mechanism includes a pair of resilient fingers which are mounted on a rotatable body and define a nip through which the sliver passes. Rotation of the body and fingers twists the sliver. The spacing at the nip between end portions of the fingers is adjustable to enable sliver of different thicknesses to be frictionally engaged with a force such that the sliver will be twisted when the body is rotated and yet enable the sliver to readily pass through the nip. If the nip becomes obstructed, the spacing between the end portions of the fingers can be increased to enable the obstruction to pass through the nip.

3,670,488
IN-LINE FRICTION TWISTER AND METHOD OF TWISTING
Hans H. Richter, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.
Continuation-in-part of Ser. No. 25,559, April 3, 1970. This application Aug. 28, 1970, Ser. No. 67,896
Int. Cl. D01h *7/92*; D02g *1/04*
U.S. Cl. 57—77.4 15 Claims

A method and apparatus is disclosed for imparting false twist to textile yarn wherein a friction twister is employed to impart a plurality of turns of twist to a strand of yarn for each revolution of the friction twister. The invention is particularly suited to situations wherein the yarn strand is moving rapidly. The disclosed frictional twister comprises two axially aligned hollow spindles containing frictional engagement means therein. The two spindles are driven by moving belts that con-

tact the exterior circumferential surfaces of the spindles. Movable yarn guide means are provided to engage the yarn strand and assure adequate frictional engagement between the



yarn strand and the frictional engagement means after the spindles are threaded up. Another embodiment of the friction twister has the capacity to handle a plurality of yarn strands simultaneously.

3,670,489
TEXTILE YARN

Winston J. Jackson, Jr., and Marshall T. Watson, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

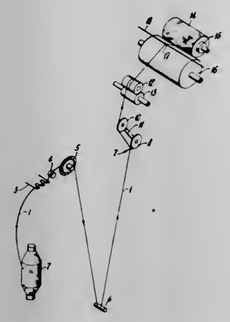
Filed July 28, 1969, Ser. No. 845,549
Int. Cl. D02j 3/02; C08g 17/015; D01d 7/04
U.S. Cl. 57—140 **23 Claims**

Textile yarn comprising oriented, crystalline fibers of poly(tetramethylene terephthalate) characterized by an improved combination of properties including a liveliness index of at least 0.25, and a toughness of at least 0.50 g./denier. Also disclosed is crimped staple textile fiber comprising oriented, crystalline, poly(tetramethylene terephthalate) characterized by a liveliness index of at least 0.25 and crush recovery greater than 50 percent.

3,670,490
PROCESSING OF FLAX DERIVED YARNS

Adrian W. Kneafsey, Ballymena, Northern Ireland, assignor to Ernest Scragg & Sons Limited

Filed May 8, 1970, Ser. No. 35,865
Claims priority, application Great Britain, May 8, 1969, 23,521/69
Int. Cl. D01h 7/92
U.S. Cl. 57—156 **9 Claims**

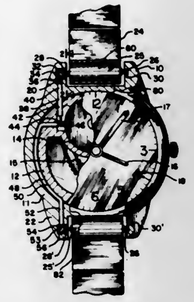


A method of processing flax derived yarns having a natural stiffness due to the presence of a resin bonding size in the yarn to make the yarn more suitable for production into a fabric. The yarn is given a false twist by passing it in frictional engagement with a linearly preceding portion of itself to physically work the yarn thereby breaking down the bonding size.

3,670,491
BATTERY-PINTLE ASSEMBLY FOR A WRIST WATCH

Milton E. Weschler, 47-27 Little Neck Parkway, Little Neck, N.Y.

Filed March 10, 1971, Ser. No. 122,732
Int. Cl. G04c 3/00
U.S. Cl. 58—23 BA **10 Claims**

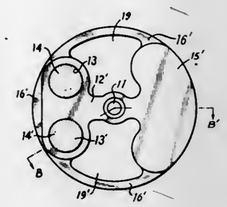


A battery-pintle assembly for connecting a wrist band to a wrist watch case containing an electrically actuatable timing mechanism, comprises a cylindrical battery engageable with one end of the watch band, with pintle pins extending outwardly of opposite ends of the battery for engagement with lugs of the watch case. The pintle pins can be permanent parts of the battery terminals or can be separate members. The pintle pins can be carried by a casing enclosing the battery or can be carried by a pintle tube removably disposed axially of the battery. The watch case has one or more lugs containing electrical connector means for electrically connecting pintle pins to the timing mechanism. The watch case can support two battery-pintle assemblies at opposite ends, with batteries arranged in a parallel electrical circuit. The wrist band can engage a battery-pintle assembly at either end or at both ends.

3,670,492
BALANCE WHEEL ASSEMBLY

Hirotoki Takamune, and Yoshifumi Mochizuki, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,654
Claims priority, application Japan, May 28, 1969, 44/49372; May 29, 1969, 44/50126
Int. Cl. G04b 17/00; G04c 3/04
U.S. Cl. 58—28 A **5 Claims**

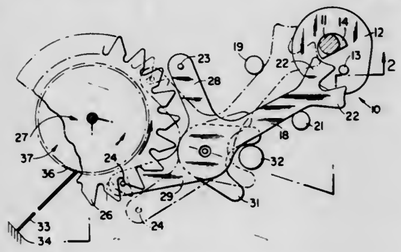


In an electronic timepiece the counter weights and magnets are secured to a balance wheel which is stamped from stock material having a uniform thickness throughout. The weight member for distributing the weight in the desired manner is conformed in part to the configuration of the balance wheel and secured directly thereto by adhesives or the like. The magnetic pieces are secured to the weight member and extend through perforations in the balance wheel per se. The perforations may be beveled or formed with a plurality of circumferential fingers to securely grip the magnetic member extending therethrough.

3,670,493
INDEXING MECHANISM FOR ELECTRIC/ELECTRONIC TIMEPIECES

Paul Wuthrich, Woodbury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed March 27, 1970, Ser. No. 23,145
Int. Cl. G04b 15/00; G04c 3/04
U.S. Cl. 58—116 **4 Claims**

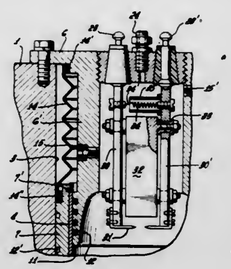


A horological instrument such as a watch includes an indexing mechanism or dial train drive for transmitting power from an oscillating balance wheel to an index wheel. The index wheel drives the gear train of a watch. The balance wheel oscillates a lever between two end positions and one or more pins mounted on the lever step the index wheel in a predetermined direction under the influence of a drag spring. Detenting of the index wheel is accomplished by the drag spring which engages the multi-toothed drag disk mounted on the index wheel.

3,670,494
METHOD AND MEANS OF CONVERTING ATOMIC ENERGY INTO UTILIZABLE KINETIC ENERGY

Josef Papp, San Pedro, Calif., assignor to Environetics, Inc., Gardena, Calif.

Filed Oct. 31, 1968, Ser. No. 772,077
Int. Cl. F01k 27/00; F03g 7/06
U.S. Cl. 60—23 **18 Claims**

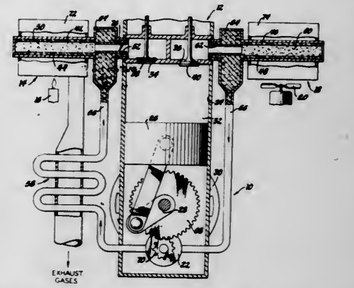


Method of utilizing potential energy of atoms and various forms of radiation (electrons, photons, positrons, gamma beta and alpha radiations, etc.) in a controlled power generating system; effective mixtures of chemical elements adapted for use in the method; the preparation of charges of ingredients for use in virtually gas-tight power generating devices; the activation and control of such charges and devices; structural requirements of power generating devices utilizing the methods and compositions.

3,670,495
CLOSED CYCLE VAPOR ENGINE

Charles B. Leffert, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 15, 1970, Ser. No. 55,037
Int. Cl. F03g 7/06
U.S. Cl. 60—25 **13 Claims**

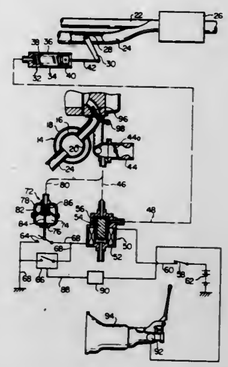


A closed cycle vapor engine has evaporator and condensor elements utilizing liquid carrying wick means arranged to provide surfaces for the evaporation and condensation of the engine working fluid and to transport said fluid in liquid form from the condensor to a condensate pump and from the condensate pump to the evaporator. Vapor passages connect the evaporator and condensor with the intake and exhaust openings of the expander, providing a closed system in which the evaporator and condensor operate essentially on the principle of a heat pipe.

3,670,496
EXHAUST GAS AFTER-BURNING SYSTEM

Yasuo Nakajima; Yoshimasa Hayashi, and Sin-ichi Nagumo, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

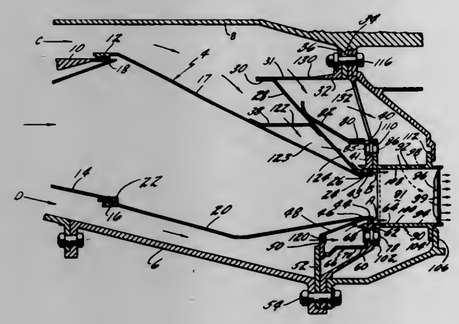
Filed July 27, 1970, Ser. No. 58,516
Claims priority, application Japan, July 28, 1969, 44/58980
Int. Cl. F02b 75/10
U.S. Cl. 60—288 **1 Claim**



An exhaust gas after-burning system for reduction vehicular air pollution without sacrificing engine operating efficiency, which system includes a reactor adapted to function at predetermined operating conditions of the engine in response

to variations in vehicle speed and intake manifold vacuum of the engine.

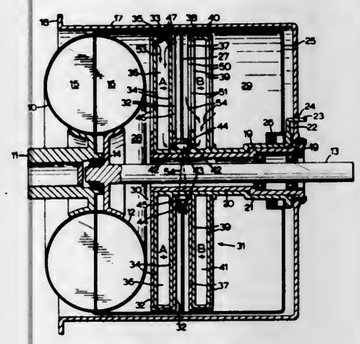
3,670,497
COMBUSTION CHAMBER SUPPORT
Donald E. Sheldon, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 2, 1970, Ser. No. 68,835
Int. Cl. F02c *7/20, 7/12*
U.S. Cl. 60—39.32 **9 Claims**



An annular combustion chamber having an inner and outer wall has its rear, downstream, end mounted to permit radial growth and meter cooling air to control the temperature at that location at engine operating conditions. The rear end of the outer wall is mounted to an outer casing of the engine so that it is fixed axially but permitted radial growth. An annular flange extends inwardly from the outer casing and is positioned so that at engine operating temperatures the rear end of the outer wall contacts the inner periphery of the flange. Slots are located in the inner periphery so that they meter cooling air therethrough to the inner surface of an outer shroud to which the outer ends of turbine vanes are attached. The rear end of the inner wall is mounted to an inner casing of the engine so that it is fixed axially but permitted radial growth. An annular flange extends outwardly from the inner casing and is positioned so that at engine operating temperatures the rear end of the inner wall contacts the outer periphery of the flange. Slots are located in the outer periphery so that they meter cooling air through between the outer surface of inner shrouds at which the inner ends of turbine vanes are attached. The inner and outer walls both have a slip joint connection along their length between the upstream and downstream ends.

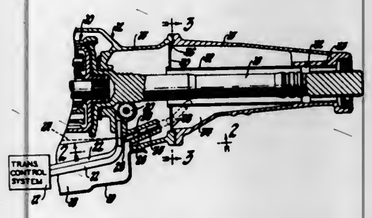
3,670,498
HYDRAULIC COUPLINGS
John E. Becker, Bowmanville, Ontario, Canada, assignor to Eclipse Consultants Limited, Oshawa, Ontario, Canada
Filed Feb. 16, 1971, Ser. No. 115,331
Claims priority, application Canada, Feb. 18, 1970, 075126
Int. Cl. F16d *31/06, 33/00*
U.S. Cl. 60—54 **5 Claims**

A hydraulic coupling is provided with a pick-up compartment directly connected with the working compartment and a reservoir compartment. The flow of liquid from the working compartment to the reservoir compartment and the quantities of liquid retained in the respective compartments are controlled by two simultaneously operated valve means in each compartment. Preferably, the valve means comprise pairs of



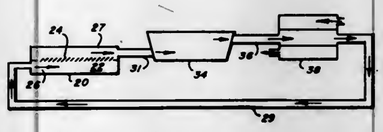
slotted valve plates movable in close face contact with one another.

3,670,499
VEHICULAR TRANSMISSION SUMP SYSTEM
Leon A. Tucholski, Belleville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed March 18, 1971, Ser. No. 125,698
Int. Cl. F16h *41/30*
U.S. Cl. 60—54 **5 Claims**



A vehicular transmission has an auxiliary sump provided by the transmission's case extension with a jet pump operated by transmission pressure maintaining a predetermined oil level in the transmission's main sump by delivering the excess oil to the auxiliary sump from which the oil drains to the main sump.

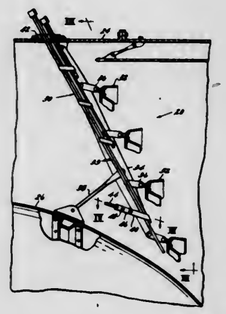
3,670,500
THERMODYNAMIC POWER SYSTEM AND METHODS
Arthur H. Schultz, 6003 Louis Drive, North Olmsted, Ohio
Filed June 22, 1970, Ser. No. 48,313
Int. Cl. F01b *31/00*
U.S. Cl. 60—57 R **6 Claims**



A thermodynamic power system, including in combination a membrane compressor comprising wall means which define an enclosure with a membrane or membranes in the enclosure

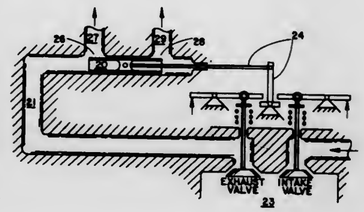
dividing the same into inlet and outlet sides. Conduit means connect the inlet side of the membrane compressor to a source of gas. Each membrane is constructed so as to permit the passage of gas molecules from the inlet side to the outlet side and prohibits the passage of gas molecules from the outlet side to the inlet side. Conduit means connect the outlet side of the membrane compressor to a work performing mechanism to drive the same. The disclosure also relates to the method of doing work in accordance with the terms of the invention. Methods of making permeable membranes, in particular membranes having unidirectional characteristics, are included.

3,670,501
GAS TURBINE ENGINE WITH IMPROVED AFTERBURNER
John K. Arand, Palos Verdes Peninsula, Calif., assignor to General Electric Company
Filed June 29, 1970, Ser. No. 50,415
Int. Cl. F02k *3/10*
U.S. Cl. 60—261 **3 Claims**



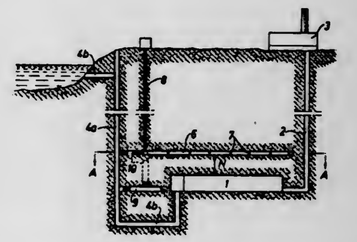
The disclosure shows an afterburner for a gas turbine engine comprising fuel injectors and concentric, annular, V-shaped gutters which function as flameholders. The fuel injectors are mounted in cantilever fashion from a casing and their inner ends are connected by links to a ring to damp vibrations.

3,670,502
ENGINE EXHAUST GAS SEPARATING DEVICES
Joseph C. Firey, 1554 N.E. 95th Street, Seattle, Wash.
Filed March 6, 1970, Ser. No. 17,180
Int. Cl. F02b *75/10;* **F01n** *3/08*
U.S. Cl. 60—324 **2 Claims**



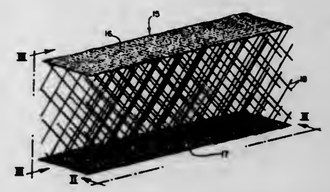
This invention provides means for separating the exhaust gas of an internal combustion engine into two streams, one a higher temperature stream relatively richer in oxides of nitrogen, the other a lower temperature stream relatively richer in unburned fuel components. This separation is made by mechanically actuated valves.

3,670,503
METHOD OF PREVENTING LEAKAGE DURING STORAGE OF A GAS OR A LIQUID IN A ROCK CHAMBER BY ARTIFICALLY SUPPLYING A GAS OR A LIQUID TO THE ROCK SURROUNDING THE ROCK CHAMBER
Ingvar Janelid, Forsetevagen 18, Djursholm, Sweden
Filed June 22, 1970, Ser. No. 48,176
Claims priority, application Sweden, June 30, 1969, 9297/69
Int. Cl. B65g *5/00;* **E21f** *5/14*
U.S. Cl. 61—.5 **5 Claims**



A pressurized gas or liquid in a rock chamber is prevented from leaking out through cracks in the rock if pressurized water is supplied to the rock so as to fill said cracks. The pressurized water shall be supplied to the rock also before and during the blasting of the rock chamber.

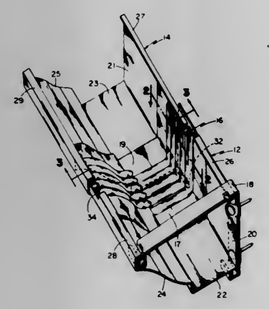
3,670,504
FABRIC CONTAINMENT CONSTRUCTIONS
John T. Hayes, Durham, and Robert G. Currier, Roxboro, both of N.C., assignors to Collins and Aikman Corporation, New York, N.Y.
Filed Feb. 5, 1968, Ser. No. 702,925
Int. Cl. E02b *3/04*
U.S. Cl. 61—3 **4 Claims**



A dual-wall fabric is provided, with integrally woven drop stitches connecting opposite walls thereof, the fabric being adapted to receive a filler material between walls thereof, the filler material being preferably cast therein, such as concrete, and the fabric walls being of desired materials and weaves to yield desired porosities. One or both of the walls may be constructed of a material having a specific gravity less than water, to facilitate floating of the same in water. Prior to filling the dual-wall fabric with concrete or the like, reinforcing rods may be interspersed between the connecting drop stitches. The dual-wall fabric, or a single-wall fabric may be anchored along beaches, canals and the like, into canopy-like configurations or structures, which structures may be filled with sand or other natural fill, the mound or sand bar thus formed being

then covered by a concrete-like material. In the case of a dual-wall fabric construction, concrete may be pumped between the fabric walls, to provide a concrete-like outer encasement for the sand bar or the like thus formed.

3,670,505
PLASTIC GUTTER EXPANSION JOINT CONSTRUCTION
Leonard Wheelock Weaver, Walpole, Mass., assignor to Bird & Son, Inc., East Walpole, Mass.
Filed Sept. 22, 1970, Ser. No. 74,384
Int. Cl. E02b 9/04; E04d 13/06
U.S. Cl. 61—14 **4 Claims**



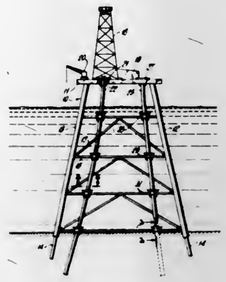
A plastic gutter expansion joint construction comprising a pair of mutually supported telescopic rigid plastic gutter sections having overlapping ends and a flexible plastic expansion bellows extending between said sections therewithin and having opposite end portions bonded to said sections to provide a watertight expansion joint across the telescoping end portions of said sections.

3,670,506
PROCESS FOR STABILIZING SOILS
Yves Gaudard, Lyon, France, assignor to Societe Rhodiaceta, Paris, France
Continuation-in-part of Ser. No. 888,812, Dec. 29, 1969, abandoned. This application May 17, 1971, Ser. No. 144,252
Claims priority, application France, Dec. 31, 1968, 6850894
Int. Cl. E02d 3/00
U.S. Cl. 61—35 **6 Claims**

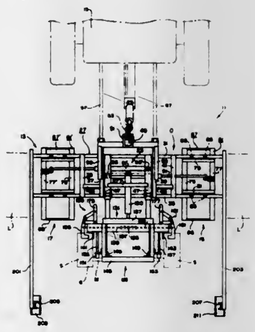
In stabilizing soil for foundations for buildings or roads, a non-woven or spunbonded fabric, preferably of continuous filaments and preferably of a polyester or polyolefine, is used as an anti-contaminant layer over cleared soil, below the preparation layers and coating layers if these are used. The spunbonded fabric is pervious to water but not to mud.

3,670,507
MARINE DRILLING STRUCTURE WITH CURVED DRILL CONDUCTOR
George E. Mott, Metairie, and Johnnie J. Ziober, Morgan City, both of La., assignors to Texaco Inc., New York, N.Y.
Filed Sept. 17, 1970, Ser. No. 72,911
Int. Cl. E02b 17/00; E21b 15/02
U.S. Cl. 61—46.5 **10 Claims**

The invention relates to a marine structure of the type normally anchored into the substratum of an offshore body of water. The structure includes a work deck which is supported beyond the water's surface to position drilling, processing and other equipment ancillary to a subsea well producing operation. The supporting faction includes a plurality of downwardly reaching support legs that anchor into the substratum by means of piles or other fastening means. The platform is further provided with horizontal bracing, which positions a series of conductor guide units substantially one above the other, whereby a cylindrical drill conductor can be driven from the working deck, through the respective guide units, to be deflected into a predetermined curvature.

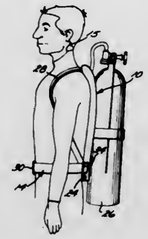


3,670,508
GATE PLACER FOR LEVEE
Louis C. Engler, Heber Springs, Ark.
Filed Nov. 16, 1970, Ser. No. 89,981
Int. Cl. E02b 7/20; E02f 5/16
U.S. Cl. 61—63 **14 Claims**



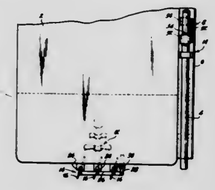
Apparatus adapted to be used with a tractor in conjunction with irrigation levees, for making an opening in the levee and subsequently placing a gate therein. The apparatus includes a pair of scoops movably mounted from a frame for transverse movement towards and away from each other. There is a device provided for urging the scoops downwardly into the dirt. Also, structure is provided for urging the scoops apart to spread the dirt to provide the opening in the levee. A gate handling device is provided for releasably holding a levee gate and for urging the gate into the opening in the levee formed by the scoops.

3,670,509
BUOYANCY ADJUSTMENT BACK PACK
William D. Walters, 2940 Andros Ave., Costa Mesa, Calif.
Filed Aug. 10, 1970, Ser. No. 62,450
Int. Cl. B63c 11/30
U.S. Cl. 61—69 **5 Claims**



A buoyancy adjustment back pack for use by divers. The back pack is capable of supporting a usual air tank or tanks but also includes a compartment containing a pelleted or fluent mass which can be partly jettisoned to adjust the buoyancy of the diver, or completely jettisoned in an emergency.

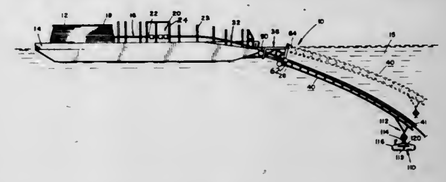
3,670,510
PROPELLER WASH DIVERSION APPARATUS FOR PIPE BARGE
Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.
Division of Ser. No. 587,288, Oct. 17, 1966, Pat. No. 3,533,244. This application Oct. 7, 1970, Ser. No. 78,882
Int. Cl. B63b 35/04; F16l 1/00
U.S. Cl. 61—72.1 **7 Claims**



In pipe lay barges where the pipeline enters the water off the rear of the barge proximate the propulsion apparatus for the barge, rudderlike vanes are provided rearwardly of the propellers to deflect the propeller wash laterally with respect to the pipeline and thus prevent the turbulence from the propellers from affecting the pipeline being laid.

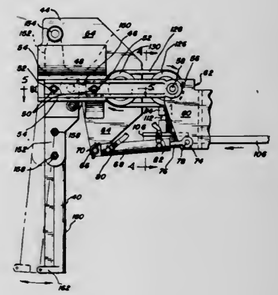
3,670,511
RIGID STINGER WITH ADJUSTABLE PIPELINE CURVATURE MEANS
Robert G. Gibson; John G. Mackin, Jr.; Paul K. Johnson, and Francis D. Koop, Jr., all of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.
Filed April 1, 1970, Ser. No. 24,580
Int. Cl. B63b 35/04; F16l 1/00
U.S. Cl. 61—72.3 **7 Claims**

A nonarticulated stinger is provided which is towed through a body of water at a predetermined depth. Vertical and lateral position control means maintain the trailing end of a pivotally mounted rigid stinger at predetermined depths below the surface of a body of water. The pipeline guided by the stinger can



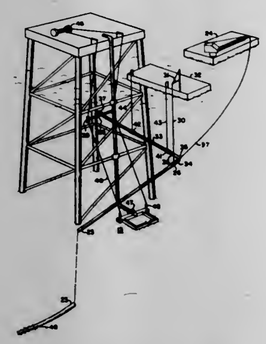
be made to assume various radii of curvature by adjusting the elevation of pipeline support rollers and/or by adjusting the elevation of the trailing end of the pivotable stinger.

3,670,512
SELF-PROPELLED CABLE BURYING APPARATUS
Robert L. Grazier, Wadsworth, and Kenneth F. Kudingo, Round Lake Beach, both of Ill., assignors to Service Dynamics Inc., Lake Bluff, Ill.
Filed March 12, 1971, Ser. No. 123,663
Int. Cl. E02f 5/02; A01b 3/64
U.S. Cl. 61—72.6 **13 Claims**



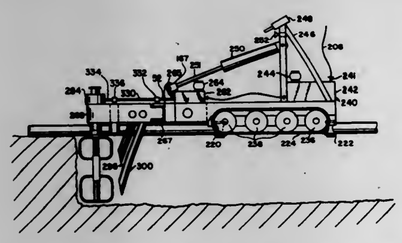
A cable burying apparatus is mounted to a self-propelled tractor which can be ridden by the operator. The cable burying function is achieved by a blade which oscillates in a vertical plane parallel to the front to rear axis of the tractor. The upper end of the blade is pivoted to the top of a housing and a connecting rod driven by an eccentric is connected between the ends of the blade so that rotation of the shaft which mounts the eccentric will oscillate the bottom end of the blade. The housing also carries the eccentric and the shaft which drives the eccentric. Power for the rotation of the shaft is taken from a prime mover that is used to drive the tractor and is coupled to the eccentric shaft by a belt and pulley system including a pulley which is connected to the eccentric shaft. The entire housing is pivotally mounted to the rear of the tractor and can be swung between positions that raise the blade upward away from the ground and that move the blade down into the ground. This can be done by hydraulic means under the control of the operator without leaving his seat and without regard to whether the tractor is moving or not. The blade may have a chute for leading wire or cable through the chute to the bottom of the blade from the top thereof, or it may have a connection at its bottom end to enable a cable or pipe to be connected thereto to be pulled through the ground. In either case there is a narrow slit trench cut by the oscillation of the blade and the cable or pipe is disposed in the bottom of the trench.

3,670,513
METHOD FOR SUBSURFACE FLOWLINE CONNECTION
Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company
Filed Oct. 2, 1970, Ser. No. 77,463
Int. Cl. F16l 1/00
U.S. Cl. 61—72.3 11 Claims



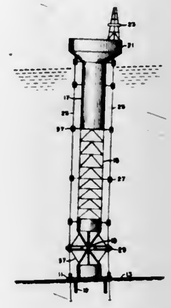
A method for constructing an underwater pipeline installation. One section of the pipeline is laid along a line which intersects the longitudinal axis of a second section of the pipeline or other conduit. This second section of the pipeline has a free end which terminates at a point spaced from the intersection of the longitudinal axes of the two sections. The subsurface distance and orientation between the free ends of the two sections is determined and a lateral extension is then secured to the free end of the first section. The lateral extension has a length and orientation such that it will span the subsurface distance and orientation between the two sections. The lateral extension with its attached pipeline section is then lowered and guided into mating relation with the other pipeline section. The lateral extension and the other pipeline section are then connected and the installation is complete. In another embodiment, the method is used to repair or replace a portion of a pipeline.

3,670,514
AUTOMATIC SUBMARINE TRENCHER
Michael P. Breston, and Ray D. Kellberg, both of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.
Filed Sept. 4, 1970, Ser. No. 69,566
Int. Cl. E02f 5/08, 16/1, 1/00
U.S. Cl. 61—72.4 21 Claims



An automatic trencher is provided for entrenching a pipeline in the bed of a body of water. The trencher is adapted to ride over the pipeline and includes one or more trenching tools which cut away the formation of the bed to form a single trench therein for receiving and burying the pipeline. Power and control signals are supplied by a flexible cable coupling the trencher with an accompanying overhead marine vessel. This power is used to move the trenching tools, to advance the trencher along the path of the pipeline as the trench is being formed, and to energize surveillance apparatus. Depending on the type of soil, tools of various configurations can readily be interchanged while the trencher is submerged. Piston-type hydraulic pump-motor combinations rotate the tools and propel the trencher along the desired path. Means responsive to the fluid pressure in the pumps automatically maintain the power output at the tools substantially constant within a wide range of load variations, thereby greatly increasing both the efficiency of the tools and the speed of the trenching operation.

3,670,515
ARTICULATED STRUCTURAL SUPPORT LINKAGE
James R. Lloyd, Houston, Tex., assignor to Esso Production Research Company
Filed Sept. 2, 1970, Ser. No. 69,066
Int. Cl. E02d 21/00; E21b 7/12
U.S. Cl. 61—46.5 4 Claims

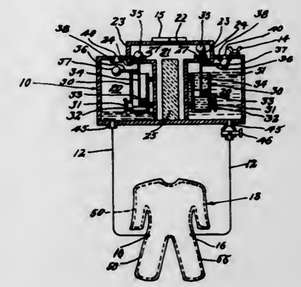


Offshore apparatus is disclosed which includes a base, a tower pivotally connected to the base, at least one support member attached to the tower and adapted to slidably support a conductor pipe, and at least one conductor pipe adjacent and substantially parallel to the longitudinal axis of the tower and laterally supported by at least one support member. An articulatable means connects the apparatus to a span of the conductor pipe situated in close proximity to the pivotal connection. This means provides sufficient lateral support to the pipe span to prevent buckling and at the same time controls the configuration of the pipe span as the tower sways to prevent bending stress within the pipe span from attaining a level that will cause the pipe to fail.

3,670,516
MACHINE FOR MAKING DRY ICE PELLETS
Paul P. Duron, Anaheim, and Harold T. Rich, Fullerton, both of Calif., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,552
Int. Cl. B29c 3/00
U.S. Cl. 62—35 22 Claims

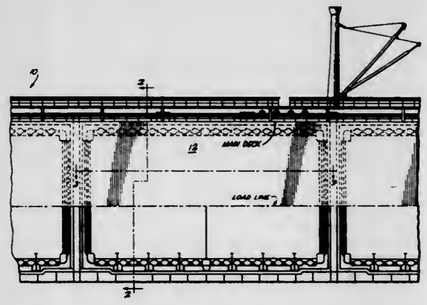
A dry ice pellet machine having a snow horn for flashing liquid carbon dioxide into snow; an extruding ring die for receiving the snow and consisting of an internal ring gear with radial drawnholes in and between the gear teeth around the ring periphery; a concentrically pivoted carrier within the ring die having diametrically positioned gear pinions for planetary movement in meshing engagement with the ring gear, and alternatively, rolls on the carrier for traversing a corresponding surface of the ring die; a drive motor for rotating the carrier and causing collected snow to be entrained and forced by the rolls (meshing gears) into the draw-holes and extruded therefrom as ice pellets.

3,670,518
GARMENT COOLING SYSTEM
John J. Esposito, Delran, N.J., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 21, 1970, Ser. No. 100,074
Int. Cl. F25d 3/12
U.S. Cl. 62—167 3 Claims



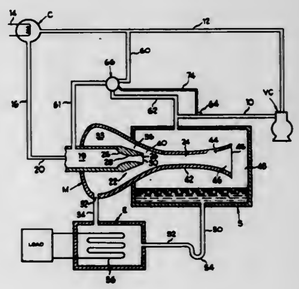
A protective garment for providing cooling including a network of flexible tubing completing a loop between two chambers thermally connected to solidified carbon dioxide. Heat transfer fluid alternately flows between the chambers to transfer heat from the garment to the heat sink. The pressure generated by gasification of the carbon dioxide as heat is absorbed in each chamber causes the alternate flow. A float valve in each chamber controls the admission and exhaustion of the gaseous carbon dioxide.

3,670,517
APPARATUS FOR COOLING AND FILLING LIQUEFIED GAS TRANSPORT AND STORAGE TANKS AND IMPROVEMENTS IN SAID TANKS
Ernst A. Noanecke, Hamburg, Germany, assignor to John J. McMullen, Montclair, N.J.
Continuation of Ser. No. 440,081, March 16, 1965. This application May 15, 1968, Ser. No. 732,009
Int. Cl. F17c 7/00
U.S. Cl. 62—45 12 Claims



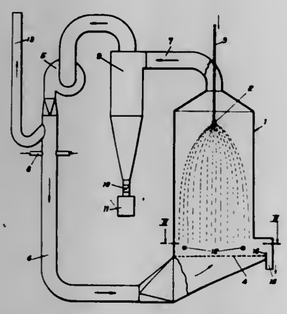
A transport tank for carrying liquefied gas at about ambient pressure including free-standing inner and outer tank walls formed of material for withstanding low temperatures so that the outer tank acts as a secondary system in the event the inner tank fails and a plurality of interconnecting members coupling the inner tank wall to the outer tank wall so as to limit the relative movement therebetween but provide 2° of freedom within this limit. Stress members secured to the inner and outer tank walls are provided to assure more uniform thermal tank growth in the vertical direction.

3,670,519
CAPACITY CONTROL FOR MULTIPLE-PHASE EJECTOR REFRIGERATION SYSTEMS
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 8, 1971, Ser. No. 113,224
Int. Cl. F25b 1/00
U.S. Cl. 62—116 28 Claims



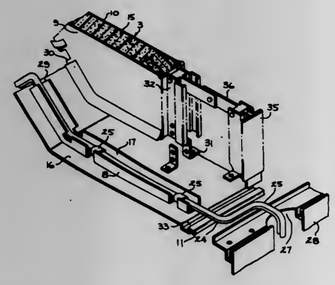
A multiple-phase ejector refrigeration system including a capacity control allowing part-load operation. The capacity is varied by bleeding a stream of hot gas from the discharge side of a vapor compressor and introducing it in a controlled manner into the liquid nozzle of the multiple-phase ejector. This has the effect of first increasing and then reducing the efficiency of the nozzle as the bleed rate increases, thereby affecting the efficiency and flow capacity of the ejector unit.

3,670,520
INSTALLATION FOR FREEZING A LIQUID OR SEMI-LIQUID PRODUCT
Robert C. Bonteil, Clichy, France, assignor to Societe D'Etudes Et D'Exploitation De Procedes Pour L'Industrie Alimentaire Sepial, Clichy, France
Filed Feb. 13, 1970, Ser. No. 11,120
Claims priority, application France, April 2, 1969, 6909973
Int. Cl. F28d 5/00
U.S. Cl. 62—314 1 Claim



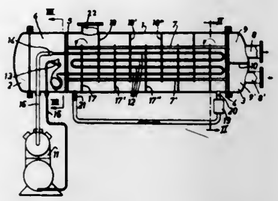
The invention concerns an installation for freezing a liquid or semi-liquid product comprises a vessel in the form of a vertical tower through which a rising current of cold gas may pass to superficially freeze the droplets, an atomizer in the upper portion of the vessel for atomizing the product into droplets, a fluidization plate disposed in the lower portion of the vessel for collecting superficially frozen atomized droplets in a fluidized bed in which the freezing of the superficially frozen droplets is completed.

3,670,521
SIDE-BY-SIDE REFRIGERATOR
Gerald Floyd Dodge, III, Louisville, and Howard D. F. True, Jr., Fern Creek, both of Ky., assignors to General Electric Company
Filed Nov. 17, 1970, Ser. No. 90,376
Int. Cl. F25d 23/00
U.S. Cl. 62—329 3 Claims



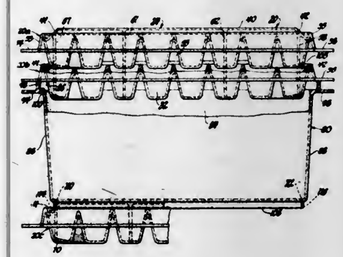
A refrigerator comprising a single liner and a removable partition separating the liner space into side-by-side storage compartments. The refrigerant conduits passing into the liner area for connecting a refrigerant condensing unit to an evaporator unit in the rear portion of one of the compartments are positioned in a passage beneath the partition.

3,670,522
EXCHANGER FOR COOLING FLUIDS
Adam Brasin, 9 Cite du Paradis, 75 Paris 10, France
Filed Aug. 18, 1970, Ser. No. 64,695
Claims priority, application France, Sept. 4, 1969, 6930169
Int. Cl. F25d 17/00
U.S. Cl. 62—333 6 Claims



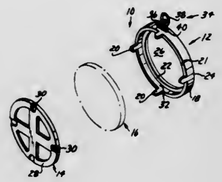
This invention relates to a cooling exchanger for cooling fluids in which there are two pipe systems through which are passed respectively the fluid to be cooled and the cold-producing fluid. The pipes for the cold-producing fluid are distributed among the pipes for carrying the fluid to be cooled and both sets of pipes are submerged in a refrigerating liquid.

3,670,523
FLEXIBLE PLASTIC ICE TRAY AND STORAGE CONTAINER
Thomas H. Fogt, West Carrollton; William R. Steiner, and John M. Murphy, both of Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 10, 1970, Ser. No. 88,388
Int. Cl. F25c 5/18
U.S. Cl. 62—344 6 Claims



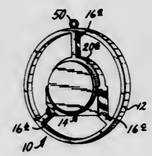
A resilient plastic ice tray and integral grid formed by a longitudinal center partition having an inverted V-shaped cross section together with transverse partitions enclosing two rows of freezing compartments. The tray center partition being of greater height than its transverse partitions, end walls and side walls to allow complementary notched locking guides formed on the underside thereof to cooperate with the upstanding rib portion of the central partition of an underlying tray for relative sliding movement therebetween and to support the trays in interlocked nested fashion when the trays are stacked one upon another in vertically aligned relation. Each tray has its side and end walls provided with an outwardly extending flange wall which allows a tray with its frozen contents to be inverted and nested over a receiving container having a cooperating outwardly directed seating ledge about its upper open end to harvest ice cubes into the container while the container additionally provides for a tray to be nested in an upright position either over or under the container.

3,670,524
ORNAMENTAL DEVICE
Irving Korwin, New Rochelle, N.Y., assignor to Wideband Jewelry Corp., New York, N.Y.
Filed March 30, 1970, Ser. No. 23,885
Int. Cl. A44c 15/00
U.S. Cl. 63—18 2 Claims



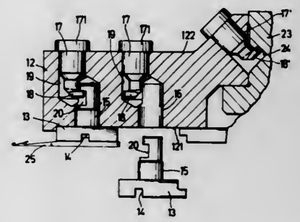
An article of jewelry comprises a setting composed of several parts releasably secured together and an ornamental element held between the parts and exposed at a window in one of the parts. The element may be a disc composed of a precious metal with decorative indicia placed thereon, or it may be an ornament such as a valuable coin. A number of such objects may be interchangeably used with a single setting. A member is attached to one of the parts of the setting and is employed to support the jewelry article in a carrying position when the article is used for personal adornment. Such a member may take the form of a cufflink clasp bar, a tie pin clasp bar, a money clip fastening device, a ring mounting or the like.

3,670,525
MAGNETIC SEX-DENOTING ORNAMENT WHICH ATTRACTS OR REPELLS RESPECTIVE SIMILAR ORNAMENTS DENOTING UNLIKE OR LIKE SEX
William R. Mulligan, 5243 Idaho Ave. N., Crystal, Minn.
Filed Aug. 31, 1970, Ser. No. 68,104
Int. Cl. A44c 25/00
U.S. Cl. 63—23 3 Claims



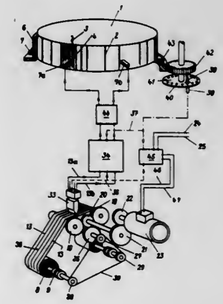
A novelty in the form of a planar circularly-shaped medallion having either a male or female symbol defined by a center portion thereof, the center portion further defining a coaxially extending cylindrically-shaped cavity. Two cylindrically-shaped magnets are positioned within the cylindrically-shaped cavity having like magnetic poles of one polarity outwardly directed for medallions symbolically defining one of the sexes and magnetic poles of the other polarity outwardly directed for medallions symbolically defining the other of the sexes so that the medallions symbolically defining the same sex repel one another and medallions symbolically defining opposite sexes attract one another.

3,670,526
NEEDLE TRACK LOCKING MEANS FOR KNITTING MACHINES
Johann Martinetz, Hechingen/Wuerttemberg, Germany, assignor to Firma Mayer & Cie, Talfingen/Wuerttemberg, Germany
Filed July 20, 1970, Ser. No. 56,417
Claims priority, application Germany, July 31, 1969, P 19 38 891.1
Int. Cl. D04b 9/06, 15/34
U.S. Cl. 66—20 5 Claims



A lock for a knitting machine which permits guiding tracks thereof to be quickly exchanged in groups or as a unit. The tracks are removably secured to ring segments by the lock. The lock includes a first stud disposed normal to the track and received in a first bore in the ring segment extending inwardly from a first face of the ring segment. A second, headed stud, extends into a second bore, extending inwardly from the second, opposite face of the ring segment. The first and second bores partially overlap and communicate at their inner ends. Interfitting cam and notch configurations are provided on the confronting, inner ends of the studs, whereby they are secured together against separation by turning one stud relative to the other.

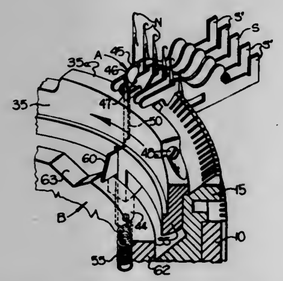
3,670,527
CIRCULAR KNITTING-MACHINE
Norbert Paul Bourgeois, Troyes, France, assignor to Etudes et Bonneterie SA, Lausanne, Switzerland
Filed July 24, 1970, Ser. No. 57,980
Claims priority, application France, July 31, 1969, 6926319; July 31, 1969, 6926320
Int. Cl. D04b 15/78
U.S. Cl. 66—50 R 9 Claims



The needles of a knitting machine are selectively actuatable upon passing by electro-magnetic selection members. A tape carrying a program for controlling selection of the needles is driven past a reader which supplies information in the form of electrical signals to a memory. The signals are extracted from

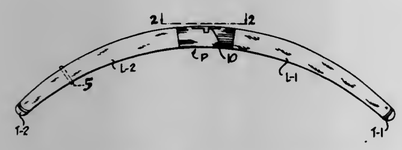
the memory at the frequency of passage of the needles past the selection members, and supplied to the selection members to select the needles. The speed of driving the tape is servo-controlled as a function of the quantity of information in the memory whereby the rate of reading information on the tape need not be synchronized with the frequency of passage of the needles past the selection members. This facilitates use of a two-ended tape alternately wound and unwound from one spool to another. The tape can also carry information for controlling reversal of tape driving means and for selectively reading the principal information according to the direction of motion thereof.

3,670,528
APPARATUS AND METHOD FOR SLITTING FABRIC ON A CIRCULAR KNITTING MACHINE
Oscar Fregeolle, Hickory, N.C., assignor to Pilot Research Corporation, Valdese, N.C.
Filed Sept. 4, 1969, Ser. No. 855,148
Int. Cl. D04b 35/00
U.S. Cl. 66—147 **10 Claims**



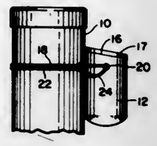
The slitting apparatus includes a vertically movable cutter positioned inside of the needles to engage the fabric as it is drawn from the needles and downwardly through the needle cylinder. Control means is provided for, at times, positioning the cutter in the path of movement of the fabric to slit the fabric in a walewise direction and for, at other times, maintaining the cutter below the level of the fabric so that the fabric is not slit thereby.

3,670,529
SEAMLESS PANTY HOSE AND METHOD
Oscar Fregeolle, Hickory, N.C., assignor to Pilot Research Corporation, Valdese, N.C.
Filed June 3, 1969, Ser. No. 830,045
Int. Cl. A41b 9/02
U.S. Cl. 66—177 **11 Claims**



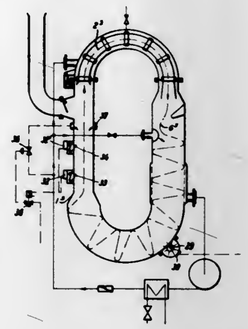
A panty hose type garment is formed by knitting an elongate tubular blank on a circular knitting machine and closing opposite ends of the tubular blank to provide toe closures at opposite ends. During the knitting of the blank, the stitch length of each course is graduated from a large stitch at one side of the blank to a small stitch at the opposite side of the blank so that said one side of the blank is longer than the opposite side and the blank is curved throughout its length. The medial portion of the blank is then slit in a walewise direction along the longer side to form a waist opening and an elastic waistband is attached thereto.

3,670,530
DISPENSER FOR CLOTHES WASHING ADDITIVES
Edmund H. Filipak, 132 Grasmere Ave., Mansfield, Ohio
Filed June 9, 1971, Ser. No. 151,196
Int. Cl. D06f 39/02
U.S. Cl. 68—17 A **8 Claims**



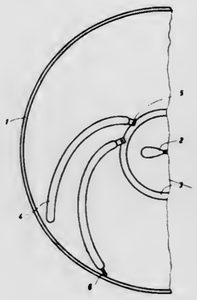
An additive dispenser for clothes washing machines or the like having a container that pivots from a vertical additive-retaining position to a substantially horizontal additive-dispensing position in response to centrifugal force developed by spinning of the agitator. The container is maintained in the retaining and dispensing positions by an elastic band urging the side and top walls, respectively, against the agitator, the elastic band stretching during agitator spin to allow the container to change positions. In another embodiment of the invention, the container is pivotally mounted to the agitator by a bracket that has a leaf spring depending therefrom, the leaf spring being operative to engage the top of the container after agitator spin to hold the same in its dispensing position.

3,670,531
APPARATUS FOR THE WET TREATMENT OF TEXTILES
Alfred F. B. Thies; Bernhard Alfons Ameling, both of Coesfeld; Albert R. Reuther, Frankfurt-Sossenheim, and Werner Fluchter, Lette, all of Germany, assignors to Firma B. Thies, Coesfield, Germany
Filed Nov. 13, 1969, Ser. No. 876,377
Claims priority, application Germany, July 5, 1969, P 19 34 157.2; Sept. 24, 1969, P 19 44 794.0
Int. Cl. B05c 3/134
U.S. Cl. 68—177 **10 Claims**



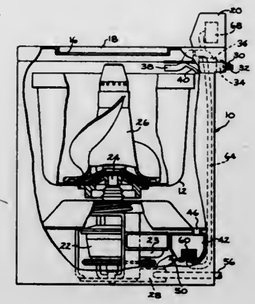
A process of and an apparatus for the wet treatment of textiles in strip or web form which comprises a U-shaped tubular treatment vessel having at least two arms and a semi-circular tubular drive set conveying textiles through the treatment vessel by a treatment liquid and interconnecting the arms.

3,670,532
APPARATUS FOR DYEING SKEINS OF YARN
Hans Nielsen, Reinach, Switzerland, assignor to Vald. Henriksen A/S, Soborg, Denmark
Filed Jan. 14, 1971, Ser. No. 106,363
Claims priority, application Denmark, Jan. 15, 1970, 172/70
Int. Cl. B05c 8/02
U.S. Cl. 68—188 **4 Claims**



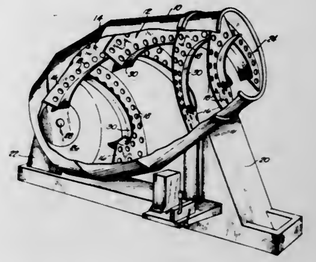
An apparatus for dyeing skeins of yarn in which the skeins are suspended on bars formed as circle involutes.

3,670,533
LIQUID FILL CONTROL
Joseph C. Worst, Louisville, Ky., assignor to General Electric Company
Filed Nov. 16, 1970, Ser. No. 89,830
Int. Cl. D06f 39/08
U.S. Cl. 68—207 **3 Claims**



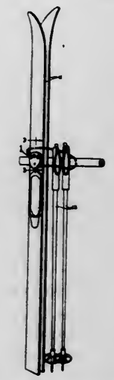
A liquid fill control for an automatic washing machine which shuts off the inflow of water into a washing machine when a preselected water level has been reached. An impervious bellows is mounted within an accumulator in the washing machine, and communicates by means of a pneumatic tube with a pressure switch which controls a water inlet valve. The pressure switch is pre-set by an operator to correspond to a desired water level for the wash load, and influent water into the washing machine deflects the bellows in an amount proportional to the hydrostatic head thereby increasing the pressure upon the pre-set pressure switch through the pneumatic tube until the pressure switch operates to close the water inlet valve.

3,670,534
APPARATUS AND PROCESS FOR TREATING HIDES
Bruce Michael Gould, Waukesha, Wis., assignor to "Automatic" Sprinkler Corporation of America, Cleveland, Ohio
Filed March 20, 1969, Ser. No. 808,838
Int. Cl. C14c 15/00
U.S. Cl. 69—30 **3 Claims**



The hide-processing apparatus is comprised of a rotatable and axially inclined drum having two helical T-shaped blades fixed to its inside wall. The web of each blade is perforated. In treatment of hide, the drum is partially filled with a processing solution and with hide. Upon rotation of the drum in a tumbling direction, the hide is dehaired by being worked upon by the rotating blade and the removed hair is moved in an opposite direction to the movement of the hide and towards the open end of the drum. Upon rotation of the drum in a discharging direction, the treated hides are discharged through the loading end, yet, because of the perforations, most of the hide-treating liquid is retained in the drum during the discharging phase.

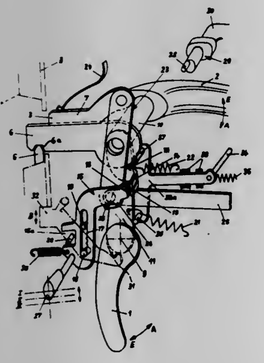
3,670,535
SKI EQUIPMENT LOCK ASSEMBLY
Dennis Stettner, 179 Estates Drive, Piedmont, Calif., and Ronald B. Hollison, 2405 Oakhearst Drive, Oakdale, Calif.
Filed June 1, 1970, Ser. No. 41,793
Int. Cl. E05b 23/00; A47f 7/00; A63c 11/02
U.S. Cl. 70—58 **4 Claims**



A ski equipment lock assembly affixed to a ski, includes a spring wound cable adapted to be threaded through and wrapped about associated ski equipment and available rail or pole, and its free end then locked and restrained against unauthorized removal. The lock preferably includes a com-

bination mechanism, whereby only those having the combination, may unlock the free end of the cable.

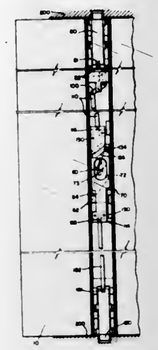
3,670,536
LOCK ARRANGEMENT FOR VEHICLES ESPECIALLY VEHICLES EQUIPPED WITH SLIDING DOORS
Horst Klebbe, Weyhausen, Germany, assignor to Volkswagenwerk AKG, Wolfsburg, Germany
Filed March 16, 1971, Ser. No. 124,874
Int. Cl. E05b 65/14; E05c 3/30
U.S. Cl. 70—99 15 Claims



A locking mechanism for the sliding door of a vehicle in which a swingable lock bolt projecting through an opening in the sliding door has associated therewith a safety element slidable along the bolt into said opening to positively prevent release movement of the bolt. Retraction of the safety element from the opening is transmitted by linkages from independently swingable inside and outside door handles, the arrangement being such that the common blocking slide may be selectively positioned to obstruct and prevent the actuation of one or both of said linkages, or of neither of them. Suitable arrangements are made for controlling the position of the blocking slide either from the inside or from the outside of the automobile, the external arrangement comprising a key-controlled cylinder lock. Also there is provided a child proof safety latch operable to prevent opening of the door from within the vehicle, and to permit its opening from the vehicle exterior in the even of an accident. Additional control means also are provided.

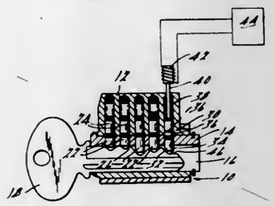
3,670,537
LOCK FOR A GLASS DOOR
William J. Horgan, Jr., Allegheny County, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 21,257, March 20, 1970, abandoned. This application Nov. 4, 1970, Ser. No. 86,863
Int. Cl. E05b 63/14
U.S. Cl. 70—120 2 Claims

A lock mechanism for a door comprises one or more lock cylinders which are mounted on opposite sides of the door and which are connected through the door to actuate a common lever in response to appropriate movement of the tabs on the backs of the lock cylinders. The lever locks or unlocks the



door by advancing or retracting vertically one or more bolts. Ball bearings are used throughout to reduce friction.

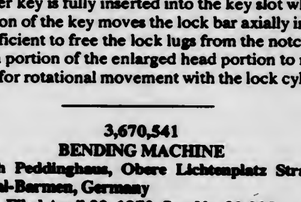
3,670,538
CONTROLLABLE KEY LOCK
Robert E. Curry, 1935 Collegewood Drive, Ypsilanti, Mich.
Filed Nov. 12, 1970, Ser. No. 88,833
Int. Cl. E05b 43/00, 27/04
U.S. Cl. 70—271 8 Claims



A lock consisting of a key plug having a keyway therein, a line of conventional tumblers for locking the key plug against release movement and an auxiliary tumbler assembly located at the inner end of the line of tumblers and projecting into the keyway. A timer operated solenoid is associated with the auxiliary tumbler assembly for rendering the auxiliary tumbler assembly inoperative during selected time periods. As a result, a first key having a land engageable with the auxiliary tumbler assembly is operable to move all of the tumblers to plug release positions at all times and a second key lacking a land engageable with the auxiliary tumbler assembly is incapable of actuating the auxiliary tumbler assembly so that the second key is useful only during the selected time periods.

3,670,539
COMBINATION LOCK
Kenneth George Charles Marotte, 27 Drummond St., Blackburn, Victoria, Australia
Filed July 28, 1970, Ser. No. 58,966
Claims priority, application Australia, July 28, 1969, 58694/69
Int. Cl. E05b 37/00
U.S. Cl. 70—299 16 Claims

A combination lock having a rotor, mounted in a casing, and which carries locking elements arranged in lengthwise extending slots on the outer surface thereof, the locking elements each being manipulatable, by suitable mechanism, to cause movement between first and second longitudinally spaced dispositions, each element in one disposition precluding rotation of the rotor by engagement with an abutment on



the internal surface of the casing and in the other disposition clearing the abutment so as not to preclude rotation, the rotation precluding condition for some elements normally corresponding to one disposition, and for others normally corresponding to the second disposition.

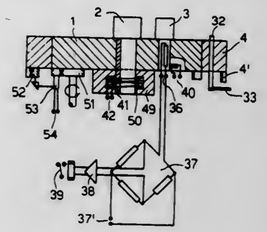
3,670,540
DOOR LOCK
J. de Jesus Fernandez, 430 N.E. 29th St., Miami, Fla.
Filed March 1, 1971, Ser. No. 119,493
Int. Cl. E05b 27/04
U.S. Cl. 70—421 8 Claims

A lock which, in addition to the usual tumblers which are radially moved to release the lock cylinder in response to the insertion of a proper key, provides an additional cylinder lock releasable only by the tip of the key when fully inserted into the key slot of the cylinder. The bolt actuating bar which extends axially inwardly from the inner end of the key slot provides an enlarged head portion which is slidably engaged in the inner portion of the key slot, said enlarged head portion includes a pair of oppositely extending lock lugs which are normally engaged in a pair of diametrically opposed notches provided in the fixed lock barrel. Compression spring means circumposed about the bolt actuating bar holds the enlarged head portion in the key slot and the lock lugs in the notches until a proper key is fully inserted into the key slot whereupon the tip portion of the key moves the lock bar axially inwardly a distance sufficient to free the lock lugs from the notches while permitting a portion of the enlarged head portion to remain in the key slot for rotational movement with the lock cylinder.

3,670,541
BENDING MACHINE
Carl Ulrich Peddinghaus, Obere Lichtenplatz Strasse, 276 Wuppertal-Barmen, Germany
Filed April 20, 1970, Ser. No. 30,205
Claims priority, application Germany, April 22, 1969, P 19 20 265.4
Int. Cl. B21b 37/12
U.S. Cl. 72—8 17 Claims

A bending machine for bars, wires and sections of steel and like materials having a bending plate which supports a pair of bending tools and which is rotatable and drivable in controlled

directions, there being also provided a setting member connected to the bending plate for setting various principal bending angles. At least one of the bending tools is provided with switch means which are sensitive to the load applied at the beginning of bending and after reaching the pre-determined



principal bending angle keep the drive to the bending plate switched on until the bending plate has achieved an additional bending angle which corresponds to the angle of rotation of the bending plate from the beginning of switching-on until the response of the switch means.

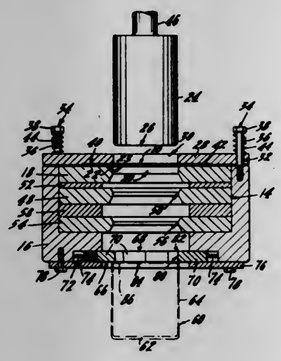
3,670,542
EXTRUSION METHOD AND APPARATUS
Auvo I. Kemppinen, and Bobbie W. Strum, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Dec. 4, 1969, Ser. No. 882,160
Int. Cl. B21b 37/12; B21c 23/00
U.S. Cl. 72—8 17 Claims

A determination is made of the portions of an extrusion ram's energy that is converted to heat at the segmant of the billet adjacent the die. This is then used to predict the exit temperature of the extruded piece. The predicted exit temperature is compared with a desired exit temperature and the ram speed is adjusted accordingly so that the workpiece is substantially continuously extruded at the desired temperature.

3,670,543
DRAWING AND IRONING PROCESS
Richard Robert Bolt, Lake Villa, and Delbert Edmond Wobbe, Cary, both of Ill., assignors to American Can Company, New York, N.Y.
Filed Jan. 27, 1969, Ser. No. 794,141
Int. Cl. B21d 22/28, 37/18
U.S. Cl. 72—41 3 Claims

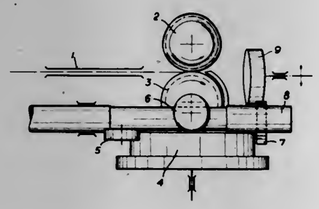
Prior to the drawing and ironing of a sheet or blank of a material such as untinned low carbon cold rolled steel to form a tubular article such as a can body, the metal sheet is roughened in such manner as to provide an overall, uniformly dense pattern of minute depressions in its surface. Oil or other lubricant is applied to the roughened surface and is retained within these small depressions during the drawing and ironing

operation, whereby to reduce the mechanical and frictional forces on the blank and on the drawing and ironing dies and



thus eliminate galling of the dies and minimize fracture of the metal.

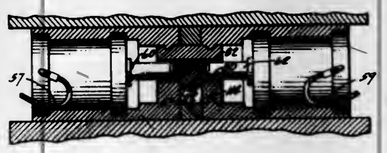
3,670,544
MACHINE FOR THE PRODUCTION OF TUBING
Friedrich Behm, Vienna II, Austria, assignor to Metallschlauchfabrik Joseph Ulbrich & Co., Vienna, Austria
Filed Oct. 23, 1970, Ser. No. 82,935
Int. Cl. B21c *37/12*
U.S. Cl. 72—49 **5 Claims**



A machine for producing protective flexible tubing from a profiled, helically wound strip, which comprises a strip guide and a pair of driven profiling rollers disposed after the strip guide, and for pre-profiling the strip. A driven plane profile plate finish-profiling said strip together with one of the profiling rollers, the rollers and the plate constituting profiling means. A freely rotating winding mandrel, the profiled strip being fed to the winding mandrel after being deflected by the plane profile plate, and a driven winding roller co-operates with the winding mandrel, to constitute winding means.

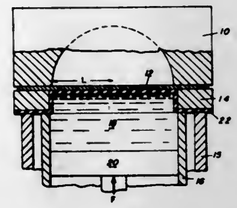
3,670,545
BULGE-FORMING APPARATUS
Ronald E. Kent, Gardena, and Alvin C. Rothenberger, Rolling Hills, both of Calif., assignors to McDonnell Douglas Corporation
Filed Oct. 29, 1970, Ser. No. 85,103
Int. Cl. B21d *9/05*
U.S. Cl. 72—58 **3 Claims**

Power cylinders at each end of a tubular workpiece having a force transmitting medium therein operable by the cylinders to force the workpiece into mold cavities. The force transmitting medium is an incompressible plastic such as a polyurethane plug with a memory which returns to its original configuration when the pressure is removed. The retention force



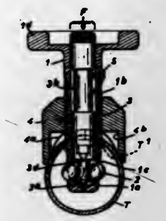
between the opposing cylinders is transmitted through the mold die.

3,670,546
FLUID PRESS
Jose Luis De La Sierra, Norte 45, No. 985, Col. Industrial Vallejo, Mexico
Filed Dec. 5, 1969, Ser. No. 882,615
Claims priority, application Mexico, Dec. 5, 1968, 107591
Int. Cl. B21d *22/12*
U.S. Cl. 72—63 **1 Claim**



The stamping of a sheet material is accomplished by forcing a liquid against it in such manner that it is formed to the shape of a mold or die element. Use of a liquid produces an even distribution of force against the sheet material and thus reduces breakage while overcoming the need for repetitive stamping in order to obtain complex shapes.

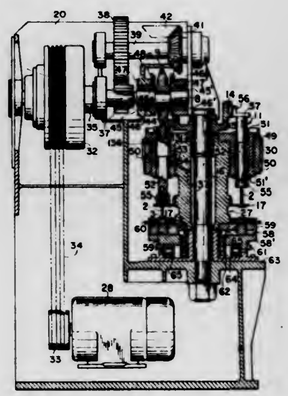
3,670,547
APPARATUS ADAPTED TO FORM COLLARS AROUND OPENINGS PREVIOUSLY EXECUTED IN PLATES OR TUBES
Maurice Granger, 9, rue Bourgneuf, Saint-Etienne, Loire, France
Filed June 24, 1969, Ser. No. 835,972
Claims priority, application France, June 28, 1968, 68137; Aug. 13, 1968, 68178; June 2, 1969, 6917652
Int. Cl. B21d *19/00*
U.S. Cl. 72—75 **26 Claims**



An apparatus adapted to form a collar round an opening in the wall of a tube or in a metal sheet or to expand the end of a

tube. A screw engages a nut provided with a recess to allow the setting of the nut over the open section in which the collar is to be raised. The screw is positioned so as to engage the opening and to carry on the inside of the part to be formed balls or like members so that the outward drawing of the screw urges balls against the edge of the opening so as to engage them against the nut and to form thus the desired collar. The introduction of the balls inside the part to be formed is allowed by a piston sliding inside the screw which controls their outward projection. The piston may be replaced by a cage slidably carried over the outer surface of the screw for defining the collapsed and projecting locations of the balls.

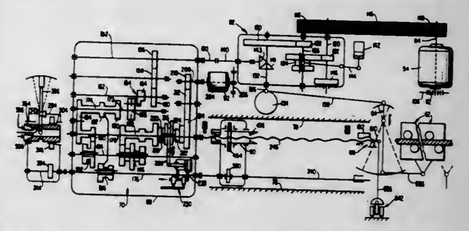
3,670,548
APPARATUS FOR PRODUCING OPEN-TOPPED HOLLOW ARTICLES
Kazuhiro Mori, Hirakata; Akio Nakamura, Kyoto; Miyoji Nakai, Neyagawa, and Tetuji Kamisako, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 17, 1970, Ser. No. 99,072
Claims priority, application Japan, Dec. 22, 1969, 44/104639
Int. Cl. B21b *1/04*; B21d *45/00*
U.S. Cl. 72—187 **7 Claims**



An impact extruder comprising means for feeding circular work-pieces of a metal, a turn table having a plurality of dies and ramming mechanisms supporting vertically movable punches in axial alignment with the dies, respectively, a ramming roll for downwardly driving the ramming mechanisms to cause the phnches to cooperate with associated dies to form the work-pieces into open-topped hollow articles during rotation of the turn table, a cam member for lifting the ramming mechanisms after their forming operations, and strippers for removing the formed articles from the punches.

3,670,549
METHOD AND APPARATUS FOR COLD ROLLING THIN WALL PIPE
Alexandr Ivanovich Tselikov; Vsevolod Vladimirovich Nosal, and Vadim Anatolievich Verderevsky, all of Moskwa, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky and Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroenlya, Moscow, U.S.S.R.
Filed Jan. 5, 1970, Ser. No. 529
Int. Cl. B21b *21/04*
U.S. Cl. 72—208 **31 Claims**

A pipe (or tube) mill which receives preformed pipe blanks over an axially fixed mandrel rod and by cold rolling deforms the blanks into super thin walled pipes. The mill has variable speed main and auxiliary drive motors, a main frame, a rolling stand with spring balanced tool rollers with contoured roller tracks having provision for adjustment to accommodate various different diameters of pipe, a rocking lever mechanism for roller stand operation, a mandrel rod clamping mechanism, a



floating blank feeding and rotating chuck with associated variable feed and turning gear mechanism, an intermediate blank clamp, a speed reduction gearing with output to the feed and turning mechanism and, via a crank mechanism, to the rolling stand rocking lever mechanism and correlating controls between mandrel clamp and intermediate blank clamp. Emulsion and lubrication is provided.

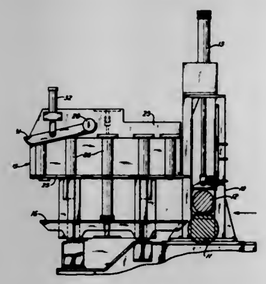
3,670,550
WORK ROLL EXCHANGE DEVICE
Friedrich Rotter, Kreuztal, Kredenbach, and Horst Hanke, Hilchenbach-Dahlbruch, both of Germany, assignors to Siegener Maschinenbau G.m.b.H.
Filed March 18, 1970, Ser. No. 20,683
Claims priority, application Germany, March 22, 1969, P 19 14 685.1
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **4 Claims**

The disclosure deals with a device for the installation and removal of the work rolls of a rolling mill roll frame consisting of a carriage which is movable in front of the roll frame. The carriage has a plate for receiving the work rolls which is located on the level of the mill floor. The device also consists of a shifting mechanism for the work rolls which, by means of a driving device, may be raised from its inoperative position below the floor of the mill, which is covered by a plate, to an operative position above the floor of the mill.

3,670,551
HOLDING SHELF APPARATUS
Albert Theodore Briggs, Tarentum, and Eugene Henry Swisher, Verona, both of Pa., assignors to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 46,360
Int. Cl. B21d *43/16*; B21b *39/20*
U.S. Cl. 72—252 **8 Claims**

The present invention relates to an holding shelf apparatus

for strip-like material as is employed, for example, in connec-

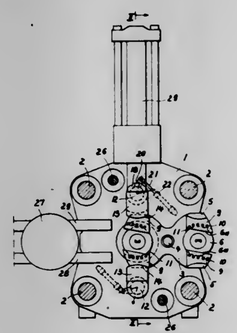


tion with a tandem rolling mill.

3,670,552
DIE MOUNTING MEANS

Josef Kaspers, Monchengladbach, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 18, 1970, Ser. No. 12,170
Claims priority, application Germany, Feb. 21, 1969, P 19 08 664.7
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **6 Claims**



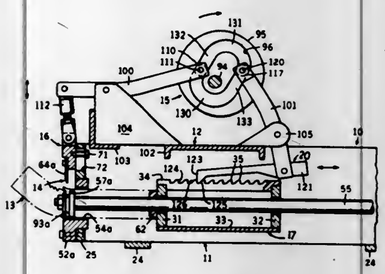
In a metal extrusion press for both sections and tubing a die means is rotatably mounted, but axially fixed with respect to the axial direction of the press, on a front platen. Locking means, preferably in the form of two shafts extending in the axial direction of the press, are pivotably mounted but axially fixed on the front platen, and engagement members extend perpendicularly from each locking means, so that pivotal movement causes the engagement members to engage the die mounting means at opposite sides to prevent both axial and rotary movements of the die and to permit access of a saw or shear for cropping an extrusion.

3,670,553
TUBE BENDING MACHINE

Andrew Nothum, St. Louis; Billy W. Thomas, St. Ann, and Abram L. White, De Soto, all of Mo., assignors to Grover Machine Company, Kirkwood, Mo.

Filed March 2, 1970, Ser. No. 15,732
Int. Cl. B21d *11/04*
U.S. Cl. 72—307 **14 Claims**

This tube bending machine includes a base housing having an end aperture adapted to receive a hollow, rectangular tube. An inner die element is spaced from the margin of the aperture so as to be received by the tube and a toggle mechanism, carrying compatible outer die elements, is mounted to the housing and is adapted to crimp three sides of the tube. A crosshead carriage is mounted within the housing and connected to a pusher mechanism to advance the tube sequentially when the crimping action is completed. The toggle assembly and the pusher mechanism are actuated by a rotating cam connected to each assembly by rocker arms which reciprocate as the cam rotates. The cam is provided with an



eccentric cam groove having a dwell portion which permits the toggle mechanism to be actuated when the pusher mechanism is quiescent and the pusher mechanism to be actuated when the toggle mechanism is quiescent.

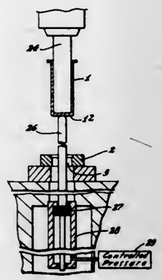
A limit device, mounted within the housing, predetermines the number of applied crimps, thereby controling the degree of bend induced into the tube.

A second cam is mounted to the cam shaft and actuates a second die assembly which is capable of crimping the ends of the tube following bending to permit these ends to be telescoped within a similar tube of regular cross section.

3,670,554
FORMING HOLLOW BLANKS

Wolfgang Kienzler, Nuraberg, and Marten Burgdorf, Schwaig, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Aug. 26, 1970, Ser. No. 67,088
Claims priority, application Germany, Aug. 29, 1969, P 19 43 884.7
Int. Cl. B21d *24/10*
U.S. Cl. 72—347 **3 Claims**

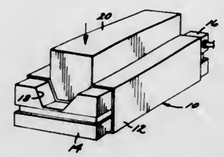


A hollow blank is slipped on a punch to be formed in cooperation with a die. Prior to engagement with the die, the blank is held and retained on the punch in a manner which does not disturb the forming process.

3,670,555
METHOD OF FABRICATING STRUCTURAL MEMBERS

Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.

Filed June 24, 1970, Ser. No. 49,221
Int. Cl. B21d *9/05, 9/08*
U.S. Cl. 72—370 **11 Claims**



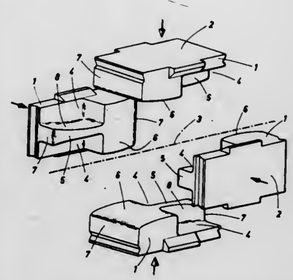
A method of fabricating a structural member by arranging a length of formable material in overlying relation to one or more recesses defined by a mandrel or mandrels. One or more rams are utilized to urge the formable material into such recess to place the formable material under tension. Various configurations of mandrels and rams are utilized to form structural members of various configurations. The method may also include the step of pivoting certain of the mandrels to bring them into contiguity with the ram or rams to thereby form structural members of still different configurations. The mandrels can be removed from the structural member, or made of lightweight material and left in place for insulation, structural stiffening, and the like.

The formable material is preferably in the form of a continuous loop or band arranged about the mandrel or mandrels so that urging of the material into the recess or recesses places the loop under tension, conforming it to the shape of the mandrel and the recess. Many variations of the concept are disclosed.

3,670,556
TOOL FOR USE IN A SWAGING MACHINE

Bruno Kralowetz, Weinleiten 142, St. Ulrich near Steyr, Austria

Filed May 25, 1970, Ser. No. 41,464
Claims priority, application Austria, June 16, 1969, A 5672/69
Int. Cl. B21j *13/02*
U.S. Cl. 72—402 **4 Claims**

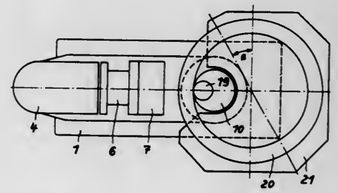


Four hammers are spaced 90° apart about an axis along which a workpiece is movable. The hammers extend radially to the axis and are intended to carry at their free ends respective tools. Each of the tools comprises a block having the general shape of a quadrangular prism which has four longitudinal side faces. The block has a central web, which forms a narrow section of one of the longitudinal side faces and extends from one end of the block approximately over one half of the length thereof. The one longitudinal side face has a working face section which is wider than the narrow section and extends from the latter to the opposite end of the block and slopes symmetrically to the two longitudinal side faces which are adjacent to the one longitudinal side face. The web has two side faces, each of which has in a view on the one longitudinal side face a contour which corresponds to one-half of the contour of the working face secton in a view on the other end of said block.

3,670,557
RING-FORGING PRESS

Willy Muller, Dusseldorf-Gerresheim, and Helmut Robra, Mulheim/Ruhr, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed April 17, 1970, Ser. No. 29,504
Claims priority, application Germany, April 19, 1969, P 19 19 939.4
Int. Cl. B21d *43/02*
U.S. Cl. 72—421 **8 Claims**

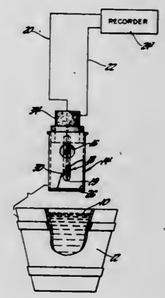


Means for forging pierced and up-set block sections into rings on a forging press, provided with a vertically arranged mandrel and a horizontally acting forging ram, and means for turning and displacing the ring. A secondary mandrel, the diameter of which is smaller than that of the main mandrel, may be included for the manipulation of rings with initially relatively small holes.

3,670,558
RAPID THERMAL ANALYSIS METHOD FOR PREDICTING NODULAR IRON PROPERTIES

Edward F. Ryntz, Jr., Warren; John F. Janowak, Saginaw, and John F. Watton, Roseville, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1971, Ser. No. 147,836
Int. Cl. G01n *25/02*
U.S. Cl. 73—17 R **4 Claims**



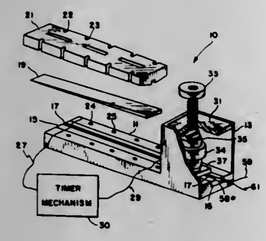
A method of rapidly and accurately predicting the cast properties of nodular iron in foundry control operation is disclosed. A sample of nodular iron having a thermal mass such

as to cool from 2,300° to 1,850° F in less than 4 minutes is extracted from a heat of molten cast iron immediately before the casting thereof. A cooling curve is generated and divided into characteristic curve segments indicative of the nucleation and growth reactions occurring on solidification. A comparison of the characteristic curve segments with respective families of like curve segments obtained from samples of known metallurgical properties yields one like curve segment from each family most like each characteristic curve segment. Correlation of most like curve segments with a known relationship between said families and nodular iron metallurgical properties yields the largest range of properties possible for the unknown sample on solidification.

3,670,559
LINEAR EXPLOSIVE COMPARISON

Laurence J. Bement, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 17, 1971, Ser. No. 154,094
Int. Cl. G01n *33/22*
U.S. Cl. 73—35 10 Claims



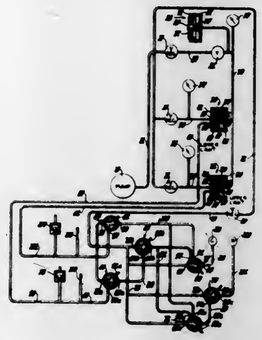
An apparatus for quantitatively determining the performance of linear explosives, mild detonating fuse and flexible linear shaped charges. Elongated explosive samples are detonated in a test fixture that is provided with means for sensing the explosive blast energy, explosive cutting ability, and detonation propagation rate.

3,670,560
FLUIDIC SYSTEM FOR EVALUATING PHYSICAL CHARACTERISTICS

Fred W. Dega, Oak Park, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1970, Ser. No. 67,161
Int. Cl. G01b *13/02, 13/10*
U.S. Cl. 73—37 7 Claims

A fluidic system for evaluating the physical characteristics of an article within upper and lower limits. The system includes a fixture in which the article to be measured is placed, a source of fluid pressure which delivers fluid to the fixture, a plurality of fluidic amplifiers, a pair of interface signal devices and a pair of indicators. Pressure signals resulting from fluid flow past the article in the fixture are conducted to the signal devices which emit control signals to actuate the fluidic amplifiers. The output of two of the fluidic amplifiers are in fluid communication with the indicators and function to selectively

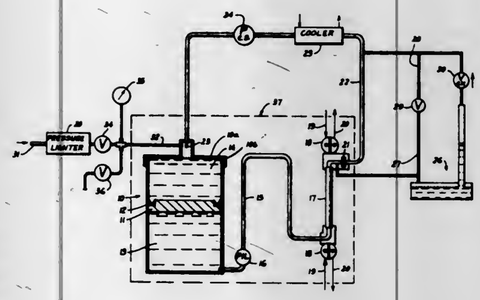


actuate the indicators in response to the fluid pressure in the fixture and the signals emitted by the signal device.

3,670,561
APPARATUS FOR DETERMINING THE THERMAL STABILITY OF FLUIDS

Alf Hundere, P.O. Box 28299, San Antonio, Tex.

Filed Jan. 30, 1970, Ser. No. 7,133
Int. Cl. G01n *33/22*
U.S. Cl. 73—61.2 8 Claims

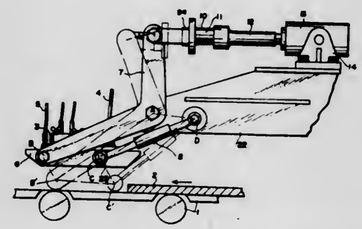


An apparatus for determining the thermal stability of fluids, particularly for testing the deposition characteristics of jet fuels, comprising a single reservoir for containing fresh and tested fuel on opposite sides of a movable piston therein, a supply line connecting the fresh fuel chamber of the reservoir with a housing in which is mounted a heated tubular member, a return line connecting the outlet of the housing with the tested fuel chamber of the reservoir, a constant speed metering pump located in the return line between the housing and the tested fuel chamber of the reservoir to pump the fuel through the apparatus, a filter, designed to trap deposits which remain suspended in the fuel due to heating, located at the outlet of the housing, and a differential pressure measuring device connected across the filter to measure the pressure drop therethrough, and a valved bypass around the filter. The apparatus also contains a source whereby the entire system may be pressurized to a constant pressure, preferably with an inert gas.

3,670,562
HOLDING AND FOLLOW-UP MECHANISM FOR ULTRASONIC FLAW DETECTOR

Iwao Muto; Yutaka Matsumura; Katsuyuki Nishifuji, and Kenji Matsuura, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Sept. 24, 1970, Ser. No. 75,183
Claims priority, application Japan, Sept. 29, 1969, 44/77085
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 9 Claims

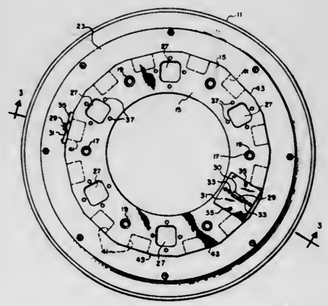


An ultrasonic flaw detector element is mounted on a shoe which is connected to a holding arm by a four linked mechanism. The four linked mechanism consists of two pairs of substantially parallel links spaced laterally on the shoe so that the shoe may be moved into a material engaging position and away while its contact surface remains parallel to the surface of the material to be tested. One of the links forms one arm of a bell crank, the other arm of which is connected to the piston of a double acting cylinder so that movement of the piston raises and lowers the shoe.

3,670,563
FIXTURE FOR SUPPORTING ARTICLES DURING VIBRATION TESTS

David J. Light, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Oct. 5, 1970, Ser. No. 77,786
Int. Cl. G01n *29/00*
U.S. Cl. 73—71.6 8 Claims

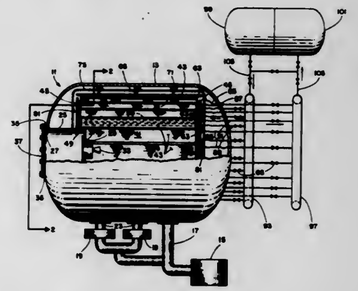


A fixture for supporting and securing articles, such as electrical components, during vibration testing of the articles comprising an integral annular unit having a series of spaced blind cavities formed in its top surface and a series of spaced blind cavities formed around its outer surface. Articles to be vibration tested are secured in the cavities of the fixture and the fixture is mounted on the driver head of a vibration exciter whereby the fixture is aligned with the driver coil of the exciter. The cavities may be in the form of partially threaded bores with an intermediate shoulder to receive a disk and a clamping nut for securing test items in the bores.

3,670,564
ALTITUDE SIMULATION CHAMBER FOR ROCKET ENGINE TESTING

John W. Davis, and Herschel W. Belew, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 21, 1971, Ser. No. 154,935
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.1 10 Claims

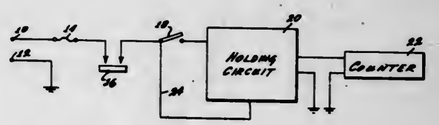


A vacuum chamber in which a scale model of the rocket engine base area of a space vehicle is mounted and fired in short duration runs for testing the model under simulated, high-altitude pressure conditions. To dissipate the engine exhaust energy, and particularly the starting shock wave produced when the engine is fired, an energy-absorbing compartment is provided within the vacuum chamber which compartment is made of cryogenically cooled metal honeycomb panels supported by the wall of the vacuum chamber. The cells of the honeycomb panels are opened on the inner side of the panels to present a large, cold and confining surface area to dissipate the energy of the exhaust gas molecules by capturing and freezing the molecules within the honeycomb cells.

3,670,565
CYCLE COUNTER FOR JET ENGINES

Allen E. Paulson, 3021 Airport Ave., Santa Monica, Calif.

Filed July 15, 1970, Ser. No. 55,172
Int. Cl. G01l *3/26*; G04f *9/00*
U.S. Cl. 73—117.3 9 Claims

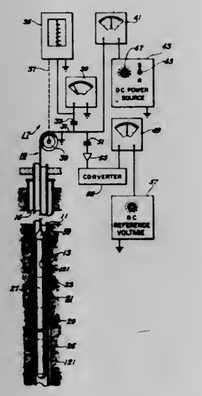


Apparatus for providing a representation of engine life including thermally responsive and throttle responsive switches and an indicator. Provision is made for energizing the indicator when the thermally responsive and throttle responsive switches are closed and subsequently preventing an indication from being registered on the indicator after the throttle responsive switch is opened and reclosed.

3,670,566
APPARATUS FOR ATTACHING A TOOL TO A CONDUIT IN A BOREHOLE

Edward R. Basham, and William D. Smith, both of Fort Worth, Tex., assignors to Go International, Inc., Fort Worth, Tex.

Filed Dec. 10, 1970, Ser. No. 96,864
Int. Cl. E21b 47/00
U.S. Cl. 73—151 **8 Claims**



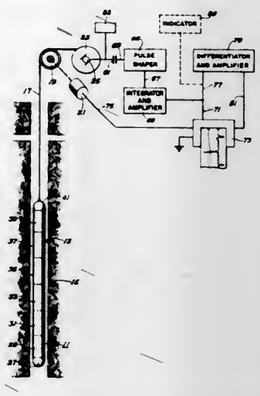
Apparatus for attaching to a conduit at a depth in a borehole, as in free point indicator tools, characterized by a plurality of aspects. In a first aspect, the apparatus has individual, non-flow restricting attachment members that are operable to engage the conduit any number of times on a trip into the well with a force sufficient to bear the weight of the tool and any sinker bars and cable resting thereon. In a second aspect, the force is controlled electrically from the surface with a current limiter and a downhole electric motor is run to stall. In a third aspect, the attachment members are connected with the downhole motor via a shear pin so the pin can be sheared to release the attachment members in the event of power failure. In a fourth aspect, the downhole, or borehole tool has a sensor section with an automatic centralizer for effecting a neutral position of the two movable portions for detecting small rotational or longitudinal movement therebetween. Also disclosed are specific structures and methods that are advantageously employed in measuring the depth at which a conduit such as drill pipe is stuck in the borehole.

3,670,567
MEASURING BOREHOLE TEMPERATURES EMPLOYING DIODE JUNCTION MEANS

Beauford F. Stout, Grandview, Tex., assignor to Worth Well Surveys, Inc., Fort Worth, Tex.

Filed Sept. 8, 1969, Ser. No. 855,982
Int. Cl. E21b 49/00
U.S. Cl. 73—154 **6 Claims**

Method and apparatus for measuring temperatures and temperature anomalies along the longitudinal axis of a borehole penetrating subterranean formations characterized by employing a constant current flowing through a diode junction means and measuring the variations in voltage across the junction as an indication of the temperature. The diode junction means is linear up to temperatures of about 350° F and linear enough to be usable to temperatures as high as 400° F. Signals are generated that are related by the voltage drop across the diode junction means to the temperature and transmitted to the surface where they are converted to an analog indication of temperature. The analog indication of temperature is differentiated to emphasize temperature anomalies.

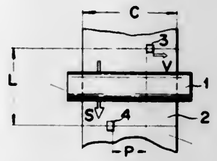


Specific structure of the diode junction means and a temperature compensated constant current regulator is also disclosed.

3,670,568
SYSTEM OF MEASURING THE DISTRIBUTION OF REDUCTION RATE OF METAL STRIPS

Moritada Kubo, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 29, 1970, Ser. No. 102,356
Claims priority, application Japan, Jan. 7, 1970, 45/2114
Int. Cl. B21b 37/02
U.S. Cl. 73—159 **4 Claims**



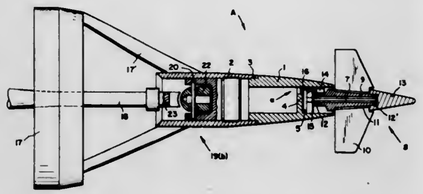
In a system of measuring the distribution of the reduction rate of a metal strip rolled by a rolling mill, a pair of thickness gauges spaced apart with a predetermined spacing and which are reciprocated across the metal strip are provided on the entry and exit sides of the rolling mill and the gauges are controlled such that the same portion of the metal strip is measured on the entry and exit sides of the rolling mill by the pair of thickness gauges.

3,670,569
FLIGHT MEASURING APPARATUS

Peter Partzsch, Friedrichshafen-Manzell, Germany, assignor to Dornier A.G., Friedrichshafen, Bodensee, Germany

Continuation-in-part of Ser. No. 871,759, May 2, 1969, abandoned, which is a continuation of Ser. No. 505,150, Oct. 25, 1965, abandoned. This application Jan. 15, 1971, Ser. No. 106,817
Claims priority, application Germany, Nov. 25, 1964, D 45912
Int. Cl. G01c 23/00
U.S. Cl. 73—180 **8 Claims**

This invention relates to an apparatus for simultaneously measuring the angle of incidence, the angle of sideslip, distance covered along a flight path and air speed of an aircraft which comprises a body, a rotatable nose portion mounted on the body and having propeller blades thereon, a tail assembly mounted on the body, a support for connection to an associated aircraft, a Cardan joint mounted in the body in the center of gravity of the apparatus and connecting the body to said support, electrical means adjacent to the Cardan joint for measuring angles of rotation between the support and

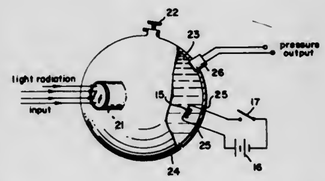


the body in two orthogonal directions, said electrical means including an element mounted on said support and an element mounted on said body, photoelectric measuring means in the body for measuring the number of revolutions of the nose portion, and means for converting the number of revolutions to determine the flight distance and the air speed from the rotational speed of the nose portion and the pitch of the propeller blades, and to count the revolutions of the nose portion within one unit of time.

3,670,570
LIGHT INTENSITY CALORIMETER

Robert A. Briones, Granada Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 592,381, Nov. 7, 1966, abandoned. This application April 30, 1971, Ser. No. 139,268
Int. Cl. G01k 17/00; G01t 1/16
U.S. Cl. 73—190 R **4 Claims**



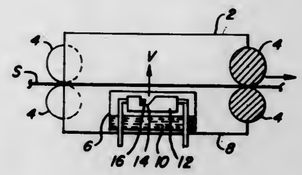
A calorimeter for measuring high-energy pulsed laser light. The light is absorbed by a suitable liquid which causes a molecular expansion. The liquid may be permitted to expand and the change of volume may be measured by a capillary tube. Alternatively, if the liquid is not permitted to expand, the rising pressure may be measured. This obviates the usual waiting period needed for a temperature equilibrium to be reached in conventional calorimeters.

3,670,571
JET DEFLECTION VAPOR GAGE

Ralph G. Rudolph, Edgewood Borough, Pa., assignor to United States Steel Corporation

Filed Dec. 5, 1969, Ser. No. 882,540
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R **5 Claims**

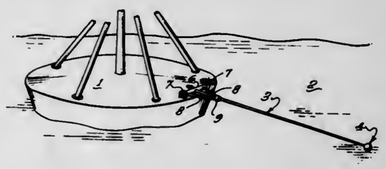
A gage for measuring the flow rate of a vapor in an evacuated chamber has a narrow jet of air directed across an opening through which a stream of the vapor passes. The vapor deflects the air jet in proportion to the amount of material in the vapor stream. The flow rate is determined by measuring the air pressure on the side of the opening opposite the air jet.



3,670,572
AIR-SEA INTERFACE TEMPERATURE MEASURING APPARATUS

Robert F. Devereux, Oxon Hill, Md., and Ernest L. Casco, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 11, 1971, Ser. No. 152,141
Int. Cl. G01k 1/14
U.S. Cl. 73—342 **9 Claims**

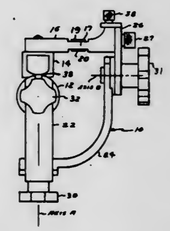


Vertical distribution of temperature at the sea surface is measured by an array of temperature sensors extending upwardly and downwardly from a small float. The float is carried at the outboard end of a relatively long outrigger member which itself is pivotally carried by a buoy or ship so as to be in a free-swinging disposition capable of floatably riding the undulating sea surface to maintain the sensors at fixed positions relative to the surface both in the air and submerged.

3,670,573
APPARATUS FOR MEASURING THUMB AND FINGER FORCE

Karl Heinrich Eberhard Kroemer, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force

Filed Nov. 18, 1970, Ser. No. 90,551
Int. Cl. G01l 5/02
U.S. Cl. 73—379 **4 Claims**



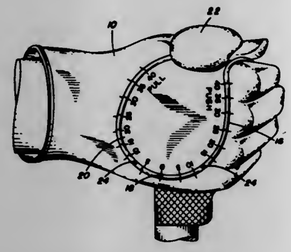
An apparatus for measuring the force exerted by a thumb or finger of a test subject, having a hand grip with a thumb pres-

sure well being positioned on a beam adjacent the hand grip. The beam has a reduced section with strain gages thereon, with the output of the strain gages being applied to a recording device. Adjustments are provided to adjust the relative angular and vertical positions of the thumb pressure well with respect to the hand grip.

3,670,574
FORCE GAGING GLOVES

William R. Edwards, California, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 7, 1971, Ser. No. 132,035
Int. Cl. G01l 5/22
U.S. Cl. 73—379 R **6 Claims**

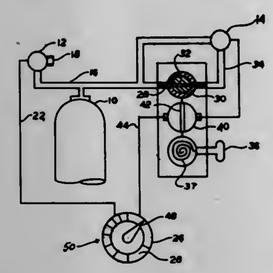


A glove for indicating pressure either positive or negative, as may be applied to the stick of helicopter. A number of interconnected flexible cells located in the palm and along the fingers of the glove are connected by transparent tubing which runs along the back of the hand. The cells and tubing are liquid filled, and a small nylon ball in the tubing moves as pressure is applied to the cells.

3,670,575
INDICATING DEVICE FOR CONTINUOUSLY INDICATING TIME TO DEPLETION OF PRESSURE TANKS IN USE

Bruce D. Emerick, 4927 Hauck Drive, New Orleans, La.

Filed Feb. 19, 1971, Ser. No. 116,780
Int. Cl. G01l 13/00
U.S. Cl. 73—388 **10 Claims**

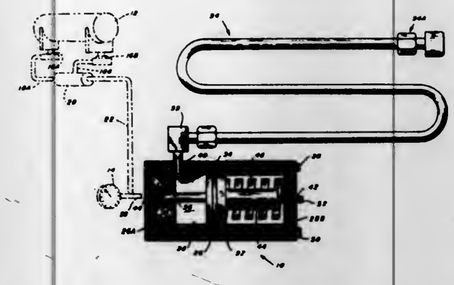


An indicating device in which a pressure transducer periodically measures loss of pressure in a pressure tank to produce an output proportional to the logarithm of the pressure loss rate since the period is constant, and a second pressure transducer continuously measures the effective tank pressure, that is the pressure difference between the tank and the ambient pressures, in mechanical values which are converted into electric logarithmic signals by means of logarithmic potentiometers to drive a dial and pointer respectively in a slide rule application of subtracting exponents, that is logarithms, to divide the effective pressure in the tank by the rate of its use to read the time remaining to depletion from a logarithmic scale numbered arithmatically as indicated on the dial by the pointer.

3,670,576
TEMPERATURE COMPENSATOR FOR A PRESSURE GAUGE

Stuart E. Corry, 4511 S. Lewis Place, Tulsa, Okla.

Filed Dec. 23, 1970, Ser. No. 100,880
Int. Cl. G01l 19/04
U.S. Cl. 73—393 **5 Claims**

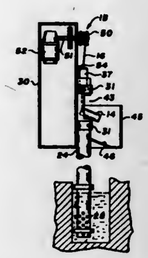


A temperature compensator for a pressure gauge or the like, including a body having a first and second cylindrical cavity coaxial of each other and communicating with each other, a sensing port communicating with one end of the first cylindrical cavity, a vent port communicating with the other end of the first cylindrical cavity, and a compensating port communicating with the second cylindrical cavity, a sense responsive piston positioned in the first cavity intermediate the sensing and vent ports, a compensating piston positioned in the second cavity, the sense responsive and compensating pistons being affixed to each other for simultaneous axial movement, resilient means urging the sense responsive piston towards the sensing port and thereby the compensating piston towards the compensating port, and a closed temperature sensing vessel having communication with the sensing port.

3,670,577
FLUID SAMPLING APPARATUS

Ernst Singer, 3491 Puget Drive, Vancouver, British Columbia, Canada

Filed March 27, 1970, Ser. No. 23,290
Int. Cl. G01n 1/12
U.S. Cl. 73—423 R **4 Claims**

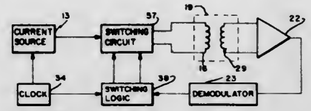


Apparatus for taking samples of fluid, such as industrial waste and sewage effluent, including a sampling cup slidably mounted in guide means adapted to extend downwardly in the fluid. Hoisting means lowers and raises the cup, and discharge means at the guide causes the cup to tip and discharge its contents when the cup is raised to a predetermined level. The guide means usually is a tube with the cup slidably mounted therein, and the cup is unbalanced but normally retained in an upright position by the tube. When the cup reaches an opening in the tube this unbalanced state causes it to tip over and discharge its contents.

3,670,578
CURRENT PULSE GENERATOR

Louis T. Schulte, Paris, France, assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 681,170, Nov. 7, 1967, abandoned. This application Oct. 8, 1970, Ser. No. 79,239
Int. Cl. G01c 19/28; H03k 17/56
U.S. Cl. 74—5.6 **8 Claims**

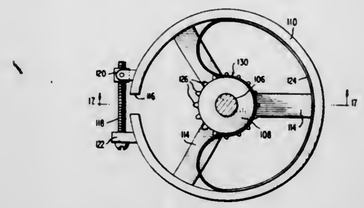


A pulse generator for developing current pulses with precisely controlled rise and fall times. These current pulses are made to pass through a gyro torquer in either one of two directions by means of switches. The gyro torquer current is reversed by digital logic in a pulse rebalanced loop. These current pulses pass through a resistor. The voltage at one end of the resistor is controlled by an operational amplifier. The voltage at the other end of the resistor is controlled so that periodically there is substantially no current flow through either the load or the resistor. This makes it possible to switch the direction of current flow when there is substantially no current flow through the load.

3,670,579
CYCLIC APPARATUS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Filed April 29, 1970, Ser. No. 32,808
Int. Cl. F16h 9/00
U.S. Cl. 74—63 **14 Claims**

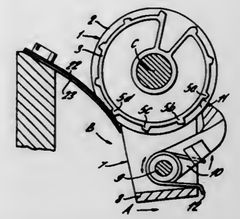


The apparatus includes a guide surface and a thin, resiliently flexible endless band. The guide surface provides a continuous cyclic path for the band. The length of each cycle of the guide surface is substantially less than the cyclic length of the band and the band is arched away from the guide surface in a lobe. Portions of the band on opposite sides of the lobe frictionally engage the surface to prevent the lobe from collapsing. The lobe is capable of progressing along the band to displace the lobe relative to the guide surface. Each cycle of the band relative to the guide surface advances the band a predetermined distance along the guide surface.

3,670,580
INDEXING MECHANISMS

Hans Bud, London, England, assignor to English Numbering Machines Limited, London, England

Filed Oct. 22, 1970, Ser. No. 82,906
Claims priority, application Great Britain, Nov. 7, 1969, 54,570/69
Int. Cl. G05g 5/12
U.S. Cl. 74—815 **4 Claims**

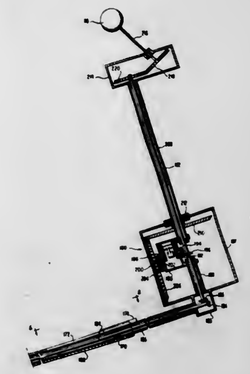


An indexing mechanism wherein an index wheel having a number of spaced projections around a periphery thereof is indexed by means of an indexing mechanism which is moved to and fro to engage in turn the said projections and wherein there is a leaf spring which acts on the projections to urge same forward to the desired index position or rearwards to the desired index position.

3,670,581
SPACE MOTION SIMULATOR SYSTEM

Eldie H. Holland, Box 747, Athens, Ala.

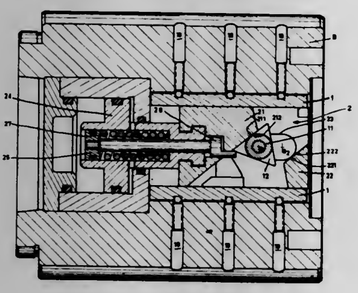
Division of Ser. No. 544,509, April 22, 1966, Pat. No. 3,521,384. This application Nov. 20, 1969, Ser. No. 877,543
Int. Cl. F16h 35/00
U.S. Cl. 74—86 **6 Claims**



The drive unit includes a vertically disposed drive shaft and a rotatable telescopic driven arm which is mounted for rotation about the drive shaft in a plane which intersects the drive shaft at a suitable angle. The gear train including elliptical gears is disposed between the drive shaft and the driven arm so that the arm will be rotated about the drive shaft at a variable rate. A stationary cam plate is disposed about the drive shaft and a cam follower on the telescopic arm controls the extension and retraction of the telescopic arm as the arm is rotated about the drive shaft. Meshing gears are provided on the stationary cam member and the rotatable driven arm to rotate the arm about its own axis while it is being extended and

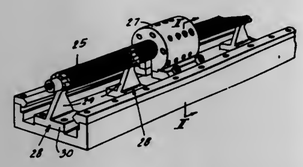
retracted by the cam. A driven member may be provided at the end of the driven arm which is also rotatable about its own axis.

3,670,582
POSITIONING DEVICE
Hans Herose, Bern, Switzerland, assignor to Anciens Ets., T.M.B.-J. Tobler S.A., Louvres, France
Filed Nov. 3, 1970, Ser. No. 86,420
Claims priority, application Switzerland, Nov. 26, 1969, 17564/69
Int. Cl. F16h *27/02*
U.S. Cl. 74—88 **6 Claims**



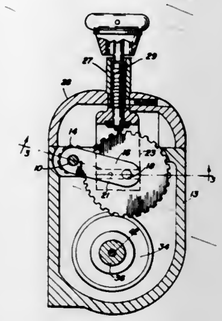
A positioning device comprising a slider acting so as to obtain an alternating rectilinear control movement, means for limiting said movement to a pre-determined travel in one direction or the other while causing said control means to cooperate by members forming an integral part of said slider with positioning means adapted to be put in rotation by said members, said positioning means being coupled directly or indirectly to the positioning element proper, said positioning element being moved in rotation in its plane from one angular position to another angular position. The positioning device finds one of its applications in the control of machine-tools.

3,670,583
LONG SPAN SCREW AND NUT DRIVES
John C. Leming, Glen Ellyn, Ill., assignor to Overton Gear and Tool Corporation, Addison, Ill.
Filed Oct. 19, 1970, Ser. No. 81,996
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **29 Claims**



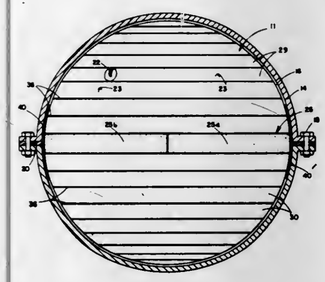
Relatively short coaxial, corotative screw sections are supported by brackets at such intervals as will assure adequate stiffness of the screw against deflection under the loads which it must withstand in service under conditions which a similar screw not supported intermediate its ends could not withstand without deflection. One or more transmission nuts are adapted to run along the screw, or the screw is adapted to run coaxially through the nut or nuts, with free relative passage of the nut and any supporting bracket along the screw. Heavy torque and thrust loads and relatively high speeds can be accommodated. Great practical adaptability and versatility are indicated.

3,670,584
VARIABLE SPEED RATIO TRANSMISSION
Leo C. Bogaerts, and George W. Weinberger, both of Antioch, Ill., assignors to Ammco Tools, Inc., North Chicago, Ill.
Filed Jan. 18, 1971, Ser. No. 107,307
Int. Cl. F16h *15/08, 55/34*
U.S. Cl. 74—199 **8 Claims**



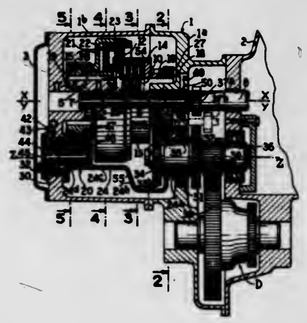
The friction drive wheel of a variable speed ratio transmission for controlling the speed of a lathe crossfeed assembly includes teeth around its periphery that engage the teeth of driving pinion with which they re held in engagement by linkages pivotably connecting the centers of rotation of the driving pinion and the friction drive wheel so that the friction drive wheel remains engaged with the pinion as it is raised nd moved by a control knob to infinitely variable positions between two rotatable friction discs of a clutch. The friction discs are biased toward each other by a compression spring to grip the friction drive wheel at a location on its faces controlled by its position between them, whereby a lead screw that moves the crossfeed assembly and which is connected by a clutch to the friction discs is driven by the discs at an infinitely adjustable speed.

3,670,585
ATTITUDE READOUT FOR FLOATED INERTIAL PLATFORM
Newton C. Alexander, Harbor City; Herbert Stark, Torrance, and Richard C. Thornton, Lawndale, all of Calif., assignors to Northrop Corporation, Beverly Hills, Calif.
Filed April 17, 1970, Ser. No. 29,464
Int. Cl. G01c *19/28*
U.S. Cl. 74—5.6 **18 Claims**



A floated inertial platform comprising a ball member floated within an outer sphere utilizes a plurality of conductive concentric "latitude" rings running around the circumference of the ball member and a resistive ring running around the equator of the ball member as pick-off excitation elements. The excitation elements are excited in sequence with signals suitable for obtaining readouts about three mutually orthogonal axes such as roll, pitch, and yaw. Pick-offs which may be in the form of pairs of oppositely located pads and strip members in the form of a segmented "longitude" ring are mounted on the outer sphere adjacent to the ball surface. Readout signals are sequentially obtained from the pick-offs which are in Eulerian coordinates and require no compensation for two axes, the third axis readout being readily compensated for cross coupling effects to provide an accurate output in Eulerian coordinates as well.

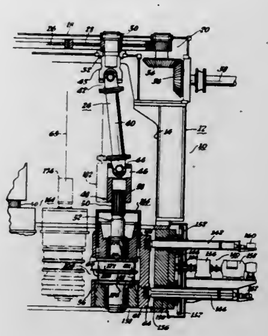
3,670,586
SPEED VARIATOR WITH FRICTION ELEMENTS
Bernard Falay, Paris, and Armand Froumajou, Pontoise, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale des Usines Renault, Billancourt, France
Filed Nov. 13, 1970, Ser. No. 89,399
Claims priority, application France, Feb. 19, 1970, 7005916
Int. Cl. F16h *15/08*
U.S. Cl. 74—199 **8 Claims**



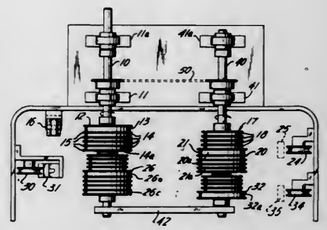
Speed variator comprising a rocker element mounted to swing about a first axis in a housing. The housing contains a first support rotatable about a second axis and carrying a first series of friction elements and a second support mounted in the rocker element to rotate about a third axis and carrying a second series of friction elements engaged between the friction elements of the first series. Means are provided to modify the angular position of the rocker element with respect to the housing and thus modify the distance between the first, second and third axis.

3,670,587
VERTICAL MILL
Herbert Lemper, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.
Filed June 1, 1970, Ser. No. 42,077
Int. Cl. B21b *31/08*
U.S. Cl. 72—239 **18 Claims**

I disclose a rolling mill comprising a housing, a pair of mill rolls rotatably mounted on said housing, means mounted on said housing for rotatably mounting each of said rolls, means for rotating each of said rolls including a drive spindle, means for moving each of said rolls axially, a detachable coupling for detachably coupling each of said spindles to the associated one of said rolls, each of said detachable couplings including inter-fitting and axially withdrawable keying components on the associated drive spindle and mill roll respectively, and said axial moving means being capable of moving each of said rolls through a distance at least sufficient to engage and to withdraw said inter-fitting keying members.



3,670,588
WIRE DRAWING
Carl O. Bruestle, 10 Longview Rd., Edison, N.J.
Filed April 5, 1971, Ser. No. 130,949
Int. Cl. B21c *1/02*
U.S. Cl. 72—289 **16 Claims**

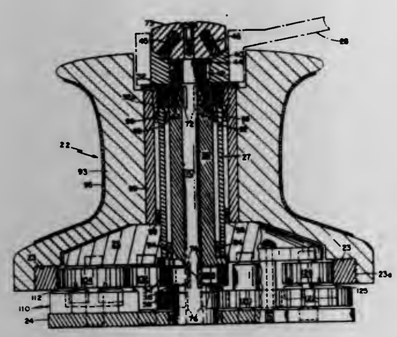


Similar dual step capstan units each having a larger and a smaller diameter section, in which the strand in process provides the driving means from capstan to capstan.

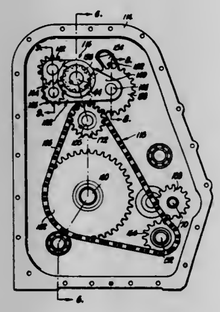
3,670,589
WINCH
John Henry Carter, Lincoln, Mass., assignor to Aeromarine Corporation, Weston, Mass.
Division of Ser. No. 799,802, Feb. 17, 1969, Pat. No. 3,599,937. This application May 5, 1971, Ser. No. 140,332
Int. Cl. F16h *3/08*; F16d *67/00*; B66d *1/30*
U.S. Cl. 74—325 **3 Claims**

A multiple-speed winch having a plurality of independently rotatable pinions coaxial with a drive shaft, drive linkages of varying mechanical advantage connecting these pinions to the winch drum and a shaft engager for engaging a selected pinion to the drive shaft. The shaft engager includes drive cams associated with the pinions and mounted for movement between

an extended position which prevents relative rotation of pinion and shaft and a retracted position which permits rotation; selective extension of the drive cams causes the shaft to drive selected pinions.

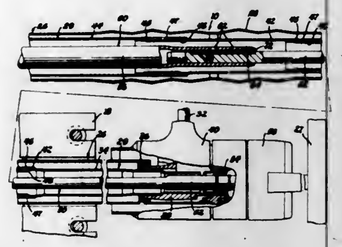


3,670,590
TRANSMISSION FOR FORAGE HARVESTERS AND THE LIKE
William D. Long, Hesston; Ferol S. Fell, Newton; Bernard L. Wells, Wichita, and John P. Prichard, Bentley, all of Kans., assignors to Hesston Corporation, Hesston and Field Queen Incorporated, Maize, Kans., part interest to each
Filed Jan. 18, 1971, Ser. No. 107,090
Int. Cl. F16h *3/34*; A01d *45/18*
U.S. Cl. 74—353 **6 Claims**



A transmission on a forage harvester permits the gathering chains, sickle, and feed rolls thereof to be selectively shifted into forward, neutral, or reverse drive conditions without affecting the operation of the power source, chopper, and blower of the harvester. Components of the transmission are operably coupled in such a manner that the rotative speeds of the feed rolls may be varied relative to the chopper without correspondingly varying the speeds of operation of the sickle and gathering chains, and rockable shifter mechanism journaling the input shaft of the transmission is geometrically arranged such that the transmission tends to remain in its forward drive condition.

3,670,591
COLLAPSIBLE STEERING SHAFT ASSEMBLY
Thomas J. Milton, Bay City, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 5, 1971, Ser. No. 112,910
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **4 Claims**

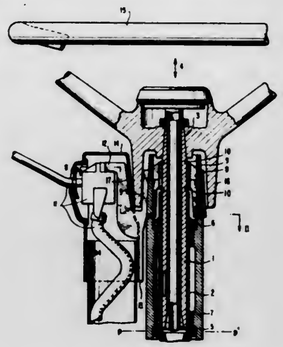


A collapsible steering shaft assembly for a collapsible steering column assembly is disclosed as comprising a sleeve member and a shaft member projecting from within the sleeve member which are rotatably mounted within a collapsible steering column. A joining member for joining the sleeve and shaft members is located intermediate thereof and is fixed against both axial and angular movement relative to one of the members. The joining member and the other of the steering shaft members have a first detent which normally prevents inward collapse of the steering shaft assembly and a second detent which normally prevents outward telescoping of the steering shaft assembly. The first detent of the joining member is shearable and the second detent of the joining member is yieldable to permit inward collapse of the steering shaft assembly upon an end impact of the steering column assembly of a predetermined magnitude. The joining member and the other of the steering shaft members also have a third detent which normally prevents relative angular movement between the sleeve and shaft members. Further, the sleeve and shaft members have structures providing a joint therebetween thatoperates during and after the inward collapse of the steering shaft assembly to maintain the locked angular relationship therebetween. that operates

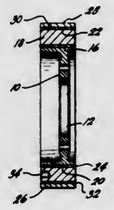
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3,670,592
STEERING INSTALLATION, ESPECIALLY FOR COMMERCIAL-TYPE VEHICLES
Herbert Senft, Gaggenau (Murgtal), and Hans Rinsergschwentner, Rotenfels (Murgtal), both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Aug. 7, 1970, Ser. No. 62,040
Claims priority, application Germany, Aug. 8, 1969, P 19 40 493.4
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **10 Claims**

A steering installation for motor vehicles, particularly trucks, which essentially includes a steering spindle, a steering column, a vertically adjustable steering wheel, and vehicle operating and actuating devices, such as gear shift levers etc., coordinated to the steering wheel. The operating and actuating devices are so connected with the steering spindle that they have substantially the same distance to the steering wheel in every position of the latter. A connecting support provided for the operating and actuating devices is secured at the steering spindle so that these devices may move axially with the steering spindle but are prevented from rotating with the steering spindle during normal turning operations. The steering column is fixed in position and surrounds the steering spindle. The connecting support extends through a groove in said column, which groove holds the connecting support against rotation with the steering spindle. The steering column may also be pivotal for further adjustment possibilities.



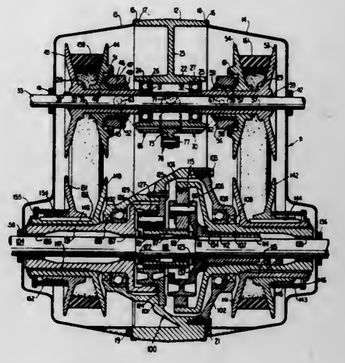
3,670,593
SERIES TYPE VIBRATION DAMPER
William J. Troyer, Coldwater, Mich., assignor to Simpson Industries Inc., Litchfield, Mich.
Filed July 13, 1970, Ser. No. 54,402
Int. Cl. F16f *15/12*
U.S. Cl. 74—574 **3 Claims**



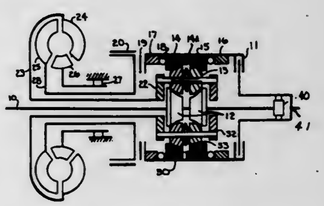
A vibration damper for rotating members consisting of a hub member and at least two annular inertia members mounted upon the hub member by elastic elements. The hub and inertia members include cylindrical surfaces concentric to the axis of hub member rotation and the elastic elements cooperate with these surfaces for mounting one inertia member upon the hub member in a vibration absorbing relationship, and the second inertia member is mounted upon a cylindrical surface defined on the previously mentioned inertia member by an elastic element creating a "series" relationship between the inertia members and the hub member.

3,670,594
INFINITELY VARIABLE PLANETARY TRANSMISSION
Daniel W. Roper, Rochester, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,846
Int. Cl. F16h *37/00, 9/18*
U.S. Cl. 74—689 **7 Claims**

An infinitely variable forward and reverse drive mechanical transmission has parallel input and output shafts, a pair of variable diameter drive pulleys fixed on the input shaft, a pair of driven pulleys rotatable upon the output shaft, belts interconnecting one pulley of each pair with an associated pulley of the other pair, planetary gearing comprising a pair of ring gears nonrotatably connected to the respective driven pulleys, a rotatable carrier mounting planet gears meshed with one of the ring gears, a fixed carrier mounting idler gears meshed with the other ring gear and a common sun gear, and a single control lever is provided for inversely varying the effective diameters of the drive pulley.



3,670,595
VARIABLE SPEED AUTOMATIC TRANSMISSION
Walter Valdemar Chery, 744 Alden Street, Meadville, Pa.
Filed Dec. 17, 1969, Ser. No. 885,912
Int. Cl. F16h *47/08, 13/08*
U.S. Cl. 74—688 **6 Claims**

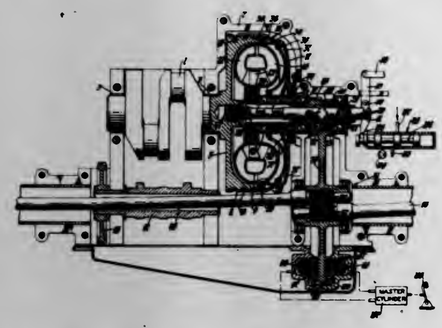


This specification discloses an infinitely variable speed transmission. The transmission is made up of a friction planetary drive and a torque converter. The reactive member of the friction drive and the output of the torque converter are connected to the output of the transmission.

3,670,596
VEHICLE POWER TRANSMISSION WITH SERVICE BRAKES
Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 805,745, March 10, 1969, Pat. No. 3,590,966. This application Nov. 10, 1970, Ser. No. 88,457
Int. Cl. F16d *67/00*
U.S. Cl. 74—710.5 **8 Claims**

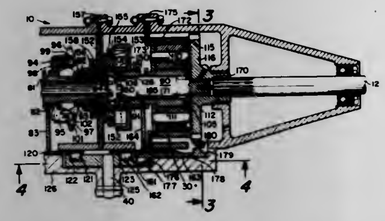
Power transmission in which the input rotor of a hydrodynamic torque-transmitting unit and a rotatable transmission input are selectively clutched and unclutched to control power flow through the unit. Controls associated with a gear selector mechanism for forward and reverse gearing effect the momentary disconnection of the input rotor and the transmission input when shifting gears. Disc brakes selectively engageable with the differential input provide vehicle service

brakes. The housing of the torque-transmitting unit is rigidly connected to the transmission input by deforming a portion of



the housing into appropriate openings formed in the transmission input.

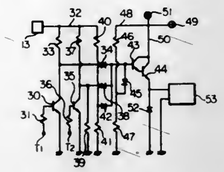
3,670,597
AUTOMATIC TRANSMISSION FOR AUTOMOTIVE VEHICLES
Worthin F. Grattan, 4224 South Bruce, Las Vegas, Nev.
Filed Nov. 25, 1970, Ser. No. 92,815
Int. Cl. F16h 5/42, 47/08; B60k 29/00
U.S. Cl. 74—752 E **4 Claims**



An automatic transmission in which a drive shaft is coupled to a driven shaft through a centrifugal clutch, a fluid coupling, a forward planetary gear and a rear planetary gear. A shift lever is activated to lock-up the rear planetary gear for drive, neutral, reverse, and parking. Thus, the rear planetary gear is initially locked-up when the shift lever is in the drive position. In low drive, power is transmitted from the drive shaft to the driven shaft through the centrifugal clutch, the fluid coupling, and the forward planetary gear. After the vehicle speed reaches 20 m.p.h., the forward planetary gear locks-up and power is transmitted from the drive shaft directly to the driven shaft. When the vehicle speed reaches 40 m.p.h., the rear planetary gear will automatically shift into overdrive, and power is transmitted from the drive shaft to the driven shaft through the rear planetary gear.

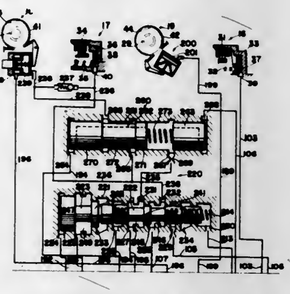
3,670,598
CONTROL SYSTEM FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION
Yoichi Mohri, and Hirohisa Ichimura, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Oct. 13, 1970, Ser. No. 80,283
Claims priority, application Japan, Oct. 14, 1969, 44/81753
Int. Cl. B60k 21/00
U.S. Cl. 74—866 **4 Claims**

A control system for controlling the line pressure in a hydraulic control system of an automotive automatic power transmission in which a line pressure regulator valve is controlled by a variable back pressure produced by a servo valve which is actuated by an electronic control circuit in accordance with changes in vehicle speed. The voltage to be supplied to the servo valve is increased in proportion to the



turbine speed of a value and, when the turbine speed exceeds the predetermined value, the voltage to be applied to the servo valve remains constant. The line pressure is thus regulated in a manner to follow the output torque of the torque converter to thereby control the line pressure to an appropriate level for effecting smooth shifting between the gear ratios.

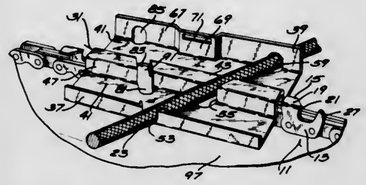
3,670,599
AUTOMATIC TRANSMISSION CONTROLS
Hiroaki Nagamatsu, Hiroshima-shi, Japan, assignor to Toyo Kogyo Co., Ltd., Aza-Shinchi, Fuchu-cho, Aki-gun, Hiroshima-ken, Japan
Filed Oct. 8, 1969, Ser. No. 864,793
Claims priority, application Japan, Oct. 31, 1968, 43/79512
Int. Cl. B60k 21/02, 29/02
U.S. Cl. 74—869 **3 Claims**



Automatic transmission controls for use in an automotive vehicle which improves smoothness and reduces pumping losses in automatic shifting by modifying the hydraulic pressure to be applied to friction engaging device in accordance with the torque output of the vehicle engine during normal driving of the vehicle and in accordance with the torque transmitted from the vehicle at the time of engine braking. The controls include a regulator valve operable to extend the operating range to high engine speed and to increase the varying rate at low speed, a timing valve effective to control the engaging time of a servo-motor operated at the low speed, a shift valve being capable to impart hysteresis thereto, and an inhibitor valve being adapted to prevent transmission into the low speed driving condition only if the vehicle driving speed exceeds over a predetermined speed.

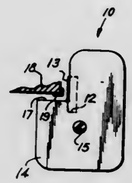
3,670,600
CHAIN SAW FILING FIXTURE
Uwe F. Arff, Peterborough, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Aug. 26, 1970, Ser. No. 67,014
Int. Cl. B23d 63/08
U.S. Cl. 76—36 **10 Claims**

Disclosed herein is a filing fixture for sharpening a saw chain, which filing fixture comprises a filing plate having first and second outer flanges extending respectively from the opposed outer edges of the filing plate and from one surface thereof and in generally perpendicular relation to the one surface. The filing plate also has, intermediate the opposed edges thereof, a channel shaped section including third and fourth flanges extending from said one filing plate surface in perpendicular relation thereto and connected by a web. In addition,



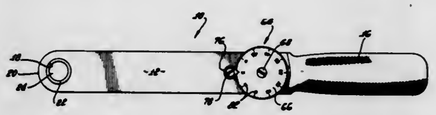
the filing fixture includes a slot in each of the flanges, the slots being in alignment with one another so as to afford guidance and/or clearance of a file movable in the slots. In addition, one of the first and second flanges includes an offset portion facilitating "point" of a saw chain. Still further, one saw chain filing fixture disclosed herein includes stabilizing legs selectively locatable in collapsed or extended position.

3,670,601
SKI EDGE SHARPENER
Francis G. Weeks, 721 Leslie Ave., Thunderbay, Ontario, Canada
Filed Sept. 10, 1970, Ser. No. 71,143
Int. Cl. B21k 17/00
U.S. Cl. 76—83 **1 Claim**



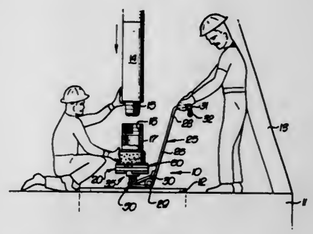
A ski sharpening device for skiers. This device consists of a plastic or wooden body having a file positioned within a recessed area in order to draw the device along the ski edge in order to sharpen it. The device has end plates for holding the file in place.

3,670,602
TORQUE LIMITING WRENCH
William E. Van Hoose, 4117 Brompton Ave., Bell, Calif.
Filed July 13, 1970, Ser. No. 54,194
Int. Cl. B25b
U.S. Cl. 81—52.4 **14 Claims**



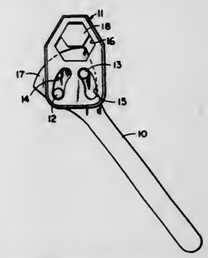
A torque limiting wrench adapted to tighten a fastener with either a right- or left-hand thread, which wrench will physically register a predetermined torque requirement when said torque limit is reached upon the tightening of said fastener. The wrench includes a body portion having a longitudinal axis and carried on said body portion and aligned parallel with said longitudinal axis is a deflectable means pivotally connected with said body portion. Mounted on the deflectable means is a conventional wrench socket head adapter to receive a wrench socket head. Release connecting means associated with said body portion and said deflectable means provided remote from the pivotal connection is adapted to be overcome by torque created between the body and fastener as it is tightened to allow the deflectable means to pivot out of parallel alignment with said body portion signaling that the predetermined torque has been reached by said fastener as it is tightened.

3,670,603
OIL WELL TOOL POSITIONING AND COUPLING STARTING APPARATUS
Harold R. Hawkins, 129 West 5th Ave., Anchorage, Alaska
Filed May 21, 1970, Ser. No. 39,321
Int. Cl. B25b 13/00
U.S. Cl. 81—53 **12 Claims**



The apparatus has a rotatable table for receiving a heavy drill bit tool with a threaded upper end to be raised generally vertically by movement of a lever, to which the table is pivotally mounted until the threads of the drill bit engage the mating threads on the lower end of a suspended oil well string pipe with rotation of the table coupling the two together. The table is provided with extendable and retractable arms having upstanding pins for receiving and holding different sizes of oil well tools.

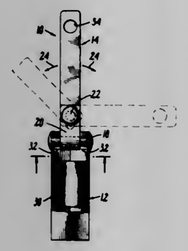
3,670,604
VARIABLE HEXAGON SPANNER
Rolf Ivar Fromell, Tabyvagen 71, Box 53, S-183 21 Taby, Sweden
Filed Jan. 18, 1971, Ser. No. 107,154
Claims priority, application Sweden, Jan. 28, 1970, 1060/70
Int. Cl. B25b 13/28
U.S. Cl. 81—98 **10 Claims**



A variable hexagon spanner comprising a handle pivotally interconnected with a spanner head; the spanner head has a

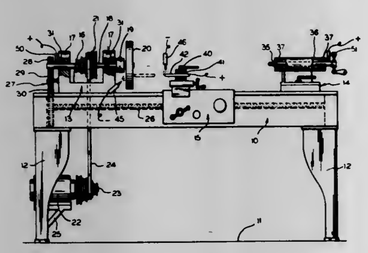
non-symmetrical hexagonal hole into which a cam portion on the handle protrudes a variable amount depending on the angular relationship between the handle and spanner head for positively gripping a hexagonal head positioned in the hole irrespective of the direction of movement of the handle.

3,670,605
SPARK PLUG WRENCH
Kenneth J. Heim, Douglaston, and Fred F. Rimmler, Manhasset, both of N.Y., assignors to A. L. Doering Mfg. Corp., Bayside, N.Y.
Filed Jan. 26, 1971, Ser. No. 109,809
Int. Cl. B25b *13/02*
U.S. Cl. 81—125 **8 Claims**



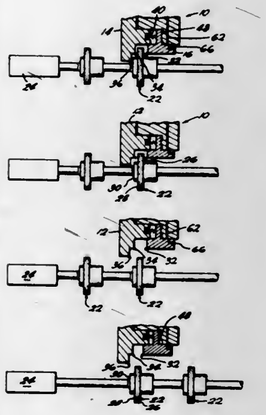
A spark plug wrench has a handle movably coupled through a U-shaped link to a pivot pin that extends across the opening at one end of a plug-engaging socket, with the upper ends of the link being pivotally attached to one end of the handle, so that a loose fitting universal joint is formed between the handle and the socket.

3,670,606
METHOD AND APPARATUS FOR COOLING THE WORKPIECE AND/OR THE CUTTING TOOLS OF A MACHINING APPARATUS
Oscar C. Blomgren, Sr., and Oscar C. Blomgren, Jr., both of Lake Bluff, Ill., assignors to Inter-Probe, Inc., Chicago, Ill.
Filed Oct. 12, 1970, Ser. No. 79,751
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **7 Claims**



A method and apparatus for dissipating heat generated during the machining and processing of metals or other materials which includes directing toward the workpiece and/or cutting tool a needle-like or sharp tooth-shaped probe that is connected to a high voltage direct current potential, and electrically insulating the workpiece and cutting tool from the machine.

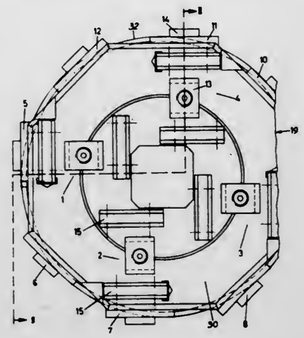
3,670,607
METHOD FOR MACHINING SPACED SURFACES
Frank C. Skrentner, Bloomfield Hills, Mich., assignor to LaSalle Machine Tool, Inc., Warren, Mich.
Division of Ser. No. 833,349, June 16, 1969, Pat. No. 3,592,089. This application March 29, 1971, Ser. No. 128,818
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **2 Claims**



The method for finish machining parallel surfaces on a workpiece in which the machine tools which are movable across the surfaces to be machined are mounted on relatively movable supporting head sections. The tools are moved radially inwardly along opposite surfaces of a rotating workpiece, one of the head sections is then moved a predetermined distance in a direction to move the tool thereon away from the tool on the other head section, the workpiece is then moved in the same direction a smaller distance so that both surfaces are spaced from the tools, and the head is then retracted while the tools are spaced from the workpiece surfaces to positively preclude the formation of objectionable drawback lines on the workpieces.

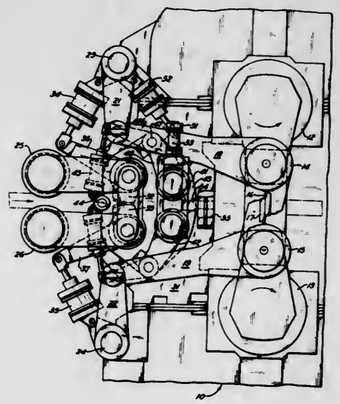
3,670,608
MULTIPLE TOOL HOLDER DEVICE
Otto Marzy, Steyr, Austria, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland
Filed March 31, 1970, Ser. No. 24,141
Claims priority, application Switzerland, April 7, 1969, 5250/69
Int. Cl. B23b *29/24*
U.S. Cl. 82—36 A **6 Claims**

A multiple tool holder for a machine tool, especially a lathe, comprising a tool holder body member having a number of tool receiving stations at least some of which are arranged in neighboring pairs. Respective axially displaceable and radially displaceable clamping elements are provided for each neighboring pair of tool receiving stations, which respective clamping elements are mounted at the tool holder body member. A common clamping mechanism is provided for the respective axially displaceable and radially displaceable clamping elements of each neighboring pair of tool receiving stations, and a single eccentric bolt means is rotatably



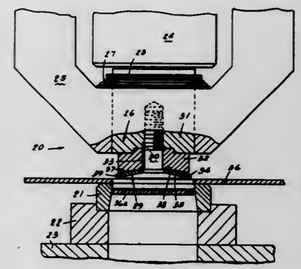
mounted at the tool holder body member for actuating each such common clamping mechanism.

3,670,609
METHOD AND APPARATUS FOR CONTROLLING SHEARING OF METALLIC WORKPIECES
Joseph Contaldo, Sewickley, and George Pripeton, Boyers, both of Pa., assignors to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Nov. 12, 1969, Ser. No. 875,655
Int. Cl. B23d *25/08*
U.S. Cl. 83—37 **5 Claims**



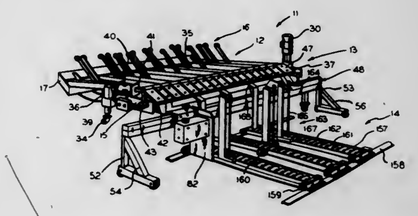
This disclosure relates to the art of producing predetermined length cuts of steel billets by a flying shear. It includes a primary pinch roll machine arranged in front of the shear to advance all but the trailing end portion of the billet to the shear for cutting into desired lengths. Between the primary pinch roll machine and the shear and immediately adjacent the shear, there is arranged a secondary pinch roll machine. A measuring roll is provided to measure the length of the billet, except for the trailing end thereof issuing to the shear. This measuring operation is employed to control the operation of the shear in cutting the billet into a number of desired length cuts. The trailing end portion of the billet is not measured by the measuring roll but instead by the second pinch roll machine, which also advances the trailing end portion to the shear.

3,670,610
METHOD AND MEANS FOR PUNCHING
Percy L. Cady, Jr., Darien Center, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Dec. 22, 1969, Ser. No. 886,986
Int. Cl. B26f *1/14*
U.S. Cl. 83—55 **31 Claims**



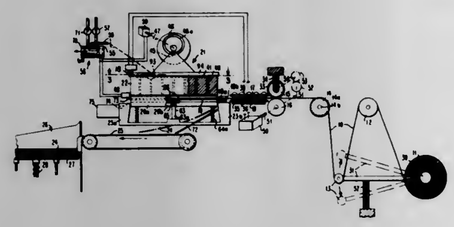
A method and means for punching includes the use of a resilient washer-like member as a punch tip.

3,670,611
SHEAR DISCHARGE CONVEYING SYSTEM
David J. Jarman, 3520 Michigan, Cincinnati, Ohio
Filed Jan. 6, 1971, Ser. No. 104,289
Int. Cl. B23d *33/00*
U.S. Cl. 83—81 **10 Claims**



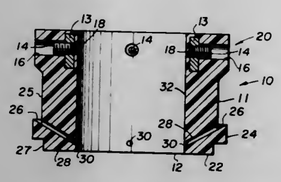
A portable automatic shear discharge conveying system which operates in conjunction with squaring shears to automate the shearing operation. The system comprises a unique conveyor which includes camless support units for supporting the material being sheared. The support units drop down automatically as the shear cut commences. The support units are raised automatically after the sheared material passes by. A scrap separator is provided at the rear of the conveyor which causes the scrap to be delivered to one bin and sends the sheared material to a stacker that is equipped for stacking odd shaped cuts. The stacker frame integrally includes the surge tank for the compressed air circuit used in controlling the conveyor system and stacker.

3,670,612
CARD CUTTING APPARATUS
Robert L. Johnson, and David W. Leach, both of Trenton, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 27, 1970, Ser. No. 40,976
Int. Cl. B65h 35/06
U.S. Cl. 83—99 7 Claims



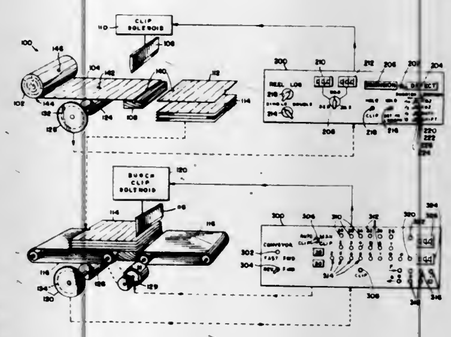
Cards are formed by intermittently die cutting both ends simultaneously from a web of polyester material, providing cards of a width equal to that of the web. This "cookie-cutter" approach leaves a small scrap strip between cards, but assures that the cards will be of consistently accurate length with precisely positioned corner cuts or rounded corners being formed at the same time as the transverse end cut. During the punching stroke, the uncoated side of the web is attracted by vacuum to the punch just before it enters the die; and two U-shaped movable guides that laterally support the web are spread apart to release the card as it is cut from the web; whereupon air under pressure is supplied to the punch to divert the scrap strip into a receptacle and release the card onto a conveyor for stacking.

3,670,613
PUNCH STRIPPER
Dominick Rienzi, 15 Jefferson St., Nutley, N.J.
Filed Aug. 24, 1970, Ser. No. 66,363
Int. Cl. B26d 7/06, 7/18
U.S. Cl. 83—139 15 Claims



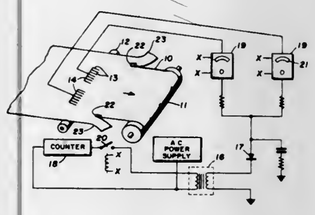
A punch stripper unit comprising an integral polyurethane body member having a steel band embedded therein which reinforces the body member and threadingly receives locking screws for securing a punch in a punch receiving hole passing through the body member. The polyurethane provides its own spring-back force when compressed during a punching operation to forcibly remove a punch member mounted in the stripper unit from a punched hole. The workpiece engaging surface of the polyurethane body does not mar workpieces being punched since polyurethane is non-abrasive. Further, an oil retaining reservoir in the form of a groove formed around the outside of the stripper unit communicates with the punch receiving hole via lubricating channels for continuously supplying lubricant between the surface of the punch receiving hole and a punch disposed therein. In addition, oil collecting means may be provided for lubricating the walls of the punching end of the punch for facilitating punching of a workpiece.

3,670,614
AUTOMATIC VENEER MEASURING AND CLIPPING CONTROL SYSTEM
Ernest H. Streckert, 609 North Road, Medford, Wis.
Filed Dec. 17, 1969, Ser. No. 885,917
Int. Cl. B26d 5/40
U.S. Cl. 83—208 16 Claims



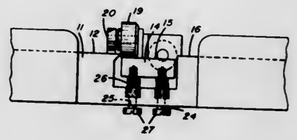
A solid state control system measures out the length of veneer cut from reel or log as it is moved by a conveyor and automatically clips the veneer to the desired length. The veneer can be automatically cut into sheets of any desired length, or it can be automatically clipped whenever a periodic knot or defect appears. After the veneer has been clipped into sheets and stacked, the stacks are semi-automatically shifted and are electronically measured and clipped into sections of the proper length for assembly into standard size panels.

3,670,615
WEB MARKING DEVICE
Robert F. Scholl, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 18, 1970, Ser. No. 90,537
Int. Cl. B26d 5/00
U.S. Cl. 83—367 3 Claims



A marking device is employed in conjunction with a system for electrically detecting defects in a nonwoven web. The marking device uses the trimmings or waste portions of the web rather than marking the usable portion of the web. In response to a signal indicating the presence of a defect, the marking device moves the web laterally inward thereby leaving at least a portion of the trim attached to the web at the location of the defect.

3,670,616
CUTTING AND SPLICING APPARATUS
Stephen H. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 10, 1970, Ser. No. 53,722
Int. Cl. B26d 7/22
U.S. Cl. 83—397 3 Claims



Apparatus for cutting a web and for supporting the web during the splicing thereof. The apparatus comprises two generally planar support members, one of which bears a cutting edge formed along a lateral extremity thereof. The other support member is moveable relative to the first and is normally positioned generally coplanar therewith and adjacent said cutting edge whereby the two members together effectively form a single support surface extending on either side of the cutting edge and whereby the operator's exposure to the cutting edge is minimized. A rotatable cutter wheel is suitably mounted for traversal of the cutting edge in cutting relationship therewith. During such traversal, a portion of the cutter wheel extending laterally above the moveable support member engages that member and displaces it from its normal position to a depressed position.

3,670,617
VACUUM PUMP OPERATED MUSICAL INSTRUMENT
Ernest Halle, 30 Cadwalader Terrace, Trenton, N.J.
Filed June 25, 1971, Ser. No. 156,837
Int. Cl. G10d 7/00
U.S. Cl. 84—330 12 Claims



A vacuum pump operated musical instrument is herein described which includes a hollow cylindrical body. The body is formed to define at least one aperture in the cylindrical wall thereof. The hollow body is open at one end and closed at the opposite end. A piston is slidably mounted within the cylindrical body for reciprocation past the aperture. As the piston is moved past the aperture, in a direction from the closed end to the opened end of the hollow body, the piston draws a vacuum and then suddenly communicates that vacuum to the ambient through the aperture. Air rushing in from the ambient into the vacuum space is acted upon the size and configuration of the aperture to form an audible sound.

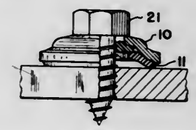
A second piston arrangement may be disposed between the aperture and the closed end of the hollow body. The second piston arrangement may be manually positioned to vary the volume of the vacuum retaining space. The adjustment of the volume of the last mentioned space is operable to controllably vary the pitch of the sound caused by air rushing from ambient into that space.

Alternatively, a sleeve member may be coaxially and slidably mounted over the open end of the tubular shaped body so as to be adjustable with respect to the aperture. Axial movement of this sleeve member is operable to controllably vary the pitch of the sound in response to the position of the sleeve member.

A one way valve is mounted within the first piston as a compression relief mechanism when the first piston is moved toward the closed end of the tubular body, before commencing the vacuum stroke.

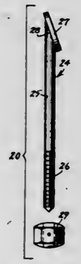
If it is found that the vacuum formed between the two pistons is too great when both pistons are moved in opposite directions at the same time, the compression relief valve may be opened manually by a control mechanism associated with the first piston arrangement to dissipate some of the vacuum.

3,670,618
COMPOSITE WASHER
Paul J. Jellison, Pittsburgh, Pa., assignor to Textron, Inc., Providence, R.I.
Filed Oct. 2, 1970, Ser. No. 77,610
Int. Cl. F16b 35/00, 43/00
U.S. Cl. 85—1 JP 9 Claims



A composite washer having a dome-shaped metal member and a resilient member such as neoprene bonded thereto. The resilient member comprises two components, the first of which is bonded to the metal member along its bottom surface at the high portion of the dome and substantially adjacent the central opening, and the second component is positioned in partially overlapping relationship with the first component and is also bonded to the metal member along the bottom surface and radially removed from the washer central opening. The metal member is shaped to restrict the resilient member from moving radially outward and to urge a radially inward movement.

3,670,619
HORSESHOE FASTENER
William M. Coats, Route 3, Box 357, Huntsville, Ala.
Continuation-in-part of Ser. No. 749,820, Aug. 2, 1968, abandoned. This application Oct. 28, 1969, Ser. No. 871,850
Int. Cl. F16b 35/06
U.S. Cl. 85—9 1 Claim



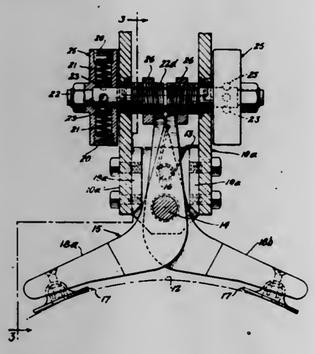
A horseshoe fastener including a head member having an elongated straight shank supporting a planar head at a steep

angle to the longitudinal axis of the shank for setting flush against the surface of a horse's hoof when the shank is extended through a hole through the shell of a hoof and a corresponding hole in a horseshoe, and a securing member for engaging the head member to secure the horseshoe to the hoof.

3,670,620
AUTOMATIC SWAY BRACE DEVICE

William Paraskewik, Lansdale, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 23, 1970, Ser. No. 92,039
Int. Cl. B64d 1/04
U.S. Cl. 89—1.5 B 1 Claim

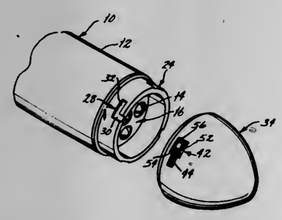


Automatic sway brace device for restraining stores mounted on an aircraft. Paired sets of scissored sway braces, restrained by clamps mounted on a threaded shaft, extend outward from the bottom of a rack for abutting a store secured in the rack.

3,670,621
ROCKET LAUNCHER FAIRING

John J. Nash, Ferguson, Mo., assignor to Alsco, Inc., St. Louis, Mo.

Filed Oct. 31, 1969, Ser. No. 872,842
Int. Cl. F41f 3/06
U.S. Cl. 89—1.8 17 Claims

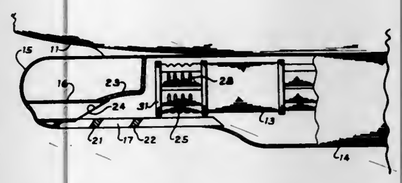


A rocket launcher fairing is adapted for use with an elongated rocket launcher having at least one rocket tube containing a rocket. The fairing includes a rim adapted to fit on one end of the launcher, securing means on the rim for detachably securing it to the launcher, and a polystyrene shell foamed in place around the rim so that it adheres to the rim. The shell forms a rounded surface which encloses the end of the launcher and which is adapted to shatter and break in response to the impact from the rockets when they exit from the tubes.

3,670,622
GUN BLAST STRIPPER AND DIFFUSER

William W. Bryant, Ferguson, and Richard T. Groff, Ladue, both of Mo., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 109,405
Int. Cl. B64d 7/02; F41f 17/12
U.S. Cl. 89—14 C 3 Claims

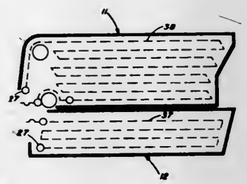


An apparatus for diffusing and directing the energy from a gun blast from aircraft mounted guns including a stripper attached to each said gun, said stripper having a plurality of openings for directing energy from a gun blast in a downward direction, a curved acceleration ramp positioned forward of said guns, and one or more cascades for directing energy downwardly.

3,670,623
AMMUNITION CONTAINER FOR AIRCRAFT

William Kuyper, Westminister, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 1, 1970, Ser. No. 51,425
Int. Cl. F41f 9/06
U.S. Cl. 89—34 1 Claim



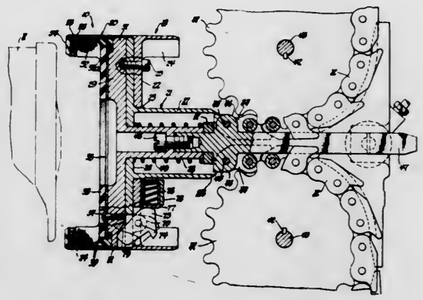
An ammunition box for an aircraft having a first container adaptable to be removably attached to an aircraft and having a second container adaptable for attaching to said first container. The first container has an opening in its bottom and said second container has an opening in its end thereby providing access to ammunition belts within said containers for linking an ammunition belt in said second container with an ammunition belt in said first container.

3,670,624
RAMMER HEAD

John R. Hayes, Indianapolis; Francis H. Eckart, Bargersville, and Donald E. Peck, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1970, Ser. No. 93,606
Int. Cl. F41f 17/16
U.S. Cl. 89—47 5 Claims

A rammer head structure in which two entrapped flexible gripper segments, such as rubber gripper segments, are squeezed against the shoulder on the rear of an ammunition cartridge case at a loading station to securely grip the round of ammunition and move it forward through a loading tube into the breech of a gun barrel with the rammer head structure being released from the round of ammunition after it has been partly positioned in the breech of the gun barrel.



3,670,625
POT BROACHING MACHINE

Lily G. Skalsey, Detroit, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Oct. 15, 1970, Ser. No. 80,951
Int. Cl. B23d 41/06
U.S. Cl. 90—86 9 Claims

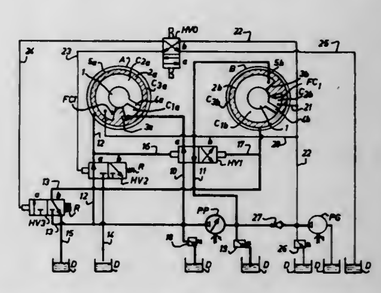
A pot broach comprising an upright frame including a vertical broach adjacent the upper end of the frame. A piston and cylinder device is disposed below the broach and a work holder is provided on the upper end of the piston. Automatic loading mechanism slides a work piece into position above the work support on the piston. Guide means retains the work piece accurately located until it enters into the lower end of the broach.

3,670,626
JET PIPE FLUID CONTROL

John E. Olson; Wayne W. Bostad, and Norman L. Price, all of Portland, Oreg., assignors to Hyster Company, Portland, Oreg.

Filed June 11, 1969, Ser. No. 832,212
Int. Cl. F15b 13/042, 13/68
U.S. Cl. 91—3 24 Claims

A jet pipe fluid control having a nozzle which is movable in more than one plane into alignment with any one of a cluster of input openings for a series of fluid passages leading to fluid-actuated control valves. The valves control the flow of high pressure fluid to fluid motors which operate various load-handling apparatus of an industrial lift truck. A control handle at the operator's station of the truck moves the jet pipe into alignment with the desired opening for remote actuation of a control valve.



3,670,627
DEVICE FOR DRIVING A SHAFT IN ROTATION

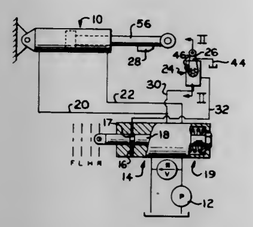
Alfred Valantin, Clermont, France, assignor to Charbonnages De France, Paris, France

Filed Oct. 13, 1969, Ser. No. 865,918
Claims priority, application France, Oct. 15, 1968, 68170022
Int. Cl. F15b 11/18; F01b 7/20; F01c 9/00
U.S. Cl. 91—167 6 Claims

A device for driving a shaft in rotation, of the kind comprising at least one set of two identical rotary jacks mounted on a common shaft, the annular space comprised between the cylindrical casing of each jack and the shaft coaxial with this latter being divided into two fluid-tight chambers of variable volume, separated on the one hand by a longitudinal abutment provided on the internal face of the said cylindrical casing, and on the other hand by a radial blade fixed longitudinally in the said shaft, the cylindrical casing of each jack being provided with a device for locking it with respect to a housing by which said casing is enclosed.

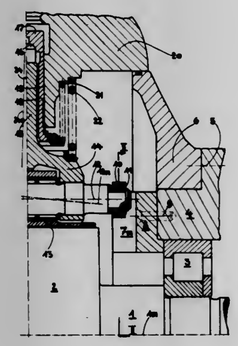
It comprises: a hydraulic circuit composed of two portions connected to a common tank; a first portion supplied by a main pump and a second portion supplied by a topping-up pump; the locking device of the cylindrical casing of one jack being constituted by a cylindrical housing enclosing the jack casing and comprising a fluid-tight annular chamber, in which the wall in contact with the outer surface of this same casing is a thin wall, the said annular chamber being connected by means of a three-way distributor with two positions, either to the said main pump or the the common tank.

3,670,628
KICKOUT VALVE AND CIRCUIT
Herbert W. Borer, Naperville; John R. Cryder, and Edward A. Wirtz, both of Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 2, 1970, Ser. No. 69,009
Int. Cl. F15b 13/01, 13/16
U.S. Cl. 91—358 A 5 Claims



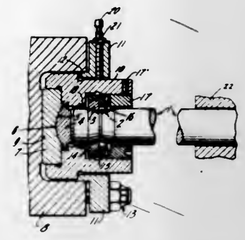
A kickout valve for use in a machine having a part moved by hydraulic pressure under control of a manual control valve which has a detent for holding it in an actuating position. The kickout valve is engaged when the movable part reaches a preestablished position. The valve is opened and admits fluid under pressure through a circuit leading to the control valve, where it causes release of the detent and allows the control valve to seek a closed or hold position and the moving part to come to rest.

3,670,629
RADIAL PISTON MACHINE
Emil Biernath, Stuttgart-Oberturkheim, and Hans Burkard, Stuttgart, both of Germany, assignors to Excentra Gesellschaft mit beschrankter Haftung hydraulische Antriebe, Fellbach, Germany
Filed May 28, 1970, Ser. No. 41,176
Claims priority, application Germany, May 31, 1969, P 19 27 807.0
Int. Cl. F01b 1/00
U.S. Cl. 92—72 10 Claims



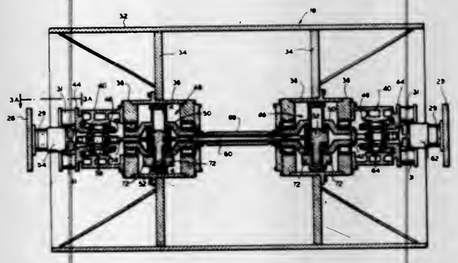
A radial piston machine having a casing formed with radially disposed cylinders containing pistons and a cam shaft which is rotatably mounted in the casing and guide shoes carried by the piston and engaging on the cam so that the transmission of power between the cam shaft and the piston takes place through the guide shoe.

3,670,630
RESILIENT CONNECTING MEANS
Henry K. Tyson, and Karl W. Wikelski, both of Odessa, Tex., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Dec. 15, 1969, Ser. No. 884,999
Int. Cl. F16j 1/14; F16c 9/00
U.S. Cl. 92—129 7 Claims



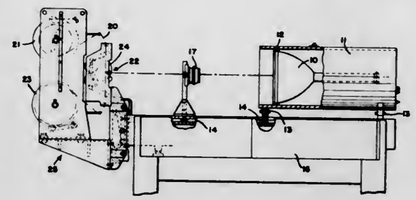
A connecting means is disclosed for resiliently connecting an elongate member to a driving means for imparting motion to the elongate member and is particularly suitable for connecting piston rods to driving heads of compressor systems. The connecting means includes a shoulder means adapted to be secured to the elongate member adjacent that end of the member to be secured to the driving means, a retaining means adapted to be secured to the driving means and which encompasses both the shoulder means and elongate member in spaced apart relationship, and a resilient member interposed between the retaining means and shoulder means for urging the shoulder means and elongate member toward the driving means.

3,670,631
ROTATING VIBRATOR
Richard P. Gaylord, St. Joseph, Mich., assignor to Clark Equipment Company
Filed Dec. 28, 1970, Ser. No. 101,892
Int. Cl. E01c 19/28
U.S. Cl. 94—50 V 7 Claims



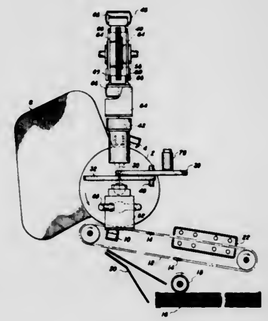
A vibrator has two rotating eccentric masses which are interlocked to operate at the same speed. The eccentric masses are arranged so that one is movable circumferentially during rotation relative to the other to change between a vibrating condition and a non-vibrating condition. Two individual motors may be utilized to drive the eccentric masses, and means are provided for changing the relative torque outputs of the motors to shift one eccentric mass relative to the other to change between the vibrating condition and the non-vibrating condition.

3,670,632
PHOTOTYPESETTING APPARATUS
Arthur J. Stanton, Warrensville Heights; Edwin R. Kolb, Cleveland, and Webster C. Roberts, South Euclid, all of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Nov. 18, 1968, Ser. No. 776,738
Int. Cl. B41b 19/08
U.S. Cl. 95—4.5 R 3 Claims



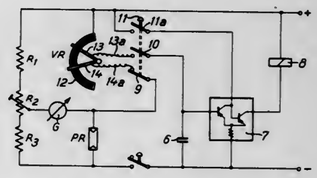
A device for expanding the effective width Of an image forming surface, such as the face of a cathode ray tube, on which characters are formed in proper succession to make up lines of composition includes a carriage supporting photographic material, which is in optical alignment with the image forming surface, for permanently recording the images thus formed on the display surface, the carriage being movable from a first position, where a large portion of the photographic material is exposed to the image formed on the tube, to a second position where the remainder of the photographic material is placed within the field of view of the image forming surface.

3,670,633
RECORDING APPARATUS
Lawrence J. Mason; George R. Simpson, both of Webster, N.Y.; Louis F. Paradysz, East Randolph, Vt., and Philip L. Chen, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 791,050, Jan. 14, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,192
Int. Cl. B41b 13/00; G03b 27/70
U.S. Cl. 95—4.5 R 12 Claims



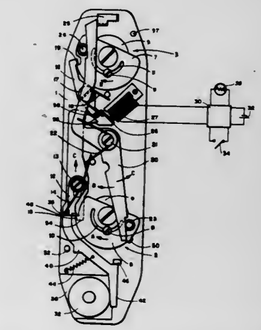
An alphanumeric recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed intercept the projected image and focus it onto a photoreceptive recording medium. The character disc rotates at a rate such that with the slits therein associated with respective characters intercharacter spacing is assured. Dead time in the recording process is eliminated by the use of the collimated projected character image and plural interception of that image.

3,670,634
APPARATUS FOR ELECTRONIC EXPOSURE CONTROL
Arthur Kessler, Grosse Altenstadten, and Peter Lorserles, Diez, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany
Filed May 5, 1970, Ser. No. 34,723
Claims priority, application Germany, July 18, 1969, P 19 36 544.7
Int. Cl. G03b 7/02
U.S. Cl. 95—10 C 6 Claims



An apparatus for electronic exposure control in photographic cameras comprising a measuring circuit in the form of a resistance bridge circuit including meter, and a timing circuit, which includes a resistance-capacitor combination (RC-combination). Only one variable resistance is provided for the two circuits which is an exponentially variable resistance having two wipers. The two wipers are electrically isolated from one another, and one wiper is included in the measuring circuit, the other one in the timing circuit. In dependence on the film speed and/or the selected F-stop number of wipers are adjusted to a predetermined position relative to one another, and in this position they are together movable across the windings of the resistance.

3,670,635
AUTOMATIC SHUTTER-SPEED CONTROL
Wolfgang Ort, Stuttgart-Bad Cannstatt, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed June 8, 1970, Ser. No. 44,394
Claims priority, application Germany, June 6, 1969, P 19 28 877.8
Int. Cl. G03b 7/08, 9/58
U.S. Cl. 95—10 C 5 Claims



In a camera having a photoelectric system for establishing shutter speed, means are provided for detecting the presence

of a predetermined condition in the photoelectric control system and for establishing a predetermined exposure interval independently of the photoelectric control system in response to the detection of such a predetermined condition. In the preferred embodiment, the photoelectric control system includes a time-delay circuit energizable by a battery in a receptacle, and the camera includes a mechanical shutter control having a predetermined speed which is actuated in response to detection by a sensing arm of the absence of a battery in a battery receptacle.

3,670,636

APPARATUS FOR CONTROLLING THE SHUTTER SPEED OF PHOTOGRAPHIC CAMERAS

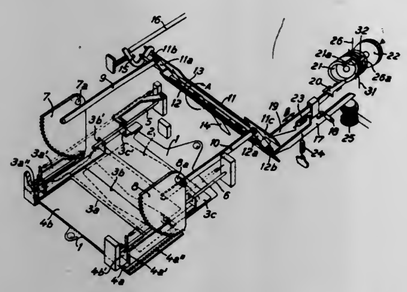
Werner Holle, Wetzlar, and Arthur Kessler, Grossaltenstadten, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Aug. 31, 1970, Ser. No. 68,373

Claims priority, application Germany, Sept. 10, 1969, P 19 45 709.1

Int. Cl. G01j 1/44

U.S. Cl. 95—10 CT **5 Claims**



Apparatus for controlling the shutter speed of photographic cameras which includes mechanical components for controlling the shutter speed in the short-time range combined with an electric timing circuit and an electromagnet for effecting control in the long-time range.

3,670,637

AUTOMATIC TIMING NETWORK FOR CAMERA SHUTTERS

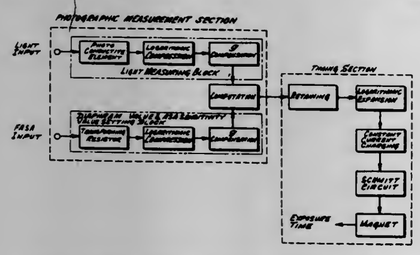
Chiharu Mori, and Toru Nakajima, both of Tokyo-to, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 25, 1968, Ser. No. 778,433

Claims priority, application Japan, Nov. 28, 1967, 42/75897

Int. Cl. G03b 7/08; G01j 1/44

U.S. Cl. 95—10 CT **11 Claims**



A camera shutter timing network includes a photoconductor connected in series with a plurality of diodes, the voltage across the diodes which is a logarithmic function of the photoconductor incident light is amplified by a variable gain amplifier to produce a first voltage. A second diode network combined with variable resistors and an amplifier produces a second voltage which is a logarithmic function of the camera diaphragm opening and film speed rating. A memory capacitor is charged to the difference of the two voltages and a timing capacitor is charged through a diode type logarithmic expansion network at a constant rate dependent on the memory capacitor voltage. An electromagnet energized through a Schmitt type switch releases the shutter to closing upon a predetermined voltage on the timing capacitor. A meter indicates the difference between the first and second voltages and hence the shutter speed.

3,670,638

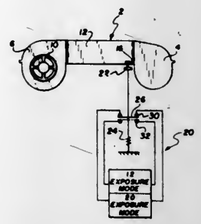
MEANS FOR INDICATING THE LENGTH OF ROLL FILM IN A FILM CARTRIDE FOR PROCESSING PURPOSES

Douglas J. Lindsay, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 15, 1970, Ser. No. 46,359

Int. Cl. G03b 1/60, 17/26; G03d 13/00

U.S. Cl. 95—31 CA **2 Claims**



A film cartridge defines a discontinuity indicative of the length of the film in the cartridge for determining the mode of operation of a film processor used to process the film.

3,670,639

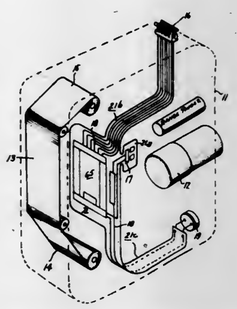
FLEXIBLE ELECTRONIC INTEGRATED CIRCUIT CAMERA CONTROL ASSEMBLY

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 16, 1968, Ser. No. 791,846

Int. Cl. G03b 15/03

U.S. Cl. 95—11 L **13 Claims**



An electronic integrated circuit assembly intended for the control of automatic cameras comprises a flexible, electrically insulating, supporting member having a plurality of electronic control sub-circuits formed thereon including both active semiconductor devices and passive circuit components and the electrically conductive paths interconnecting the active semiconductor devices and passive circuit components in electrical circuit relationships for performing a desired sub-circuit control function, and further including the conductive paths required to energize the sub-circuits and supply the outputs thereof to others of the sub-circuits and to the respective sub-systems being controlled. The assembly is entirely flexible and capable of being intertwined and disposed in otherwise unuseable, irregular spaces in the interior of a housing whereby the overall size of the housing can be minimized. The particular assembly disclosed is intended for use with an automatic camera for electronically, selectively flashing the respective bulbs of a multiple array of photoflash bulbs and/or automatically timing and variably controlling the exposure period of the camera in response to lighting conditions of a subject being photographed to thereby obtain optimum exposure of a film frame. The active semiconductor device employed in the circuits may be fabricated in monolithic integrated circuit form, and the assembly is provided with an overlying protective electrical insulating layer that conforms substantially to the silhouette of the assembly and which extends over substantially the entire surface of the assembly on the side opposite the flexible insulating member excluding any contact areas for external connections. The assembly may comprise a hybrid, integrated circuit with the conductive paths being formed by laminated conductive runs of an electrically conductive material such as copper formed on the insulating supporting member by known printed conductor techniques with the passive circuit element including at least one capacitor of the pumpkin seed variety. Alternatively, the assembly may be fabricated using thin film circuit techniques.

3,670,640

ROOF TOP FOR MOTOR VEHICLES

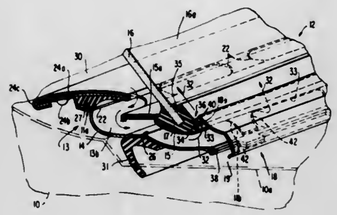
Hans Gotz, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed May 20, 1970, Ser. No. 39,090

Claims priority, application Germany, May 24, 1969, P 19 26 612.7

Int. Cl. B60h 1/24

U.S. Cl. 98—2.18 **20 Claims**



A roof top for motor vehicles which is adapted to be detachably secured to the lower vehicle body and which includes a lower rear cross frame that forms a relatively wide gap with the top side of the rear part of the vehicle body; this gap which terminates at its rear end in the atmosphere, forms part of a line system of a ventilation installation for the passenger space; a ventilating channel is branched off from this line system whose air flow fans the outer surface of the rear window.

3,670,641

BEVERAGE INFUSION APPARATUS, FOR EXAMPLE COFFEE

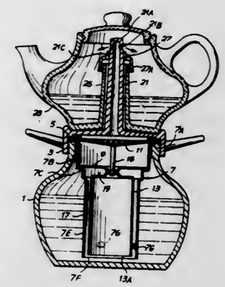
Luciano Mancioli, Localita Il Cartolaro, Montelupo, Italy

Filed Dec. 24, 1970, Ser. No. 101,271

Claims priority, application Italy, Dec. 31, 1969, 4915

Int. Cl. A47j 31/043

U.S. Cl. 99—293 **6 Claims**



Home coffeepot including a boiler, a coffee powder chamber with permeable upper and lower walls, a water rise passage extending downwardly from said chamber towards the boiler bottom, and a conduct extended upwardly for the outlet of the beverage formed by the hot water passing through the powder, the water being urged into said rise passage and into the conduct by steam pressure generated by heating of the boiler. A bell member is arranged in the boiler to set up a steam dome, wherein steam is continuously generated by heating; the rise passage extends with annular cross-section around this bell wherein the generated steam is discharged and rises together with the boiler's water.

3,670,642

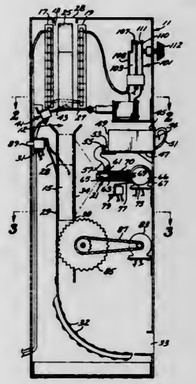
COMBINATION TOASTING AND BUTTERING APPARATUS

Robert N. Bergman, 1766 Molino, Long Beach, Calif.

Filed Sept. 14, 1970, Ser. No. 71,863

Int. Cl. A47j 37/06

U.S. Cl. 99—329 RT **6 Claims**



A combination toasting and buttering apparatus including a housing formed with a passage leading from an upper heating compartment to a lower buttering compartment. Heating

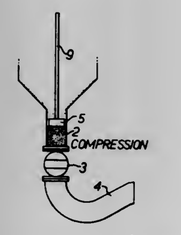
means is disposed in the upper compartment and support means is provided for supporting a slice of bread disposed in heat exchange relationship with the heating elements. A shortening applicator is disposed in the lower compartment for applying shortening to toast as it passes therethrough and advancing means is provided for advancing the bread slice from the upper compartment to the lower compartment. Actuating means is provided for actuating the applicator as the bread is advanced to the lower compartment for applying shortening to the bread slice as it is passed through the lower compartment whereby a slice of bread may be introduced into the upper compartment where it is toasted and then automatically advanced to the lower compartment where the applicator will automatically apply shortening thereto.

3,670,643

METHOD FOR TREATMENT OF DISCHARGED SOLIDS FROM A LIQUID STREAM

Kurt W. Flhn, Hjalteby, Sweden, assignor to Esso Research and Engineering Company

Filed Aug. 13, 1969, Ser. No. 849,754
Int. Cl. B30b 9/02
U.S. Cl. 100—37 **2 Claims**



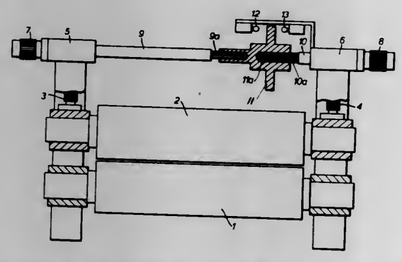
Solids, separated out from a liquid in a tank, are compressed in the tank to remove entrained liquid which flows back to the main body of liquid, and the compressed solids removed. The process, preferably, is continuous with solids discharge valve opening on the compression stroke of the compressing device. Preferably a back pressure is provided in the discharge pipe.

3,670,644

CALENDER ROLL ADJUSTMENT APPARATUS

Heinz Hoever, Gehrden, and Herbert Orth, Misburg, both of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover, Germany

Filed March 10, 1970, Ser. No. 18,033
Claims priority, application Germany, March 12, 1969, P 19 12 392.3
Int. Cl. B30b 3/04
U.S. Cl. 100—168 **4 Claims**



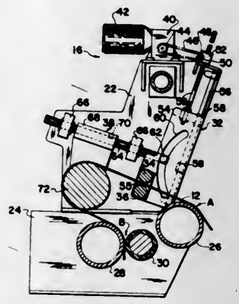
Apparatus for adjusting the spacing between parallel calender rolls comprises a respective motor for moving each end portion of one of the rolls. Differences in the speeds of the motors causes movement of a member to switch off the motors.

3,670,645

DECURLING METHOD AND APPARATUS

D. Brian R. Hill, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,879
Int. Cl. B41f 5/06, 13/02
U.S. Cl. 101—181 **13 Claims**



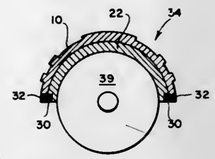
A decurling method and the associated apparatus are usable with a printing system or the like incorporating a series of stations for performing operations upon a web as the web is advanced in predetermined registered relationship with the stations. An elongated decurling member over which the web is drawn imparts to the web a tendency to curl which compensates for an objectionable curl tendency imparted to the web by the system or curl tendency previously existing in the web. The relative positions of the web and the decurling member are adjustable in a manner which produces change in the magnitude of the compensating curl tendency imparted to the web without influencing the path length of the web.

3,670,646

MAGNETICALLY SECURABLE PRINTING PLATE

Vergil B. Welch, Jr., Ellicott City, Md., assignor to W. R. Grace & Co.

Filed Oct. 9, 1970, Ser. No. 79,606
Int. Cl. B41f 27/02, 27/12
U.S. Cl. 101—382 MV **1 Claim**



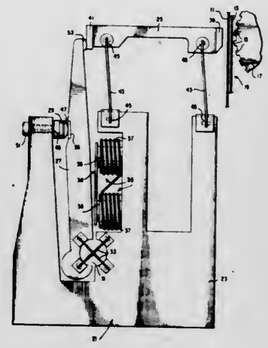
The invention disclosed is directed to a flexible printing plate having magnetic particles disposed in nonprinting regions thereof and to a method for removably securing the plate to a printing press element having magnetic means associated therewith. Also disclosed is a printing press saddle having magnetic means for cooperating with the printing plate disposed magnetic particles to removably secure the plate to the saddle for printing use. The present invention provides an effective means for rapidly replacing printing plates used in high-speed printing operations.

3,670,647

METHOD OF DAMPING REBOUND OF PRINT HAMMER

John W. Funk, Dearborn, Mich., and Kishor M. Lakhani, Saugas, Mass., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 20, 1969, Ser. No. 878,313
Int. Cl. B41j 9/42, 9/38, 9/36
U.S. Cl. 101—426 **3 Claims**



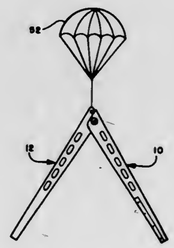
A method of oscillation-free print hammer and return is provided in an apparatus having an inertial hammer, a relay and a resilient backstop. In this method the armature of the relay is pivotably mounted and imparts motion to the hammer. The solenoid of the relay physically restrains the motion of the armature and then holds the armature by residual magnetism. The hammer continues in inertial flight until it reaches the printing area. On rebound the hammer strikes the armature and part of the kinetic energy of the hammer is absorbed as the hammer drives the armature free from the residual magnetic field. The armature and hammer continue to the backstop which absorbs or dissipates the remainder of the kinetic energy. The absorption of kinetic energy is for damping hammer oscillations and permits higher frequency of operation.

3,670,648

LINEAR STRUCTURE CAPTURING AND CUTTING APPARATUS

James K. Cole; Carroll A. Coonce, and Harold N. Post, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 14, 1970, Ser. No. 63,788
Int. Cl. F42b 25/02, 25/16
U.S. Cl. 102—4 **8 Claims**



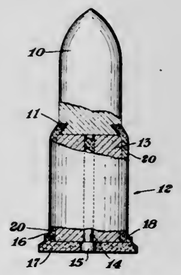
Apparatus for capturing and cutting a linear structure such as a cable comprising collector arms hingedly interconnected adjacent ends thereof, means for swinging distal ends of the arms away from each other to form an inverted V and for limiting the spread of the arms, shaped explosive charge means adjacent the interconnected ends for producing an explosive jet that is aimed or directed generally toward a captured linear structure, and means for initiating the shaped explosive charge means upon suitably capturing the structure or cable.

3,670,649

COMBUSTIBLE CARTRIDGES

Robert C. Hartlein; James D. Kiles; Willard D. Larson, all of Midland, and Carl R. Olson, Freeland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 13, 1970, Ser. No. 63,537
Int. Cl. F42b 9/16
U.S. Cl. 102—38 **13 Claims**



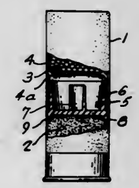
Nonmetallic cartridges having a porous casing of fiber-reinforced nitrocellulose are rendered oil and water resistant by first incorporating into the casing an organosilicon compound which renders the casing material essentially impervious to liquid water but which does not substantially alter the porosity of the material and then providing a continuous coating on the surface of the casing, the coating being a room temperature curing resinous organosiloxane having from 1.2 to 1.8 organic substituents per silicon atom, the major portion of the organic substituents being lower alkyl and/or phenyl radicals.

3,670,650

SHOTSHELL WAD

Francis Hamnet Garland McCaffrey, Brownsburg, Quebec; Jack Garnett McIndoe, and Herbert Rigg, both of Lachute, Quebec, all of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed April 19, 1971, Ser. No. 135,095
Claims priority, application Canada, June 10, 1970, 085160
Int. Cl. F42b 7/08
U.S. Cl. 102—42 C **4 Claims**



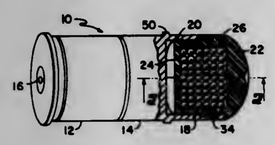
A two part wad column for use in shotshells is provided which consists of an overpowder component comprising inner

and outer concentric cylindrical walls attached to a skirted and plate and a shot container component comprising a cup-shaped shot container and a skirted end plate which abutts the outer cylindrical wall of the overpowder component.

3,670,651
AMMUNITION ROUND

William J. Mertens, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed April 21, 1971, Ser. No. 135,997
Int. Cl. F42b 7/08
U.S. Cl. 102—42 C **8 Claims**

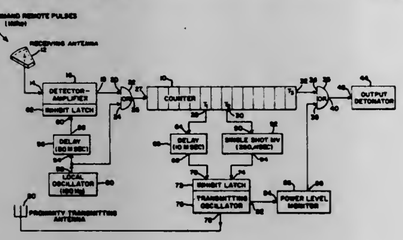


An ammunition round for providing deployment of a plurality of shot at a distance from a gun or launcher muzzle is disclosed. The shot are held within a container secured to the front end of a projectile body by projections on both the ogive and container body. The container is provided with a weakened shear or clamp area which permits separation of the ogive from the container during setback. The shot is deployed from the container upon deceleration of the projectile body. The use of a rocket motor in the projectile will delay the deployment until after rocket burn-out.

3,670,652
CONTROLLED RANGE PROXIMITY FUZE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company

Filed May 11, 1970, Ser. No. 36,118
Int. Cl. F42c 13/00, 11/00, 9/00
U.S. Cl. 102—70.2 P **5 Claims**



An electronic, digital time fuze has a counter which also serves as a serial programmer and which may be remotely preset while in flight to enable a proximity detector circuit at a first predetermined range, and to self detonate the fuze, if not sooner detonated by the proximity detector circuit, at a second predetermined range.

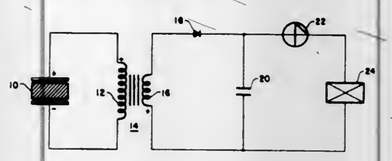
3,670,653
SELF-POWERED FUZE FIRING SYSTEM

Wilbur B. Lunt, Arlington, and Robert A. Haskell, Long Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 16, 1963, Ser. No. 316,770
Int. Cl. F42c 11/02, 7/00, 15/20
U.S. Cl. 102—70.2 R **6 Claims**

1. A self-powered fuze firing system that will initiate moderate energy wire-bridge detonators comprising:

a. piezoelectric impact generator having first and second electrodes for generating an output signal voltage when deformed on impact,
b. a transformer having a primary winding and a secondary winding,

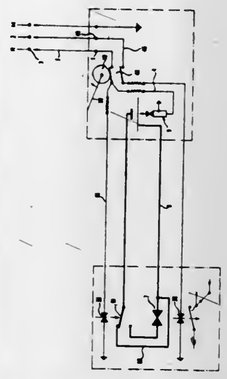


c. said primary winding being connected across said impact generator,
d. a diode rectifier connected in series with said secondary winding and being poled so as to block current flow in said secondary winding during the time a rising compressive forcing function is being applied to the piezoelectric impact generator,
e. electric charge storage means coupled across said secondary winding and said rectifier series connected circuit,
f. and a detonator connected in series with a voltage responsive switching means.

3,670,654
CONTROL AND SAFE-STARTING DEVICE FOR USE IN A DETACHABLE MISSILE

Jean Billot, Levallois, France, assignor to Rafaut & Cie

Filed May 11, 1970, Ser. No. 36,239
Claims priority, application France, May 13, 1969, 6915443
Int. Cl. F42b 15/00
U.S. Cl. 102—70.26A **10 Claims**



This invention relates to a safe-starting device for a detachable missile fed with current from a source situated on board a vehicle carrying the missile, by means of a cable connected to a removable terminal.

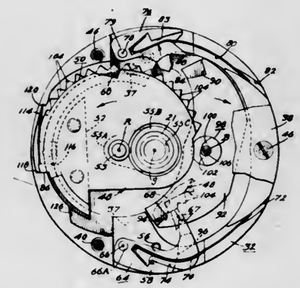
In the actual missile housing between a starting mechanism and a current input fed by said cable, there is a provided a time-delay relay in which the electric current emanating from the carrier vehicle is converted into mechanical energy which actuates a transducer capable of supplying an electric current intended to be used directly or to ensure control of the starting mechanism.

This device increases the safety of using detachable missiles while at the same time enabling the length of the feed cable to be reduced.

3,670,655
TIMING MECHANISM

Thomas J. Krupa, Willingboro, N.J., assignor to Delaware Valley Armaments, Inc., Mount Laurel, N.J.

Filed June 9, 1970, Ser. No. 44,698
Int. Cl. F42c 15/24
U.S. Cl. 102—79 **9 Claims**



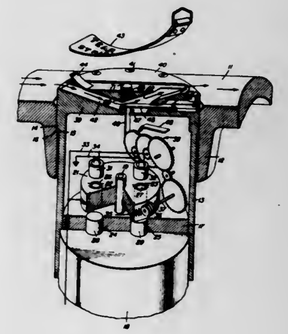
An arming-delay mechanism suitable for use in artillery shells to prevent premature arming and explosion of the shell, employing an escapement including a balance which is "unbalanced" in that its pivot axis is radially further outward than its center of gravity with respect to the spin axis about which the mechanism spins after the shell is fired. It also includes two sequentially operating centrifugal detents for preventing accidental starting of the operation of the timing mechanism prior to firing of the shell, with the balance arranged to serve as an interlock between the two detents whereby the second detent cannot be actuated to its open position until after the first detent has been actuated. Arming is produced, after spinning of the shell releases both detents in sequence, by means of a centrifugally operated rotor having escapement teeth on it, which teeth engage the balance directly rather than through a gear train. The unbalanced balance responds to centrifugal forces produced during spinning to resist motion of the rotor more strongly than a "balanced" balance of the same mass, making possible a smaller, lighter and simpler mechanism for a given amount of delay, and the sequentially operating arrangement of detents provides a high degree of safety from premature accidental arming.

3,670,656
FUZE ARMING DEVICE

William J. Donahue, Takoma Park; David L. Blanchard, Silver Spring, and John M. Wack, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 26, 1965, Ser. No. 428,264
Int. Cl. F42c 5/02
U.S. Cl. 102—81 **13 Claims**

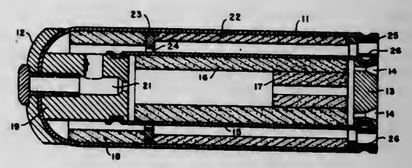
1. A safety and arming device for an ordnance fuze comprising:
a housing having an explosive initiator mounted therein and being connected to the fuze,
an arming rotor rotatably moUnted within said housing adjacent said initiator,
said arming rotor having an explosive detonator mounted therein for detonation by said initiator and transmission of that detonation to the main charge of the ordnance item,
said arming rotor being normally held in a safety position wherein said detonator is rotatably out of line with said initiator to prevent ignition of said detonator by said initiator and being rotatably movable to an armed position wherein said initiator and said detonator are aligned to provide a continuous detonation path from the initiator to the main charge,
air flow responsive means mounted upon said housing for vibratory response at its natural frequency when exposed to air velocities in excess of a predetermined minimum velocity, and
motion translating means connected to said flow responsive means and to said arming rotor,
whereby vibration of the flow responsive means at its natural resonant frequency for a predetermined duration of time will cause the arming rotor to be moved from its safety position to its armed position.



3,670,657
SIGNAL FLARE

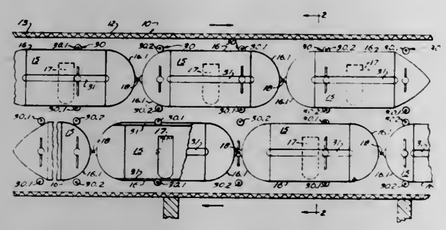
Robert W. Evans, Herndon, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 30, 1970, Ser. No. 33,396
Int. Cl. F42b 11/16, 13/34, 13/40
U.S. Cl. 102—87 **4 Claims**



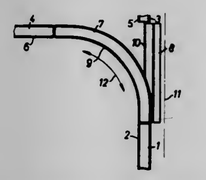
A signal flare having a container with a plurality of propulsion nozzles in the aft end and having a propellant charge therein. A flare propellant is provided in the forward end of the container and is arranged to be ignited by the burning of the propellant charge. A plurality of flare nozzles are also provided in the aft end of the signal container and a quantity of flare dye is positioned between the flare propellant and the flare nozzles. The contact of hot flare propellant gases with the flare dye causes ablation of the flare dye so that the dye colors the hot flare propellant gases which are dispersed through the flare nozzles.

3,670,658
TRANSPORTATION SYSTEM
Mogens Stelling, 1275 Pacific Street, Vancouver, 5 British Columbia, Canada
Filed July 9, 1970, Ser. No. 53,576
Int. Cl. B64b 1/50; B61b 13/12
U.S. Cl. 104—22 3 Claims



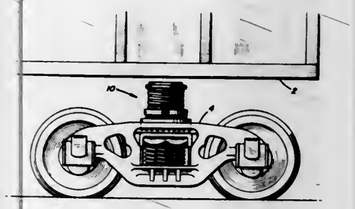
A transportation system wherein a plurality of gas filled load-carrying units having substantially neutral buoyancy are moved through a conduit. Guiding and driving rollers in the conduit guide and drive the units therethrough.

3,670,659
TRANSPORTATION INSTALLATION
Eugen Schurch, Geriafingen, Switzerland, assignor to Von Roll AG, Geriafingen, Switzerland
Filed April 14, 1970, Ser. No. 28,440
Claims priority, application Switzerland, April 17, 1969, 5816/69
Int. Cl. E01b 25/26
U.S. Cl. 104—101 12 Claims

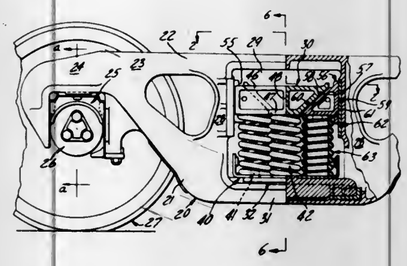


A transportation installation incorporating a horizontal and/or vertical and/or inclined extending track rail equipped with at least one rail member, along which there can travel a number of transportation or conveying units having a drive means and devices for receiving loads. The track rail possesses branching points equipped with switch or routing means. The switch or routing means incorporates a movable portion embodying linear and/or curved connection rail pieces for the track rail which, with respect to their position and their rail surfaces as well as also their planes perpendicular to such rail surfaces and containing the rail axes deviate from one another.

3,670,660
DAMPENED RAILWAY CAR TRUCK
Hans B. Weber, Bedford, and Joseph Brown, Warrensville Heights, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Aug. 4, 1969, Ser. No. 847,025
Int. Cl. B61f 5/06, 5/12, 5/38
U.S. Cl. 105—171 11 Claims



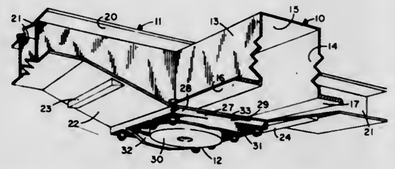
A four-wheel, two-axle railway car truck having non-integral side frames, a spring plank and a bolster, functioning both as a swing motion truck and a roll control truck and having its side frames journaled on the associated wheel and axle assemblies for swinging movement of the side frames transversely of the truck. The truck has a first stop means on the bolster for restricting the lateral movement of the bolster relative to the side frames at a level below the plane containing the longitudinal axes of the axles and second stop means associated with the spring plank and side frames for limiting the swinging movement of the side frames.



3,670,661
RESILIENT ROLL CONTROLLING RAILWAY CAR SIDE BEARINGS
Frans V. A. Pangalila, Matawan Township, N.J., assignor to John J. McMullen Associates, Inc., New York, N.Y.
Filed March 2, 1970, Ser. No. 15,809
Int. Cl. B61f 5/14; F16c 17/04, 19/54
U.S. Cl. 105—199 A 21 Claims

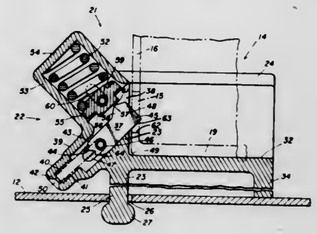
A device for positively establishing a maximum allowable roll angle for a railway car, without detracting from the capability of the car to move, in a horizontal plane, relative to its trucks. The device utilizes a strong but yet resilient rubber-like material in limiting the roll of the car. In some instances, the material is combined with shock absorbing coil springs, in others, it serves, itself, as the roll limiter, and still in another, the material is combined with a plurality of steel cylinders.

3,670,662
CAR BODY BOLSTER CENTER PLATE ASSEMBLY
Stanley H. Fillion, Wilmette, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Aug. 31, 1970, Ser. No. 68,293
Int. Cl. B61f 1/00, 5/16; F16c 17/00
U.S. Cl. 105—199 C 5 Claims



An integral, preferably cast steel center plate includes a generally rectangular flat base portion defining spaced mounting flanges on opposite edges. A central circular boss extends from one face of the base, for engagement with a mating center plate bowl, and a pair of beams extending from the one face between the mounting flanges on opposite sides of the boss. In assembly to a car underframe, the mounting plate flanges are bolted to the longitudinal supporting flanges of the center sill with the beams stiffening the center plate for better resistance of eccentric forces.

3,670,663
DEVICE FOR AUTOMATICALLY LATCHING A CONTAINER TO A RAILWAY CAR OR THE LIKE AND FOR AUTOMATICALLY UNLATCHING IT THEREFROM
Theodore J. Sweger, Naperville, Ill., assignor to Illinois Railway Equipment Company, Chicago, Ill.
Filed April 30, 1968, Ser. No. 725,363
Int. Cl. B60p 7/08; B65j 1/22
U.S. Cl. 105—366 C 34 Claims



A container fitting is automatically latched to a railway car or the like as a direct result of lowering the container thereon, is held in latched position against the action of any usual forces likely to be encountered by the car in transit, and is automatically unlatched when the container is lifted from the car by a force sufficient to overcome the force of gravity acting on the container and the force of a spring maintaining the latched condition at each corner of the container.

3,670,664
MOVABLE COVER FOR RAILWAY FLAT CARS
Duane V. Thornton, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,502
Int. Cl. B61d 39/00
U.S. Cl. 105—377 2 Claims

A cover adapted to fit over lading carried on the deck of a flat car. A hoist is provided on a vertically extending support at each end of the flat car to raise the cover to permit loading and unloading of lading from the sides of the flat car, such as by a forklift truck or the like. For movement of the cover to a raised position, one end of the cover is first raised and then the opposite end is raised. Extensions on the ends of the cover guide the cover during raising and lowering thereof to minimize any lateral tilting of the cover.

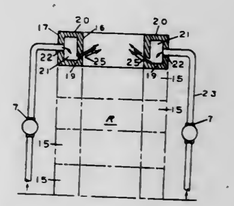


3,670,665
LAYERING DEVICE FOR CAKE
George A. Levi, Saginaw, Mich., assignor to Baker Perkins, Inc., Saginaw, Mich.
Filed Jan. 18, 1971, Ser. No. 107,139
Int. Cl. A23g 3/00
U.S. Cl. 99—92 15 Claims



An apparatus and a method of making products such as layered cake comprising an oven for receiving and baking food product passed therethrough, a band conveyor for conveying a plurality of continuous strips of food product, such as cake, through said oven in side-by-side relation, and a plurality of conveyors for receiving the baked strips of food product from the band conveyor and transposing the strips into vertically superposed, stacked relation.

3,670,666
FLOW CONTROL AND DAMPING MEANS
James A. Herman, Royal Oak, Mich., assignor to Prenco Manufacturing Co., Royal Oak, Mich.
Filed July 27, 1970, Ser. No. 58,545
Int. Cl. F23g 7/00
U.S. Cl. 110—7 R 16 Claims



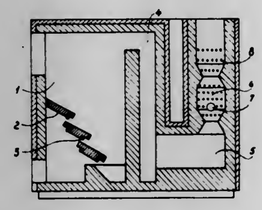
The rate of passage of a current of fluid moving in one direction through, or out of, a conduit is modified by means of a counter-current of similar or different fluid moving in a direction thereby impeding the passage of said current and prolonging its dwell time in such conduit.

3,670,667

INCINERATOR FOR THE COMBUSTION OF WASTE PRODUCTS, PARTICULARLY PLASTIC MATERIALS

Bent Faurholdt, Tornerosevej 134, 2730 Herlev, Denmark

Filed April 24, 1970, Ser. No. 31,507
Int. Cl. F23g 5/12
U.S. Cl. 110—8 A 8 Claims



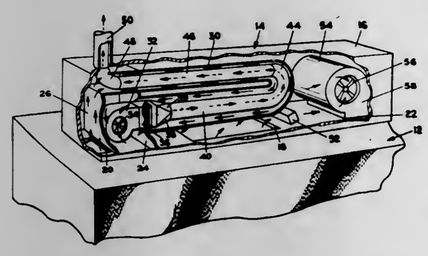
In an incinerator comprising two combustion chambers, the primary combustion chamber comprising refractory ceramic elements located adjacent to one another so as to form inclined continuous guide surfaces and means for supplying primary combustion air to said primary combustion chamber opening into said chamber at different levels above the bottom thereof.

3,670,668

INCINERATOR WITH EXTENDED HEAT EXCHANGE SURFACE

William A. Phillips, Comstock Park, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Jan. 8, 1971, Ser. No. 104,912
Int. Cl. F23g 7/00
U.S. Cl. 110—8 A 17 Claims



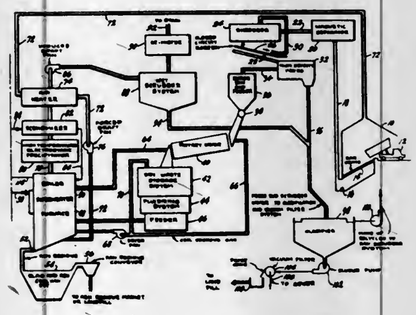
An incinerator for a drying oven and the like to remove combustible fumes such as solvent vapors from the exhaust from such ovens. The incinerator is formed from a narrow, elongated, heat conducting, metal incinerator conduit having at least one U or reverse bend to increase turbulance within the conduit and to increase heat exchange of hot gases with the exterior of the conduit. The incinerator conduit is formed of a plurality of elongated arcuate sections which are secured together at the edges. Heat conducting fins extend through the conduit between the interior and the exterior thereof at the edges of the arcuate sections to facilitate heat transfer between the interior and exterior of the incinerator conduit. The fume-laden gases to be incinerated are channelled along the exterior surface of the incinerator conduit in contact with the heat exchange fins by a larger preheat conduit surrounding the incinerator conduit. A fan draws the solvent-laden gases through the larger preheat conduit and forces the preheated gases into the incinerator conduit at a higher pressure than that of the preheat conduit.

3,670,669

PROCESS FOR DISPOSAL OF COMBUSTIBLE WASTE

John G. Hoad, Dearborn, Mich., assignor to John G. Hoad & Associates, Ypsilanti, Mich.

Filed Dec. 16, 1970, Ser. No. 98,559
Int. Cl. F23g 5/04
U.S. Cl. 110—8 R 14 Claims



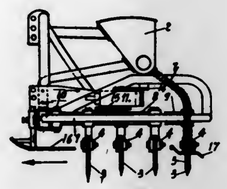
Combustible waste material is collected and processed after which it is disposed of by incineration, the energy derived from combustion being utilized to produce electrical energy. Included in the processing of the waste material are the steps of shredding the waste material, feeding the shredded material through a high density press to separate the dry matter from the liquids, heating the shredded material to drive off additional moisture and gases, fluidizing and feeding the dried shredded material into the incinerator.

3,670,670

HARROWS

Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to Landbouwwerktuigenen Machinefabriek H. Vissers N.V., Nieuw-Vennep, Netherlands

Continuation of Ser. No. 741,944, July 2, 1968, abandoned.
This application June 5, 1970, Ser. No. 41,780
Int. Cl. A01c 7/08, 5/00; A01b 33/16
U.S. Cl. 111—10 8 Claims



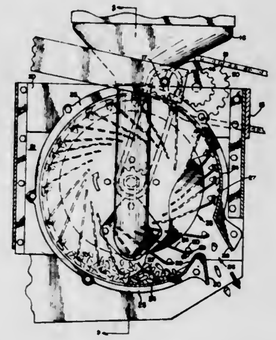
The invention relates to a harrow having one or more transversely reciprocating teeth carrying beams and further having a device for sowing seeds. The teeth of said reciprocating harrow beam or beams are each provided or united with a channel extending longitudinal of the tooth and said channel at its upper end is connected to a seed supply and has at or near its lower end an outlet.

3,670,671

PLANTER

Dario Lienemann, Clarendon Hills, and Daniel Henry, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 6, 1970, Ser. No. 998
Int. Cl. A01c 7/18; G01f 11/20
U.S. Cl. 111—77 3 Claims



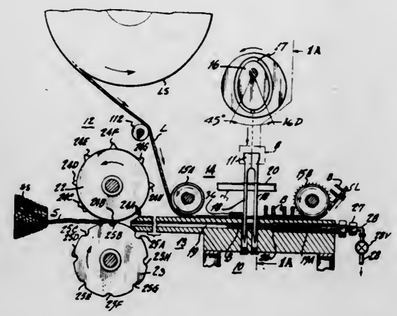
A planter for seed of different size of shape wherein a seed wheel or rotor is rotatably mounted in a housing having a stationary wall surrounding the rotor and a seed supply. Inwardly yieldable fingers are mounted on the rotor to pass through the seed supply, select a seed and press it against the wall, said wall being adapted to urge the fingers inwardly and having an outlet therein accommodating outward movement of the successive of said fingers to discharge the seed.

3,670,672

TUFTING MACHINES FOR MANUFACTURE OF TUFTED FABRICS, TUFTED CARPETS, RUGS, DRAPES, HEAVY FABRICS, AND THE LIKE

Abram N. Spanel, 344 Stockton St., Princeton, N.J., and John L. Schwartz, Hightstown, N.J., assignors to said Spanel, by said Schwartz

Filed June 25, 1969, Ser. No. 836,399
Int. Cl. D05c 15/34
U.S. Cl. 112—79 R 27 Claims



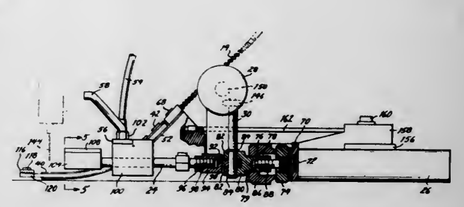
Tufting machines for making U-tufts and/or loop-tufts on a backing. The tufts may be made of the same or different heights and from strands of tufting material having the same or different color or other characteristics. Some machines form U-tufts and/or loop-tufts from discrete bits of tufting material whereas others form loop-tufts and/or U-tufts from a continuous strand. For tufts of the same or different color and of the same or different length, the pile pattern may be changed by controlling the number of rows of tufts per unit length of the backing; the number of tufts per row (gage), and the relative positions of corresponding tufts of different rows. All of the machines utilize at least one, and usually more, of the following means in cooperative combinations; tufting needle means including split-eye needles of novel construction and mode of control for opening and/or closure of the needle eyes; forked-end tufting blades which slit the backing and force the strands through the backing to form loop-tufts; novel adjustable bit-stop means at the tufting stations; strand-clamping means of novel construction at the tufting stations and/or in advance of strand-severing means; strand-severing means of novel rotary cutter and anvil construction used in various combinations of single cutter/single anvil, multiple-cutter/single anvil, and multiple-cutter/multiple anvil to supply a tufting station with tufting material of selected length and/or of selected color or other characteristics: novel cutter/anvil arrangements for making cut and/or uncut loop-tufts from continuous strands and in which blades of the cutter slit the backing, force the strands through the backing into the anvil recesses, and, for cut loop-tufts, cooperate with knife means in anvil recesses: for slitting the backing, the tufting blades may be fixed to a rotary member, or may be retractibly mounted on a rotary cutter member, fixedly attached to a reciprocating member, slidably mounted in a stationary member and operated by a cam or other means, or slidably mounted in a reciprocating member; the tufting anvil may be a rotary structure or a belt structure, segmented or continuous, having upstanding recess-forming elements attached to the belt or integral therewith: means including mechanism for effecting adjustable step-by-step lengthwise feed of the backing; means including novel mechanism for effecting relative motion between the backing and a row of tufting-needle means in direction laterally of the lengthwise feed of the backing.

3,670,673

BUTTON FEED DEVICE

Eric Winston, Melrose Park, and Herbert V. Jacobs, Lower Merion, both of Pa., assignors to Jacobs Machine Corporation, West Conshohocken, Pa.

Filed Aug. 25, 1970, Ser. No. 66,777
Int. Cl. D05b 3/22
U.S. Cl. 112—113 14 Claims

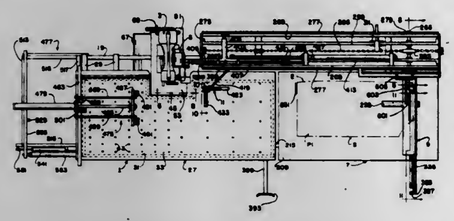


A button feed device comprising insert arm means to orient and transfer buttons from an engaging station to a sewing station, lifting means to sequentially raise and lower the insert arm means, pin means extending from the insert arm means and adapted to move relative to each other in a first direction to an orienting position when contacting the surface of a button to engage certain of the sewing holes of the button with the pin means again returning to a normal position, but engaged in the button holes in order to orient the button by no later than the time drive means transport the insert arm and engaged button to the sewing station.

3,670,674
AUTOMATIC FEEDER FOR WORKPIECES OF FABRIC OR THE LIKE

William R. Conner, Jr., Shelbyville, Tenn., assignor to Kellwood Company, St. Louis, Mo.

Filed April 30, 1970, Ser. No. 33,378
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 9 Claims

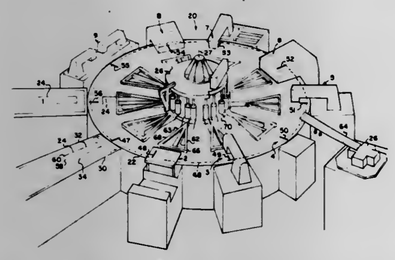


Apparatus for automatically feeding workpieces of fabric or similar limp material one after another from a stack of workpieces and delivering each workpiece to a sewing machine for a sewing operation along an edge of the workpiece. The top workpiece of the stack is picked off by means of a roller which rolls up the top workpiece of the stack, advances it to a position spaced from the stack, and then retracts to unroll the workpiece, whereupon a feed device takes over to feed the workpiece into a sewing machine to start the sewing operation. The sewing machine then takes over, and the workpiece is fed through the sewing machine by the feed device of the sewing machine and stitched. In being fed through the sewing machine, the workpiece is automatically guided for contour stitching along an edge thereof. A stacker is provided on the exit side of the sewing machine for automatically stacking completed workpieces exiting from the sewing machine.

3,670,675
METHOD AND SYSTEM FOR ATTACHING A POCKET TO A PORTION OF A GARMENT

Herman Rovin, Norwalk, Conn.; James W. Cobb, Tarrytown, N.Y.; Theodore Opuszenski, Darien, Conn.; Richard H. Willard, Norwalk, Conn.; Raymond Rigat, Jr., Monroe, Conn., and Joseph Pellicano, Greenwich, Conn., assignors to Ivanhoe Research Corporation c/o Robert A. Hack, New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,012
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 16 Claims



A system and method of fastening a pocket to a portion of a garment is described. Garment working stations are arranged in a preselected manner about a platform with predetermined accurate alignment of their individual garment working operations. Each garment portion is automatically deposited on the platform and aligned with an orientation selected to bring its desired working areas with precision opposite the garment working stations. A garment portion indexer is employed which clamps the panel to preserve its automatically obtained alignment effectively throughout the working operations. The indexer accurately indexes the aligned panel step by step to each of the stations continuously retaining its grip until that is no longer needed. Pockets are deposited on the platform and automatically aligned with a selected indexed panel position. The pocket is attached to the panel at a precisely determined panel location after being transferred thereto with an automatic actuated transfer device. Pocket manipulation is uniquely performed at a garment station to precisely align pocket and panel parts as well as prepare completion of pocket attachment. Aesthetic completion of panel to pocket assembly is obtained with accurate bar tack operations, assuring a repetitively neat product. An automatic panel dart forming station is shown for the attachment of a rear garment panel for a pair of trousers to a back pocket. High speed pocket to garment attachments are obtained.

3,670,676
CONTROL MEANS FOR BUTTONHOLE ZIGZAG SEWING MACHINE

Toshio Sawada, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Pref., Japan

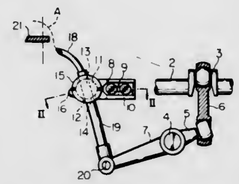
Filed Nov. 9, 1970, Ser. No. 87,877
Claims priority, application Japan, Nov. 10, 1969, 44/89943
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 B 5 Claims

A zigzag sewing machine including means to oscillate the needle at right angle to the work feeding direction, first control means to vary the overstitch width, second control means to vary the stitching direction, third control means to vary needle stitching position, and manual control means for the sewing of buttonholes. The manual control means is operably connected to control cam means to have said control cam means actuated together so as to engage with cooperating follower means at corresponding tracks of said control cam means.

3,670,677
LOOPER DRIVE MECHANISM

Tetsuro Hirayama, Tokyo, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 73,914
Claims priority, application Japan, Sept. 25, 1969, 44/76452
Int. Cl. D05b *1/06*
U.S. Cl. 112—199 3 Claims

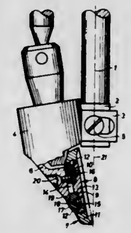


A looper drive mechanism comprises a driving shaft or crank shaft, a connecting rod connected to the crank shaft, an arm coupled to the connecting rod, a looper shaft connected to the arm and supported by a support member mounted to the sewing machine, and a looper provided to the looper shaft.

3,670,678
ROLLER-FOOT FOR SEWING MACHINES

Hans Ziegler, Kaiserslautern, upper Palatinate, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserslautern, Pfalz, Western, Germany

Filed Jan. 4, 1971, Ser. No. 103,745
Claims priority, application Germany, May 6, 1970, P 70 17 001.3
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 3 Claims



A roller foot for sewing machines comprising a support and a feed roller secured to said support and inclined relative to the path of needle movement, said feed roller having a race ring that is connected to an inner disk by way of a ball bearing, while the inner disk is connected to said support by a releasable positive force transmitting connection and means, such as a screw that secures the connection.

3,670,679
CUFF MAKING METHOD

Richard D. Campbell, deceased, late of 135 Yaupon Terrace, P.O. Box 296, Morehead City, N.C. (by Sue Green Campbell, executrix)

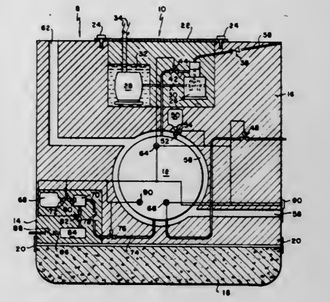
Filed Sept. 4, 1970, Ser. No. 69,526
Int. Cl. D05b *1/00*
U.S. Cl. 112—262 7 Claims

A shirt sleeve cuff making method and apparatus wherein a continuous length of cuff lining material is passed through tandem sewing heads, and pairs of cuff panels are placed upon the lining material and are sewn along their aligned edges to one edge of the lining material by one sewing head and the overlying edge of the lower cuff panel of each pair is folded downwardly about the opposite edge of the lining material and sewn thereto by the other sewing head. The continuous lining material with the cuff panels sewn thereto are then passed to a second sewing station where the lining material is cut between the pairs of cuff panels and the edges of the cuff panels adjacent the cut in the lining material are sewn to the lining material.

3,670,680
WATER EXPULSION SYSTEM

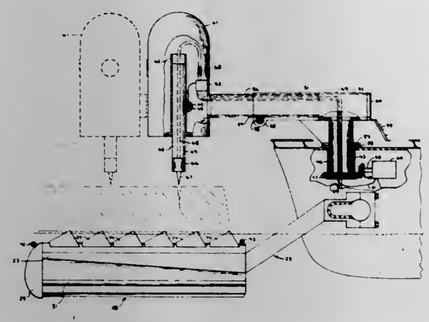
Frederick A. Kriedt, 604 Alma St. S.E., Vienna, Va.

Filed Sept. 25, 1970, Ser. No. 75,461
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R 12 Claims



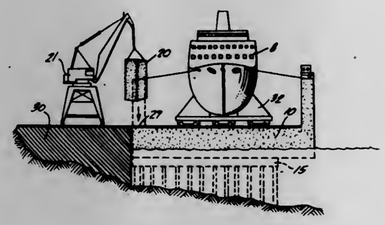
The present invention is an improvement for use in deep-water hydraulic power units, utilizing a chemical reaction to generate a gas to evacuate a chamber into which ambient seawater is passed after being throttled through a hydraulic motor.

3,670,681
SHIP MOUNTED ICE BREAKING SYSTEM
Thomas B. Upchurch, Jr., 101 Magnolia St., Raeford, N.C.
Filed May 15, 1970, Ser. No. 37,566
Int. Cl. B63b 35/08
U.S. Cl. 114—40 8 Claims



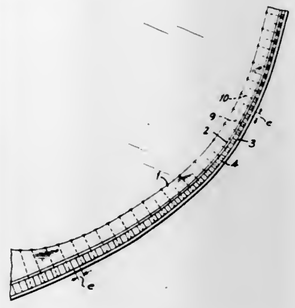
In abstract, a preferred embodiment of this invention is a ship capable of cruising at relatively high speed in open water while still having capability of breaking up large ice floes with a combination of a saw toothed upwardly biased, under ice stressing member and an above ice, downwardly projecting, variable position, chisel type ice cracking means.

3,670,682
METHOD AND APPARATUS FOR HANDLING SHIPS
Clyde M. Leavitt; Walter C. Johnson, both of Pascagoula, and Don C. Hall, IV, Ocean Springs, all of Miss., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Jan. 2, 1970, Ser. No. 9
Int. Cl. B63c 1/02, 3/04, 3/08
U.S. Cl. 114—45 18 Claims



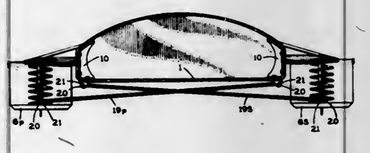
A launching and retrieving facility for handling ships with an open ended, sectionally constructed drydock having one side of removable wingwalls. In an inshore position the drydock is ballasted to rest upon a firm foundation and a track system on the drydock floor aligns with a similar shore-based track system thereby allowing the ship to be rollably or slidably transferred between the drydock and shore. After the ship is transferred to the drydock, the wingwalls are set in place and the drydock deballasted to float off the foundation. The drydock and ship thereon are moved into the launching area where the drydock is ballasted down until the ship is set afloat. Ship retrieval from water to shore is achieved by a reverse procedure.

3,670,683
HULLS OF THE SHIPS AND THEIR METHODS OF CONSTRUCTION
Bernard Jean Pierre Louis Lucien Brusiaux, Chatenay Malabry, and Roger Jean Le Corre, Courrevoie, both of France, assignors to Etat Francais-Delegation Ministerielle Pour L'Armement, Paris, France
Filed June 25, 1970, Ser. No. 49,865
Claims priority, application France, June 25, 1969, 6921218
Int. Cl. B63b 3/00
U.S. Cl. 114—65 R 9 Claims



A hull of a ship comprises a plurality of longitudinally spaced transverse frames on which are mounted in succession, a first continuous skin, a plurality of spaced longitudinal ribs and a second continuous skin. The skins and ribs are assembled on the frames with the latter in inverted position, and the assembly is inverted when completed.

3,670,684
POWER DRIVEN VEHICLE FOR SURFACE TRAVEL ON A BODY OF WATER
George J. Helker, 1261 N.E. 112th St., Miami, Fla.
Filed Oct. 2, 1970, Ser. No. 77,556
Int. Cl. B63b 1/22
U.S. Cl. 114—66.5 P 3 Claims

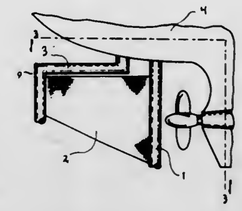


A power driven vehicle for travel on a body of water which maintains static flotation by means of a hull and is provided with articulated skis or pontoons for surface travel when power driven, including independent shock absorbing suspension connections between each ski or pontoon and the hull for negotiating rough water with minimum shock transmission to the hull.

ERRATUM

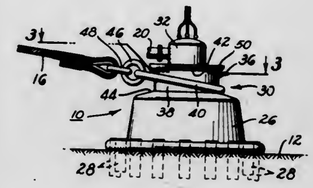
For Class 114—74 see:
Patent No. 3,671,315

3,670,685
FLEXIBLE RUDDER
Aldo Milessa, 171 Avenue B, New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,264
Int. Cl. B63h 25/06
U.S. Cl. 114—162 1 Claim



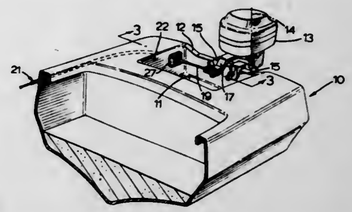
A vessel rudder consisting of a woven plastic water deflecting plate of a substantially trapezoid shape tensionally supported by a vertical slotted rod which is positioned in the center plane of the vessel's stern. A rudder stock is also positioned in the center plane. But aft of the vertical slotted rod a distance approximately equal to one fourth of the rudder plate's total maximum length. There is also fixed on the aft side another slotted rod supporting the back end of the woven plastic plate. And by turning the rudder stock plate it assumes a longitudinally curved shape for deflecting the water sideways.

3,670,686
SUBMERGED MOORING SYSTEM
David G. Reynolds, 13952 Dunton Drive, Whittier, Calif.
Filed Sept. 22, 1970, Ser. No. 74,293
Int. Cl. B63b 21/00
U.S. Cl. 114—230 5 Claims



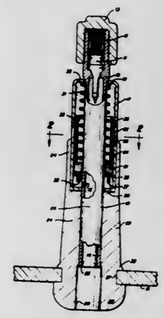
A submerged mooring system for a tanker which is being loaded, or unloaded. The mooring system permits the tanker to drift with the wind and/or current while maintaining the bow of the tanker headed toward the anchor point. The mooring system incorporates a swivel which rotates around a vertical axis as the heading of the tanker changes with variations in the wind and/or current. The swivel comprises a column means, a circular mooring ring loosely encircling and slidable circumferentially around the column means, means for retaining the mooring ring on the column means, and a slip ring linked with and slidable circumferentially of the mooring ring, the mooring line being connected to the slip ring. A hose for loading or unloading the tanker extends between the tanker and the mooring system and the mooring system incorporates another swivel which permits the hose to swivel about the same axis as the mooring swivel in response to changes in the heading of the tanker.

3,670,687
BOAT HAVING PIVOTALLY MOUNTED STEERING MECHANISM
Ernest W. Rowley, 13952 Dunton Drive, Willowdale, Ontario, Canada
Filed April 30, 1970, Ser. No. 33,295
Int. Cl. B63h 21/26
U.S. Cl. 115—18 R 9 Claims



A boat having a transom which constitutes the stern wall of a well provided in the boat, an outboard motor being pivotally mounted on the transom with a portion of the outboard motor having pivotally connected thereto, at a spaced distance from the axis about which the motor is pivotally mounted on the transom, one end of a rigid actuating rod which is slidably disposed within a guide tube. The guide tube is disposed through an opening in a side wall of the well and presents the ball of a watertight ball and socket joint, the socket of which is constituted by the portion of the side wall bounding the entire opening through the thickness of the side wall whereby the socket extends across the entire thickness of said side wall. Thus, pivotal movement of the actuating rod, and of the guide tube within which the rod is disposed, is permitted about the ball and socket joint in order to accommodate pivotal movement of the outboard motor, while even if water enters the well by passing over the transom, this water is prevented from passing from the well through the opening in the side wall thereof into the interior of the hull of the boat. Passage of water into the interior of the hull of the boat could of course result in the boat being swamped.

3,670,688
COMPOSITE VALVE STEM
Lewis A. Seaberg, 7401 Humboldt Ave. S., Minneapolis, Minn.
Filed March 2, 1971, Ser. No. 120,121
Int. Cl. B60c 23/02
U.S. Cl. 116—34 4 Claims

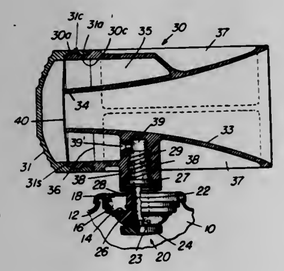


A pressure-indicating composite valve stem for mounting in the valve stem opening of tubeless tire rims is taught. The valve stem includes a central rigid tubular stem member. A

barrel housing extends about or around a portion of the length of the central tubular member, forming an elongated annular cavity about the tubular member. A lateral port in the wall of the central tubular member communicates with this cavity. The barrel housing has an annular band transparent window permitting view of pressure indicia within the barrel housing. A significant portion of the central tubular member extends below the barrel housing and is firmly bonded to a unitary elastic body. This elastic body also is firmly bonded to the lowermost portion of the barrel housing and forms a hermetic seal over the junction at the inner or lowermost end of the barrel and the tubular member. The elastic body is also provided with a neck portion and head portion for mounting purposes in the tubeless tire rim.

Within the cavity between the barrel housing and tubular member is a pressure-indicating assembly which includes a ring piston, a coil spring forcing the piston toward the bottom of the cavity nearest the rim mounting, a sleeve-like visual pressure indicator fixed to the piston and viewable through the window of the barrel housing, movable seals for maintaining an air tight condition as the piston slides, stop member to limit the motion of the piston, and means permitting atmospheric air passage from and to the outer end of the cavity as the piston slides therein.

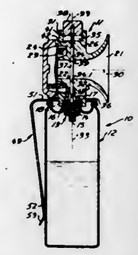
3,670,689
TILT-OPERATED HAND HELD GAS POWERED ACOUSTIC DEVICE
Michael Pappas, Irvington, N.J., assignor to Falcon Safety Products, Inc., Mountainside, N.J.
Filed March 20, 1970, Ser. No. 21,244
Int. Cl. G08b *21/00*
U.S. Cl. 116—112 **8 Claims**



A hand-held gas powered horn is operated by manually tilting the horn body with respect to the can from which it is supported. The can contains a vaporizable liquid or compressed gas which is released through a valve mounted in the neck of the can and having a stem on which the horn is mounted by a screw-thread connection. The parts are made of momentarily deformable synthetic plastic material which enables the cover to be snapped in place on the back of the horn body and the horn to be force-locked on and force-released from the valve stem.

3,670,690
AEROSOL OPERATED HORN
Robert E. Swanson, 5212 Granville St., Vancouver 13, British Columbia, Canada
Filed Nov. 9, 1970, Ser. No. 87,808
Int. Cl. G08b *21/00*
U.S. Cl. 116—112 **2 Claims**

A small air horn adapted to be secured to a standard valve of a standard aerosol cartridge. A push rod extending through the horn to the valve, with a push button at an outer end of the rod. When the push button is pressed inwards, the push rod moves inwards so opening the valve. Gas under pressure



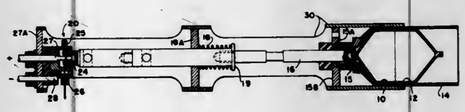
passes to the horn causing it to sound. This is a small device — well adapted for use as a personal warning and signalling device.

3,670,691
BOOKMARKS
Isabel H. Anderson, 3427 E. Hatcher Road, Phoenix, Ariz.
Filed April 10, 1970, Ser. No. 27,367
Int. Cl. B42d *9/00*
U.S. Cl. 116—119 **3 Claims**



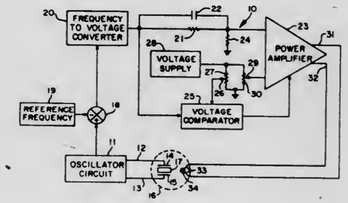
A bookmark employing a bifurcated elongated member for extending around one or more pages of a book and having an ornamental crown fastened to the member for indicating the type of book on which the bookmark is placed. A ribbon is pivotally mounted on the bookmark between the bifurcated elongated member and the crown for 360° pivoted movement.

3,670,692
UNDERWATER DYE-MARKER RELEASE MECHANISM
David L. Jackson, 4504 Cape May Ave., San Diego, Calif.
Filed May 12, 1970, Ser. No. 36,520
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 B **3 Claims**



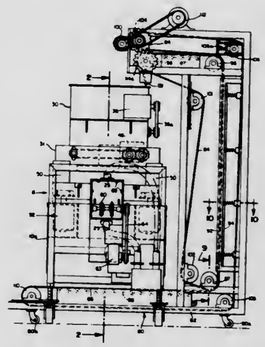
A quantity of concentrated marker dyestuff is sealed between two lip-to-lip plastic cups. The cups are held together in a round tubular sleeve by a strong pre-loaded spring in response to a remote trigger pulse, whereupon the cups fall apart and release the dye.

3,670,693
QUARTZ CRYSTAL RESONATOR TUNING CONTROL APPARATUS
William G. Rorick, Costa Mesa, and Herbert O. Lewis, Westminster, both of Calif., assignors to Collins Radio Company, Dallas, Tex.
Filed March 23, 1971, Ser. No. 127,270
Int. Cl. C23c *11/12*
U.S. Cl. 118—5 **6 Claims**



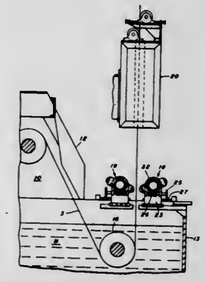
A quartz crystal resonator tuning plating automatic control process utilizing an automatic feedback control circuit in a process loop with the quartz crystal being metal plating tuned in an oscillator circuit. The frequency of the oscillator circuit is mixed with a reference frequency and the difference frequency is converted to dc applied to an RC circuit connected to a power amplifier for developing an exponential power output response from the power amplifier that melts and vaporizes plating metal (such as gold) in a vacuum chamber. This results in the plating rate on the quartz crystal being tuned processed tapering off from a much higher rate to a very low plating rate as the desired tuned frequency is approached. Minimum power level and shutoff controls are provided for the power amplifier in attaining desired levels of product frequency adjustment and plating cutoff.

3,670,694
APPARATUS FOR COATING FOOD ARTICLES
Leo G. Vogel, Downingtown, Pa., assignor to Campbell Soup Company, Camden, N.J.
Filed Sept. 15, 1969, Ser. No. 857,675
Int. Cl. B05b *7/14*; B05c *5/00*
U.S. Cl. 118—24 **5 Claims**



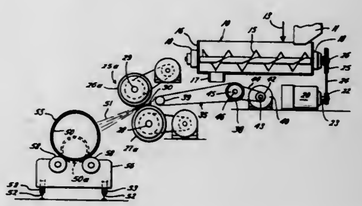
An apparatus for applying moist, long strands of shredded coconut or similar material to a series of food articles, such as layer cakes, in which the coconut is sprayed onto and around the cakes by rotating impellers as the cakes advance through a chamber. The coconut not adhering to the cakes is collected at the bottom of the chamber by air under pressure and recirculated to the impellers by a conveyor system. A rotating agitator located within a reservoir continually breaks up lumps of the shredded coconut and laterally moving cups carry and crop the coconut to the impellers for application to the food articles.

3,670,695
APPARATUS FOR CONTROLLING WEIGHT AND DISTRIBUTION OF A COATING
Robert W. Patterson, Fairfield, Ala., assignor to United States Steel Corporation
Filed Feb. 23, 1971, Ser. No. 117,894
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **3 Claims**



An air knife assembly with a multiplicity of curved orifices spaced around its periphery for controlling the weight and distribution of a coating applied to a continuously moving substrate. Means are included for rotating the assembly to position any desired orifice into an operating position facing the substrate. Removable baffles prevent the flow of air to all of the knives except the one in the operating position.

3,670,696
COATING APPARATUS FOR TUBULAR OBJECTS
Anthony W. Findley, Bellechasse, La., and Jesse M. Rogers, Houston, Tex., assignors to Anchor-Wate Company
Filed Feb. 22, 1971, Ser. No. 117,607
Int. Cl. B05c *5/00*; B05b *13/02*
U.S. Cl. 118—320 **10 Claims**



A pair of elastomeric coated drums is arranged so that the longitudinal axis of the lower of the pair of drums is positioned rearwardly, or offset from, the longitudinal axis of the upper of the pair of drums to thereby provide a receiving area on the lower drum for receiving a mixture of aggregate, cement, and water. One of the drums of the pair is mounted so that it may be moved along its support toward and away from the longitudinal axis of the other drum, and it may be adjusted to any desired position, up and down, in spaced relation to the other drum. As the drums are rotated, the mixture deposited on the

lower drum will be conveyed between the drums and impelled onto the surface of a tubular member. The angle or direction of the stream discharged from between the drums may be changed by moving and positioning one of the drums relative to the other drum. The desired angle of discharge of the stream depends upon the diameter of the tubular member being coated. The drums are elastomeric coated to provide a more uniform surface for contacting and impelling the mixture from between the drums in a more uniform stream, and the elastomeric coating is wear resistant.

3,670,697

APPARATUS FOR COATING A TUBE OF FIBER MATERIAL WITH VISCOSE BY EXTRUSION

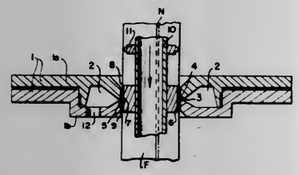
Erwin Kindl, Wiesbaden-Biebrich, and Ernst Riegler, Niederwalluf, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 23, 1970, Ser. No. 100,917

Claims priority, application Germany, Dec. 27, 1969, P 19 65 129.7

Int. Cl. B05c *3/00*

U.S. Cl. 118—408 **5 Claims**



This invention relates to an apparatus for coating a tube of fiber material with viscose, comprising an annular slot die and a backing element spaced therefrom to form a cylindrical passage having a width of 0.3 to 1.0 mm through which the tube can be passed, the slot in the die being directed transversely with respect to this passage and having its exit into this passage at a distance of at least 2 mm from the tube entry of this passage and of at least 2 mm and at least three times the width of said passage from the tube exit of this passage.

3,670,698

APPARATUS FOR IMMERSING LASTED BOOTS IN A LIQUID BATH

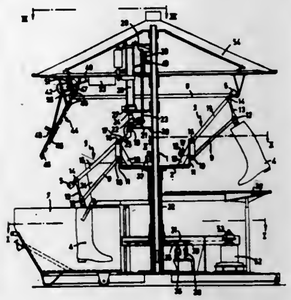
Hendrik Joosten, Montgomerylaan, Netherlands, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed July 24, 1969, Ser. No. 844,535

Int. Cl. B05c *3/10*; **B29c** *13/00*

U.S. Cl. 118—425 **9 Claims**

An apparatus for immersing lasted boots into a liquid bath in which the lasted boots carried by rod arrangements are moved uninterruptedly throughout a circular path above an immersion bath and upon reaching a predetermined location in the path each rod arrangement moves downwardly for immersing the lasted boot in an immersion bath after which the lasted boot is moved upwardly to the circular path for the completion of its travel therealong. Movement means are provided for supporting the rod arrangement during its movement into the bath, its immersion, and its return to the circular path. The rod arrangement includes a plurality of pivotally interconnected rods defining a polygon and each polygon is mounted for movement in a vertical plane with the mutual position of the last and the rod pivots being such that during downward and upward movement of the rod arrangement, the lasted boot is in a position inclined to the perpendicular and in a vertical position during immersion and means attached to one of



the rods constituting each polygon bears against a rotatable disc which is a pat of the movement means.

3,670,699

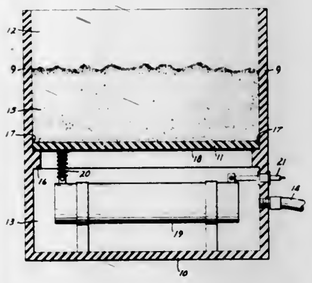
ELECTROSTATICALLY CHARGED FLUIDIZED BED APPARATUS

Jerald P. Sargent, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 24, 1970, Ser. No. 49,241

Int. Cl. B05b *5/02*

U.S. Cl. 118—629 **6 Claims**



Electrostatically charged fluidized bed apparatus having a porous membrane through which a continuous stream of air flows upwardly to fluidize powder in a bed above the membrane. A conductive web consisting of a layer of conductive particles incorporated into the membrane is maintained at a potential of at least 5,000 volts so that the stream of air carries electrical charges to powder suspended in the fluidized bed. Alternatively, the conductive web may be a fabric of conductive fibers mounted beneath and close to the membrane.

3,670,700

DEVELOPMENT ELECTRODE

James E. Britt, Webster, and Robert E. Hewitt, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

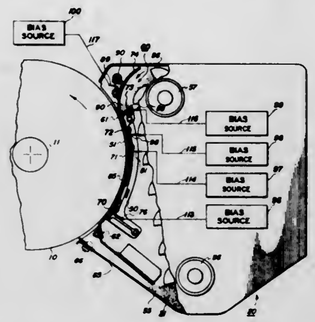
Filed July 3, 1969, Ser. No. 838,815

Int. Cl. G03g *13/00*

U.S. Cl. 118—636 **4 Claims**

A development electrode placed in a xerographic development zone in close parallel relation with a moving latent image bearing member having a potential thereon between the image

potential and background potential on the member and having means to redirect the flow of developer material moving



through this region so that the developer material impinges against the surface of the member.

3,670,701

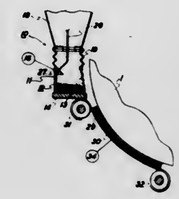
TWO STEP ORBITAL PAD DEVELOPMENT

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed July 3, 1969, Ser. No. 838,952

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **10 Claims**



A method and apparatus for developing a latent electrostatic image with electroscopic material wherein development is effected by utilizing a biased toner cloud generator for conveying developer to the image bearing surface and an oscillating pad mounted adjacent to the surface to enhance the development of the image. A cloud of toner is generated by oscillating a container supporting developer to release charged toner therefrom and the cloud thereupon contacts the image bearing surface. By then orbiting a brush member on the surface, toner affixed to the non-image background areas is redistributed to the image to produce a high quality developed image.

3,670,702

HINGE MECHANISM FOR A COVER PLATE IN AN ANIMAL FEEDER

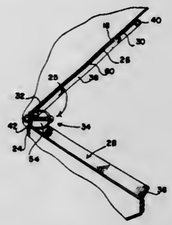
Victor W. Cory; Edgar E. Williams, and Robert J. Howard, all of Quincy, Ill., assignors to Moorman Manufacturing Company, Quincy, Ill.

Filed July 29, 1970, Ser. No. 59,120

Int. Cl. A01k *5/00*

U.S. Cl. 119—52 R **6 Claims**

The hinge mechanism includes pin formations on the cover plate and C-shaped straps which are secured to the animal feeder about the periphery thereof and which each receive the pin formations of adjacent cover plates. Each cover plate normally rests over a feeding portal in a feed trough which extends about the animal feeder. The cross section of each of the pin formations is substantially less than the opening defined between each of the C-shaped straps and the feeder to provide a sloppy fit and permit both pivotal and translational movement of the cover plate by an animal in the act of feeding so that the cover plate will be fully supported about the periphery



of its associated portal when it is not disturbed by an animal and so that the cover plate will bear against an upwardly and outwardly inclined side wall portion of the animal feeder in generally flush relationship to a line of contact on the sidewall portion when the cover plate is forced against the side wall portion by an animal in the act of feeding.

3,670,703

FORCED-FLOW BOILER

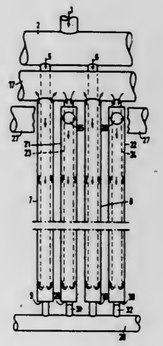
Rupprecht Michel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Muhlheim (Ruhr), Germany

Filed July 23, 1970, Ser. No. 57,711

Claims priority, application Germany, July 26, 1970, P 19 38 043.9

Int. Cl. F22b *29/02*

U.S. Cl. 122—406 R **10 Claims**



Forced-flow boiler includes combustion chamber walls formed of vertical welded tube-crosspiece tube systems comprising riser tubes having respective downcomer tubes located therewithin.

3,670,704

BOILER CONTROL SYSTEM

Robert M. Siewert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

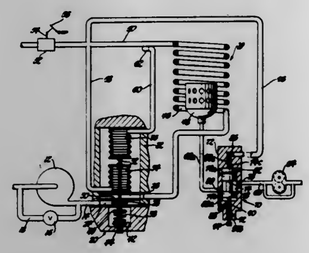
Filed Dec. 16, 1970, Ser. No. 98,622

Int. Cl. F22d *5/26*

U.S. Cl. 122—448 S **6 Claims**

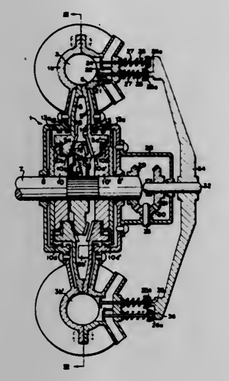
A boiler control system to control the vapor temperature and pressure at the boiler outlet of a Rankine cycle heat en-

gine utilizing a super heat control valve to throttle the liquid flow to the boiler and a boiler pressure actuated fuel control



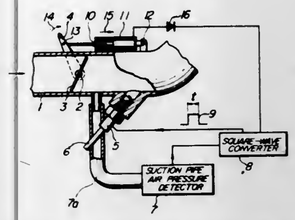
valve to regulate the flow of fuel to the burner supplying the heat input to the boiler.

3,670,705
ENGINE WITH AN ANNULAR CHAMBER
Masahiro Saito, 407 Takashi, Mobara-shi, Chiba-ken, Japan
Filed July 28, 1970, Ser. No. 58,800
Int. Cl. F02b *55/00*
U.S. Cl. 123—8.47 **7 Claims**



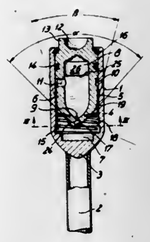
An engine comprises an annular chamber, a plurality of runners disposed in the annular chamber in a manner to be moved in the same direction by gas pressure through the annular chamber, the runners being divided into two equal groups each having at least two units, two rotor members respectively coupled with each group of runners, inertia imparting blocks attached to the respective rotor members so as to apply the momentum of the runners of one group to those of the other group by collision between the block associated with one rotor member and that coupled with the other rotor member, a power take off shaft journaled in bearings in a manner to be aligned with the rotating axis of the rotor members, two power transmitting members fixed to the power take off shaft so as to cooperate with each rotor member in the advancing direction of the runner, and means for preventing the rotor members from being moved backwards.

3,670,706
FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Hideya Fujisawa, Kariya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed July 6, 1970, Ser. No. 52,465
Claims priority, application Japan, Aug. 20, 1969, 44/65906
Int. Cl. F02b *3/00*; **F02d** *31/00, 9/00*
U.S. Cl. 123—32 EA **1 Claim**



A fuel injection control system for internal combustion engines, wherein, the fuel supply is adapted to be cut during coasting only if the pressure of air in the engine suction pipe is detected to drop below a certain predetermined value and at the same time the engine throttle is detected either to be moving in the direction of decreasing the degree of opening of the throttle valve or to remain stationary, and the fuel supply is resumed to recover the acceleration of the engine when the throttle starts to move in the direction of increasing the opening of the throttle valve even during the coasting of the engine.

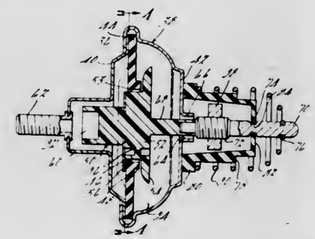
3,670,707
CLEARANCE COMPENSATING MECHANISM, ESPECIALLY FOR VALVE DRIVES OF INTERNAL COMBUSTION ENGINES
Jurgen Guido, Borsigstrasse 4, Regensburg-Neutraubling, Germany
Filed March 10, 1970, Ser. No. 18,090
Claims priority, application Germany, March 10, 1969, P 19 12 046.8
Int. Cl. F011 *1/14, 1/16, 1/24*
U.S. Cl. 123—90.57 **8 Claims**



A clearance compensating mechanism in reciprocating driving linkages, especially for valve drives of internal combustion engines. The mechanism is provided with a piston in front of an oil-filled pressure chamber, which piston moves into a cylinder in a downward direction, thus leaving an annular gap so as to permit a passage for minor oil leakage. The pressure chamber is in communication with a reservoir, which

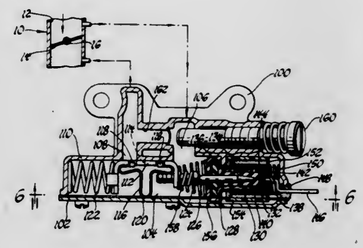
also contains oil, by means of a passage having a relief valve with a valve body held by, for example, a cage and adjoining the pressure chamber below an inlet point in the annular gap. A compression spring can be provided for pretensioning the piston along the lines of its movement out of the cylinder.

3,670,708
INTEGRATED ANTI-STALL AND IDLE-SPEED ADJUSTMENT MECHANISM
William K. Ojala, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 31, 1970, Ser. No. 103,216
Int. Cl. F02d *11/08*; **F02m** *19/12*; **F16t** *3/07*
U.S. Cl. 123—103 E **7 Claims**



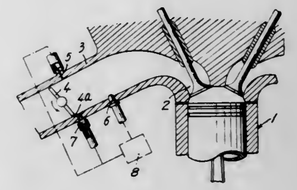
An integrated anti-stall and idle-speed adjustment mechanism for an internal combustion engine including a dashpot means for arresting or time delaying the final closing movement of an engine throttle valve to prevent stalling of the internal combustion engine. This dashpot includes adjustment means for setting the stroke of the dashpot and for stopping the closing movement of the throttle valve to thereby set the idle speed position of the throttle and the internal combustion engine.

3,670,709
IDLE AIR CONTROL
Clarence J. Eckert, Rochester, and John W. Moulds, Penfield, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed May 25, 1970, Ser. No. 40,894
Int. Cl. F02m *23/04*
U.S. Cl. 123—124 R **1 Claim**



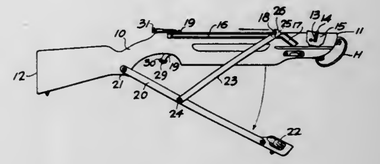
Idle air flow is bypassed around the closed throttle in an internal combustion engine induction passage and controlled by poppet and slide valve embodiments of an idle air control valve to regulate engine idle speed. The valve are positioned by a power element which is electrically heated to a predetermined temperature during the engine warmup period.

3,670,710
APPARATUS AND METHODS FOR CONTROLLING THE AMOUNT OF FUEL INJECTED INTO AN INTERNAL COMBUSTION ENGINE
Tasuku Date, Tokyo, and Eiichi Hashimoto, Niiza-machi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1970, Ser. No. 86,192
Claims priority, application Japan, May 21, 1970, 45/42903
Int. Cl. F02d *1/06*
U.S. Cl. 123—140 MP **7 Claims**



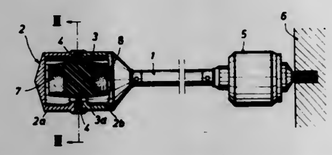
The amount of fuel injected into an inlet passage of an internal combustion engine leading to a cylinder thereof is regulated by a control device in response to suction pressure in the passage and to the degree of opening of a throttle valve in the passage. This is achieved by connecting in parallel to the control device, a first suction opening in the passage downstream of the valve, and a second suction passage immediately proximate the valve so as to lie downstream thereof when the valve is closed but to gradually be positioned upstream of the valve as it opens.

3,670,711
CROSSBOW COCKING DEVICE
Max Firestone, 26151 Lake Shore Blvd., Euclid, Ohio
Filed Feb. 22, 1971, Ser. No. 117,228
Int. Cl. F41b *5/00*
U.S. Cl. 124—25 **5 Claims**



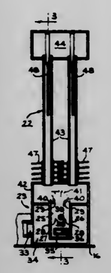
A crossbow with a crossbow cocking device for cocking a bow string in which the cocking device includes a lever and link mechanism for moving the bow string to cocked position preparatory to shooting an arrow aligned on the stock of the crossbow, the lever being pivoted at one end to the stock of the crossbow and the link being pivoted at one end to the lever and having means at its other end for engaging the bow string. The lever when pivoted rearwardly may selectively engage and pivot the trigger and release the bowstring into engagement with the means on the other end of the link so that, if desired, the bowstring can be moved from a cocked position to an untensioned position without firing of an arrow.

3,670,712
STABILIZER FOR ARCHERY BOW
Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Feb. 17, 1971, Ser. No. 116,082
Claims priority, application Japan, Feb. 21, 1970, 45/16721
Int. Cl. F41b 5/00
U.S. Cl. 124—30 R 4 Claims



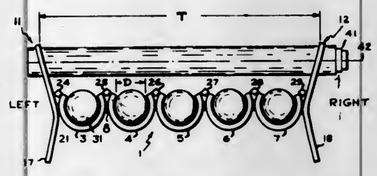
A stabilizer for an archery bow having a rod portion and a weight body fixed to the free end of the rod portion. The weight body is made into a hollow construction and a mass-body having a suitable mass and weight is supported within the hollow weight body for independent movement by means of a resilient mounting material in such a manner that the mass-body can be vibrated inside of the hollow weight body substantially in all directions.

3,670,713
GAS-FIRED HEATER MEANS
Roy W. Abbott, Jeffersontown, Ky., assignor to General Electric Company
Filed June 18, 1970, Ser. No. 47,433
Int. Cl. F24h 3/06
U.S. Cl. 126—110 R 6 Claims



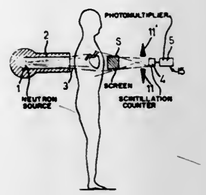
Improved gas-fired heater means are provided for supplying heat to a space, such as a room, house, building, or the like. Basically, the improved heater means comprises a combination of highly efficient heat exhanger means for transferring heat generated by the combustion of a combustible gas-air mixture to air circulated between the heat exchanger means and the space to be heated at a rate of at least 3,500 BTU of heat per hour per pound of heat exchanger means material and high intensity combustor means for mixing fuel-gas with pressurized air to produce the combustible gas-air mixture and to burn that mixture to provide a source of heat of sufficient intensity to meet the heat transferring ability of the highly efficient heat exchanger means. The improved heater means provided by the present invention permits considerable weight and volume reduction and consequent cost savings in heat exchanger means material over conventional gas-fired heaters of comparable heating capacity.

3,670,714
FIREPLACE GRATE
Leonard Eyges, Observatory House, Wellesley College, Wellesley, Mass.
Filed Jan. 26, 1971, Ser. No. 109,926
Int. Cl. F23h 13/02
U.S. Cl. 126—165 10 Claims



A fireplace grate for burning paper or paper and wood is designed to hold rolled up newspapers or magazines with the rolls of newspapers arranged in at least one row and held by sets of holders, the holders in each set being arranged side by side, each holder in each set having a corresponding holder in the other set which is in registration therewith and each holder having an opening into which an end of the roll of paper is inserted and held securely so that the paper is not likely to unroll. Embodiments of the invention include four sets of holders arranged to hold paper in two transverse rows one above the other with sufficient space between the rows and between rolls of paper in a row to permit ample flow of air between to sustain burning of the rolls.

3,670,715
DEVICE FOR MEASURING THE FLOW OF BLOOD
Jean Robert Perilhou, Bourg-La-Reine, and Michel Joseph Auphan, Courbevoie, both of France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,519
Claims priority, application France, Feb. 12, 1969, 6903308
Int. Cl. A61b 5/02; G01t 1/20
U.S. Cl. 128—2.05 V 5 Claims



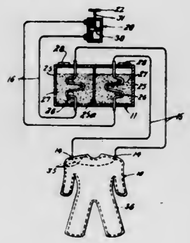
a. The device according to the invention permits of measuring the flow of liquids which contain oxygen, especially blood flow.

b. It comprises a pulsed neutron source which partly irradiates the liquid; the oxygen O^{16} of the liquid is converted into N^{16} which emits radiation.

A detector measures the radioactivity of the liquid as a function of flow.

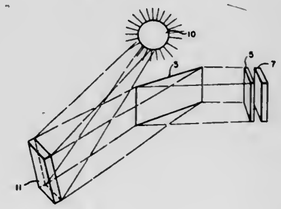
c. The device can be used especially in medical diagnosis for measuring blood flow, for example cardiac output, arterial flow or the supply of blood to an organ.

3,670,716
SELF-HEATED PROTECTIVE GARMENT
John J. Esposito, Delran, N.J., assignor to the United States of America as represented by the Secretary of the Navy
Filed Dec. 21, 1970, Ser. No. 100,073
Int. Cl. B63c 11/28; F24j 1/00
U.S. Cl. 126—204 7 Claims



A heat-augmentable outside garment for protecting personnel from extended low temperature exposure. A network of flexible tubing lined within the outside garment completes a loop between the one ends of two coils within chambers of a portable heater unit containing a chemical exothermic composition. The other ends of the coils are connected respectively to an upper and a lower chamber of a portable manual double-action pump. The upper and the lower chambers of the pump, the coils, and the tubing are filled by a heat transfer fluid. Reciprocation of the pump alternates fluid flow to and from the two coils and the tubing resulting in heat transfer from the exothermic reaction of a chemical composition to the garment.

3,670,717
UNLIMITED QUANTITY OF POWER FROM SOLAR RADIATION SECURED WITH ZERO ATMOSPHERIC POLLUTION
Charles G. Abbot, 4409 Beechwood Road, Hyattsville, Md.
Filed March 24, 1971, Ser. No. 127,638
Int. Cl. F24j 3/02
U.S. Cl. 126—270 4 Claims



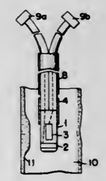
Solar radiation collected by a polar siderostat is reflected by a reflecting surface arranged at an angle to the beam from the polar siderostat of one-half of the latitude of the polar siderostat. The resulting horizontally disposed beam of solar radiation is then utilized by vertically disposed elements for heating air which heated air is thereafter converted to useful work.

3,670,718
PATIENT CARE WALL
Thomas Brendgord, Fairview, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed June 1, 1970, Ser. No. 41,985
Int. Cl. A61b 19/00
U.S. Cl. 128—1 R 10 Claims



This specification discloses a wall with a window in it. The wall may be in the form of a closure for a room to prevent cross contamination between service personnel and the environment in which they work. The wall has a tent-like sheet with "built-in" suits, adapters and life support equipment that permit one or more persons to perform work with a high degree of dexterity and accessability within a sealed chamber. In a lowered position, the tent becomes a closure for the window. In the raised position, the tent permits ingress and egress of service personnel. The suits are attached to the tent by means of adapters which permit access to the full length of a reclining patient. A clear plastic helmet is attached to the suit. An air supply provides air to the helmet and to the gloves through a passage formed by two layers of the plastic. The air flow prevents fogging of the inside of the helmet and helps to keep the hands dry and comfortable.

3,670,719
CATHETER TYPE SEMICONDUCTOR RADIATION DETECTOR
Tetsuji Kobayashi, Yokohama-shi, and Seiichi Takayanagi, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 22, 1969, Ser. No. 868,355
Claims priority, application Japan, Oct. 25, 1968, 43/77323
Int. Cl. A61b 6/00
U.S. Cl. 128—2 A 5 Claims

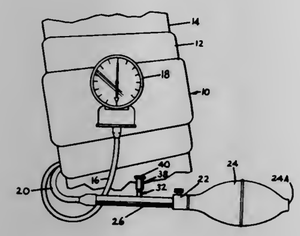


A catheter type semiconductor radiation detector for insertion into a living body includes an elongated, preferably cylindrical semiconductor radiation detector having a first detecting portion non-directionally sensitive to radiation in a direction perpendicular to the longitudinal axis of the detector and at least a second detecting portion directionally sensitive to radiation in the direction perpendicular to the longitudinal axis of the detector.

3,670,720
POWER-ASSISTED INFLATION ASSEMBLY FOR SPHYGMOMANOMETERS

Norman Panzer, 71 Blanchard Road, South Orange, N.J.

Filed May 4, 1971, Ser. No. 140,163
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 G 8 Claims

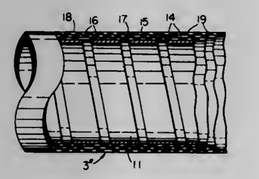


In a sphygmomanometer, the improvement which comprises a tube interconnecting the air line, leading to the inflatable cuff, and the air-introducing bulb by means of an interconnecting channel, with the channel having inner diameters at its ends at least equal to the inner diameters of its connecting elements and tapering centrally to define a constricted throat, and an air-intake tube disposed at right angles to the throat axis and affording air intercommunication between the throat and the exterior of the tube. The air-intake tube is further provided with a sleeve valve to selectively close off communication of the throat with the exterior of the tube.

3,670,721
ENDOSCOPE

Masaharu Fukami, and Toshiyuki Mori, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1970, Ser. No. 8,776
Int. Cl. A61b 1/06
U.S. Cl. 128—6 2 Claims



Endoscope having a bendable tube connected to a forward end member adapted to be inserted into a hollow body portion to be inspected and controlled from a control housing and an elongated flexible tube connecting the bendable tube and the control housing. The flexible tube has a thin tubular synthetic resin layer having a tubular net-like braid of non-metallic fibers embedded therein and another thin tubular synthetic resin layer having a tubular net-like braid of metallic fibers embedded therein, the superimposed resin layers coaxially covering the flexible core of the flexible tube, and the bendable tube comprises a tubular, knitted net-like braid of crimped synthetic fibers closely enveloping a bendable tubular core and a pliable resin tube closely enveloping the braid, thus providing adequate wall thickness for the flexible tube and the bendable tube while retaining sufficient flexibility and twist-resisting property.

3,670,722
ELECTRIC POWER SUPPLYING DEVICE FOR AN ENDOSCOPE

Shinya Kosaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,513
Claims priority, application Japan, Aug. 18, 1969, 44/65234
Int. Cl. A61b 1/06
U.S. Cl. 128—6 8 Claims

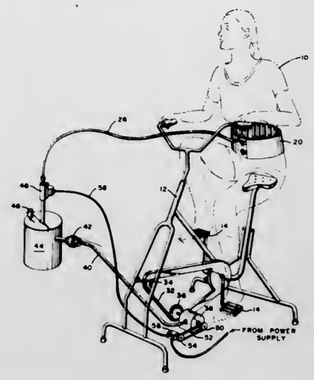


Electric power supplying device for an endoscope having a photographing device, a lamp for illuminating an object for observation and a lamp for illuminating the object for photographing. The device is adoptable to an automatic exposure control type having a photoelectric element and an endoscope of the manual exposure control type. The electric power supplying device has an exposure control device, a first, a second and a third relay. When an endoscope of the automatic exposure control type is connected, the observation lamp is energized and the photoelectric element is connected to the exposure control device and, upon actuation of release means of the endoscope, the first relay is energized to actuate a switching circuit so as to energize the photographing lamp and the exposure control device supplied with the output of the photoelectric element actuates the switching circuit to terminate the energization of the lamp. When an endoscope of the manual exposure control type is connected, the observation lamp is energized and, upon actuation of the release means, the second and the third relay are actuated so as to connect an electric source of adjustable voltage to the exposure control device so that a reference voltage manually set in the source is supplied to the exposure control device while the first relay is actuated by the third relay to actuate the switching circuit so as to energize the photographing lamp which is deenergized after a time period corresponding to the reference voltage by the actuation of the switching circuit controlled by the exposure control circuit.

3,670,723
MASSAGING DEVICE DRIVEN BY EXERCISE APPARATUS

Luther G. Simjian, 7 Laurel Lane, Greenwich, Conn.

Filed Oct. 8, 1970, Ser. No. 79,113
Int. Cl. A61h 7/00
U.S. Cl. 128—64 10 Claims

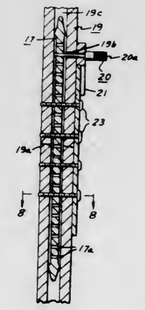


An inflatable massaging device, such as a belt, is cyclically inflated and deflated in coordinated action with the operation of an exercise apparatus requiring the expenditure of muscle power.

3,670,724
PROSTHETIC OR FRACTURE DEVICE AND METHOD

David N. Bosacco, 266 Saxer Ave., Springfield, Pa.

Filed March 12, 1970, Ser. No. 19,002
Int. Cl. A61f 5/04
U.S. Cl. 128—92 D 5 Claims



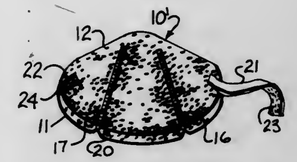
A hip replacement prosthesis comprises an artificial ball mounted on or integral with an intermediate portion which abuts the end of the bone in question. A shank or stem having a plurality of screw holes is attached to the intermediate portion and is intended for intramedullary insertion. The intermediate portion has at least one locating hole and the stem has a plurality of spaced holes formed therein. The stem is inserted into the medulla leaving the locating holes in the intermediate portion exposed. A rectangular post is fitted into the locating holes and then a template having a rectangular aperture is fitted over the rectangular post. The template has a plurality of screw holes in it positioned, when in place, to be congruent with the holes in the stem. When the template is in place one or more holes are drilled transversely through the template, the near bone cortex, the corresponding prosthetic stem hole and the far cortex portion. The template is then removed and screws are then screwed through the aligned holes in the bone and the stem.

In ordinary bone fixation a similar technique is used except that at least part of the external plate or template is left on and the screws are screwed through it, the bone and the intramedullary nail.

3,670,725
PROTECTIVE PAD

John F. Gaylord, Jr., Charlotte, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.

Filed June 30, 1969, Ser. No. 837,548
Int. Cl. A61b 19/00
U.S. Cl. 128—149 3 Claims

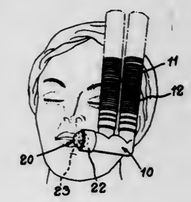


A protective pad for an elbow, heel, knee or like body portion including a generally convexo-concave member of cushioning material having a pair of spaced apart seams extending inwardly from the outer periphery of said member but terminating in spaced apart inner ends, said seams joining together cut edges of said material formed by the removal of two sectors from the material and serving to impart to said member its generally convexo-concave shape, and fastener means carried by said member for securing the pad on the body of a wearer in covering relation to the body portion to be protected.

3,670,726
BREATHING CIRCUIT

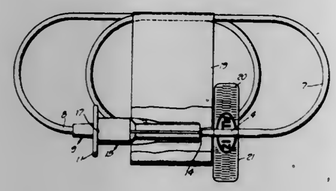
Thomas J. Mahon, Palisades Park, and Samuel Cherba, Totowa, both of N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Sept. 23, 1969, Ser. No. 860,319
Int. Cl. A61m 17/00
U.S. Cl. 128—188 5 Claims



There is disclosed a breathing circuit which includes a swivelled fitting for connection to a patient's face mask or endotracheal tube and for connecting thereto breathing hoses which are to be connected to an anesthetic machine or to a pulmonary ventilator. The fitting is characterized in that the hoses are laterally disposed with respect to the patient's nose. The circuit in its entirety is further characterized in that it is light in weight, is translucent and is designed for one-patient use to render it disposable.

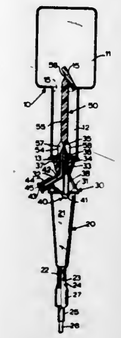
3,670,727
MEDICAL INFUSION SET
Donald R. Reiterman, Sierra Madre, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed April 16, 1970, Ser. No. 29,039
Int. Cl. A61m *05/00, 05/32*
U.S. Cl. 128—214 R 11 Claims



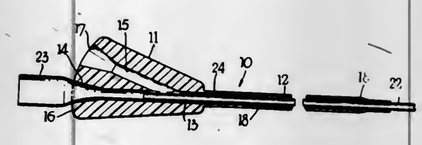
A medical infusion set for administering parenteral liquid into a patient's veins in which the set is in the form of a continuous flexible loop that is manually broken apart before venipuncture at a frangible section (this section comprising an indication of the sterile integrity of the set to subsequent users), the set providing means for flushing air therefrom while maintaining the set in a sterile condition by either running the liquid through the loop before effecting the venipuncture, or flushing the air from the set by using the patient's blood flowing therethrough and before connection to the liquid being administered; the set including means protecting either a connector to the parenteral liquid or the needle against contamination while air is flushed from the set; and the needle of the set including a pair of flexible plastic wings generally diametrically opposed and including manually interengageable portions comprising interengageable upstanding ribs manually interlockable when manually pinched together to form a dual purpose temporary handle in which the wings can be subsequently spread apart adjacent the venipuncture in the patient for securement to the patient to stabilize the implanted needle or cannula.

3,670,728
APPARATUS FOR INTRAVENOUS ADMINISTRATION OF A FLUID FROM A DUAL-CHAMBER FLASK HAVING AN INTERNAL UPSET-TABLE SEPTUM NORMALLY SEPARATING TWO AXIALLY-IN-LINE CHAMBERS AND HAVING A PIERCEABLE END STOPPER
William C. Dabney, Oakland, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
Filed June 1, 1970, Ser. No. 41,866
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C 7 Claims

A standard drip meter assembly of the type having an upstanding stopper piercer with both an air inlet and a passage for the fluid into the drip meter, is supplemented by a solid air-inletting spike with a socket fitting over the stopper piercer and having a long shank that terminates in a non-coring piercing end. Passages adjacent the socket communicate with the air inlet and the passage in the drip meter stopper piercer. The supplemental spike is long enough to upset the septum after it pierces the stopper of a dual-chamber flask. An advantage is that inletting air then enters near the bottom of the flask to help agitate the fluid. An initiating pumping device for hand operation is provided adjacent the outlet of the drip meter.



3,670,729
TRANSFUSION NEEDLES
Alan E. C. Bennett, 40, White Horse Drive, Epsom, Surrey, and Michael Bewick, 12, Grenville Place, London, S.W.1., both of England
Filed Sept. 17, 1969, Ser. No. 858,593
Claims priority, application Great Britain, Sept. 19, 1968, 44,530/68; May 19, 1969, 25,421/68
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 8 Claims



A transfusion device for transfusing fluid intravenously without causing inflammation at the site of entry. The device comprises a body portion having a through bore and a secondary bore communicating with the through bore and a sleeve projecting from the body portion to form a continuation of the through bore, the wall of the sleeve being provided with a plurality of perforations. In one embodiment of the invention, the tip of the sleeve is restricted to receive and seal against the tube of a catheter which is insertable through the through bore in the body portion and the sleeve, a first fluid being transfused through the catheter and a second fluid being transfused through the secondary bore, via the annular passage formed between the catheter and the sleeve to the perforations in the wall of the sleeve. In another embodiment of the invention, an integral inner wall is provided within the sleeve, the inner wall being imperforate and forming a continuation of the through bore which serves as a flow passage for the first fluid.

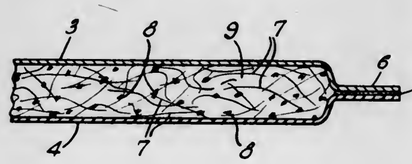
3,670,730
LIQUID MEDICINE APPLICATOR
Norman S. White, Pittsburgh, Pa., assignor to The Sampson Corporation
Filed March 12, 1971, Ser. No. 123,659
Int. Cl. A61j *7/00*
U.S. Cl. 128—222 7 Claims

A one-piece syringe formed entirely of plastic has a dosage scaled barrel provided at one end with a discharge nozzle and

at the other end with a flexible, resilient, hand-compressible bulb in which its major wall portion is of less thickness than the barrel wall thickness. The bulb wall includes oppositely located finger grip areas of less thickness than the thickness of the bulb wall, whereby the finger grip areas may be indented toward each other by pinching between the thumb and forefinger of a person holding the syringe in one hand, without other support. The fluid capacity of the bulb is such that, when the finger grip areas are indented to a point at which they cannot be further depressed without beginning to collapse the major portion of the bulb, they will have displaced from the bulb a volume of fluid sufficient to discharge from the barrel an accurately measured quantity of any liquid contained therein and without collapse of the main body of the bulb itself.



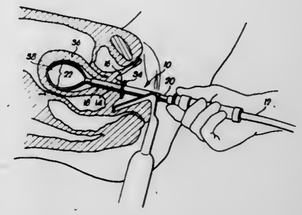
3,670,731
ABSORBENT PRODUCT CONTAINING A HYDROCOLLOIDAL COMPOSITION
Carlyle Harmon, Scotch Plains, N.J., assignor to Johnson & Johnson
Filed May 20, 1966, Ser. No. 551,772
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 11 Claims



An absorbent dressing having an absorbent layer defined by water soluble hydrocolloidal composition capable of absorbing of at least about fifteen times its weight of body exudate and retaining said exudate under pressure of up to about 2.5 p.s.i.

3,670,732
VACUUM CURETTE
Ralph R. Robinson, P. O. Box 668, Middlesboro, Ky.
Filed May 11, 1970, Ser. No. 36,049
Int. Cl. A61m *1/00*; A61b *17/22*
U.S. Cl. 128—297 5 Claims

A curette for emptying a gravid uterus of the products of the first trimester of pregnancy has a suction tube reciprocably and rotatably carried within an open-ended sleeve and a pair of flexible, interconnected fingers joined to one end of the tube within the sleeve. After inserting the sleeve through the cervix into the uterine canal, the fingers may be expelled from the sleeve to form a loop within the uterus by shifting the tube within the sleeve. Gentle rotation and reciprocation of the tube causes the loop to wipe against the uterine walls and loosen the products for subsequent withdrawal through the tube when the latter is coupled with means for creating negative pressure therein.



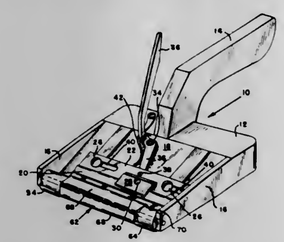
3,670,733
PRECISE DEPTH CUTTER
Richard S. Carlisle, 1051 Broadway, Thornwood, N.Y.
Filed Sept. 14, 1970, Ser. No. 71,640
Int. Cl. A61b *17/32*; B26b *29/00*; B21k *11/00*
U.S. Cl. 128—305 7 Claims

A flat member is incised at an angle of approximately 45° to a straight section of its perimeter, and a narrow portion of the body adjacent to the 45° angle is folded approximately 90° to form a guide. The remaining downwardly extending portion on the other side of the incision is sharpened to form a straight blade which can be ground to a desired length to cut soft materials precisely to exact depths. To maximize safety, a rounded portion is formed rearwardly from the blade region. The blade edge is totally exposed below the plane of the guide, to help promote accuracy. The angle of the blade edge and the slight downward inclination of the unsharpened edge extending rearwardly from the point, allow the device to initiate and sustain a prescribed depth incision with relatively slight downward pressure required on the part of the user.

3,670,734
APPARATUS FOR REMOVING SKIN SECTIONS
Thomas G. Hardy, Jr., 621 Glen Echo Trail, Winston-Salem, N.C.
Filed July 20, 1970, Ser. No. 56,343
Int. Cl. A61b *17/322*
U.S. Cl. 128—305 1 Claim

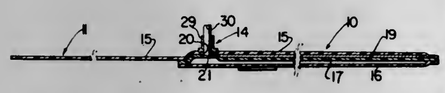
An apparatus for obtaining skin sections of preselected thicknesses and widths having a reciprocating blade mounted within its housing. The blade can be reciprocated either manually by a displacing member or mechanically by a motor and suitable power source. The graft thickness is determined by positioning to a selected setting a member located at the

forward portion of the housing so that more or less of the cutting edge of the blade is exposed, and the graft width is



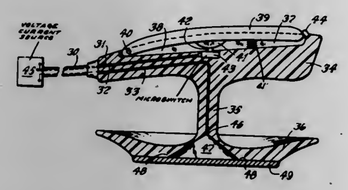
determined by positioning selectively removable guide runners located in spaced relationships each with the other.

3,670,735
DISPOSABLE INFLATABLE TOURNIQUET
Lewis F. Hazlewood, Marlton, N.J., assignor to Walter & Kidde Company, Inc., Belleville, N.J.
Filed Feb. 9, 1970, Ser. No. 9,675
Int. Cl. A61b 17/12
U.S. Cl. 128—327 **6 Claims**



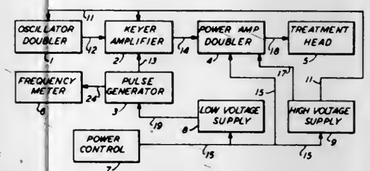
A disposable plastic tourniquet which includes an inflatable elongated envelope formed from three layers of vinyl plastic, of which one layer extends from one end of the envelope to form a long tongue. A sheet of stiffening material is positioned between two of the layers of vinyl to increase the contact surface, and a strip of pressure sensitive tape extends from each side of the envelope to engage the tongue and lock the tourniquet in possition on the patient.

3,670,736
THERAPEUTIC INSTRUMENTATION ELECTRODE
Joseph J. Panico, Arlington, Mass., assignor to Health Systems, Inc., Woburn, Mass.
Filed July 17, 1970, Ser. No. 55,851
Int. Cl. A61n 1/04
U.S. Cl. 128—404 **7 Claims**



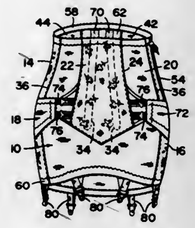
A medical electrode for applying electrical energy to or across the body of a patient which includes a paddle having a flat disc-like contact plate electrode for intimate contact with the skin. Electrical energy is supplied to the plate along a ring disposed centrally thereof through a hollow right cone at whose apex the energy is applied. The paddle also includes an upper dielectric horizontal handle having a control switch through which a supply wire passes to and through a vertical dielectric rod to the cone apex. Disposed above the plate is a dielectric shield protector which is integral with the rod and extends outwardly past the plate.

3,670,737
ULTRA-SHORT WAVE ATHERMAPEUTIC APPARATUS
Joseph J. Pearo, Great Neck, N.Y., assignor to Diapulse Corporation of America, New Hyde Park, N.Y.
Filed July 2, 1970, Ser. No. 51,945
Int. Cl. A61n 1/40
U.S. Cl. 128—422 **10 Claims**



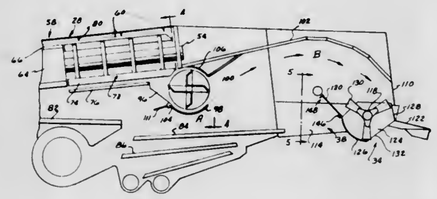
An athermapeutic apparatus for administration of electrotherapeutic treatments to living matter for curing or abatement of diseases, infections and the like, by subjecting such matter to high frequency oscillations of a preselected wavelength for predetermined time periods thereby eliminating the generation of accompanying heat generation. The desired electromagnetic oscillations are accurately produced with a minimum of power consumption by utilization of stable solid state circuitry resulting in more accurate pulse frequency generation accompanied by considerably reduced power consumption and enabling a much greater degree of control over both pulse frequency and power output administered to a patient or the like. Proper treatment dosage in terms of pulse frequency and penetration is readily selectable by depression of the proper push-button on the front of apparatus panel, with a lighted signal lamp behind the button indicating each treatment setting as selected by the operator. Moreover, with reduction in power consumption a much greater degree of control over the pulse frequency and power is achieved.

3,670,738
FOUNDATION GARMENT PROVIDING ORTHOPEDIC SUPPORT
Leona M. Johnson, Cuyahoga Falls, Ohio, assignor to ATCO Surgical Supports Co., Cuyahoga Falls, Ohio
Filed April 2, 1970, Ser. No. 25,035
Int. Cl. A41c 1/00
U.S. Cl. 128—549 **9 Claims**



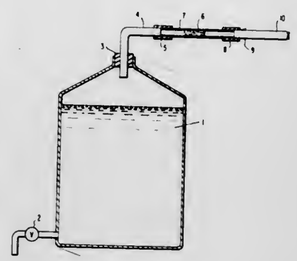
A foundation garment which provides support in both the abdominal and pelvic regions. The garment is in the form of a body enveloping sheath of an elastic material which has non-elastic panels at least at the upper portions of the front and back of the garment. A removable body-encircling elastic band is attached to tabs at the opposite sides of the upper front panel and is positioned vertically adjustably in the back by a strip of Velcro. Patches of Velcro are also provided for holding the tabs against the front of the garment when the body-encircling band is not used.

3,670,739
AXIAL FLOW COMBINE WITH A ROTARY DISCHARGE AND A STRAW CHOPPER
Edward William Rowland-Hill, Lancaster, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed July 14, 1971, Ser. No. 162,512
Int. Cl. A01f 7/06
U.S. Cl. 130—27 T **9 Claims**



An axial flow combine has two axial flow threshing and separating units with a rotary discharge receiving discharged threshed crop material from the rear of the axial units and impelling the threshed crop material through the rear of the combine hood. A straw chopper is mounted at the rear of the hood and has a feed plate extending upwardly and forwardly within the hood for receiving and guiding crop material to the straw chopper. A transverse roll extends along the upper rear edge of the plate to clear the end of threshed crop material.

3,670,740
CIGARETTE FILTER MATERIALS
Sadao Takenaka; Soichiro Kishida, and Yoichi Yamazaki, all of Kyoto, Japan, assignors to Nippon Cloth Industry Co., Ltd., Kyoto, Japan
Filed Jan. 13, 1970, Ser. No. 2,619
Claims priority, application Japan, Jan. 13, 1969, 44/2488
Int. Cl. A24b 15/02; A24d 01/06
U.S. Cl. 131—261 R **4 Claims**



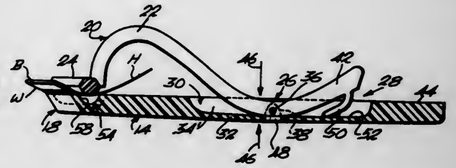
A cigarette having a filter prepared by kneading a mixture of gluten and wheat flour with water, baking the kneaded mixture, and crushing the backed product into coarse grains of less than 60 mesh.

3,670,741
METHOD OF MAKING ARTIFICIAL HAIR PIECES
Jitsuo Utsunomiya, 1416, Yanocho, Aki-gun, Hiroshima, Japan
Filed Aug. 4, 1970, Ser. No. 60,906
Int. Cl. A41g 3/00
U.S. Cl. 132—5 **9 Claims**



A method of making an artificial hairpiece including a layer of artificial skin with implanted hair, comprising steps of tying strands of hair to a net which is initially tensioned so as to fully open its meshes, then subsequently stretching said net in one direction whereby said net is contracted in the direction perpendicular to that of the stretching to reduce its area and thereby effect a much closer or more dense grouping of the hair strands, and applying a layer of fluid raw material to said net in its reduced area condition whereby said raw material becomes solidified forming the artificial skin with said net and hairstrands embedded therein.

3,670,742
EYELASH APPLICATOR
Edward Weaner, 7980 Hawthorne Avenue, Miami Beach, Fla.
Filed April 23, 1970, Ser. No. 31,281
Int. Cl. A45d 40/26
U.S. Cl. 132—88.7 **4 Claims**

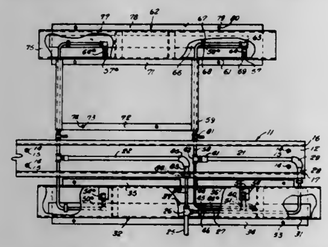


A small hand tool for placing a false eyelash on an eyelid and for use in adhesively positioning the eyelash to the eyelid. A T-configured base element is pivotally fulcrumed to a T-configured clamp lever element. The forward portion of the base element defines a crescent shape anvil portion adapted to supportingly engage the underside of a false eyelash; the forward portion of the clamp lever element defines a crescent shape clamping portion adapted to engage the upperside of the false eyelash. Spring means continuously urge the crescent shape portions convergingly and operatively to a disposition clamping an eyelash. Subsequent to adhesively positioning a false eyelash on the eyelid, the eyelash is released by finger-squeezing the base and clamping elements thereby permitting removal of the tool from the eyelash.

3,670,743
VEHICLE WHEEL WASHING APPARATUS
Werton Dewitt Moore, Dallas, Tex., assignor to Delta Manufacturing and Engineering Corporation, Dallas, Tex.
Filed Oct. 12, 1970, Ser. No. 62,058
Int. Cl. B60s 3/04
U.S. Cl. 134—45 **7 Claims**

An apparatus for directing sprays of liquid on outer side surfaces of each pair of wheels of a vehicle as the wheels roll past

pairs of spray nozzles, the liquid being expelled under pressure through spray nozzles by flexible pump conduits which are



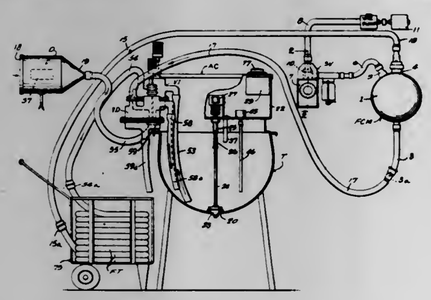
progressively longitudinally occluded by a vehicle wheel as it rolls over the pump conduits.

3,670,744

SOLENOID OPERATED, TWO WAY DIVERTER VALVE FOR FLUID LINE WASHING APPARATUS

Lloyd F. Bender, Route 5, Hayward, Wis.

Filed Jan. 11, 1971, Ser. No. 105,314
Int. Cl. B08b *3/10, 9/02*
U.S. Cl. 134—57 R **3 Claims**



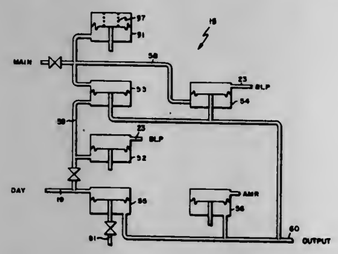
A washing apparatus including a fluid circuit for conducting a cleansing solution through conveying conduits, a drying means for blowing heated air through the conduits after they are cleaned, and improved, solenoid operated two way valves for selectively diverting the washing and drying fluids. An improved, solenoid operated, two way diverting valve for fluids.

3,670,745

DIAPHRAGM LOGIC CONTROL CIRCUIT FOR ELECTRIC HEATING SYSTEM

Louis J. Bentsen, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed March 11, 1971, Ser. No. 123,290
Int. Cl. G05b *11/50;* **G05d** *16/00*
U.S. Cl. 137—84 **7 Claims**



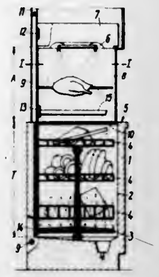
A pneumatic, diaphragm logic circuit for controlling a step controller in a day-night, electric heat, temperature control system. The circuit establishes maximum heating when the branch line pressure of the thermostat is below a predetermined minimum, and establishes either modulated heating during the day or zero heating during the night when the branch line pressure exceeds the predetermined minimum.

3,670,746

COMBINATION DISHWASHING MACHINE AND OVEN

Hasso Gehrmann, Bregenz, Austria, assignor to Elektra-Bregenz GmbH, Bregenz/Vorarlberg, Austria

Filed Jan. 26, 1971, Ser. No. 109,777
Claims priority, application Austria, Jan. 26, 1970, 767/70
Int. Cl. B08b *3/02*
U.S. Cl. 134—107 **18 Claims**



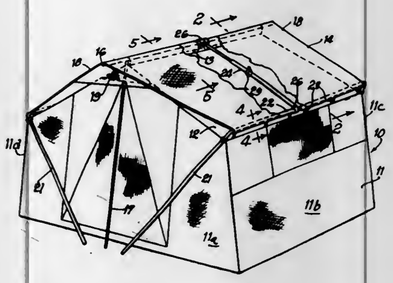
A combination dishwashing machine and oven is formed of an open-topped tank with a cover closing its opening, a heating element unit spaced vertically above the opening in the tank, and a vertically displaceable shell positionable between the cover and the heating element unit for laterally defining the oven space. A vertically arranged support column is associated with the tank and includes a lifting mechanism for displacing the shell downwardly into the tank from its position about the oven and for lifting dishwashing baskets upwardly out of the tank. The shell, tank cover and dishwashing baskets are sized so that the shell fits around the cover and baskets for effecting the vertical displacement of the various parts.

3,670,747

TENT WITH PERMANENTLY ATTACHED FLY

Harold J. Pohl, Washington, and Raymond H. Kratky, Kirkwood, both of Mo., assignors to Kellwood Company, St. Louis, Mo.

Filed Dec. 31, 1970, Ser. No. 103,076
Int. Cl. A45f *1/10*
U.S. Cl. 135—1 R **7 Claims**



A tent having a fly superposed over the tent roof in spaced relation thereto and permanently connected to the roof along the roof ridge. The side edges of the fly are secured to eave

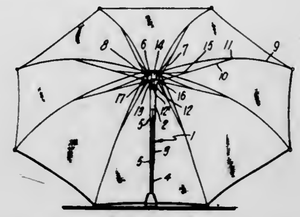
frame members which support the sidewalls of the tent. The fly is maintained in taut condition and provides an air space above the tent roof for improved resistance to rain and for insulation purposes.

3,670,748

HANDLE FOR UMBRELLA

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed April 13, 1970, Ser. No. 27,561
Claims priority, application Germany, April 16, 1969, G 69 15 072.7
Int. Cl. A45b *25/00*
U.S. Cl. 135—20 **7 Claims**



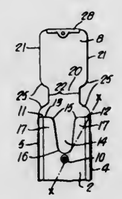
A handle for use with an umbrella which assumes a flat rectangular cross sectional shape when collapsed wherein the handle is of a trapezoidal outline and is of flat cross section.

3,670,749

SHEATH FOR UMBRELLA

Hans Buschmann, Solingen-Ohligs, Germany, assignor to Telesco Brophy Limited, Montreal, Quebec, Canada

Filed May 13, 1970, Ser. No. 36,749
Int. Cl. A45b *25/18*
U.S. Cl. 135—33 C **3 Claims**



A sheath for an umbrella of the type which assumes a flat cross-sectional shape when collapsed, the sheath having two flat wide lateral walls connected by narrow side walls, the sheath having an open end, a cut-away portion in the front wall and a flap connected to the rear wall and overlying the cut-away portion of the front wall when closed.

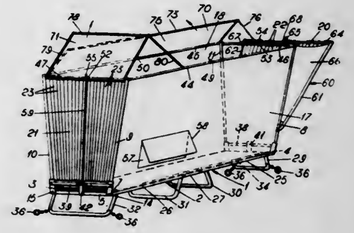
3,670,750

SUN COT

Edward W. Johnston, P.O. Box 457, Schefferville, Quebec, Canada

Filed Sept. 23, 1970, Ser. No. 74,600
Claims priority, application Canada, June 2, 1970, 084 435
Int. Cl. A61g *9/00, 33/06;* **A67c** *79/00*
U.S. Cl. 135—5.1 **8 Claims**

A sun cot for protecting a sun bather from the prying eyes of potential observers including a supporting bed, upstanding canvas end and side panels being provided and being supported on upstanding frame members. A zip fastener may be provided in one panel for entry of the sun bather.

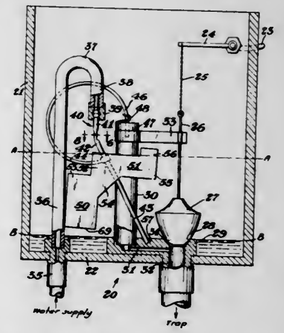


3,670,751

ECCENTRIC ACTING FLOATING-CONTROLLED PINCH-VALVE VESSEL FILLING ASSEMBLY

Wallace H. Buswell, Grand Haven, Mich., assignor to Clare C. Anderson, Midland, Mich., a part interest

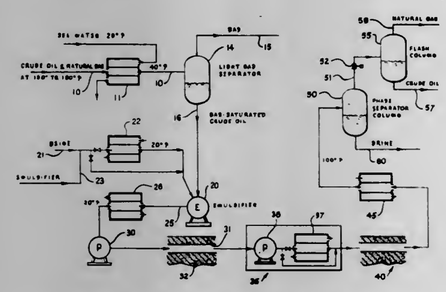
Filed Feb. 22, 1971, Ser. No. 117,301
Int. Cl. G05d *9/02*
U.S. Cl. 137—1 **24 Claims**



An eccentric acting float-controlled pinch-valve vessel filling mechanism utilizes as flow control means, in combination, (1) a delivery tube having a free end portion and an attached end portion coupled to downwardly extending liquid supply means and an intermediate flexible portion adjacent the attached end capable of being repeatedly flexed sufficiently to shut off the flow of liquid therethrough, and (2) fixedly associated with the delivery tube adjacent the flexible portion and between such portion and the mid-length of the free end portion of the tube, a critically shaped float having substantially an L shape, being formed with two body portions that join at an angle of about 90°, such joinder being adjacent the association with the delivery tube, the free end portion of the delivery tube extending along a line between the respective longitudinal axes of the two body portions of the float and substantially in the same plane therewith. As an essential feature, the float is disposed, with respect to the delivery tube, e.g., when in an empty vessel, so that rising liquid buoys up the then depending body portion of the float and moves it slightly in a direction opposite to subsequent motion and temporarily locks it against adjacent stop means and keeps the flexible portion of the delivery tube open until the liquid level reaches the then substantially horizontal other body portion whereupon the buoyancy of this latter body portion soon abruptly moves the float out of the locked position and the buoyancy of the formerly dependent body portion is added to that of the

second body portion and eccentrically pivots the float and the delivery tube about the point of flexing of the delivery tube and thereby abruptly pinches shut the passageway in the delivery tube, stopping delivery of liquid therethrough until the occasion when the vessel is again drained, when the float again falls temporarily into the dependent and then locked positions during filling of the vessel.

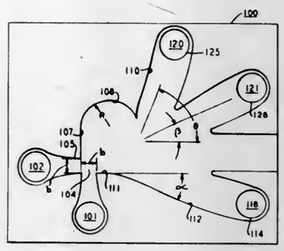
3,670,752
PIPELINING CRUDE OILS AND TARS CONTAINING DISSOLVED NATURAL GAS AT SUB-FREEZING TEMPERATURES IN ORDER TO AVOID ENVIRONMENTAL DAMAGE
Sullivan S. Marsden, Jr., Dept. of Petroleum Engring., Stanford University, Stanford, Calif., and Stephen C. Rose, 600 Liddon Court, Midland, Tex.
Filed Feb. 26, 1971, Ser. No. 119,312
Int. Cl. F17d 1/16
U.S. Cl. 137—13 **6 Claims**



Crude oils and tars, such as those obtained from the Prudhoe Bay Oil Field and the Athabasca Tar Sands, can be efficiently transported through a large diameter insulated pipeline at temperatures below 32° F., for example, between about 15° to 30° F., in the form of 40 to 70 percent oil-in-brine emulsions containing salts dissolved in the water in amounts sufficient to prevent freezing at said temperatures. These operating conditions permit the insulated pipeline to be buried in the ground without causing thawing of the permafrost which will lead to significant damage to both the environment and the pipeline. Subsurface construction of a pipeline of this sort has considerable economic advantage over the above-ground, supported construction required for a heated oil pipeline to avoid environmental damage. Dissolution of gas in the crude oil at these low temperatures, thus allowing transport of the gas in the same pipeline, will also add considerable economic advantage. Even at these low temperatures, the emulsion has an effective viscosity comparable to that of the oil alone at much higher temperatures so that energy consumption for pumping is at an acceptable level. On arriving at the discharge terminal, the cold emulsion can then be broken down into its constituents by heating the same either with or without the addition of demulsifying chemicals.

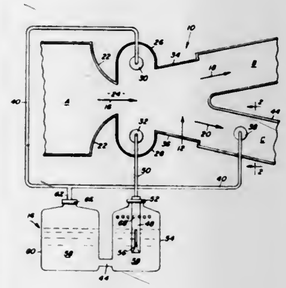
3,670,753
MULTIPLE OUTPUT FLUIDIC GATE
Anthony John Healey, State College, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed July 6, 1970, Ser. No. 52,440
Int. Cl. F15c 1/14
U.S. Cl. 137—81.5 **9 Claims**

A fluidic device is disclosed having two input jets arranged to interact, selectively producing one of three possible outputs. A first output is produced by the presence of either of the jets in the absence of the other jet. A second output is produced by the simultaneous presence of both jets where the velocity of the first jet substantially exceeds the velocity of the second jet. The third output is produced by the simultaneous



presence of both jets where the velocity of the two jets is substantially equal.

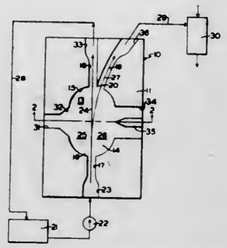
3,670,754
VACUUM CONTROLLED FLUIDIC REGULATOR
Peter A. Freeman, 8807 Littlewood Road, Baltimore, Md.
Filed Sept. 29, 1970, Ser. No. 76,414
Int. Cl. F15c 1/04
U.S. Cl. 137—81.5 **9 Claims**



Flow diversion in a fluidic regulator is controlled without moving parts. Depending upon the fluid level in a first channel, a vacuum operated system diverts a portion of incoming flow into a second channel. The operating vacuum is generated within the regulator, itself, so that regulator operation is self-contained.

3,670,755
FLUID FLOW CONTROL DEVICE
Giancarlo Nardi, Pisa, Italy, assignor to Compagnia Italiana Westinghouse Freni E Segnali, Torino, Italy
Filed Sept. 17, 1969, Ser. No. 858,651
Claims priority, application Italy, Dec. 6, 1968, 54202 A/68
Int. Cl. F15c 1/04
U.S. Cl. 137—81.5 **2 Claims**

A fluid flow control device in which a housing is provided with a flat chamber having two parallel sides, a supply passage communicating with one end of the chamber and dimensioned to pass between the parallel sides of the chamber a stream of fluid in a substantially laminar flow condition to an aligned output passage on the opposite chamber end, the stream contacting the two flat sides to form a fluid diaphragm and dividing the chamber into two lateral chambers, each communicating with different control pressure passages for pressuring the two lateral chambers at different static pressure levels to provide a differential pressure gradient acting on the full free length of the fluid stream across the chamber, bending the stream an amount determined by the pressure gradient to



deliver a portion of the stream to a second output passage adjacent the first output passage.

ERRATUM

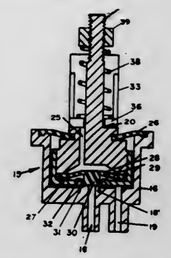
For Class 137—84 see:
Patent No. 3,670,745

3,670,756
COMPRESSOR GOVERNOR
Forrest O. E. Schultz, Owosso, Mich., assignor to Midland-Ross Corporation, Toledo, Ohio
Filed May 8, 1970, Ser. No. 35,620
Int. Cl. G05d 7/00
U.S. Cl. 137—102 **13 Claims**

A compressor governor having a variable orifice means associated with a valve means which causes positive and instantaneous response from the pumping mode to the unloaded mode and from the unloaded mode to the pumping mode. Means is also provided to limit the adjustment in both directions to avert injury of the governor components and malfunction of the device that might otherwise result.

3,670,757
CONTROL REGULATOR
Wilbur C. Quain, Winona, Minn., assignor to Lake Center Industries, Winona, Minn.
Filed Oct. 15, 1969, Ser. No. 866,671
Int. Cl. G05d 7/00
U.S. Cl. 137—103 **5 Claims**

A regulator to control devices and appliances which is actuated by pressure differentials coming from the source of pressure such as a vacuum source and also by feedback pressure



differentials from the device being controlled to provide self-monitoring servo type control.

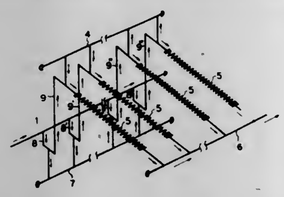
3,670,758
PRIMING DEVICE FOR A SIPHON
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed March 30, 1970, Ser. No. 23,930
Int. Cl. F04f 10/00
U.S. Cl. 137—150 **8 Claims**

A priming device having tube adapted for attachment to a siphon which transfers a liquid from a receptacle. A hollow, squeezible, bulb-like member extends outwardly from the tube with the space within the bulb-like member communicating with the space within the tube. The discharge end of the tube has a one-way valve which permits air to escape therefrom, but prohibits air from entering the tube through the discharge end. Squeezing the bulb-like member starts a siphoning action.

3,670,759
METHOD AND MULTI-BRANCHED NETWORK SYSTEM FOR UNIFORMLY DISTRIBUTING THE FLOW OF MIXED PHASE FLUIDS
Toru Terashima, Kawasaki, Japan, assignor to Nippon Petroleum Refining Company, Tokyo, Japan
Filed Aug. 3, 1970, Ser. No. 67,672
Int. Cl. F16k 45/00
U.S. Cl. 137—171 **5 Claims**

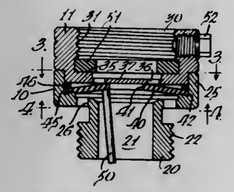
A multi-branched conduit system, supplied with a mixed-phase fluid, may have its distribution network controlled with respect to the uniformity of the liquid and gaseous fluids therein by employing an upper gas conduit and, optionally, a lower liquid conduit, so that the mixed-phase fluid introduced

in the main header positioned between said upper and lower conduits deliver a uniformly mixed flow to each of the



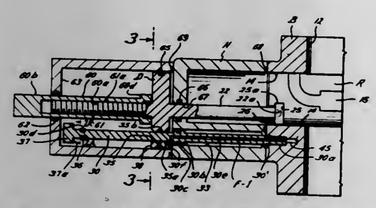
branches of the system, even when the ratio of liquid to gas or vapor is in the main header.

3,670,760
BACKFLOW PREVENTER
James Butcher, Oreana, Ill.; Richard G. Gyllstrom, St. Cloud, Minn., and William Doyle Lamb, Decatur, Ill., assignors to A. W. Cash Valve Manufacturing Corporation
Filed Aug. 13, 1970, Ser. No. 63,560
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 8 Claims



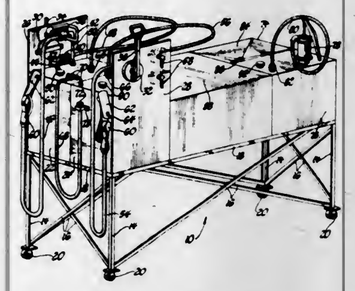
A backflow preventer for preventing reverse water flow having as a part thereof a transverse wall between inlet and outlet water passages and with a valve disc in the form of an annular member mounted to be resiliently urged against said transverse wall and block a series of circularly disposed flow passages at all times except when normal water flow occurs through the backflow preventer. The valve disc is simply constructed of a resilient material in planar form and is mounted to be dished and urged against said transverse wall for seating engagement therewith.

3,670,761
BLOWOUT PREVENTER WITH RESISTANCE MEANS BETWEEN THE BODY AND THE PISTON
Robert K. Lerouax, Houston, Tex., assignor to Hydril Company
Filed Oct. 13, 1970, Ser. No. 80,294
Int. Cl. E21b *33/06*
U.S. Cl. 137—315 16 Claims



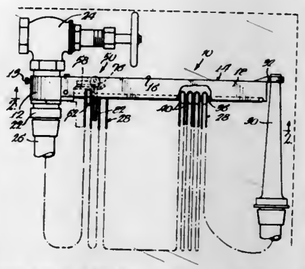
Blowout preventers each having at least one movable bonnet and an operating cylinder therewith which are movable together relative to a piston in the cylinder for exposing a ram mounted inwardly of the bonnet to effect the removal of the ram, wherein the preventer has detent or resistance means between the piston and an extension of the body to resist movement of the piston, the piston rod, and the ram connected therewith when fluid pressure is applied in the operating cylinder outwardly of the piston for thereby effecting an opening outward movement of the bonnet to the ram-exposed position.

3,670,762
SMALL ENGINE SERVICE CENTER
Michael C. Pierno, 16146 Beverly Road, Birmingham, Mich., and Vincent J. Figas, 19716 Damman, Harper Woods, Mich.
Filed July 30, 1970, Ser. No. 59,605
Int. Cl. F16k *51/00*
U.S. Cl. 137—342 9 Claims



A mobile flammable fluid handling assembly including a regular fuel tank and a mixed fuel tank juxtaposed to one another and spaced by a platform from a used oil tank and a new oil tank. A manually actuated pump is associated with each fuel tank and is connected through valves to the associated tank and to a fill hose and a siphon hose. The valves for each tank may be positioned in "fill" or "siphon" positions so as to deliver fuel from the associated tank through the fill hose when in the "fill" position and to draw fuel into the associated tank through the siphon hose when in the "siphon" position. A vent hose is connected to the fuel tanks and has a quick disconnect fitting on the free end thereof. A manually operated pump with a hose attached thereto is connected to the new oil tank.

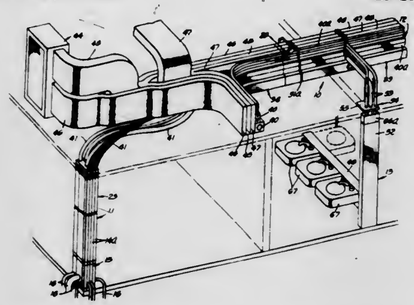
3,670,763
SEMIAUTOMATIC HOSE RACK
John T. Magdars, Northbrook, Ill., assignor to General Fire Extinguisher Corporation
Filed Feb. 19, 1971, Ser. No. 116,966
Int. Cl. B65h *75/34*, *75/38*
U.S. Cl. 137—355.18 5 Claims



A fire fighting water hose rack of the type capable of storing a long collapsed hose compactly in upright folded loops draped over a plurality of support links which sequentially release such loops as the hose is withdrawn from the rack,

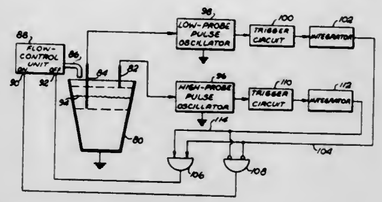
outer end first. The rack is mountable adjacent a water supply pipe with the hose connected downstream of a valve. The hose rack has an improved clamping means for temporarily closely off the flow of water through the loops until the hose is drawn out of the rack and substantially straightened, even though the valve is opened.

3,670,764
BUILDING UTILITY AND SERVICE SYSTEM
James A. Tindal, 18002 Mettler Avenue, Gardena, Calif.
Filed Feb. 4, 1971, Ser. No. 112,557
Int. Cl. F16l *5/00*
U.S. Cl. 137—357 29 Claims



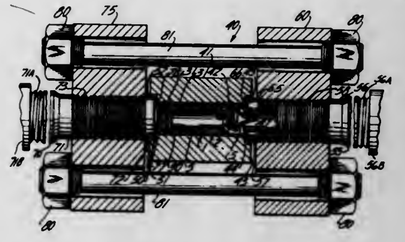
A building utility and service system which can be modified and rearranged according to the changing demands and requirements of the building generally comprises one or more collector units which collect various incoming utilities and services and extend them to the floors in the building, distributor units which distribute utilities and services from a collector unit throughout each floor, and utilization units which dispense certain utilities and services from a distributor unit to one or more outlets on a floor utilizing those certain utilities and services. Each unit includes portable transport sections comprised of a plurality of individual pre-fabricated elements which can be added to or stripped from the transport sections to alter their capacities and various connectors, connecting lines and transition components having quick connect and disconnect capabilities which interconnect the elements of the units and provide flexibility to the system.

3,670,765
LIQUID LEVEL SENSOR INCORPORATING PULSE TECHNIQUES
Joel E. Haynes, 11735 Luanda, Lakeview Terrace, Calif.
Filed July 27, 1970, Ser. No. 58,507
Int. Cl. G05d *9/12*
U.S. Cl. 137—392 6 Claims



A system is disclosed for sensing levels of electrically-conductive liquid by utilizing the liquid as a switch in cooperation with electrical probes. The destructive effects of liquid conduction on the probe are avoided by the use of pulse techniques. A pulse generator operates when the liquid under observation attains a probe-contact level to complete an electrical circuit. The pulse generator is disclosed in the form of a relaxation oscillator which pulses a trigger circuit, the output of which is integrated to provide a control signal. A plural-probe system is also disclosed. The pulses provided from the pulse generator have an interval of not more than one fifth of the interval therebetween.

3,670,766
POPPET AND VALVE ASSEMBLY
Henry K. Tyson, and Albert Q. Butler, both of Odessa, Tex., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed April 29, 1970, Ser. No. 32,874
Int. Cl. F16k *15/00*
U.S. Cl. 137—515.5 5 Claims

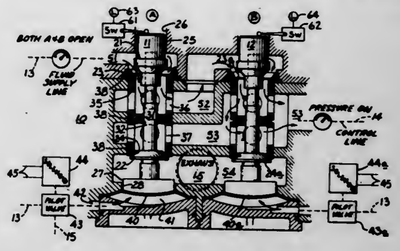


A poppet and valve assembly are designed to eliminate prior art problems of fouling with solid materials, large pressure drop, and cracking due to stress concentrations in the valve systems for checking flow of fluids in tubing.

The valve assembly comprises an elongated valve body, upstream and downstream tailpieces, means for urging these tailpieces in sealing engagement with the valve body and a poppet which is seatable within the bore of the upstream tailpiece.

The poppet comprises an elongated member having a rear end portion, a forward end portion including a tapered shoulder and a substantially continuous and smooth surface area, orifices disposed on the tapered shoulder, a passageway open to the rear of the body member, and conduits communicating between the orifices and the passageway.

3,670,767
SAFETY VALVE ASSEMBLY FOR CONTROLLING CLUTCH AND BRAKE IN POWER PRESS OR THE LIKE
Kenneth R. Mahorney, Bartlett, Ill., assignor to Danly Machine Corporation, Chicago, Ill.
Filed March 8, 1971, Ser. No. 122,008
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 6 Claims



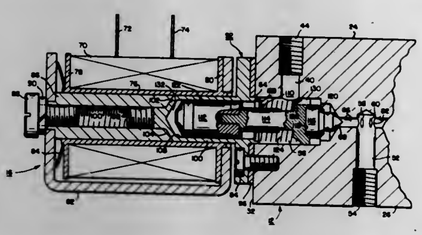
A valve assembly for a pressurized fluid line controlling a clutch and brake made up of a pair of valves having movable

valve members with separate actuators, each of the valve members having inlet ports and outlet ports, the inlet ports being connected in series and the outlet ports being connected effectively in parallel so that both valves must be activated to pass the pressurized fluid to the control line and so that upon unwanted sticking of one of the valve members in activated position, pressure fluid to the control line is cut off and exhaust fluid from the line is promptly and directly vented.

3,670,768
FLUID FLOW CONTROL DEVICE

Augustus W. Griswold, Rochester, N.Y., assignor to Dynak, Inc., Rochester, N.Y.

Filed June 8, 1970, Ser. No. 44,242
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 **16 Claims**

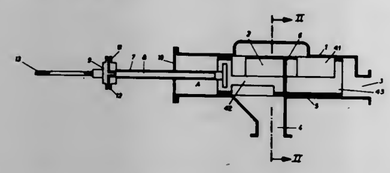


A fluid flow control device including a body having a plurality of inlet passageways and a single common outlet passageway, and a plurality of solenoid valves connected to the body for controlling fluid flow from the inlet passageways to the outlet passageway. The device and the solenoid valves are resistant to corrosive liquids. The amount of residual-liquid left in any inlet passageway downstream from each solenoid valve when that valve is closed is minimized, to provide as sharp a liquid interface as is possible between each liquid leaving the outlet passageway and the next successive liquid.

3,670,769
APPARATUS FOR THE CONTINUOUS ADJUSTMENT OF THE REFLUX RATIO OF A DISTILLATION COLUMN

Horst-Dieter Gelderblom, Sindorf, and Manfred Morsdorf, Koln-Weidenpesch, both of Germany, assignors to Chemiebau Dr. A. Zieren GmbH & Co. K.G., Koln, Germany

Filed June 30, 1970, Ser. No. 51,295
Claims priority, application Germany, June 30, 1969, P 19 33 056.4
Int. Cl. F16k *51/00*
U.S. Cl. 137—610 **11 Claims**

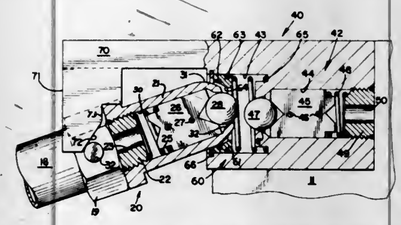


The reflux ratio of an industrial distillation column can be accurately varied in a programmed manner by passing the distillate through a reflux ratio regulator having an elongate housing having an elongate fluid inlet in a side wall thereof, a partition fitted axially in the housing perpendicular to the axis of the inlet and movable axially between the ends of the inlet; a first fluid outlet positioned on one side of the partition; a second fluid outlet positioned on the other side of the partition; means for varying the position of the partition along the inlet during the distillation, so that the partition divides the stream of distillate entering the housing in a varying ratio into two streams, one being withdrawn as distillate and the other being returned as reflux; and, optionally, a liquid stream divider downstream of the reflux ratio regulator comprising an elongate housing having in the side walls thereof a fluid inlet connected to one of the fluid outlets of the reflux ratio regulator and two fluid outlets, one connected to the head of the distillation column and one to means for collecting the product; a weir with a plurality of overflow indents in its upper edge positioned axially in said housing between the fluid inlet and the fluid outlets; and a liquid stream dividing wall mounted transversely in said housing and mounted perpendicularly to the weir, so that the stream of liquid flowing over the weir is divided by the dividing wall into two streams, one of which exists through the first fluid outlet and the other stream exits through the second fluid outlet.

3,670,770
FLUID LINE COUPLING

Vaughn A. Nelson, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 1, 1970, Ser. No. 33,757
Int. Cl. F16k *11/00*
U.S. Cl. 137—614.04 **12 Claims**

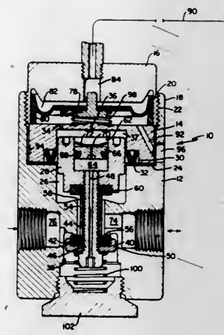


A telescopic linear type fluid line coupling having a valved female housing carrying reciprocable sealing means, and a camming surface, a valved male coupling element having cam means thereon, said cam means and said camming surface being cooperative to effectuate interconnection of said male and female portions.

3,670,771
FLUID OPERATED BOOSTER VALVE

Albert W. Dewberry, Littleton, Colo., assignor to C. A. Norgren Co., Littleton, Colo.

Continuation of Ser. No. 641,927, May 29, 1967, abandoned.
This application Dec. 11, 1969, Ser. No. 3,311
Int. Cl. F16k *31/385*
U.S. Cl. 137—625.6 **6 Claims**

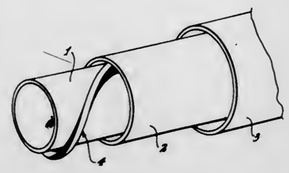


Valve housing with high pressure inlet from line and high pressure outlet to load. Housing has coaxial bores with poppet or spool valve in small bore to control high pressure flow. Valve connected by stem to piston in large bore and valve is normally urged to closed position with fluid leakage through piston exiting through bleed hole. Closure for bleed hole operated by low pressure piston or diaphragm (1 psi or less) to build up pressure on free end of piston and move it to open valve.

3,670,772
SPACING IN COAXIAL TUBES SYSTEM

Gerhard Ziemek, Hannover, and Friedrich Schatz, Langenhagen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Sept. 21, 1970, Ser. No. 73,688
Claims priority, application Germany, Oct. 14, 1969, P 19 51 659.7
Int. Cl. F16l *11/12, 59/12*
U.S. Cl. 138—114 **6 Claims**



Coaxial tubes are thermally insulated from each other by means of a spacer comprised of loosely piled tapes which have been sewn together, and helically wound on the respective inner tube.

3,670,773
TUBE

Rene L. Guerster, Maple Glen, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed March 26, 1970, Ser. No. 22,973
Int. Cl. F16l *9/22*
U.S. Cl. 138—155 **2 Claims**



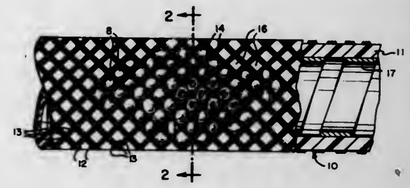
A tube comprises a helical axially extending ribbon of spring material which has adjacent turns set to coil tightly in overlapping and telescoping engagement. The overlapped portion of the ribbon is offset inwardly to provide the tube with a constant outer diameter.

3,670,774
CONTROLLED LEAKAGE CONDUIT FOR DELIVERING A FLUID TO A HEAT SOURCE

William T. Bahr, Wallingford, and Robert V. Lewis, Woodbury, both of Conn., assignors to Anaconda American Brass Company, Waterbury, Conn.

Filed Feb. 11, 1971, Ser. No. 114,616
Int. Cl. F16l *11/12*
U.S. Cl. 138—178 **6 Claims**

A fluid conduit adapted to form ruptured orifices in areas along its length when the areas or portions are subjected to selected temperatures resulting from the proximity of a high temperature heat source, the orifices thereby selectively delivering the fluid to reduce such temperature of the heat source. The conduit includes a pressure-rupturable body and reenforcing elements for reenforcing portions of the body to withstand high temperatures and to assure that the conduit

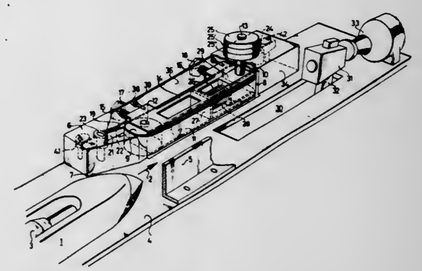


continues to transmit fluid past ruptured conduit areas. The body is adapted to rupture in portions not supported at high temperatures by the reenforcing elements where combined internal pressure and the reduced strength at high temperatures results in failure of these portions of the body. The portions of the body which do not rupture continue to function as a conduit leading fluid to other areas along the conduit.

3,670,775
BRAKING SHUTTLES IN LOOM SHUTTLE BOX

Allan William Henry Porter, Lustmuhle/Ar, Switzerland, assignor to Adolph Saurer Ltd., Arbon/TG, Switzerland

Filed Aug. 20, 1970, Ser. No. 65,442
Claims priority, application Switzerland, Aug. 28, 1969, 13025/69
Int. Cl. D03d *49/54*
U.S. Cl. 139—185 **4 Claims**



Method and device for braking shuttles in loom shuttle box whereby a shuttle is braked by contact with a belt supported by a pair of rollers.

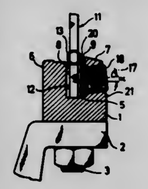
3,670,776
LOOM SLEY

Hans Demuth, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Sept. 23, 1970, Ser. No. 74,802
Claims priority, application Switzerland, Nov. 13, 1969, 16877/69
Int. Cl. D03d *49/62*
U.S. Cl. 139—188 **9 Claims**

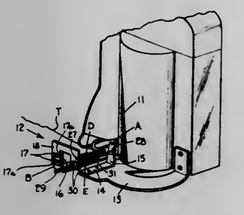
The loom sley has a flange in which the pressure screws are initially mounted in angular relation to a perpendicular plane

to the screw contacting surface on the comb. On tightening of the screws against the comb foot, the flange bends elastically



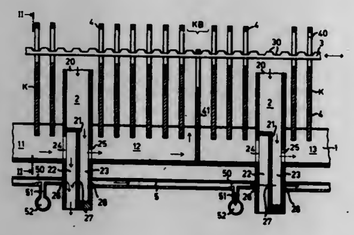
outwardly so that the flat heads of the screws come into full bearing contact on the comb foot.

3,670,777
TRANSFER TAIL CLAMPING APPARATUS
John A. Blackstone, 4 Woodridge Drive, Greenville, S.C.
Filed July 24, 1970, Ser. No. 57,992
Int. Cl. D03d *45/26, 45/02*
U.S. Cl. 139—247 **2 Claims**



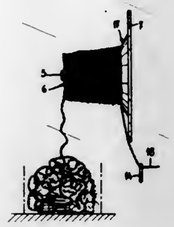
A transfer tail clamping apparatus used on a bobbin replenishing mechanism has an expansible member, having aligned clamping means, connected adjacent one end with an abutment and on the other end with a movable frame for clamping the tail when the bobbin is being transferred.

3,670,778
PNEUMATIC WARP THREAD MONITORING APPARATUS
Ghert Meier, Stadel, Switzerland, assignor to Contraves AG, Zurich, Switzerland
Filed Jan. 7, 1971, Ser. No. 104,554
Claims priority, application Switzerland, Feb. 27, 1970, 2894/70
Int. Cl. D03d *51/24*
U.S. Cl. 139—349 **6 Claims**



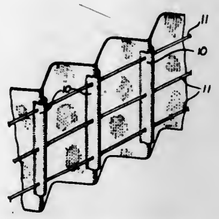
A warp thread monitoring apparatus for looms wherein each properly tensioned warp thread passes through an associated thread monitoring lamella or blade and retains such in an elevated position, and upon rupture of the relevant warp thread this lamella then drops into a lower position, thereby activating a release or triggering mechanism for sounding an alarm or stopping the loom. According to important aspects of the invention, a channel system is arranged beneath each row of thread monitoring lamellae and upon rupture of the relevant warp thread the corresponding lamella drops into this channel system to interrupt the flow of an air current forced from the inlet side of the channel system to the outlet side thereof. This in turn affects the operation of a pneumatic flow sensing device influencing the trigger mechanism for sounding the alarm or stopping the loom.

3,670,779
DEVICE FOR THE RECOVERY AND REMOVAL OF A FALSE SELVEDGE IN A SHUTTLELESS LOOM
Albert Deborde, Bourgoin-Jallieu, France, assignor to Ateliers Diederichs, Bourgoin-Jallieu Isere, France
Filed Dec. 23, 1970, Ser. No. 100,966
Claims priority, application France, Jan. 20, 1970, 7001839
Int. Cl. D03d *49/20*
U.S. Cl. 139—304 **2 Claims**



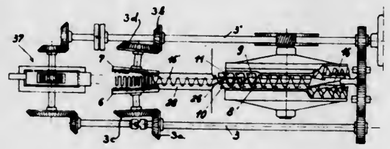
A false selvedge in a shuttleless loom is recovered by continuously winding the false selvedge under tension on the larger end of a conical bobbin, the wound selvedge moving progressively to the narrower end of the bobbin at which it progressively falls on to the floor or into a storage receptacle.

3,670,780
CURTAIN HEADING TAPES
William Wood, Gatley, England, assignor to Thomas French & Sons Limited
Continuation of Ser. No. 762,189, Sept. 16, 1968, abandoned. This application Aug. 6, 1970, Ser. No. 61,829
Claims priority, application Great Britain, Sept. 15, 1967, 42,160/67
Int. Cl. D03d *1/06, 3/02*
U.S. Cl. 139—387 **8 Claims**



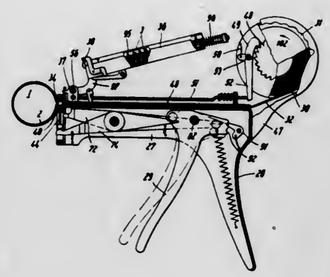
A curtain heading tape having a body and spaced pockets on at least one face thereof, wherein there is at least one draw cord in the tape, the draw cord passing through the body adjacent the edges of the pockets and also passing through the body between the edges of the pockets, thereby forming a reverse bulge immediately behind the pocket for the reception of a curtain hanging device.

3,670,781
MACHINE FOR THE ALTERNATE CAMBERING OF A METALLIC THREAD
Roger Liouville, Colombes, France, assignor to Herckelbout et Fils (Societe Anonyme), Rosny Sous Bois, France
Filed May 1, 1970, Ser. No. 33,544
Claims priority, application France, May 5, 1969, 6914281
Int. Cl. B21f *1/04*
U.S. Cl. 140—71 R **4 Claims**



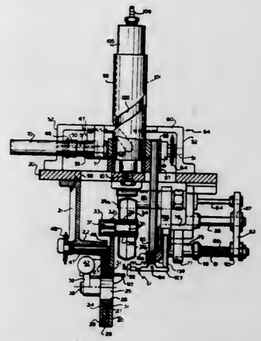
The machine is principally constituted by a wheel comprising at its periphery two rows of hammers adapted to overlap one another alternately, each of the hammers of one row being carried by a slide moving transversally on said wheel, means being provided to ensure the alternate pivoting of the hammers, from one row to the other, during the rotation of said wheel in order to provide particularly, by the transversal movement of the slides, the cambering of the thread and the disengagement of said hammers when the thread is cambered, the latter being eventually taken up by a second device composed of two plates arranged facing one another symmetrically with respect to the direction of advance of the thread and each comprising spiral grooves for the reduction of the pitch of the zig zag cambered thread.

3,670,782
APPARATUS FOR TIEING A BUNDLE OF CABLES
Heinrich Kabel, Quickborn, Holstein, Germany, assignor to Paul Hellermann G.m.b.H., Pinneberg near Hamburg, Germany
Division of Ser. No. 667,286, Sept. 12, 1967, Pat. No. 3,570,554, which is a division of Ser. No. 446,855, April 9, 1965, Pat. No. 3,353,227. This application June 12, 1970, Ser. No. 57,852
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **10 Claims**



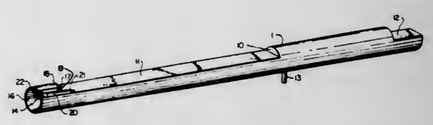
Apparatus for tieing a bundle of cables with the aid of a strap includes holding means for a lock, tensioning means for the strap, operating means for causing a pin to secure the strap and the lock to each other, and cutting means for removing excessive strap material.

3,670,783
CABLE TYING MACHINE
John T. Goodwill, Utica, N.Y., assignor to Goodwill Automated Devices, Inc., New York Mills, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,743
Int. Cl. B21f *15/04*
U.S. Cl. 140—93 R **10 Claims**



A machine for automatically putting ties on a multi-strand cable at spaced intervals therealong. The ties are made with a single, continuous piece of lacing which extends longitudinally along the cable between the ties. At each point at which a tie is to be made the machine passes the lacing around the cable and then knots the lacing, after which either the cable or the machine is moved to the next tie point. In passing the lacing around the cable, the machine forms a loop in the lacing through which a bobbin carrying the lacing passes to form the knot.

3,670,784
WIRE WRAPPING TOOL
Daniel Whitney Ackerman, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,825
Int. Cl. B21f *7/00, 15/00*
U.S. Cl. 140—118 **14 Claims**

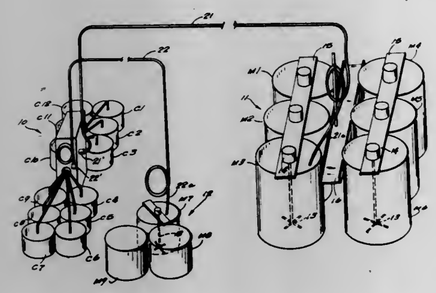


A wire wrapping tool haVing a wrapping bit with a hole therein adapted to be received by a terminal stud, a wrapping sleeve in which the bit is mounted for limited telescoping movement. The bit has a wire relief flat adjacent a wrapping slot which merges into a tapered counterbore surrounding the end of terminal engaging hole.

3,670,785
METHOD AND APPARATUS FOR TINTING PAINT
Frederick H. Heiss, and Carl E. Lindblom, both of Rockford, Ill., assignors to The Valspar Corporation, Rockford, Ill.
Filed July 2, 1970, Ser. No. 51,996
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—9 **14 Claims**

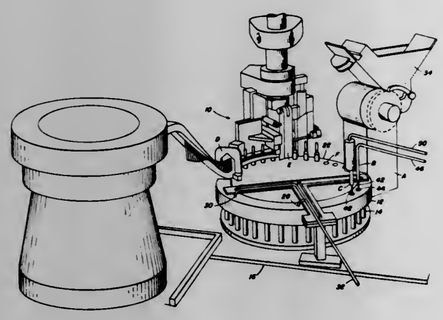
A method and apparatus for batch tinting paint by adding preselected amounts of selected paint colorants to a batch of base paint in a paint vessel at a mixing station. The different paint colorants are stored at a colorant storage station, and a

charge of paint colorant consisting of preselected amounts of one or more selected paint colorants to be used in tinting a batch of base paint are delivered to the inlet end of a single tube delivery line extending from the storage station to the mixing station. The charge of paint colorant is thereafter



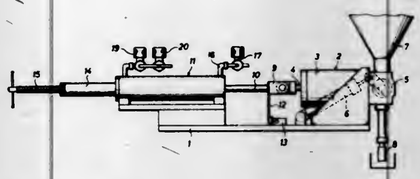
purged from the line and delivered to the mixing vessel by passing a purging fluid including a purging liquid compatible with the colorant into the line while delivering the purging liquid and colorant to the mixing vessel.

3,670,786
CONTAINER FILLING APPARATUS
Howard J. Levin, Norristown, and Franklin M. Kreider, Lancaster, both of Pa., assignors to American Home Products Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 716,521, March 27, 1968, abandoned. This application June 2, 1970, Ser. No. 42,881
Int. Cl. B65b *31/02*
U.S. Cl. 141—92 **4 Claims**



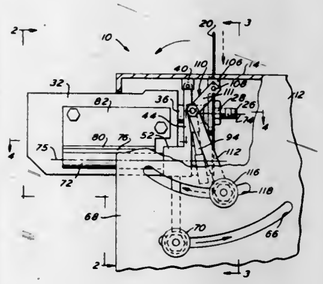
A rotary filling machine which comprises a tunnel disposed substantially from before the filling station to the sealing station of the machine along the direction of travel of a container, and means for introducing an inert gas into the tunnel under a slight positive pressure. The inert gas excludes air from the tunnel and provides an inert gas atmosphere within the tunnel which effectively maintains at a reduced level the oxygen content of the void space of containers being filled. The tunnel has orifices permitting the passage of reciprocating filling spouts for introducing inert gas into the containers being filled and, in a separate step, for filling the containers.

3,670,787
APPARATUS FOR FILLING A CHAMBER
Gerhard Hansen, Hofener Strasse 47, 7013 Oeffingen (Wurtt), Germany
Filed Dec. 10, 1968, Ser. No. 782,613
Claims priority, application Germany, Jan. 3, 1968, P 16 57 206.8
Int. Cl. B65b *3/30*
U.S. Cl. 141—250 **3 Claims**



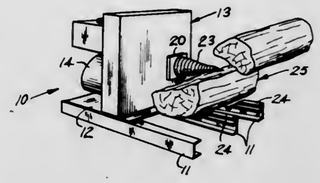
A fluid flow regulating apparatus uses the control displacement of first and second pistons to vary the fluid flow rate. A reversible two-way valve mechanism is positioned between a supply of pressure fluid and the first and second pistons and valve control means are connected between the two-way valve mechanism and respective ingress and egress ports of one of the pistons. Settable restrictive fluid flow means are connected between the two-way valve mechanism and the control means so that the first piston is displaced at a low speed and at a high speed throughout different portions of its movement.

3,670,788
ARBOR SAW
Henry M. Pollak, and Robert S. Pollak, both of c/o American Machine & Tool Co., Inc. of Pa., Royersford, Pa.
Filed May 22, 1970, Ser. No. 39,819
Int. Cl. B27b *5/24*
U.S. Cl. 143—36 R **9 Claims**



An arbor saw that can be moved vertically with respect to the table on which it is mounted and also displaced about a horizontal axis so as to cut a bevel. An integrated linkage is provided for achieving these two functions so that the blade can be displaced vertically without effecting its angle of bevel, but when the blade is displaced about a horizontal axis it is automatically lowered.

3,670,789
WOOD SPLITTING APPARATUS
John A. Long, 110 Hillview Drive, Cloverdale, Calif.
Filed July 27, 1970, Ser. No. 58,502
Int. Cl. B27l *7/00*
U.S. Cl. 144—193 D **1 Claim**



A device for splitting logs. This device consists of an engine driven shaft having a conical screw thereupon it, the screw serving to penetrate and split logs.

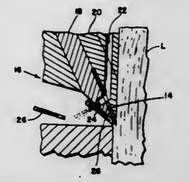
3,670,790
VENEER MACHINE ROLLER PRESSURE BAR ASSEMBLY
Andrew W. Porter, and John L. Sanders, both of Vancouver, B.C., Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Feb. 3, 1971, Ser. No. 112,144
Claims priority, application Canada, March 5, 1970, 076573
Int. Cl. B27l *5/04*
U.S. Cl. 144—213 **7 Claims**



A veneer pressure bar assembly is provided wherein the pressure bar or back-up rollers for the pressure bar are supported by hydrostatic lubrication in a housing. The lubricant which may be oil, water, oil and water, or air is fed to at least three slot shaped pockets extending along two paths along the housing (at least one slot along one path and at least two along the other path) on each side of the resultant force on the roller being lubricated. The slot or slots along each path occupy a major portion of that path.

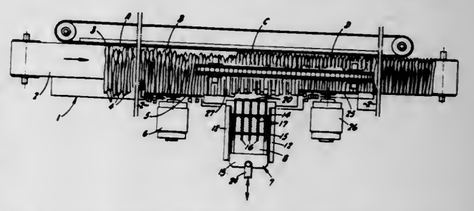
3,670,791
METHOD OF JET BREAKING VENEER TO NARROW WOOD FLAKES
Donald L. Johnson, 1816 North Lenore Drive, Tacoma, Wash.
Continuation-in-part of Ser. No. 630,396, April 12, 1967, Pat. No. 3,526,258. **This application July 13, 1970, Ser. No. 54,392**
Int. Cl. B27l *11/00*
U.S. Cl. 144—326 A **3 Claims**

Method employing a fluid jet, i.e., the forceful rush of pressurized vapor or gas through an orifice to flex, pull and break more or less continuous veneer along a weak line in the grain from the parent wood to controlled narrow width. The jet breaking occurs while the veneer is being sliced from the parent wood across the grain to predetermined thickness and



length. The flake produced has a defined and predetermined size in all three dimensions.

3,670,792
APPARATUS FOR ALIGNING ASPARAGUS SPEARS
Robert P. Clausen, 4946 West Undine Road, Stockton, Calif.
Filed Sept. 4, 1970, Ser. No. 69,575
Int. Cl. A23n *15/00*; B65g *47/28*
U.S. Cl. 146—81 A **6 Claims**

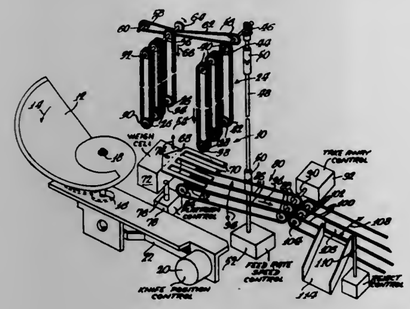


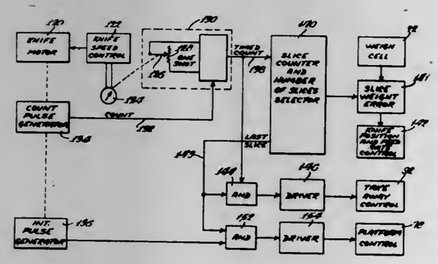
A power-actuated apparatus for tip-aligning asparagus spears disposed transversely on a longitudinally extending, horizontal feed belt preparatory to butt-trimming such spears, by power saw, to equal length; such apparatus including a carriage reciprocable in a direction transversely of the feed belt and from one side thereof, and such carriage being fitted with a multiplicity of spring-advanced but yieldable rods which, as the carriage reciprocates, engage the asparagus spears at the butt end and push such spears transversely of the feed belt until the spear tips engage longitudinally extending, vertical back-stop belt traveling adjacent the other side of the feed belt and at the same speed. This alines all of the tips of the spears in the direction of travel of the feed belt and so that such spears are all cut to equal length when subsequently butt-trimmed.

3,670,793
WEIGHT CONTROLLED SLICING SYSTEM INCLUDING VARIABLE SYNCHRONIZATION CONTROL
Keith E. Flesch, Garrett, Ind., assignor to Peter Eckrich & Sons, Inc.
Filed Dec. 14, 1970, Ser. No. 97,591
Int. Cl. B26d *4/56*
U.S. Cl. 146—94 R **6 Claims**

A weight controlled slicing system for food products wherein the weight of a stack of slices cut from a length of material is accurately controlled. The system includes a knife with a variable speed drive including a speed control system, a slice receiver that receives slices as they are cut and an intermittently operable take-away conveyor for removing slices from the slice receiver after a predetermined number of slices are cut. Also included is a one-shot circuit responsive to the speed control system of the motor for progressively advancing the point at which the take-away conveyor is actuated as the speed of the motor increases to compensate for the fixed time required to actuate the take-away conveyor thereby enabling

accurate retaring of a weigh cell associated with the slice receiver in readiness for the cutting of the next stack and





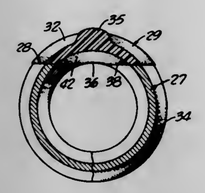
precluding interference between the slices of one completely cut stack and the first slice of the next succeeding stack as it travels to the slice receiver.

3,670,794

SELF-LOCKING TUBULAR INSERT

William F. Beidler, La Habra, Calif., assignor to Treadline Fastener Corporation, Covina, Calif.

Filed Oct. 24, 1969, Ser. No. 869,164
Int. Cl. F16b 39/34
U.S. Cl. 151—7 17 Claims



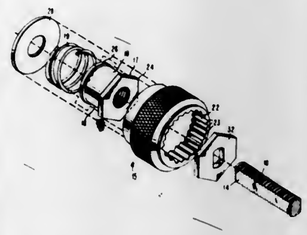
A self-locking tubular insert with an outer screw thread for engaging an outer complementary threaded member and with an inner screw thread for engaging an inner complementary threaded member has a transverse peripheral slot forming a window and a deformable plastic locking element seated in the slot is shaped and sized for compression by the outer complementary member to be bulged thereby inwardly into locking engagement with the inner complementary member.

3,670,795

SELF-LOCKING FASTENER

Wilbur J. Kuprian, Binghamton, N.Y., assignor to Barry Wright Corporation

Filed June 29, 1970, Ser. No. 50,047
Int. Cl. F16b 39/02
U.S. Cl. 151—29 6 Claims



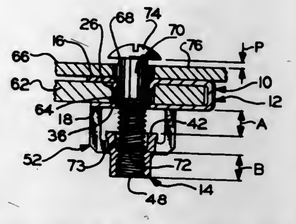
A self-locking fastener that involves a polygonal nut threaded onto a splined or keyed spindle. A sleeve generally encloses the nut and is internally grooved to engage the nut, being keyed for movement longitudinally relative to the nut and for imparting rotary motion to it. A spring urges the sleeve to slide in one direction causing one end to project beyond the end of the nut, in which position the projecting portion forms an internally grooved enclosure. A separate polygonal clamping member, slidable but not rotatable on the spindle, and having a number of sides that is a sub-multiple of the number of grooves, is engaged by the sleeve when the fastener is in the fully tightened position at which time the internally grooved enclosure may engage the polygonal edges of the clamping member to lock the nut on the spindle. Retracting the sleeve disengages the projecting portion from the clamping member, and permits the nut to be unthreaded. The clamping member may be of simple washer form, and although having a number of sides corresponding to a submultiple of the number of grooves, the nut may be indexed and locked in as many positions as there are grooves.

3,670,796

FASTENING DEVICE WITH CAPTIVE, AXIAL FLOATING NUT

David W. Grimm, Watchung, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,555
Int. Cl. F16b 41/00
U.S. Cl. 151—41.75 8 Claims



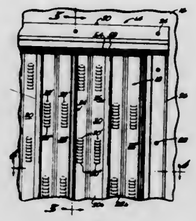
A fastening device such as a clip-nut in which the nut is free to move axially relative to the clip, the axial displacement of the nut being at least of the order of magnitude of the length of travel of the nut necessary to effectively thread the nut upon a mating screw and bring the clamping surface of the nut into clamping engagement against the workpiece to which the clip-nut is affixed such that upon initial insertion of the screw into the clip-nut, axial movement of the portion of the clip which holds the nut captive is limited to no more than that which will only deflect the clip resiliently.

3,670,797

FOLDING CLOSURE CONSTRUCTION

John H. Sassano, Hollywood, Fla., assignor to Weather Control Shutters, Inc., Broward County, Fla.

Filed June 25, 1970, Ser. No. 49,785
Int. Cl. E06b 3/48
U.S. Cl. 160—118 6 Claims



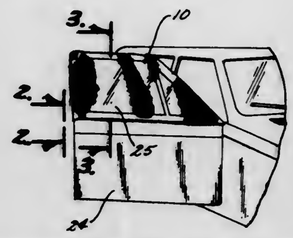
This disclosure concerns an accordian fold closure panel of the type pendantly supported on elevated trackway structure and the type adapted for embodiment in a folding door or window closure or in a pendant folding curtain wall closure. Each hinge joint connection joining adjacent slat elements of the folding closure includes mating pintle and groove portions formed respectively on confronting edge margins of each adjacent pair of vertical slat elements of tee folding closure. The pintle structure of each slat hinge connection is of slotted tube form defining a hollow core axial interior extending coextensive of the pintle structure. The opposite end portions of the hollow axial interior of the pintle structure of each hinge joint connection preferably provide means for fixedly receiving upper and lower oppositely projecting threaded screw elements: an upper hanger screw element is threadedly fixed in the upper interior of the pintle structure of a reapective hinge joint connections and pendantly supports the folding closure panel from elevated trolley means; a lower guide screw is threadedly fixed in the lower interior of the slotted tube pintle structure and supports guide bearing means operative in grooveway structure formed in horizontal sill means of the folding closure apparatus.

3,670,798

VEHICLE SCREEN

Martin F. Hass, and Grace A. Hass, both of 4531 Mayberry Street, Omaha, Nebr.

Filed Aug. 12, 1970, Ser. No. 63,158
Int. Cl. E06b 9/00, 9/52
U.S. Cl. 160—354 9 Claims



A screen device for vehicle windows comprising a screen material which is secured to the vehicle so that the screen material is positioned at the outside surface of the window. One form of the invention comprises a metal screen material having a flexible attachment means secured thereto which extends around the upper, forward and rearward portions of the vehicle door. The attachment means includes a draw string which is secured to the vehicle door to securely draw the device adjacent the window. The attachment means may also include a flexible magnet means at the lower edge thereof which holds the lower end of the device on the exterior surface of the vehicle door below the window. A second form of the invention relates to a flexible sleeve or boot comprised of netting material which extends over both sides of the upper end of the vehicle door to provide a screen on both sides of the window. A third form of the invention is disclosed which is similar to the second form except that the flexible netting material is positioned only at the outside surface of the window. A fourth form of the invention pertains to a flexible netting material having a magnetic attachment means extending around the border thereof to facilitate the attachment of the device to the exterior surface of a station wagon at the rear side window area. A fifth form of the invention is also disclosed and is similar to the fourth form with a magnet means being employed thereon for aiding in attaching the screen to the vehicle. A sixth form of the invention is disclosed which is adapted to be mounted at the rear window area of a station wagon.

3,670,799

METHOD AND APPARATUS FOR SIPHONING MOLTEN METAL TO A CONTINUOUS CASTING MACHINE

Ralph A. Vogel, Three Rivers, and Harold E. Maas, Kalamazoo, both of Mich., assignors to Essex International, Inc.

Filed Jan. 14, 1971, Ser. No. 106,384
Int. Cl. B22d 11/10
U.S. Cl. 164—63 20 Claims



A method and system for siphoning molten metal, such as copper or aluminum. A first vessel with molten metal therein and a casting chamber are provided, the casting chamber receiving the molten metal from the first vessel. A continuous tubular member is provided and has a first section and initially has a second section. The first section has an inlet end which is positioned in the first vessel and in the molten metal and has an outlet end which is positioned in the casting chamber. The second section has a discharge end which extends outside the casting chamber.

3,670,800

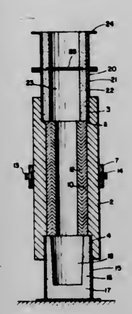
CASTING PROCESS FOR ROLLS

Jacques De Vos, Elsaute, Belgium, assignor to United States Pipe and Foundry Company, Birmingham, Ala.

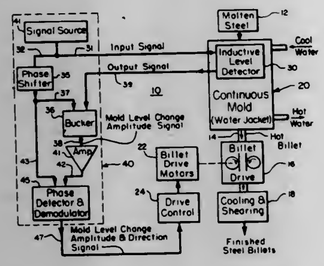
Filed June 2, 1969, Ser. No. 829,193
Claims priority, application Belgium, June 12, 1968, 48027
Int. Cl. B22d 23/00
U.S. Cl. 164—95 5 Claims

The invention consists of a method for making solid rolls, for example, metal working rolls, wherein a cylindrical shell comprising the roll working surface is first centrifugally cast in a horizontal cylindrical mold having removable end plates, and as soon as the shell has solidified, the end plates are removed, the mold containing the hot solidified cylindrical shell is mounted between two journal molds to form a complete roll mold, and metal of suitable composition is cast

in the mold whereby there is formed a solid roll core which is metallurgically bonded to the said hollow shell and has integrally formed journal portions extending beyond the cylindrical shell.



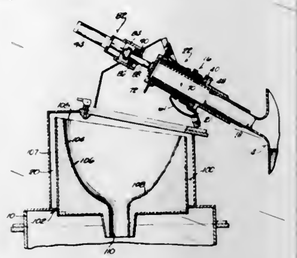
3,670,801
CONTINUOUS CASTING MOLD LEVEL CONTROL
Jack R. Crowell, Cedar Lake, Ind.; James R. Tomashek, Wood Dale, and Donald H. Ward, Glen Ellyn, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 16, 1970, Ser. No. 3,421
Int. Cl. B22d *11/12*
U.S. Cl. 164—154 **4 Claims**



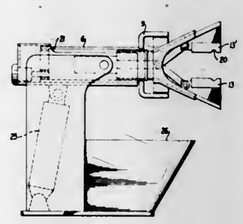
A molten metal continuous casting mold level control system is disclosed employing an inductance detector positioned within a water cooled continuous casting mold. The detector is mounted in the jacket of the mold about the generally hollow cylindrical mold core which core includes an electrically conductive form having a billet shaping surface. The output voltage from the detector is bucked against a signal that is related to an input signal, filtered and amplified to derive a signal whose polarity from a reference level and magnitude are proportionate to the direction and magnitude of change in the steel level. This signal is used to control the billet drive to correct changes from the desired level.

3,670,802
VACUUM CASTING APPARATUS
David M. Krick, Waukesha; Lawrence D. Koltz, Hartford, and Warren C. Williams, Waukesha, all of Wis., assignors to Wisconsin Centrifugal, Inc.
Filed Jan. 23, 1969, Ser. No. 793,335
Int. Cl. B22d *27/16*
U.S. Cl. 164—258 **19 Claims**

A centrifugal casting machine is mounted in a vacuum chamber, a vacuum furnace, a vacuum pump is selectively connectable to the furnace and to the vacuum chamber, and a nozzle assembly for the vacuum furnace is connected to the vacuum chamber by a flexible seal.



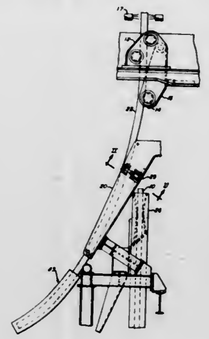
3,670,803
CHILL CASTING MACHINES
Willi Dehnhard, Ander Niers 35, 417 Geldern, Germany
Filed April 4, 1969, Ser. No. 813,663
Claims priority, application Germany, Aug. 14, 1968, P 17 58 822.6
Int. Cl. B22d *15/04*
U.S. Cl. 164—267 **8 Claims**



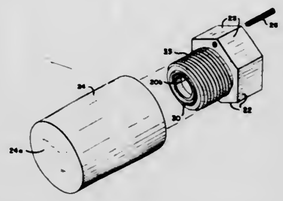
A chill casting machine wherein chill halves are mounted on the free end of a pivoting, cantilevered arm supported by a column. Pivoting movement of the arm is effective to immerse the chill halves in a bath positioned below the arm. A second pivoting means is provided to tilt the chill during the filling thereof to provide rapid and complete filling.

3,670,804
TRAP DOOR TO PREVENT WATER FROM DESCENDING INTO STARTER BAR PIT
Gottfried Hofmann, Brentwood, Allegheny County, and James T. Stull, Jackson Township, Butler County, both of Pa., assignors to United States Steel Corporation
Filed Sept. 10, 1970, Ser. No. 70,973
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **5 Claims**

An apparatus for deflecting the flow of water into the casting path of a continuous-casting machine. A trap door is hingedly fixed above a starter bar exit hole in a casting guide mechanism. The trap door is pivoted out of the path of the starter bar to permit the bar access to the bar receiver and is pivoted into position over the access hole to deflect cooling water down the casting guide. The trap door may be made of a marginal frame covered by a thin sheet of readily penetrable material.



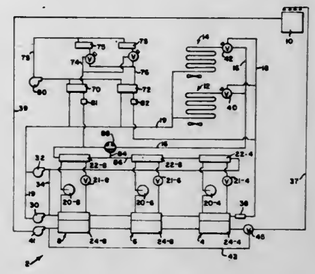
3,670,805
DIE CASTING PLUNGERS
Merle E. Weiers, P.O. Box 176, Mammoth, Pa.
Filed March 30, 1971, Ser. No. 129,479
Int. Cl. B22d *17/04*
U.S. Cl. 164—312 **5 Claims**



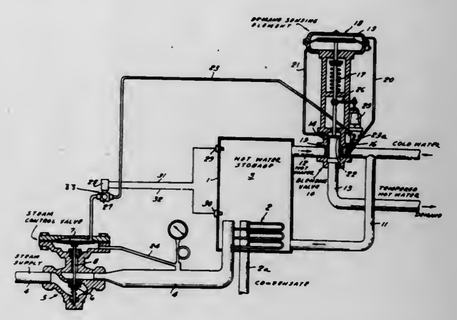
A dummy block is provided for a plunger of a die casting machine having a container with a cylindrical plunger chamber in which the dummy block moves a molten mass of metal fed to said chamber from said chamber to a die by a forward plunger stroke and is returned to its starting position by a rearward plunger stroke, said dummy block comprising an inner shell nut member having spaced wrench receiving flats at one end of its periphery and peripheral threads at the other end and a hollow central bore threaded to engage a threaded male end on said plunger and an outer cylindrical shell closed at one end and threaded at the other to engage the peripheral threads of the shell nut and radial stop means in the hollow interior of the shell engaging the end of the shell nut in axial bearing whereby thrust from the plunger is transmitted to the shell through said stop means and threads.

3,670,806
AIR CONDITIONING SYSTEM AND METHOD
Alden I. McFarlan, 691 Dorian Road, Westfield, N.J.
Filed June 29, 1970, Ser. No. 50,874
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **7 Claims**

Air conditioning systems having a plurality of refrigeration units with a hot water stream flowing through the condensers in series, and with a chilled water stream flowing through the evaporator-chillers in series. The system balances the heating and cooling loads so that the internally produced heat is used to heat the periphery when such heat is required. Excess heat is dissipated, and additional heat is provided when needed. The temperature of the hot water is higher than with the normal practice, and special advantages are obtained from the standpoint of providing efficient and dependable operations with wider ranges of the load and ambient conditions.



3,670,807
STORAGE TYPE HOT WATER HEATING SYSTEM
John T. Muller, Nutley, N.J., assignor to Leslie Co., Lyndhurst, N.J.
Filed Sept. 4, 1968, Ser. No. 757,236
Int. Cl. G05d *23/13*
U.S. Cl. 165—39 **3 Claims**

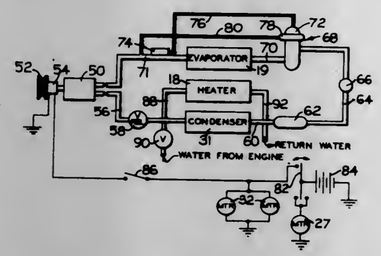


A hot water heating system which includes a storage tank with a specially arranged heat exchanger therein, together with at least one blending valve and a valve for controlling the heat supply to the heat exchanger, and also including a fluid connection whereby a change in demand for blended hot water from the blending valve causes an instantaneous change in the heat supplied to the tank which is proportional to the change in demand and takes place before any material change in the temperature of the water flowing from the tank to the hot water blending valve.

3,670,808
HEATING AND AIR-CONDITIONING SYSTEM FOR CONSTRUCTION EQUIPMENT
John D. Walt, Jr., Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 9, 1970, Ser. No. 9,583
Int. Cl. B60h *3/00*
U.S. Cl. 165—42 **5 Claims**

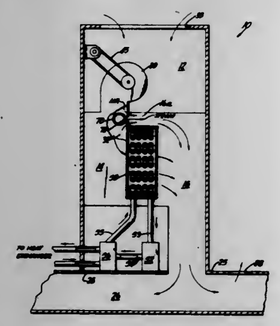
A combined heating and air-conditioning system is provided with a heater coil and evaporator coil located back to back in a single housing enabling the use of common controls and

common duct system for both heating and cooling. The heater coil is placed ahead of the evaporator coil in the air flow so



that air may be heated and dehumidified on cool, humid days and warm air from the heater may be used to prevent the evaporator coil from frosting over.

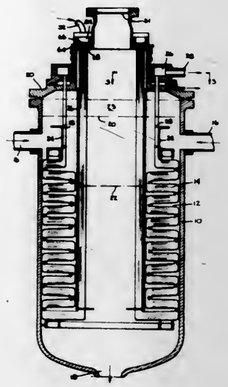
3,670,809
ENVIRONMENT CONDITIONING APPARATUS
Mahmoud S. El-Tahry, Passaic, N.J., assignor to Blaser Corporation, East Rutherford, N.J.
Filed May 21, 1970, Ser. No. 39,268
Int. Cl. F24f 3/14
U.S. Cl. 165—60 5 Claims



Computer environment conditioning apparatus employs a first air flow path for recirculating air through an evaporative cooling element for cooling purposes. A portion of the incident air flow is diverted to a by-pass duct where water vapor is added thereto, the initially dry air readily accepting the vapor. The cooled and humidified air flow streams are then combined, and discharged into the controlled environment. The humidifying operation is reliably and efficiently accomplished without regard to the operative status of the cooling equipment.

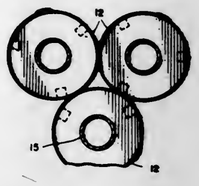
3,670,810
HEAT EXCHANGER
Robert C. Allen, Sr., Wauwatosa, Wis., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.
Filed Jan. 15, 1971, Ser. No. 106,863
Int. Cl. F28f 11/00
U.S. Cl. 165—70 12 Claims

A heat exchanger characterized by a vessel containing a plurality of tubes passing therethrough and an upper cover assembly having a first ring-shaped tube sheet and a header assembly mounted on said cover assembly and having a second ring-shaped tube sheet disposed above said first tube sheet in spaced relationship to a drain space between the two tube sheets, and means for connecting the header to the vessel to



provide expansion movement of the header assembly with respect to the vessel.

3,670,811
PROTECTION-SLEEVE FOR FINNED-TUBES OF HEAT-EXCHANGER CORE-UNIT
Donald W. Christensen, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.
Filed April 13, 1970, Ser. No. 27,986
Int. Cl. F28f 9/00
U.S. Cl. 165—134 2 Claims



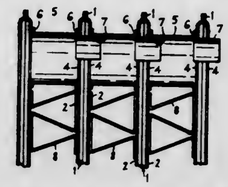
The essential concept of this invention involves a planar strip of flexible material of predetermined length and width having a series of slits formed therein to define small portions of the strip subject to being bent transversely to the plane of the strip to form tube when the strip is converted into a sleeve for embracive positioning around groups of fins on a fluid-flow tube with the tube disposed between fins to secure the sleeve against shifting axially of the tube.

3,670,812
HEAT EXCHANGERS
Colin R. Benrose, Leamington Spa, England, assignor to Associated Engineering Limited, Leamington Spa, England
Filed March 30, 1970, Ser. No. 23,702
Claims priority, application Great Britain, April 10, 1969, 18,537/69
Int. Cl. F28f 9/02
U.S. Cl. 165—175 9 Claims

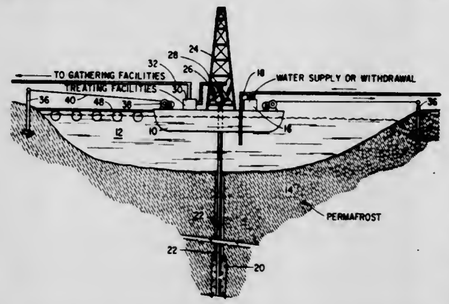
This invention relates to heat exchangers, particularly of the kind used as radiators on motor vehicles, and comprising at least one manifold interconnecting a plurality of passage members through which a liquid coolant can flow.

According to the invention, the passage members are interconnected and held on spaced relationship by means of inter-

connector members which are bonded to the passage members and which are constructed so that a part of each interconnector member is in nested relationship with the next adjacent interconnector member, the series of nested members thereby providing the manifold intercoonecting the passage members.



3,670,813
PONTOON STRUCTURES IN MAN-MADE LAKE FOR ARCTIC OPERATIONS
Floyd R. Duncan, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.
Filed July 30, 1970, Ser. No. 59,402
Int. Cl. B63b 35/44
U.S. Cl. 166—0.5 12 Claims

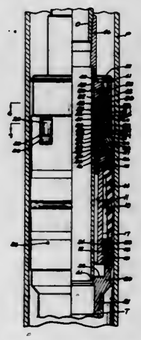


The surface of the ground in the Arctic is unstable due to settling of the permafrost during thawing periods and to uneven heaving when extreme temperature changes occur within the permafrost zone. Extraction of hot fluids from deep subsurface wells drilled through the permafrost and other sources of heat emission such as from surface installations aggravate and add to the permafrost instability. This causes problems with foundations for surface installations. These problems are relieved by the use of a man-made lake to buoyantly support a surface installation such as a drilling rig, oil treating facilities, etc. The barge supporting the surface installation must be water-tight during periods of thaw and must be of sufficient strength to withstand ice forces in the winter.

3,670,814
UNDERWATER POLLUTION CONTROL
Thomas W. Childers, Woodland Hills, Calif., assignor to Esso Production Research Company, Houston, Tex.
Filed Jan. 2, 1970, Ser. No. 174
Int. Cl. E21b 43/01
U.S. Cl. 166—.5 28 Claims

Oil emanating from a submerged well structure which includes a wellhead and a production manifold is recovered and oil pollution of surface waters and neighboring shorelines is prevented by confining the fugitive oil underwater above an oil-water interface under a roof having side curtains and extending over the well structure. One part of the roof is fixed above the production manifold, and another part of the roof is removably secured over the wellhead and includes structure for coacting with a remotely operated running-in device for removably installing and retrieving such roof part. A fluid conduit opened by an oil-water interace-level detecting device drains oil below the roof to a production conduit of the well structure, for example, the production manifold, by gravity flow. The interface level detecting device opens the conduit when the interface reaches a predetermined minimum level below the inlet of the fluid conduit. When the interface climbs to a selected higher level below the inlet with drainage of oil into the conduit, the interface level detecting device closes the inlet valve, preventing sea water from entering the fluid conduit. Means responsive to the interface level shut in production from the well structure if confined oil accumulates to a predetermined maximum interface level below the inlet of the fluid conduit. Attainment of the predetermined minimum level, as indicated by the interface level detector device, may actuate electrical circuitry provided for connection to an indicator placed at a remote accessible location, signaling the occurrence of oil leakage from the submerged well structure and the accumulation of the predetermined minimum volume of fugitive oil. The fluid conduit may have valve means to prevent backflow of oil into the confining area from the well structure production conduit. Valve means may regulate the discharge of oil into the well structure from the fluid conduit. Pumping means may be utilized to force oil from the fluid conduit into the well structure when the production line pressure in the well structure exceeds the hydrostatic pressure at the level of the well structure.

3,670,815
WELL PACKER
Cicero C. Brown, 5429 Sturbridge Drive, Houston, Tex.
Filed Jan. 22, 1971, Ser. No. 108,884
Int. Cl. E21b 23/02, 23/06, 23/06, 33/126
U.S. Cl. 166—136 6 Claims



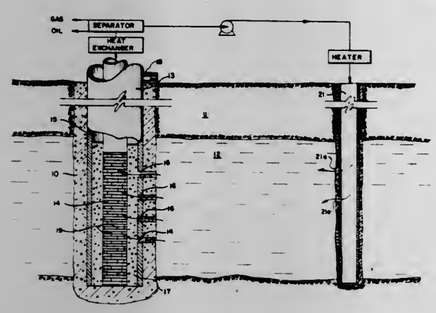
A well packer employing a resilient cup-type seal member and releasable means for initially holding the seal member in a

stretched condition to reduce its diameter sufficiently to clear the well wall during running of the packer whereby to obviate damage to the seal member.

3,670,816
OIL RECOVERY PROCESS
Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company
Continuation-in-part of Ser. No. 726,693, May 6, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 675,490, Oct. 16, 1967, abandoned, and Ser. No. 699,255, Jan. 19, 1968, abandoned. This application May 4, 1970, Ser. No. 34,012
Int. Cl. E21b *43/22, 43/25, 43/26*
U.S. Cl. 166—252 **13 Claims**

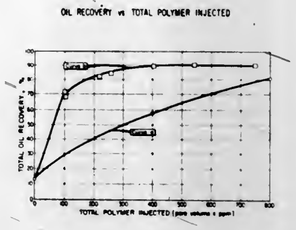
A method of displacing oil from a subsurface, water-sensitive, oil-bearing formation is disclosed. The new method involves determining the aqueous vapor pressure of the water-sensitive formation and injecting into the formation through an input well an oil-continuous displacement fluid having water dispersed therein which fluid has an aqueous vapor pressure no greater than that of the formation, and recovering oil displaced thereby from the formation at a point removed from the point of injection.

3,670,817
METHOD OF GRAVEL-PACKING A PRODUCTION WELL BOREHOLE
Randolph J. Saucier, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Continuation of Ser. No. 820,758, May 1, 1969, abandoned. This application Nov. 5, 1970, Ser. No. 87,296
Int. Cl. E21b *43/04, 43/16*
U.S. Cl. 166—252 **8 Claims**



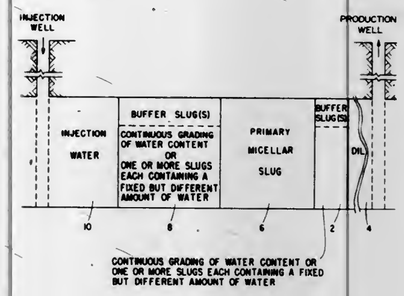
A method of gravel-packing a well borehole extending into an interval of a hydrocarbon-bearing subterranean earth formation by determining the median size of the sand grains in the interval and forming a pumpable slurry of liquid containing granular particles having a relatively narrow range of grain sizes with a median grain size from about 5 to 7 times larger than the median size of grains in the interval. Perforations are formed in a conduit sized to exclude passage of substantially all the slurried granular particles and the conduit is positioned in the well borehole at a depth adjacent to the interval, thereby forming an annulus between the conduit and the interval. A fluid including the slurry is then flowed into the annulus and into contact with the exterior of the conduit until the annulus is substantially filled with the granular particles. Fluids are then flowed from an injection well borehole into the gravel-packed well borehole for recovering of hydrocarbon-bearing fluids therefrom.

3,670,818
MOBILITY CONTROL IN OIL RECOVERY PROCESSES
Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed April 29, 1970, Ser. No. 33,021
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **12 Claims**



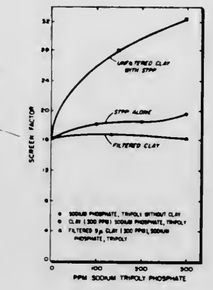
Improved secondary and tertiary recovery processes wherein a mobility buffer is used are improved by alternately injecting mobility buffer slugs (containing mobility reducing agents) and slugs of water followed by a driving agent. For example, improved crude oil recoveries with emulsion and micellar systems are obtained by alternately injecting aqueous slugs containing mobility reducing agents and slugs of water followed by drive water to displace the system through the reservoir. The mobility buffer slugs can have progressively decreasing concentrations of the mobility reducing agent relative to the initial mobility buffer slug.

3,670,819
PROCESS FOR TREATMENT OF WATER INJECTION WELLS
Dwight L. Dauben; H. R. Froning, and Loyd W. Jones, all of Tulsa, Okla., assignors to Amoco Production Company
Filed May 18, 1970, Ser. No. 38,365
Int. Cl. E21b *43/22, 43/25*
U.S. Cl. 166—305 R **13 Claims**



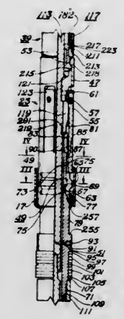
Water injection wells are stimulated by an oil-external micellar slug preceded and/or followed by at least one micellar (buffer) slug of a higher water content. This series of slugs is forced out into the formation by means of a water drive. There may be continuous grading from water to oil-external slug to drive water. The buffer slugs may be continuously graded in water content rather than by injecting distinctly different slug compositions.

3,670,820
OIL RECOVERY METHOD USING DISPERSION OF CLAYS IN AQUEOUS POLYACRYLAMIDE SOLUTIONS
Charles J. Norton, and David O. Falk, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Aug. 28, 1970, Ser. No. 67,726
Int. Cl. E21b *43/22*
U.S. Cl. 166—305 R **10 Claims**



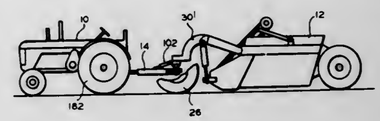
Improved viscosity and resistance factors of aqueous solutions containing partially hydrolyzed polyacrylamide are obtained by dispersing clay, e.g., sodium montmorillonite and phosphates in the solutions. The solutions are particularly useful as displacement fluids in the recovery of petroleum from earth formations.

3,670,821
LOCKING DEVICE AND METHOD AND APPARATUS FOR EMPLACING SAME
Jack W. Tamplen, Rural Route 2, Celina, Tex.
Filed Dec. 21, 1970, Ser. No. 99,762
Int. Cl. E21b *43/00, 23/00*
U.S. Cl. 166—315 **27 Claims**



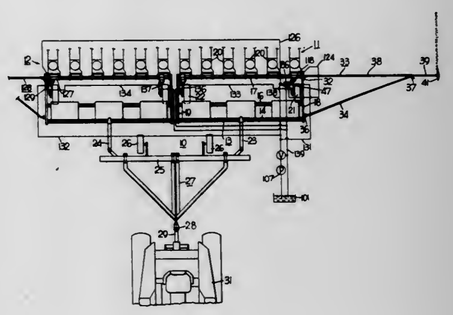
A locking device and method and apparatus for emplacing same within tubing in a well characterized by having locking dogs that are run into the well retracted; and that are operable into a no-go position at a desired depth for thereafter stopping the locking device at the top of a restricted portion such as a nipple; and that can be locked into a recess such as defined by a landing nipple or a collar immediately above the restricted portion. Both the running tool employed in emplacing the locking device, and the locking device, can be armed into the no-go position but cannot be inadvertently locked in the tubing until the locking dogs encounter the restricted portion. Also disclosed are specific and preferred structural embodiments wherein the running tool and the locking device are armed and the locking device locked and left in the tubing by reciprocal movement of the tool in the tubing in conjunction with energy stored in a spring and without the use of complicated electric motors, hydraulic connections or the like.

3,670,822
IMPLEMENT LOAD TRANSFER
Robert L. Reinhardt, Lubbock, Tex., assignor to Clark Equipment Company
Filed July 2, 1970, Ser. No. 52,036
Int. Cl. B62d *53/00*
U.S. Cl. 172—7 **4 Claims**



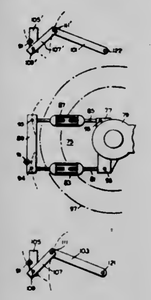
An apparatus is disclosed having hydraulic means for exerting a variable downward force on the tongue of a tractor drawn implement to optimize the tractive pull of the tractor. The apparatus is carried by the implement and includes a linear device connected to sense the drawing force exerted upon the implement and a second linear device connected between the implement and its tongue to exert a downward force upon the tongue that is a function of the drawing force sensed by the first device.

3,670,823
HYDRAULIC ROW MARKER SYSTEM
Ralph W. Matthews, New Berlin; Gerald W. Bernhoft, Wauwatosa, and Michael R. Schmidt, Hales Corners, all of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed June 18, 1970, Ser. No. 47,437
Int. Cl. A01b *25/00, 49/06*; B01c *7/18*
U.S. Cl. 172—128 **4 Claims**



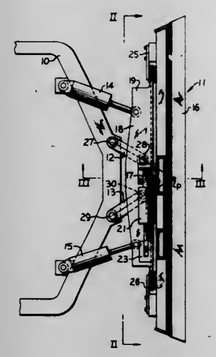
This invention is concerned with marking devices for squadron planters with the marking devices being operated by remote hydraulic devices which are in parallel with hydraulic means used for raising and lowering the planters.

3,670,824
COMPENSATION TOOL BAR DEVICE
Houston H. Buchanan, Route 2, P.O. Box 145, Snyder, Tex.
Division of Ser. No. 860,176, Sept. 19, 1969, Pat. No. 3,533,475, which is a continuation of Ser. No. 645,712, June 13, 1967, abandoned. This application Sept. 16, 1970, Ser. No. 44,617
Int. Cl. A01b 59/06, 63/116
U.S. Cl. 172—449 3 Claims



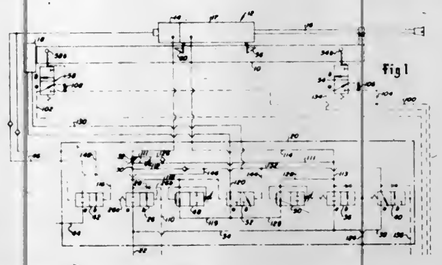
A compensating horizontal tool bar for agricultural implements mounted on a tractor having a "three-point hitch" is connected to another transverse horizontal support by two parallelogram connectors and a third connector midway between; the connectors include linkages which permit the tool bar to tilt with respect to a central axis while maintaining the bar's average height substantially constant.

3,670,825
POWER ANGLING BULLDOZER
Jerrold R. Auel, Joliet, and Donald A. Plapho, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 9, 1969, Ser. No. 865,823
Int. Cl. E02f 3/76; A01b 65/00, 35/22
U.S. Cl. 172—805 13 Claims



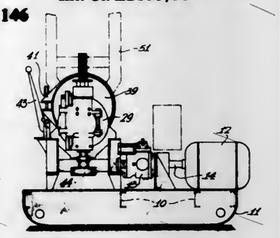
A power angling bulldozer comprises a blade operatively connected to the forward end of a C-frame by spaced links arranged to diverge toward each other forwardly of the frame. A pair of double-acting hydraulic cylinders are pivotally connected between the frame and blade to selectively impart angling movements to the blade for earth-moving purposes. The links are constructed and arranged so that the blade will completely cover and protect the frame during all such movements. A third double-acting hydraulic cylinder may be operatively associated with the blade to selectively impart tilting movements thereto.

3,670,826
CONTROL SYSTEM FOR DRILLS
Laurence B. Hansen, Pine, and Wallace W. Arthur, Denver, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.
Division of Ser. No. 868,925, March 20, 1969, Pat. No. 3,561,542. This application Sept. 11, 1970, Ser. No. 71,403
Int. Cl. E21c 5/10
U.S. Cl. 173—4 4 Claims



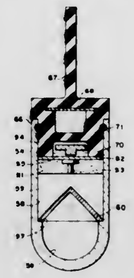
An automatic control system for a guide shell mounted rock drill including a control circuit having pneumatically operated valves for providing pressure fluid to the drill hammer, rotation motor and feed motor and for controlling drill hole flushing medium. Sensors mounted on the drill guide shell provide for reversal of the feed motor and reduced drill power upon reaching the forward end of the guide shell, and shutdown of the drill upon reaching the rearward end of the guide shell. The control circuit includes a series of control valves for selection, at will, by the drill operator of a particular operating sequence or condition of the drill. A control valve is included for providing an operating sequence which includes operation of the drill at reduced power for a predetermined period of time for collaring a drill hole. The control system also includes pressure proportioning valves for automatically regulating the feed motor pressure to be proportional to the drill percussion motor supply pressure.

3,670,827
UNDERGROUND DRILLING MACHINE
Lyle W. Hokanson, and Ronald T. Fowke, both of Kirkland Lake, Ontario, Canada, assignors to Heath & Sherwood Drilling Limited, Kirkland Lake, Ontario, Canada
Filed Jan. 6, 1971, Ser. No. 104,385
Int. Cl. E21c 5/06
U.S. Cl. 173—146 5 Claims



A compactly arranged drilling machine, having all of its components arranged on a single base, is provided. These components comprise a conventional swivel head with hoisting drum, a power means therefor including a constant speed motor, a hydraulic pump driven by the motor, a hydraulic motor driven by the pump, and a drive line from the hydraulic motor to the input shaft of the swivel head. The machine is particularly useful to underground drilling operations in which a saving of up to 40 percent in rock removal, as compared with conventional machines, has been achieved.

3,670,828
EXPLOSIVE DRILLING APPARATUS
John D. Bennett, Dantan, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.
Filed Feb. 11, 1970, Ser. No. 883,082
Int. Cl. E21b 7/00
U.S. Cl. 175—4.5 8 Claims



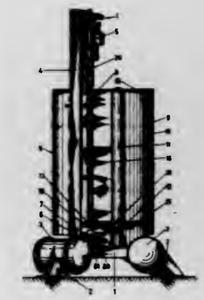
The particular embodiment described herein as illustrative of one form of the invention utilizes an elongated housing having a shaped explosive charge in one end thereof, and a firing mechanism for detonating the explosive charge upon impact of the capsule with the lower end of the borehole. During borehole drilling operations, the capsule is released into a fluid stream and moved to the bottom of the hole with the fluid stream. The capsule then exits through the end of the drill stem and impacts the formation whereupon it is detonated to serve as an auxilliary means for drilling the borehole.

3,670,829
METHOD FOR DETERMINING PRESSURE CONDITIONS IN A WELL BORE FROM SHALE SAMPLES
Harold L. Overton, 5418 Whispering Creek, Houston, Tex.
Filed Nov. 24, 1969, Ser. No. 879,147
Int. Cl. E21b 47/00, 49/00
U.S. Cl. 175—50 10 Claims



A method for determining pressure conditions in a well bore from shale samples obtained from the well bore at different elevations to thereby determine the requirements for the weight of drilling mud to prevent a blowout of the well. The pressure conditions in the well bore are determined by producing a graphical relationship of the salt which is in free solution in water confined by shale samples obtained at different elevations during the drilling of the well.

3,670,830
DRILLING APPARATUS
Franciscus Theodorus Maria Van Der Wijden, Haarlem, Netherlands, assignor to Werf Conrad en Stork Biljach N.V., and Nederlandsche Maatschappij voor Werken Buitengaats (Netherlands Offshore Company) N.V.
Filed April 9, 1970, Ser. No. 26,877
Claims priority, application Great Britain, April 9, 1969, 18,144/69
Int. Cl. F21b 19/14, 25/00
U.S. Cl. 175—52 19 Claims

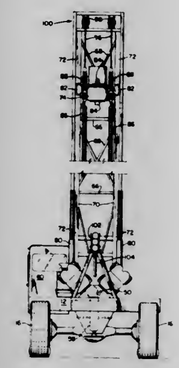


A drilling apparatus is deposited on a submerged floor for cutting a borehole in the floor and removing samples therefrom. The drilling apparatus has a drilling head which is detachably coupled to a string of pipes all detachably connected together by connecting devices which are engageable by axial pushing of the pipes together. The pipes carry inner tubes which cooperatively form an inner annular cavity and a core member is detachably connected to the lowermost inner tube of the drill string by spring-loaded latches. When a core sample is in the core tube it is detached by fluid pressure in the space between the outer pipes and the inner tubes and the core barrel is then pumped upwardly and stored in a turntable containing further drill pipes and core barrels. A further drill pipe is connected in the string and a further core barrel is dropped into the inner tubes of the string and connected to the lowermost inner tube pressurizing fluid in the inner tubes.

3,670,831
EARTH DRILLING APPARATUS
Henry A. Winter, Jr., Denver; Arthur M. Williams, Jr., Lakewood, and Richard L. Foss, Denver, all of Colo., assignors to Smith International, Inc., Newport Beach, Calif.
Filed Dec. 31, 1970, Ser. No. 103,183
Int. Cl. E21b 19/14
U.S. Cl. 175—52 10 Claims

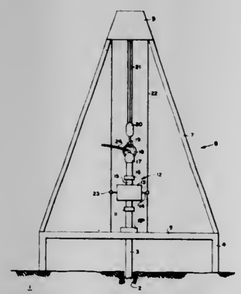
Earth drilling apparatus characterized by a wheel supported vehicle having a pivoted derrick or mast which is movable between substantially horizontal and vertical positions, the pivotal movement of the mast being utilized to transfer horizontal drill pipe, stacked vertically in a stationary magazine, to a reciprocable drilling head carried by the mast. The pipes in the magazine are incrementally moved vertically

to align the uppermost drill pipe therein with the drilling head and a releasable tong device is employed to secure the drill



pipe to the mast in fixed relation thereto during raising and lowering of the mast.

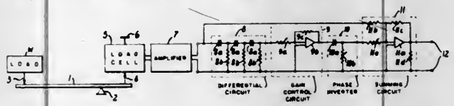
3,670,832
SLIM HOLE DRILLING METHOD
John H. Striegler, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Aug. 19, 1970, Ser. No. 65,177
Int. Cl. E21b *3/02*
U.S. Cl. 175—57 **4 Claims**



A slim hole drilling method wherein a wellbore of a diameter no greater than about 6 inches is drilled using a drill pipe rotation rate of at least 500 rpm and rotating the drill pipe with at least one electric motor operably connected to the drill pipe. Drilling power units for carrying out the drilling method which employ at least one electric motor in mechanical connection with the drill pipe for rotating the drill pipe and moving with same as it advances toward and away from the wellbore.

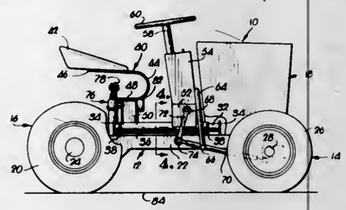
3,670,833
METHOD FOR MEASURING A WEIGHING LOAD RAPIDLY
Akuta Tomohiko; Atsumi Seya, and Shinya Hashirizaki, all of Kitakyushu, Japan, assignors to Yawata Iron & Steel Co., Ltd. and Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1970, Ser. No. 66,707
Int. Cl. G01g *3/14*
U.S. Cl. 177—1 **12 Claims**

Where a weighing load is detected as an electrical weighing signal with an oscillatory component due to various oscillations of the weighing elements, the oscillatory component is separated from the original weighing signal and after it is posi-



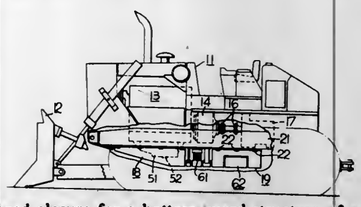
tively inverted in phase, the inverted separated signal is superposed on the original signal so that the weighing signal is obtained, with the oscillatory signal eliminated.

3,670,834
VEHICLE OPERATOR WEIGHT TRANSFER ASSEMBLY
Chester D. Rogers, Olathe, Kans., assignor to Jacobsen Manufacturing Company, Racine, Wis.
Filed Dec. 12, 1969, Ser. No. 884,588
Int. Cl. B62d *37/00*
U.S. Cl. 180—41 **1 Claim**



Increased traction on the high drive wheel of a tractor, self propelled implement or other vehicle while tilted laterally because of sloping terrain is provided by structure which permits shifting of the weight of the operator toward the high side of the vehicle. The operator's seat is held against tilting by a rigid attachment to its mount, but the mount itself is swingable about an axis disposed well below the seat and extending fore and aft of the vehicle. During tilting of the frame to which the seat mount is swingably attached, the operator's weight may be maintained in alignment with and spaced vertically above the central longitudinal axis of the vehicle by operator control of a power device which effects swinging of the seat mount. The steering wheel, instrument panel, dashboard and footrests may also be swung in one direction as a unit with the seat mount about the same single axis common thereto as the vehicle frame, its engine and its front and rear axles tilt laterally as a unit in the opposite direction.

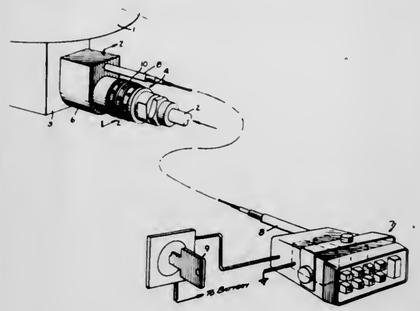
3,670,835
HINGED CLOSURE FOR VEHICLE BOTTOM GUARD STRUCTURE
Roy C. Ross, and Robert L. Crum, both of Springfield, Ill., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Aug. 31, 1970, Ser. No. 68,312
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **9 Claims**



A hinged closure for a bottom guard structure of an off-highway vehicle is secured by releasable means independent

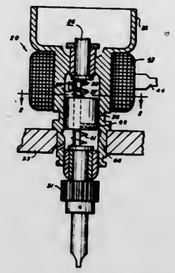
of the hinge in such a manner that the hinge pin is not subjected to load when the closure encounters an obstruction during vehicle operation.

3,670,836
ANTI-THEFT DEVICE FOR MOTOR VEHICLES
William Tonkowich; John A. Meditz, both of Franklin Lakes, and Paul Vignola, Parsippany, all of N.J., assignors to Safetech, Inc., Fairfield, N.J.
Filed July 31, 1970, Ser. No. 59,871
Int. Cl. B60r *25/04*
U.S. Cl. 180—114 **11 Claims**



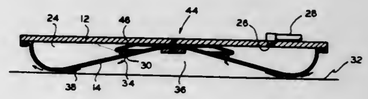
The invention is an electro-mechanical device which is incorporated in the fuel supply system of engine driven vehicles or other engine driven devices to prevent theft or unauthorized use of the vehicle or device. A valve is included in the fuel supply system which cuts off fuel flow except when it is opened by a coded electrical valve control system. The entire anti-theft device is mechanically secure and tamperproof so that it cannot be removed or bypassed by mechanical manipulations without a great deal of effort. The electrical valve control system is made electrically secure and tamperproof so that it cannot bypass or otherwise operated without using the predetermined control code.

3,670,837
ANTI-THEFT APPARATUS FOR A MOTOR VEHICLE
Peter B. Olson, 838 Beaver Ridge Terrace, Broadview Heights, Ohio
Filed Aug. 26, 1970, Ser. No. 66,919
Int. Cl. B60r *25/04*
U.S. Cl. 180—114 **7 Claims**



Anti-theft apparatus for a motor vehicle which has a conventional distributor driven by a distributor shaft which shaft is divided into first and second separated portions. A clutch member is provided which in a first position leaves the two shaft portions disconnected and when moved to a second position rotatively connects the two shaft portions together. Electrical coil means are provided adjacent the clutch member and when the coil means are appropriately energized the clutch member is moved from the first to the second position to connect the two shaft portions together which enables the distributor shaft to be rotatively driven. The coil means are made up of a plurality of separate coils, each of which is connected to an electrical power source, such as the vehicle battery, by its own separate electrical circuit. The electrical conductors which make up the separate electrical circuits for each of the coils normally pass through a key actuated switch which is rendered relatively inaccessible to a thief or any other person by means of housing the same within a resin-impregnated assembly or otherwise protected enclosure. As a result of this construction, essentially the only portion of the apparatus which is accessible to a thief are the plurality of conductors which make up the separate electrical circuits and in order to appropriately energize the coil means all of the plurality of coils must be properly electrically connected or else sufficient lifting force will not be provided to move the clutch member from the first to the second position to appropriately connect the shaft portions together. In other words, without appropriate electrical equipment the possibility of a thief properly jumping the wires to the separate coils is rendered relatively impossible. Additionally provision is made in the apparatus whereby if, in jumping any of the coil circuits, the polarity of a given coil is reversed, the clutch member is moved to an inoperative position whereat it is latched in this inoperative position.

3,670,838
INFLATABLE FLUID PAD WITH SHUT-OFF VALVE
William A. Williamson, Niles, Mich., assignor to Clark Equipment Company
Filed June 18, 1970, Ser. No. 47,409
Int. Cl. B60v *1/16*
U.S. Cl. 180—124 **6 Claims**

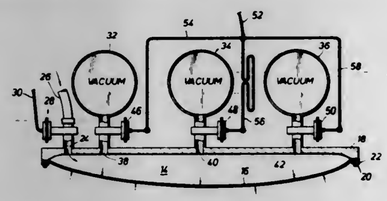


An inflatable fluid pad including an inflatable diaphragm which forms a portion of a toroidal chamber, an inlet for supplying pressurized fluid to the chamber and at least one opening in the diaphragm for permitting pressurized fluid to flow out of the chamber. Cooperating with the opening is means for preventing fluid flow out through the opening when the diaphragm is deflated and permitting fluid flow out through the opening when the diaphragm is inflated.

3,670,839
EXTENDED AREA ACOUSTIC IMPULSE GENERATOR
Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed July 23, 1969, Ser. No. 844,152
Int. Cl. G01v *1/02*
U.S. Cl. 181—0.5 H **1 Claim**

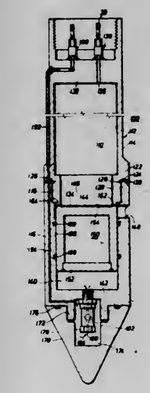
An acoustic impulse generator for producing in a liquid body acoustic impulses useful, for example, in geophysical explorations. The generator includes a housing which defines an enclosed chamber having a flexible wall. Driving means in one operating condition cause the flexible wall to execute a forward stroke in the liquid body thereby storing potential energy

in the liquid body. The driving means in another operating condition allow the flexible wall to execute a return stroke in a



relatively short time interval thereby generating an acoustic impulse.

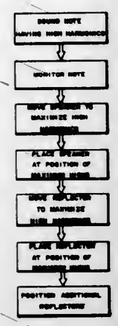
3,670,840
FLEXIBLE SEISMIC GAS EXPLODER
William J. Gundlach, Fulshear, Tex., assignor to Geo Space Corporation
Filed Aug. 6, 1969, Ser. No. 847,828
Int. Cl. G01v 1/00
U.S. Cl. 181—0.5 NC **12 Claims**



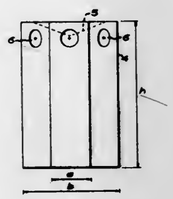
This invention relates to a repetitive seismic energy source and includes a rigid combustion chamber coupled to a flexible gas supply system for supplying to the chamber a pressurized combustible gas mixture. A piston normally maintains the chamber gas tight. Simultaneously with the ignition of the gas mixture, the piston becomes accelerated away from an outlet of the chamber to abruptly release high-temperature, high-pressure gases into the surrounding water, the underlying earth crust of which is being seismically explored. The displacement of the piston is caused by the combustion of the gas mixture in the combustion chamber.

3,670,841
METHOD OF ADJUSTING A SPEAKER OF AN ELECTRICAL SOUND PRODUCING INSTRUMENT
Marten I. Neff, 42 Phenetia Avenue, Coral Gables, Fla.
Filed May 15, 1970, Ser. No. 37,546
Int. Cl. H04r 1/28; G10k 13/00
U.S. Cl. 181—31 R **5 Claims**

A method of adjusting a speaker of an electrical musical instrument to a room in which music is to be played on the instrument through a loudspeaker. A note is sounded through at least one speaker of the instrument, the note having a single fundamental frequency and harmonics including audible high harmonics above the fundamental frequency. The note is monitored as by ear at the speaker to detect the relative volumes of the fundamental frequency and the highest audible harmonic frequency. While continuing to monitor, the speaker is moved close to and relative to a wall of the room until a particular position of the speaker is detected where the volume of the highest audible harmonic relative to that of the fundamental frequency is greater than at surrounding positions. The speaker is fixed at that particular position. Preferably, the same monitoring step is continued while moving a reflector outside and relative to the speaker until a particular position for the reflector is detected where the relative volume at the reflector of the highest audible harmonic is greatest, and the reflector is fixed at that position. Other reflectors may be positioned in the same manner. As a result of the tuning, music played on the instrument has two desirable characteristics: (1) it envelops the listener to the point where the location of the speaker is less noticeable, and (2) it has tonal qualities characteristic, for example, of a good pipe organ; i.e. fullness, roundness, solidity and spread.

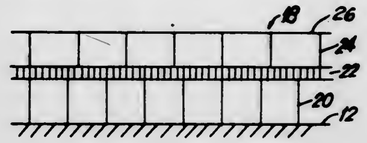


3,670,842
LOUDSPEAKERS
Hans Ekdahl, Lund, and Sten Clarkson, Malmo, both of Sweden, assignors to Ekdahl & Clarkson Handelsbolag, Malmo, Sweden
Filed July 23, 1970, Ser. No. 57,702
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B **2 Claims**



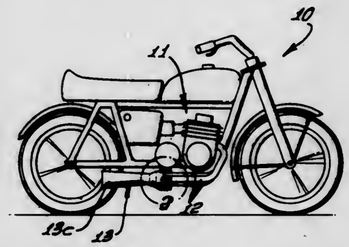
A loudspeaker having a closed cabinet in the form of a right, regular prism with a cross-sectional area of a regular polygon having at least six corners. A bass loudspeaker element is positioned in one of the end walls of the cabinet and at least three treble loudspeaker elements are positioned in each of adjoining cabinet side walls adjacent that end wall in which the bass element is mounted, the angle between the normals to the two remote cabinet side walls in which treble elements are mounted, being at most 120°.

3,670,843
SANDWICH STRUCTURE
John C. Kelly, Hemington House near Shardlow, and Christopher J. Moore, Derby, both of England, assignors to Rolls Royce Limited, Derby, England
Filed Nov. 12, 1969, Ser. No. 875,721
Claims priority, application Great Britain, Nov. 23, 1968, 55,661/68
Int. Cl. F01n 7/16
U.S. Cl. 181—33 G **2 Claims**



A sound absorptive liner for use in gas turbine engines consists of a sandwich structure which has two layers of cellular material separated by a porous layer and an impervious layer attached to the outer face of one of the layers of cellular material.

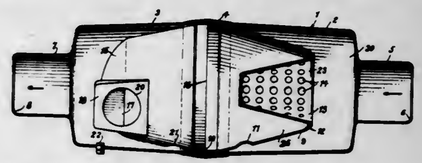
3,670,844
ENGINE EXHAUST HEADER CONSTRUCTION
Addison E. Penfield, Jr., Gardena, Calif., assignor to Triple "A" Accessories, Gardena, Calif.
Filed July 1, 1971, Ser. No. 158,775
Int. Cl. F01n 1/08, 7/10; F16l 55/04
U.S. Cl. 181—60 **10 Claims**



An exhaust header assembly comprises;
a. a multiplicity of exhaust pipes having terminals,
b. a collector tube having an entrance end receiving said terminals in side-by-side relation,
c. said terminals having out-of-round side walls retained in interengagement to block escape of exhaust gas therebetween.

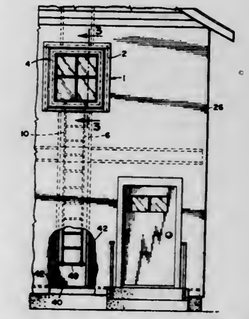
3,670,845
MARINE MUFFLERS
William M. Batts, 302 Northeast 45th Court, Pompano Beach, Fla.
Filed June 15, 1970, Ser. No. 46,423
Int. Cl. F01n 1/08
U.S. Cl. 181—57 **5 Claims**

A muffler for marine engines comprising a shell or body composed of two half sections integrally joined to produce an outer chamber having an inlet and an outlet port, an inner chamber in the shell having a perforated or foraminous cone at one end of said inner chamber, said cone establishing communication between the chambers, the inner chamber having laterally extending ports at its end remote from the cone, said ports communicating with the outer chamber and with the outlet of said outer chamber. The halves of the outer shell can



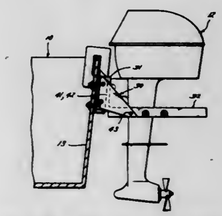
be fitted together in numerous ways to thereby align or dis-align the inlet and outlet ports of the shell.

3,670,846
ESCAPE MECHANISM
Loria M. Jones, 2908 Bellview Avenue, Alexandria, Va.
Filed Dec. 1, 1970, Ser. No. 94,146
Int. Cl. A62b 1/20
U.S. Cl. 182—20 **3 Claims**



An escape mechanism for use in a building structure whereby an escape device such as a flexible rope ladder can be easily and quickly positioned from an opening in the structure to a position of safety, said ladder being secured to a closure member for said opening and being rapidly positioned by the release of said closure member and the force exerted by the weight of said closure member as it falls from its position on the building structure.

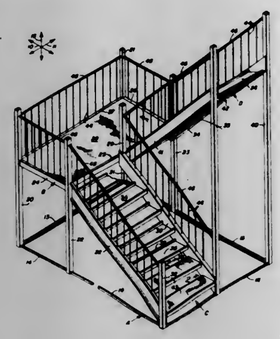
3,670,847
COMBINED PLATFORM AND STEP FOR BOAT TRANSOMS
Arthur F. Mack, Jr., Route 5, Box 30-D, Beaumont, Tex.
Filed March 12, 1971, Ser. No. 123,620
Int. Cl. B04g 7/08
U.S. Cl. 182—92 **6 Claims**



Combined platform and step for boat transoms, including a member of angular shape movable to two supported positions in brackets mounted on a boat transom, in one position the angular member providing a narrow step for use in entering the

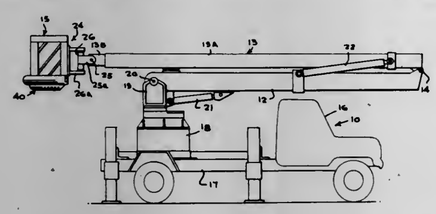
boat, and in the other position the angular member providing an elongate platform from which work may be done upon an outboard motor carried on the boat transom. The apparatus is preferably located adjacent the location of the outboard motor.

3,670,848
PREFABRICATED METAL STAIRWAY
William M. Raiguel, Jr., Wyncote, Pa., assignor to The Samuel J. Creswell Iron Works, Philadelphia, Pa.
Filed May 5, 1971, Ser. No. 140,460
Int. Cl. E04f 11/00
U.S. Cl. 182—115 **2 Claims**



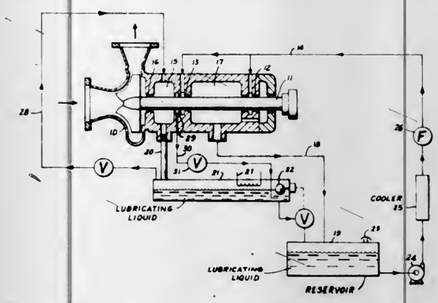
A prefabricated, totally self-supporting metal exterior stairway, for use in connection with a two-story building, is built upon a rectangular load-distributing, ground-bearing frame. Two opposed runs of steps are provided. One run leads from grade to a landing, supported on a rigid box-like support, the loads from which are posted to the ground-bearing frame. The other run leads from the landing to the second floor level. Newel posts link the steps to the ground-bearing frame and internal rigidity is provided by triangulation of members. Treads are of a type which permits field installation of a permanent tread surface.

3,670,849
AERIAL PERSONNEL PLATFORM WITH PROXIMITY SENSING SYSTEM
Edwin Earl Milner, Jr., Williamsburg, Va., assignor to Baker Equipment Engineering Co., Inc., Richmond, Va.
Filed Oct. 23, 1970, Ser. No. 82,936
Int. Cl. B66f 11/04
U.S. Cl. 182—19 **10 Claims**



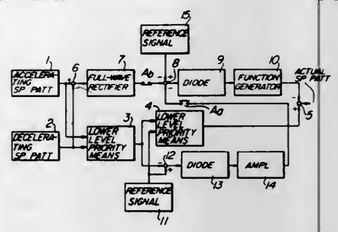
A load supporting platform, such as a workman's basket mounted on the outer end of a boom structure which is adjustable vertically and horizontally, wherein a pair of inflated resilient pneumatic tubes inflated to selected pressure are disposed in outwardly surrounding relation to the lower corner portions of the platform to contact and be deformed by objects or surfaces which are being approached by the platform, together with air pressure activated switch exposed to the pressure conditions in the pneumatic tubing and circuitry activated by the air switch to break the power circuit for the boom structure, collectively serving as a proximity sensing and protective system.

3,670,850
REMOVAL OF DISPERSED GAS FROM LUBRICATING FLUIDS
Judson S. Swearingen, 500 Bel Air Road, Los Angeles, Calif.
Filed Oct. 27, 1969, Ser. No. 869,791
Int. Cl. F16n 39/06
U.S. Cl. 184—6.23 **7 Claims**



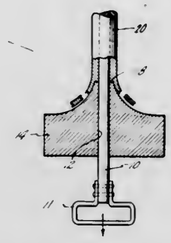
A method for removing dispersed gas from fluids used to lubricate bearings, shaft seals and the like on high speed gas handling equipment such as turboexpanders and compressors which comprises passing the gas-liquid dispersion through a pressurized settling zone for a time period sufficient to allow the gas and liquid to separate, the gas-free liquid being removed from the settling zone at a rate such that a gas and a liquid phase are maintained in the settling zone. The gas-free liquid is then ready for re-use and the gas removed is recovered under approximately its original pressure and reintroduced into the system at an appropriate point. The invention also encompasses the combination of high speed gas handling equipment such as turboexpanders and compressors with a suitable settling chamber for carrying out the above-described process.

3,670,851
SPEED PATTERN GENERATOR FOR ELEVATOR CONTROL SYSTEM
Seiya Shima, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 24, 1970, Ser. No. 75,171
Claims priority, application Japan, Sept. 29, 1969, 44/76938
Int. Cl. B66b 1/28
U.S. Cl. 187—29 R **5 Claims**



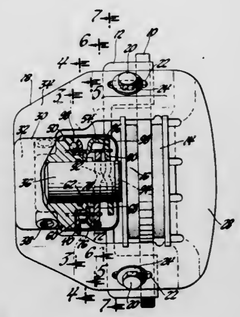
A speed pattern generator for an elevator control system generating an accelerating speed pattern with is a function of time and increases monotonously, a decelerating speed pattern which is a function of the distance between the elevator and the desired floor level and decreases monotonously, and a compensating speed pattern which is a function of the difference between the accelerating speed pattern and the decelerating speed pattern and decreases monotonously so that the compensating speed pattern ensures a smooth transition from the accelerating speed pattern to the decelerating speed pattern.

3,670,852
FRANGIBLE TENSION SHOCK ABSORBER
Jay Martin Yarm, Milford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 18, 1971, Ser. No. 116,323
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C **16 Claims**



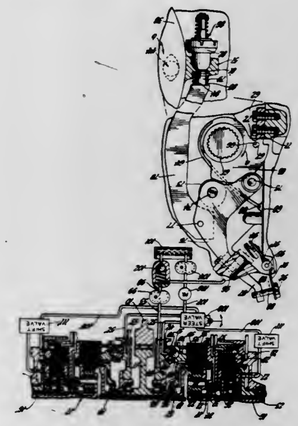
A tension shock absorber comprises a length of music wire, one end of which is passed through a hole in an anvil the diameter of which conforms closely to the diameter of the wire. The portion of the wire which has not passed through the anvil is plated with a frangible metal. Excessive tension forces applied to the unplated end of the wire cause the anvil to peel the plating from the wire. A fixed sleeve closely surrounding the plated portion of the wire a short distance from the face of the anvil prevents premature propagation of peeling.

3,670,853
DISC BRAKE WITH PARKING BRAKE
Frank W. Brooks, and Thomas D. Naismith, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 26, 1971, Ser. No. 109,790
Int. Cl. F16d 55/00
U.S. Cl. 188—72.6 **3 Claims**



A disc brake caliper includes a hydraulically actuated piston, a frictional locking device comprising a pair of apertured locking plates closely surrounding the piston at a point between the caliper bore and the brake shoe, and a cam device which upon actuation biases the locking plates relative the piston so that the piston is frictionally gripped by the apertured locking plates and carried toward the rotor to actuate the brake independently of hydraulic piston actuation. The piston is not gripped until the cam device is actuated so that the frictional locking device automatically compensates for lining wear.

3,670,854
BRAKE PUMP AIR VALVE AND COOLING MEANS
Raymond J. Maci, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed July 6, 1970, Ser. No. 52,211
Int. Cl. F16d 65/84
U.S. Cl. 188—71.6 **7 Claims**



A cross-drive transmission having a multi plate brake on each output shaft and a hydraulic and mechanical actuation and cooling system including a cylinder mounted for a rotary and axial movement on a fixed piston and a cam mechanism therebetween responsive to rotary movement of the cylinder to axially move the cylinder for a brake application. Movement of the brake apply linkage connected to the cylinder rotates the cylinder to cause the cam mechanism to mechanically apply the brake against a first rotary plate which assists rotation of the cylinder for a self energizing brake application. On the supply of fluid to the cylinder chamber, the cylinder engages the first plate and rotation thereof actuates the cam mechanism for self energized brake application. The brake plate cooling system has a pump supplying coolant thereto which has an air vent valve in its intake to discontinue cooling fluid supply when the air valve is open by the brake linkage in the brake off position. When the brake is applied, either hydraulically or mechanically, the linkage is respectively either moved by the self energizing action of the brake or by the manual brake apply movement respectively to close the air valve to provide coolant supply.

3,670,855
RELEASABLE PAWL AND RATCHET MECHANISMS
Jean-Paul Lemery, Cluses, France, assignor to Etablissements Carpano & Pons, Cluses, France
Filed July 21, 1970, Ser. No. 56,804
Claims priority, application France, July 24, 1969, 6925298
Int. Cl. F16d 63/00
U.S. Cl. 188—82.3 **7 Claims**

A pawl is coaxially mounted on the shaft of a control button with which it is angularly interlocked but with an angular play.

A spring selectively urges the pawl either towards an operative position in engagement with a ratchet or an inoperative position spaced from the ratchet, selection taking place by turning the control button. When the pawl is in operative position, the ratchet can turn in one direction which oscillates the pawl through an angle smaller than its angular play with the control

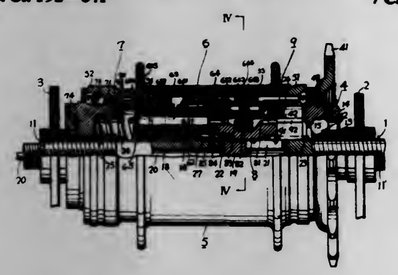


button which is therefore not caused to oscillate. The shaft can be loosely mounted on a support with an elastomeric packing member to take up play and ensure fluidtightness; similarly, the pawl can be loosely mounted on the shaft so that when the pawl locks the ratchet, the pawl is pressed against a supporting surface thereby avoiding strain on the shaft.

3,670,856
INTER HOUSING MULTI-SPEED TRANSMISSION HUB PROVIDED WITH A COASTER BRAKE

Takashi Segawa, c/o Shimano Industrial Co. Ltd. 77, 3-cho, Oimatsu-cho, Sakai City, Japan

Filed Sept. 4, 1970, Ser. No. 69,693
Claims priority, application Japan, March 25, 1970, 45/25091
Int. Cl. F16d 41/30; F16h 5/10
U.S. Cl. 192—6 A 7 Claims



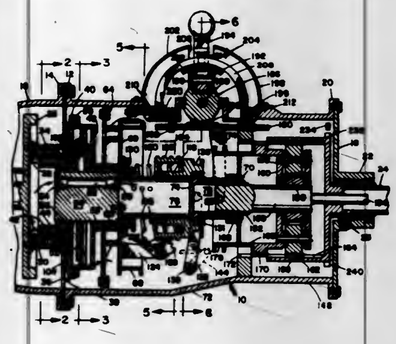
In the hub shell of a bicycle or the like a gear shifting mechanism mounted to be axially moveable is such that when the pedal is reversely rotated it is transferred in the axial direction and expands the brake shoes to forcibly press the same against the inner walls of the hub shell, thereby braking the rotation of the bicycle wheel. Thus by transferring the gear shifting mechanism for the braking purpose, it is possible at any time when necessary to secure the most reliable braking effect, in whatever speed changing condition the gear shifting mechanism may be or even if any parts thereof are damaged and even if the wire rope thereof has been extended in protracted use.

3,670,857
INTERNAL RESISTANCE FLUID CLUTCH

Marion Clark, 546 West Pleasant, Tulare, Calif.

Filed Oct. 28, 1970, Ser. No. 84,804
Int. Cl. F16d 31/02
U.S. Cl. 192—60 4 Claims

A transmission in which the input and output shafts are coupled by a fluid drive which is pressurized by eccentrically driven pumps, the variable speed fluid coupling being effective until a particular rotational speed is reached, at which speed the drive is positively locked. Means is also provided for locking the driven selectively at any speed. The transmission can be shifted between forward and reverse positions, and the

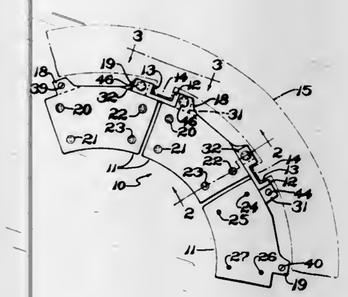


shift mechanism incorporates braking means to facilitate gear engagement, and locking means operable in a stopped position, the arrangement being particularly adaptable to automotive vehicles.

3,670,858
SEGMENTAL FRICTION MEMBER FOR BRAKE OR CLUTCH

Russell F. Van Horn, 1415 Evanston Road, Tipp City, Ohio

Filed April 26, 1971, Ser. No. 137,135
Int. Cl. F16d 13/60
U.S. Cl. 192—107 R 12 Claims



A stator or rotor of a brake or clutch mechanism having pairs of stamped plates riveted together in back-to-back relationship forming sector-shaped segmental members for frictional engagement with other parts of the mechanism. Torque links between the segmental members have flanges which are connected to lugs on one of the plates of each pair forming an annulus in which the movement of the segmental members is controlled while at the same time clearance is provided for contraction and expansion. The flanges on the torque link members have a thickness substantially equal to the thickness of one of the plates and a channel portion having a thickness substantially equal to the thickness of the pair of plates providing segmental members of substantial thickness made from stampings and requiring a minimum of machining.

3,670,859
CLUTCH AND CLUTCH COVER

Paul J. Schleder, Shawnee Oaks, and James D. McFarland, Jr., Chatsworth, both of Calif., assignors to Schleder Manufacturing Company, Monterey, Calif.

Filed Jan. 2, 1970, Ser. No. 117
Int. Cl. F16d 13/60
U.S. Cl. 192—112 4 Claims

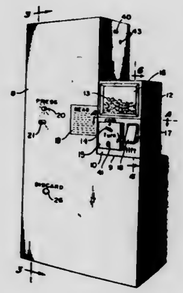


A "Long" type clutch cover has a plurality of windows for the release fingers utilized in disengaging the clutch's pressure plate from the clutch's clutch disc assembly. Each window has a pair of inwardly extending bearing flanges to increase the strength of the clutch cover to resist pressure plate imposed, rotational loads. The corners of the windows are radiused to reduce the likelihood of fatigue failure. Each pair of bearing flanges is engaged by upstanding bosses of a yoke on the pressure plate to provide the load coupling of the pressure plate with the clutch cover. The yokes also provide mounting of the release fingers to the pressure plate, the release fingers also being pivotally mounted to the clutch cover.

3,670,860
SEMIAUTOMATIC VENDING MACHINE INCLUDING MEMORY CIRCUIT

Rudolph L. Allison, Rockford, Ill., assignor to Paramount Textile Machinery Company, Chicago, Ill.

Division of Ser. No. 830,417, June 4, 1969, Pat. No. 3,561,579.
This application Jan. 6, 1971, Ser. No. 104,310
Int. Cl. G07f 15/00
U.S. Cl. 194—1 J 7 Claims

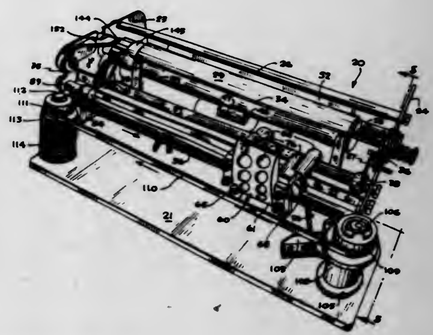


In a vending machine for providing at least one dispensing operation, such as a balloon vending and inflating machine, a memory circuit permitting the depositing of several coins, during one time interval preceding the dispensing operations, for activating a number of dispensing operations, the memory circuit accounting for each coin deposited and provided for a dispensing operation corresponding thereto. As part of one vending machine dispensing operation, magnetic switches indicate the depositing of a coin and signal the memory circuit by activating a counter corresponding to the number of vending operations paid for. A unijunction transistor and silicon controlled rectifier are activated by the counter to signal the customer that he may proceed with the prepaid vending operation. After the customer, through a manually operated control, proceeds with one vending operation, a signal is relayed to the counter. This relayed signal causes the counter to again signal the transistor thereby recycling the next vending operation until all of the stored signals are utilized.

3,670,861
CARRIAGE DRIVE FOR HIGH SPEED PRINTER

Walter J. Zenner, Des Plaines, and Raymond E. Kraus, Mt. Prospect, both of Ill., assignors to Extel Corporation, Chicago, Ill.

Filed Sept. 10, 1970, Ser. No. 71,851
Int. Cl. B41j 19/02
U.S. Cl. 197—64 14 Claims

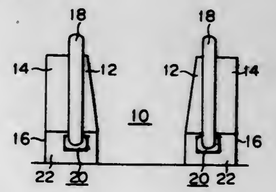


A carriage drive for a high speed dot matrix printer, including a reversible stepping motor connected through a clutch to a rotary driven member that is in turn connected by a belt to the printer carriage. The clutch remains engaged as long as the motor operates in a character-spacing direction, but reversal of the motor disengages the clutch and permits a torsion spring to drive the carriage back to a line start position. Near the end of the return movement, a flywheel decelerator absorbs the kinetic energy of the carriage and then utilizes that kinetic energy to prevent bouncing of the carriage.

3,670,862
SAFETY DEVICES FOR ENTRANCE AND EXIT FOR MOVING HANDRAIL

Katsumi Kito, Imazuma, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1970, Ser. No. 79,199
Int. Cl. B66b 9/12
U.S. Cl. 198—16 3 Claims



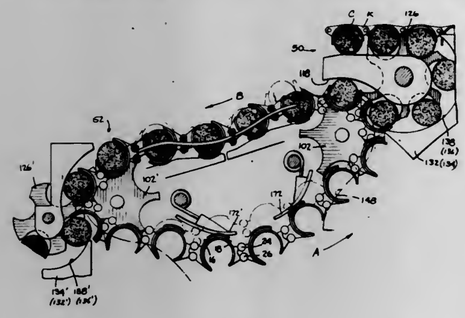
At either of entrance and exit for a moving handrail a front guard of soft, high flexible material and a rear guard of relatively hard material are tandem disposed to encircle the han-

drail to form a closed space between both guards communicating with the exterior through narrow clearances formed between the guards and the handrail.

3,670,863
ENDLESS CONVEYOR SYSTEM

Otto H. Meier, Shelburne, and Richard F. Leopold, South Burlington, both of Vt., assignors to General Electric Company

Filed March 31, 1970, Ser. No. 24,198
Int. Cl. B65g *47/00*
U.S. Cl. 198—22 R **5 Claims**

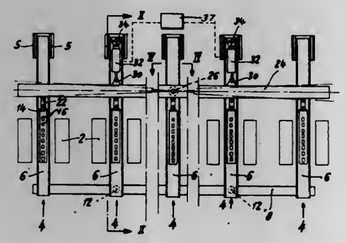


A flexible conveyor assembly including an endless chain of "clam shell" units linked together. Each unit includes two unit halves formed as longitudinally-sectioned, closed-ended, hollow cylinders. These units have interlocking joints which hold the halves together, and allow the halves to rotate concentrically with respect to each other, thus allowing the unit to "clam shell" around a cartridge. Each unit assembly is attached to the next adjacent unit by a spherical double-tapered sleeve joint which holds a set pitch to pitch length while allowing roll, fan and twist misalignment between the units. At each end of the element assembly are double pin guides which fit around flexible rod guide rails.

3,670,864
POSITIONING DEVICE FOR ALIGNING PLATES ON A ROLLWAY

Walter Grandmontagne, Ingbert/Saar, Germany, assignor to Moeller & Neumann GmbH, Ingbert-Saar, Germany

Filed Aug. 20, 1970, Ser. No. 65,468
Claims priority, application Germany, Aug. 25, 1969, P 19 43 068.3
Int. Cl. B65g *47/22*
U.S. Cl. 198—29 **6 Claims**

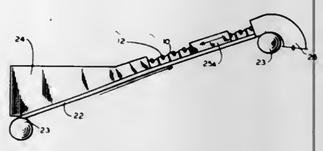


A positioning device for aligning plates on a rollway and not relying on magnetic effects consists of guideways located between adjacent pairs of rollers and frames displaceable on said guideways having support wheels running on the guideways the upper surfaces of which are adapted to engage the plate from beneath to life it clear of the rollway and to deposit it on the rollway after correct alignment.

3,670,865
RECTIFYING MEANS

Carl C. Garland, Detroit, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed July 23, 1970, Ser. No. 57,535
Int. Cl. B65g *47/14*; **B41f** *17/36*
U.S. Cl. 198—33 AA **7 Claims**

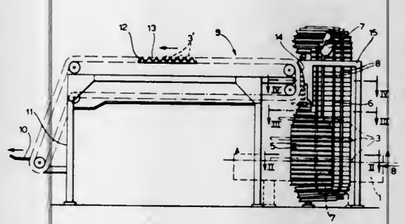


Apparatus means are provided to rectify and convey cap-and-body pharmaceutical capsules, for printing or other work operation, from a random supply of joined capsules, thereby making for significant advantage in materials handling. For labeling purposes especially, this enables selective printing either on the cap, on the body, or on both, with the same or different legends, as desired.

3,670,866
CONVEYOR DEVICES

Vanfrido Olivotto, Via Carlo Capelli 85, Turin, Italy

Filed March 8, 1971, Ser. No. 121,640
Claims priority, application Italy, March 23, 1970, 67985 A/70
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AC **2 Claims**

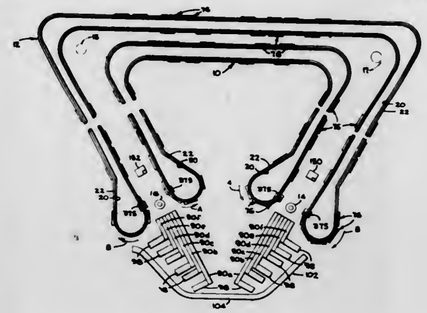


A conveyor for elongate objects particularly glass tubes is disclosed. The conveyor is adapted to turn the tubes through 90° so that, while still travelling in the same direction they change from an orientation in line with the direction of movement to an orientation transverse the direction of movement. The conveyor includes a chain mounted on two parallel sprockets one above the other, and carrying a plurality of movable supports which are free to rotate over a limited range about a substantially vertical axis. The movable supports lift the objects in their initial orientation, rotate through 90° guided by guide members as they are lifted by the chain, and transfer the glass tubes to another conveyor, moving parallel to the production line, in their new orientation transverse the direction of movement of the conveyor.

3,670,867
CONVEYOR SYSTEM

Robert J. Traube, San Mateo, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 754,443, Aug. 21, 1968. This application Nov. 17, 1969, Ser. No. 871,298
Int. Cl. B65g *47/00*; **E04h** *3/04*
U.S. Cl. 198—38 **5 Claims**



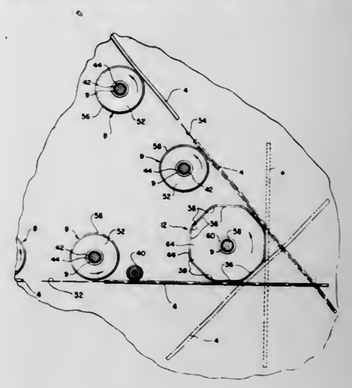
A storage and retrieval system for goods has two power operated conveyors movable in separate endless loops past two (or more) spaced apart picking stations, each picking station common to both conveyors. Each conveyor has bins with compartments in which goods are stored. Although the bins on each conveyor remain in the same sequence, the bins are movable relative to each other on the conveyor to define "buffer" zones which permit simultaneous picking by two spaced apart pickers. The control system for the conveyors includes a reader which receives digital data concerning a group of orders to be picked from a stack of cards, each card giving the identity, quantity and distribution of one of the articles to be picked. The two conveyors are automatically stopped alternately with the bins containing ordered goods at the picking stations, and the operator at each picking station picks goods from the bins in accordance with a read-out unit which displays the card data. A plurality of packing lanes originate at each picking station and terminate at a plurality of packing stations. Each picker distributes goods to the separate packing lanes in accordance with the read-out unit at the picking station.

3,670,868
MAGNETIC CONVEYOR SYSTEM

Oliver W. Gnage, and Gordon F. Connelly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 6, 1970, Ser. No. 52,153
Int. Cl. B65g *47/00*
U.S. Cl. 198—41 **6 Claims**

A magnetic conveyor system is provided for transporting flat elements or plates such as electrophotographic plates or chips which comprise a photoconductive sheet on a conductive backing. This is accomplished by the use of magnetic rollers each of which includes a bar magnet rotatable on a non-magnetic shaft and having poles at opposite ends thereof to which is attached a pole piece. These pole pieces each have a larger diameter than the magnet to form a groove between the magnet and the pole pieces. This groove is filled with a non-conductive ring or annulus which extends outwardly beyond the edges of the pole pieces to provide a tire or friction bearing surface for the plates or elements to be transported thereby. The plates can be moved from an approach plane to an exit plane by means of a polygonal-shaped roller which is provided at the intersection of the planes and which has alternating flats and ridges so that when an advancing plate engages a polygonal roller and has passed the last round roller in the approach plane it will be rotated with the polygonal roller due to attraction to one of the flats to the exit plane and be fed forwardly by the round rollers in the exit plane. To assure that the plate separates from the last round roller in the approach

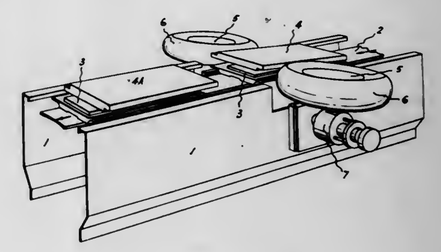


plane, a stripper bar is provided between the last roller and the polygonal roller which prevents the trailing end of the plate from following the last roller around. Alternatively, the entire roller can be encapsulated in a nonmagnetic material.

3,670,869
PICKING UP FLAT ARTICLES

Eric P. Dimmock, Parramatta, New South Wales, Australia, assignor to Monier Research & Development Pty. Ltd., New South Wales, Australia

Filed July 29, 1970, Ser. No. 59,300
Int. Cl. B65g *15/30*
U.S. Cl. 198—185 **3 Claims**



To facilitate the manual removal of flat articles from a conveyor two pneumatic rubber tired wheels are provided, one each side of the conveyor which are freely rotatably about parallel axes which are inclined relative to the conveyor. Flat articles travelling between the wheels are engaged thereby and tilted to lift the leading edge of the flat article from the conveyor.

3,670,870
CONVEYOR BELT STRUCTURE

Edward E. Cheek, Cleveland Heights, Ohio, assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed March 15, 1971, Ser. No. 124,032
Int. Cl. B65g *15/30*, *65/28*
U.S. Cl. 198—193 **9 Claims**

There is provided an endless belt for use in an apparatus capable of performing the operations of stacking and reclaim-

ing bulk material and characterized by a wire cable-reinforced rubber belt having upstanding rigid flights anchored thereto in a manner to utilize the wire cable as a supporting and securing



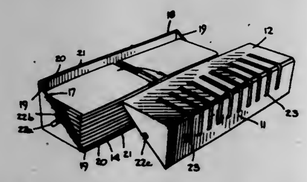
member for the flights. The belts may be either troughed or flat. Lateral stabilizing means may desirably be associated with the flights.

3,670,871
HOLDER FOR WINDBLOWN REEDS
Thomas Thomas, 1110 Breezy Meadow Lane, Spencer, Iowa
Filed Nov. 30, 1970, Ser. No. 93,757
Int. Cl. A45c 11/00; B65d 85/54
U.S. Cl. 206—13 5 Claims



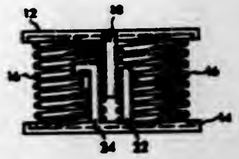
The holder has a flat, rectangular base and a removable clip to slip over one end of the base. The base contains a floor bounded by sidewalls forming channels on both sides of the floor. A partition extends about one-half the length of the floor and separates one end of the channels into pockets for the reeds. The clip has flat wings which slip over the other end of the channels and press down on the wedge-shaped ends of the reeds.

3,670,872
COMBINATION CARRYING CARTON AND DISPLAY STAND
Edward M. Bock, Hauppauge; Joseph F. Laughman, Jr., Ossining, and Ann McManus, Nyack, all of N.Y., assignors to Harcourt Brace Jovanovich, Inc., New York, N.Y.
Filed Jan. 8, 1971, Ser. No. 105,082
Int. Cl. B65d 5/52
U.S. Cl. 206—44 R 11 Claims



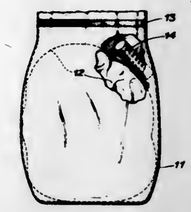
A fully enclosed carton, preferably of an elongated rectangular configuration, is parted along the end panel diagonal so as to allow the carton to be divided into triangular halves. At least one of the triangular halves includes a plurality of slots disposed along the apex thereof, with the slots being spaced from one another so that books or like material may be displayed therein when the half is disposed on its unslotted leg. The carton is preferably of a size adapted to house a quantity of books approximately equal to those which may be displayed in either one or both of the triangular halves.

3,670,873
PRECOMPRESSED SPRING PACKAGE
Howard L. Dreyer, Jr., Glen Ellyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,437
Int. Cl. B65d 85/06
U.S. Cl. 206—46 H 3 Claims



A precompressed spring package providing means for containing precompressed springs for storage and also means for automatically releasing the springs to their working height for service operation whenever a predetermined load is applied to the package. The precompressed springs are contained within two spaced apart frames and are retained in a precompressed condition by means of a retaining pin which is automatically released whenever a predetermined load is applied to the spring package. The retaining pin may be automatically released by means of gravity or by means of an ejector spring.

3,670,874
METHOD FOR IRRADIATING FOODSTUFFS AND OTHER CONSUMABLES, PHARMACEUTICALS AND THE LIKE, AND A PACKAGE FOR SAME
Alfred Brenner, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Dec. 2, 1969, Ser. No. 881,444
Claims priority, application Switzerland, Dec. 5, 1968, 18161/68
Int. Cl. B65d 81/18, 85/00
U.S. Cl. 206—46 FV 11 Claims



The material to be irradiated is placed with an oxygen binding medium into a gas-tight package and irradiated. The oxygen which may be present in the package becomes bound by the oxygen binding medium so that the irradiated material and/or the material of the package do not become adversely effected by the oxygen.

3,670,875
TAPE REEL CONTAINER
Charles E. Jones, Evanston, Ill., assignor to Charles E. Jones and Associates, Inc., Lincolnwood, Ill.
Filed May 25, 1970, Ser. No. 40,198
Int. Cl. B65d 43/16, 85/67
U.S. Cl. 206—52 F 10 Claims

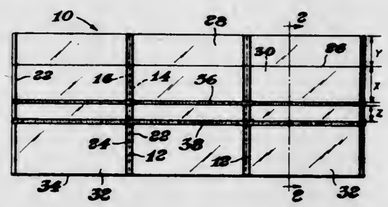
A cylindrical storage container for a film or tape reel which is formed of injection molded plastic material and which has a shape conforming to the shape of the reel, with a bottom forming body section and a two part top cover section, the two

members constituting the cover section being hinged along parallel top edges of the side walls of the body section and having overlapping portions forming a dust barrier when held closed by integral latch elements. The reel is held against



movement within the closed container and the container, when opened, may be held in one hand leaving the user's other hand free for removing or inserting the reel and otherwise handling the same.

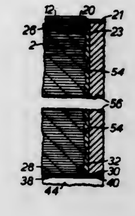
3,670,876
BAG CLOSURE MEANS
Chester P. Davis, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 1, 1970, Ser. No. 42,300
Int. Cl. B65d 85/67, 27/10, 27/16
U.S. Cl. 206—58 3 Claims



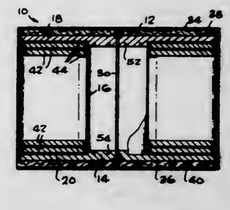
A bag for household use including an improved closure comprising a plurality of pressure adhesive strips located in spaced apart relationship on an exterior portion of the bag, and preferably extending in parallel across the entire width thereof. An offset flap portion is adapted to be folded over and attached to one or more of the adhesive strips to tightly close the bag. Accompanying closure, the bag size can be automatically adjusted to better accommodate the size of the article being packaged therewithin. Additionally, a connected series of such bags can be tightly wound on a roll and "tacked" together by the adhesive. The resultant roll is of a firm not easily disarranged character, and remains neat and in register along the ends thereof until the last bag is used.

3,670,877
PACKAGING COILS
Geoffrey Ronald Read, London, England, assignor to The British Iron and Steel Research Association, London, England
Filed April 16, 1970, Ser. No. 29,177
Claims priority, application England, May 1, 1969, 2,275/69
Int. Cl. B65d 85/66
U.S. Cl. 206—59 F 9 Claims

A coil of strip steel is packaged for export by wrapping protective material around the outer circumference of the coil with an overhanging projection around the outer circumferential edge at each end of the coil. A tube slightly longer than the coil is inserted through the eye of the coil and then the ends of the coil are sprayed with polyurethane rigid setting foam. The overhanging projections around the outer circumferential edge are provided by unwinding the outer turn of the coil and then winding it on again with narrow strips of material interposed between the outer turn and the rest of the coil.



3,670,878
APPARATUS FOR SHIPMENT AND STORAGE OF MAGNETIC MEMORY DISCS AND THE LIKE
Martin W. Seller, 4501 South Santa Fe Avenue, Los Angeles, Calif.
Filed May 11, 1970, Ser. No. 36,240
Int. Cl. B65d 71/00, 85/30
U.S. Cl. 206—62 P 15 Claims

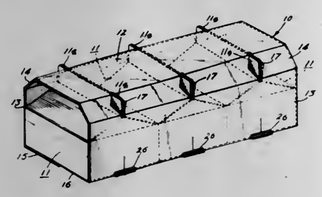


The apparatus has a tube anchor ring at each end, with each ring providing a radially directed and an axially directed surface. A tube is positioned between the rings and is engaged upon the surfaces to anchor the tube in position. Magnetic memory discs, or other similar devices, are stacked upon the tube with suitable spacers therebetween and are located between the rings. Clamping means clamps the rings together to hold the discs in place. This assembly can be employed for storage of the discs and can be packed in a carton for shipment thereof. When employed in a carton, the tube anchor rings are preferably secured to ends which are of such dimension as to engage the sides of the carton. Rubberized hair felt or similar shock-absorbing material can be packed within the carton against the ends.

3,670,879
PACKAGE SLEEVE
Elwood C. Willard, and Barbara Ann Willard, both of P.O. Box 75, Klingerstown, Pa.
Filed May 15, 1970, Ser. No. 37,608
Int. Cl. B65d 75/14, 75/06, 5/04
U.S. Cl. 206—65 D 1 Claim

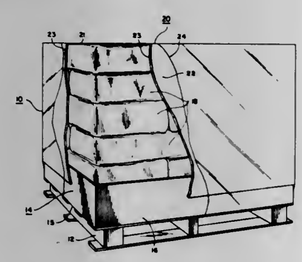
A tubular open-ended package sleeve for holding a plurality of cartons in side-by-side relationship consisting of top, bottom and side wall panels and angularly disposed top corner panels interconnecting the top and side wall panels. The

corner panels each have a plurality of equally spaced openings in them corresponding to the plurality of cartons contained



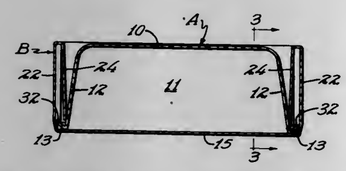
within the sleeve through which portions of the cartons project to retain the cartons within the sleeve.

3,670,880
PACKAGE FOR FLEXIBLE PRODUCTS
E. Richard Burleson, Reseda, Calif., and Carl H. Davis, Seattle, Wash., assignors to Dresser Industries, Inc., Dallas, Tex.
Filed Aug. 7, 1970, Ser. No. 61,881
Int. Cl. B65d *71/00, 85/62*
U.S. Cl. 206—65 S 4 Claims



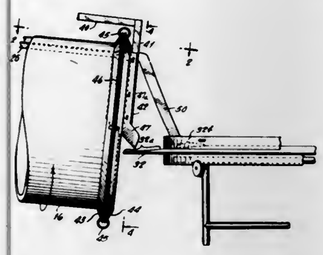
This disclosure relates to a package construction adapted for vertical stacking and shipment in which a flexible product is enclosed within a paperboard receptacle, and a paperboard cover is disposed atop the flexible product in such a fashion that the cover rests on the product and telescopes over the receptacle such that other package constructions disposed thereabove bear upon the flexible product and not the paperboard container. The package construction contains a plastic film on its outer surfaces which is shrunk wrapped thereover and is fused thereto, thereby providing weather resistant protection for the contents thereof.

3,670,881
DISPLAY CARTON
Daniel P. Dutcher, North St. Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.
Filed Jan. 7, 1971, Ser. No. 104,669
Int. Cl. B65d *25/00, 5/26*
U.S. Cl. 206—45.34 6 Claims



A tray of plastic or similar relatively rigid material is covered by a paperboard tray which may serve either as the base or cover. A channel-shaped flange projects outwardly from the open end of the plastic tray. The paperboard tray includes side and end walls connected by gusset flaps at the corners. The corners of the gusset flaps adjoining the base panel of the paperboard tray are cut away to provide abutments which engage the corners of the plastic tray flange to lock the two trays together.

3,670,882
APPARATUS FOR SEPARATING MEAT AND BONES INCLUDING BONE ELEVATOR
Lucas J. Conrad, and Raymond C. Pope, both of Winston-Salem, N.C., assignors to J. R. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Feb. 9, 1970, Ser. No. 9,513
Int. Cl. B03b *9/00*
U.S. Cl. 209—2 12 Claims



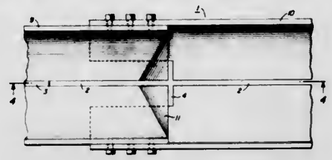
The separator is a cylindrical drum having its axis inclined to the horizontal and rotating about that axis. Meat pieces stick to the drum and are carried upwardly and deposited on a conveyor located just under the top of the drum. The bones move down the bottom of the rotating drum and fall by gravity out the lower end. The bone elevator comprises a tapered ring of increasing diameter having its smaller end mounted on the discharge end of the drum, and an oppositely facing tapered ring having its larger end adjacent the large end of the first ring. The two tapered rings have minimum diameters equal to that of the drum and are mounted in face-to-face relation and spaced apart, so as to form a V-shaped valley open at the bottom. The discharged bones fall into this groove and are trapped between the two tapered rings. They are carried up by their engagement between the rings for at least one-quarter turn of the drum. As they pass beyond that point, they either fall out of the valley or are knocked out by a stationary finger which projects into the valley. A discharge chute has a vertical portion located in alignment with the valley in the upper part of the rising side of the drum and open at the side facing the valley. The lower end of the vertical portion of the chute opens into a diagonal portion which catches the falling bones and directs them onto an inspection table. A shield mounted on the under side of the chute prevents bones from falling out through the lower quadrant of the end of the drum on its rising side.

3,670,883
METHOD FOR CONCENTRATING SLIMED MINERALS
Samuel R. Weir, Long Branch, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.
Filed Feb. 18, 1969, Ser. No. 800,281
Int. Cl. B03b *1/04*; B03d *1/00*
U.S. Cl. 209—5 7 Claims

To concentrate constituents of a mixture of slimed minerals, the mixture is formed into a well-deflocculated aqueous pulp. One (or more) of the constituents is selectively filmed with a hydrophobic coating and flocculated by intensively agitating the deflocculated pulp with a suitable selective polar-nonpolar reagent. The pulp is then allowed to settle under quiescent

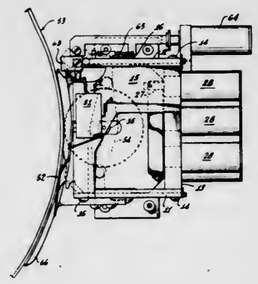
conditions (i.e., without aeration or intensive agitation). The flocculated hydrophobic particles rise and float on the surface of the deflocculated slip as loosely-bonded agglomerates. The deflocculated slip is separated from the floated matter. Separation may be carried out at higher pulp solids and with less expensive equipment than when froth flotation is employed with a slimed pulp that has been similarly conditioned.

3,670,884
NAIL SEPARATOR
Taras I. Charchalis, Baltimore, Md., assignor to Bethlehem Steel Corporation
Filed Jan. 21, 1971, Ser. No. 106,764
Int. Cl. B07b *13/04*
U.S. Cl. 209—80 4 Claims



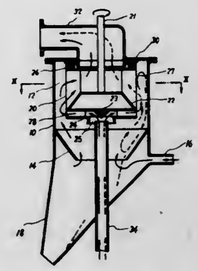
Apparatus to separate nails or similar headed articles into groups in accordance with their length.

3,670,885
SELECTOR FOR EDGE NOTCH CODED CARD-TYPE ITEMS
Norman E. Harlow, Mireleste, Calif., assignor to Image Systems, Inc., Culver City, Calif.
Filed Nov. 19, 1970, Ser. No. 91,064
Int. Cl. B07g *5/3444*
U.S. Cl. 209—80.5 8 Claims



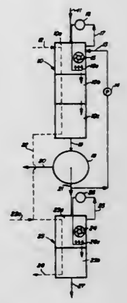
A selector for edge notch coded card-type items comprising a plurality of parallel, spaced pairs of plates movable oppositely into projected and retracted positions and, in projected position, cooperating to address a desired card-type item in a store presenting edge notches to the address plates. Magnet means, which may be rotatably mounted, cooperates with magnetic means on the coded edges of the items tending to draw the items forwardly from the store, with all but the addressed item prevented from moving forwardly by the engagement of their edges with the edges of projected address plates. Solenoid operators and spring means cooperate in the opposite movements of the paired address plates of the selector which are interconnected for simultaneous opposite movement by a lever for each pair engaged adjacent each end with one plate of the pair and having a relatively fixed pivotal axis intermediate its ends about which it rotates to effect the opposite movements of the plates in the pair. The end engagements of the lever may be through pin and slot connections to provide for rectilinear movement of the address plates while the lever rotates about its axis.

3,670,886
POWDER CLASSIFIER
Masuo Hosokawa; Tohei Yokoyama, and Fumio Nakagawa, all of Osaka, Japan, assignors to Hosokawa Funtaikogaku Kenkyusho, Osaka, Japan
Filed Aug. 5, 1970, Ser. No. 61,223
Int. Cl. B07b *7/083*
U.S. Cl. 209—139 A 4 Claims



A powder classifier having a housing, a rotary member within the housing having two sets of fins separated by a conical member and means for supplying powder to be classified into the bottom of said rotor whereby certain particles will be carried upwardly through the rotor and exhausted while other particles will fall downwardly into a suitable hopper.

3,670,887
AEROBIC DIGESTION OF SLUDGE WITH OXYGEN
John Ruben McWhirter, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of Ser. Nos. 838,499, July 2, 1969, Pat. No. 3,547,814, and Ser. No. 838,500, July 2, 1969, Pat. No. 3,547,815. This application Dec. 14, 1970, Ser. No. 97,706
Int. Cl. C02c *1/06*
U.S. Cl. 210—5 11 Claims



BOD-containing water such as sewage is aerated with oxygen and unrecycled sludge is digested with unconsumed oxygen from the aeration.

3,670,886
METHOD OF SEPARATION OF WAX FROM OIL

Raymond Milton Beveridge, Walton-on-Thames, and John Wilson Redman, Horsham, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Dec. 30, 1970, Ser. No. 102,905
Claims priority, application Great Britain, Jan. 7, 1970, 795/70
Int. Cl. B01d 21/26
U.S. Cl. 210—71 7 Claims

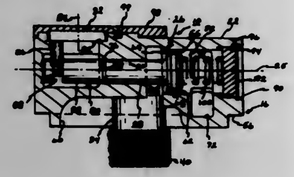
Wax is separated from a wax-oil mixture by centrifuging at a temperature below 30° C. and below the pour point of the mixture, by first of all agitating the mixture to render it mobile. The agitation, which should not reduce the wax crystal size below 50 microns, may be stirring for e.g. 1–120 minutes at e.g. 50–1000 r.p.m. with a superimposed beating or whisking set in. Preferably gas e.g. air is entrained with a 5–20 percent increase in volume. The centrifuging, preferably filtration centrifuging, may use forces of 150–3,500 G and times of 5 seconds – 15 minutes.

Preferred feedstocks are 250°–550° C. petroleum fractions, the 450°–550° C. fractions preferably having a gas oil diluent.

3,670,889
FLUID FILTER DEVICE HAVING BYPASS AND INDICATOR MEANS

Carl A. Brown, Birmingham, and Frederick L. Walter, Orchard Lake, both of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed June 1, 1970, Ser. No. 42,030
Int. Cl. B01d 27/10
U.S. Cl. 210—90 1 Claim



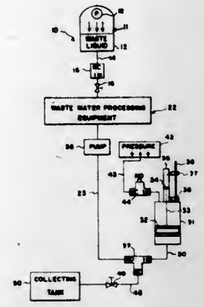
A fluid filter device of the type wherein a portion of the housing containing the filter element is adapted to be spun off from a cap member and to be disposed of with the filter element. The cap member is provided along with an inlet and an outlet respectively in fluid communication with the exterior and interior of the filter element for filtering fluid passing therethrough. A pressure responsive bypass valve is operable to directly connect the inlet with the outlet when the filter element becomes clogged by a predetermined amount. The bypass valve includes means operatively connecting it to an indicating means mounted exteriorly of the filter device to provide a visual indication to an attendant of the condition of the filtering element and the position of the bypass valve.

3,670,890
LIQUID WASTE FEED SYSTEM

John B. Hall, Jr.; Yi Tung, both of Newport News, and Lavern E. Winn, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 15, 1970, Ser. No. 3,151
Int. Cl. B01d 43/00
U.S. Cl. 210—104 9 Claims

A pressurized liquid waste tank feeds liquid waste into liquid waste processing equipment. The processed liquid is pumped into an accumulator tank which has an actuator that opens and closes microswitches as the accumulator tank is filled and emptied. These microswitches control solenoid valves which are located in the lines feeding the liquid waste processing equipment, the accumulator tank and the collecting tank. An electrical circuit ties together the switches and

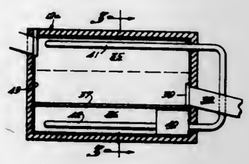


valves in a manner such that sufficient waste liquid is automatically maintained in the liquid waste processing equipment to give optimum system performance in a zero gravity environment.

3,670,891
MICROWAVE SEWAGE TREATMENT SYSTEM

Wallace Peyton Allen, 1447 N.W. 36th Street, Miami, Fla.

Filed May 4, 1970, Ser. No. 34,279
Int. Cl. B01d 21/24
U.S. Cl. 210—128 3 Claims



A sewage treatment system using microwave electromagnetic energy to sterilize raw sewage on a continuous basis is described. A holding tank for receiving the raw sewage at an inlet port periodically discharges pre-determined amounts of sewage into a treatment tank wherein the sewage is subjected to microwave radiation of such intensity over a pre-determined time interval as will destroy bacteria not only by heat induced in the raw sewage but also by the oscillatory effects of the radiation on the organisms.

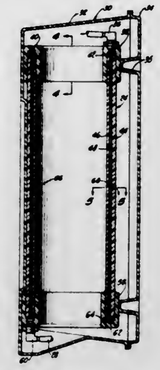
3,670,892
REVERSE OSMOSIS APPARATUS

William Soerg, 1992 Lennox Drive, Costa Mesa, Calif., and Pierre St. Guilhem Humber, 338 Solana Lane, Costa Mesa, Calif.

Filed Nov. 6, 1969, Ser. No. 874,641
Int. Cl. B01d 39/18, 31/00
U.S. Cl. 210—134 13 Claims

A reverse osmosis unit in which the membrane has a supported side and an unsupported side, with a liquid product reservoir in communication with the supported side, and a feed liquid chamber in contact with the unsupported side. The unit includes means to maintain the pressure of the feed liquid at a sufficiently high level to prevent the flow of liquid through

the membrane from the supported side to the unsupported side when the inlet to the feel liquid chamber is closed. A

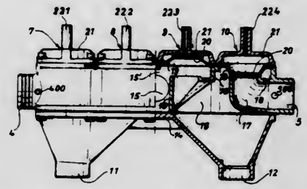


reverse osmosis unit in which the membrane is supported by a porous layer material containing activated charcoal.

3,670,893
CONTROL ARRANGEMENT FOR A SWIMMING POOL FILTER

Volker Said, Hollbrunn, Germany, assignor to Cillichemie Ernst Vogelsmann, Hollbrunn, Germany

Filed Feb. 3, 1971, Ser. No. 112,315
Claims priority, application Germany, April 23, 1970, P 20 19 691.2
Int. Cl. B01d 37/00
U.S. Cl. 210—138 10 Claims



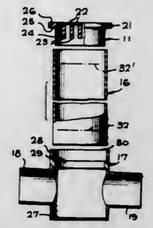
The control arrangement for a swimming pool filter includes two pairs of control valves, the discharge port of the first valve in each pair being coupled to the intake port of the second valve. The intake ports of the first valves are connected by a high-pressure conduit to the output end of the filter pump whose input end draws water from the pool. Two low-pressure conduits connect the discharge ports of the second valves to the pool and to a waste line respectively. The filter is connected by by-pass lines to the coupled ports between the valves in each pair. A single operating mechanism is connected to all valves and operates the same in timed sequence in which the valves direct water flow from the pump either through the filter in a first direction to the pool, or through the filter in the opposite direction to a waste line, or ultimately directly from the pool to the waste line.

3,670,894
GROUND SURFACE DRAINAGE APPARATUS

Edward L. Friedl, 14751 Bassemer Street, Los Angeles, Calif.

Filed Jan. 19, 1970, Ser. No. 4,153
Int. Cl. E03f 1/00
U.S. Cl. 210—164 4 Claims

In the ground surface drainage apparatus, a monolithic catch basin has a side outlet from which drain water can flow. The catch basin is tubular, with an open top. Interiorly of the catch basin, below the open top, is a stop. A vertical extension pipe of selectable length is inserted into the catch basin down

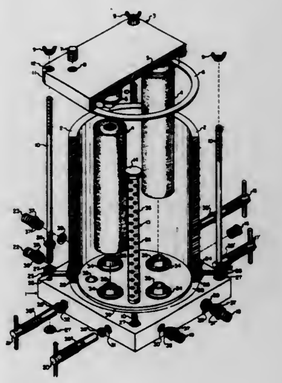


to the stop and extends up to near the ground surface. A grate rests in the top of the upright extension. All parts preferably are made of synthetic polymer composition material.

3,670,895
FLUID FLOW CONTROL APPARATUS FOR FILTER UNITS IN A FILTRATION SYSTEM

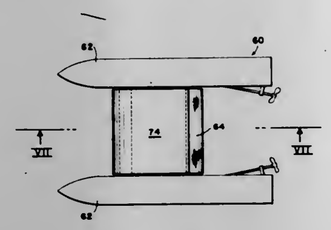
Kenneth Wayne Goodpasture, c/o Dixon Industrial Park, Dixon, Ill.

Filed July 29, 1970, Ser. No. 59,108
Int. Cl. B01d 29/38
U.S. Cl. 210—167 7 Claims



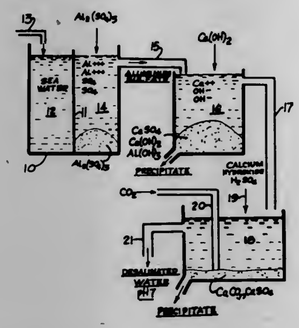
A unitary filtering device, wherein the mounting base contains an internal network of interconnected ducts having a first inlet duct and a first exit duct and a plurality of access holes each connected therewith, a second inlet duct and a second exit duct, and a valve channel individual to each of the first and second inlet and exit ducts. Anchor bolts are secured to the base and engaged by a clamp, gripping the outer surface of a hollow cylinder near one end, for sealing the one end against the base, in such a position that the access holes are surrounded thereby. A plurality of hollow tubular filter elements are each mounted at one end over a corresponding one of the access holes, with a top cover positioned over the other end of the cylinder and engaged by the anchor bolts for sealing the other end of the cylinder thereto. Plug-ended valve stems are mounted within each valve channel and are movable in longitudinal directions to either of two predetermined positions therein for establishing either a filtering route or a backwashing route within the device.

3,670,896
APPARATUS FOR REMOVING OIL FROM A BODY OF WATER
Frank E. Hale, Jr., 1638 Santa Barbara Street, and Frank E. Hale, Sr., 4005 Santa Cruz Avenue, both of San Diego, Calif.
Filed Jan. 22, 1971, Ser. No. 108,839
Int. Cl. E02b 15/04
U.S. Cl. 210—242 2 Claims



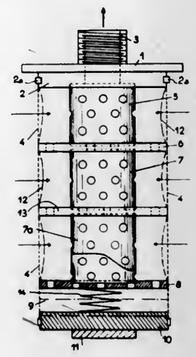
Apparatus and method for removing a liquid hydrocarbon material, such as oil, from a water surface wherein the apparatus includes a collection surface which is moved into and out of the water, the collection surface being made of a material including a high molecular weight solid hydrocarbon which is wettable with oil so that when the surface emerges from the water the oil collected by adsorption is wiped from the surface and collected.

3,670,897
DESALINATION OF SEA WATER
Bruce S. Frank, 7057 North Fairchild Circle, Milwaukee, Wis.
Filed March 20, 1970, Ser. No. 21,301
Int. Cl. B01d 31/00, 13/00
U.S. Cl. 210—321 4 Claims



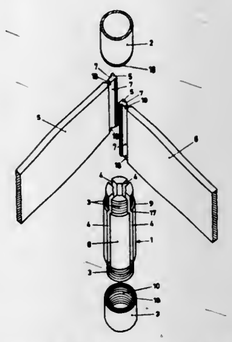
Desalination of sea water is accomplished by use of osmosis wherein there is a saline water chamber and a chamber having a concentrated solution of an intermediate or precipitable soluble salt, such as aluminum sulfate, the chambers being separated by a semipermeable membrane. Fresh water will pass from the saline or sea water to the salt solution without use of pressure. The excess concentrated salt solution in the second chamber passes to a third chamber or place where salt is removed by being brought into contact with a precipitant such as calcium hydroxide in the case of aluminum sulfate.

3,670,898
FILTER HAVING A FLEXIBLE WALL FOR FILTERING LIQUIDS
Eugene Fournier, 84 Chateauneuf De Gadagne, France
Filed June 17, 1970, Ser. No. 47,100
Claims priority, application France, June 20, 1969, 6920776
Int. Cl. C03b 3/00
U.S. Cl. 210—356 6 Claims



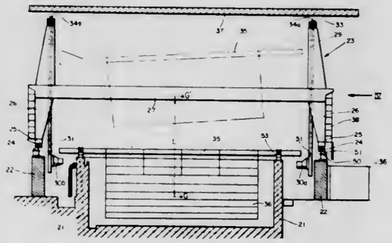
An apparatus for filtering a fluid medium, for example, dirty swimming pool water, comprises a hollow filter sleeve having a flexible wall which wall is caused to deform by the pressure of fluid medium flowing through the wall. The end of the sleeve is attached to a member which on reduction of the pressure of the fluid flowing through the wall causes the wall to straighten and assume its original position thereby causing debris resting on the wall to be moved from the wall.

3,670,899
RAIL CONNECTION
Hans Kronenberg, Lucerne, and Dionys Gmur, Wetzikon, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland
Filed Nov. 14, 1969, Ser. No. 876,888
Claims priority, application Switzerland, Nov. 15, 1968, 17212/68
Int. Cl. A47f 5/00; F16b 7/04
U.S. Cl. 211—182 4 Claims



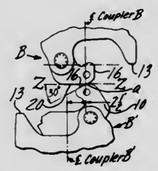
A rail connection arrangement comprising a rail, a support arranged substantially perpendicularly to the rail and comprising a holding device provided with slot means and an exterior thread, the support also comprising a spacer with a portion having an interior thread engaged by said exterior thread, the rail being received in the slot means and fixedly held therein between the holding device and the spacer, the portion of the spacer having the interior thread is made of a material which is harder than that of the remainder of the parts in the above combination.

3,670,900
LOW-DECK TRUCK FOR CARRYING AN ARTICLE TO BE TREATED
Riyokichi Ito, Tokyo, Japan, assignor to Katsukawa Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed June 4, 1970, Ser. No. 43,540
Claims priority, application Japan, Feb. 17, 1970, 45/13694
Int. Cl. B66c 5/04
U.S. Cl. 212—14 1 Claim



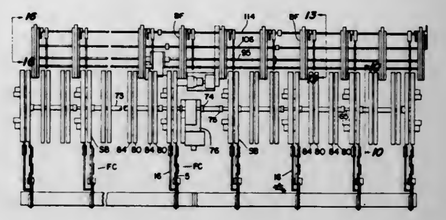
A low-deck truck for carrying an article to be treated during the treating process, adapted so as to raise the article from a liquid treating vessel as being in slanted position for dropping off the liquid therefrom at least in some part of its travel from the treating vessel up to a predetermined uppermost position. A pair of tapered drums are provided for winding up two ropes, respectively, which ropes have a pair of brackets secured to the lower ends thereof so as to be engageable with a carrier bar holding the article. The two tapered drums are so actuated as to wind the two ropes at different speeds.

3,670,901
CAR COUPLER
William J. Metzger, East Cleveland, Ohio, assignor to Midland-Ross, Cleveland, Ohio
Filed Dec. 28, 1970, Ser. No. 101,979
Int. Cl. B61g 3/04
U.S. Cl. 213—151 9 Claims



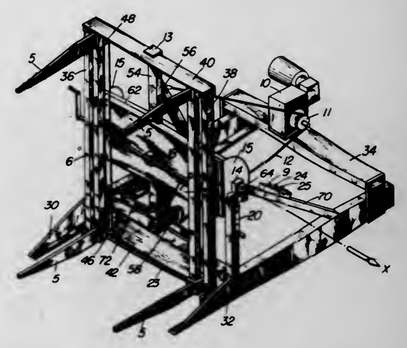
A railway car coupler of the knuckle type in which the contour of knuckle is modified so as to increase the gathering range of the coupler especially during knuckle-to-knuckle engagement between the couplers as they come together for coupling from positions in which they are displaced laterally of the longitudinal center line of the car.

3,670,902
BAR UNSCRAMBLER
Irving Leonard Kaplan, Cleveland Heights, Ohio, assignor to Carl Krasny & Associates, Inc., Cleveland, Ohio
Filed Nov. 19, 1969, Ser. No. 878,132
Int. Cl. B23q 5/22
U.S. Cl. 214—1 P 6 Claims



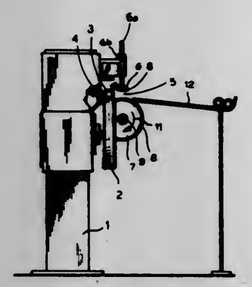
A bar unscrambler is provided consisting of feed cradles, shuffle bed modules, and bar feeder units, which are so arranged as to effectively and progressively unscramble or separate bars and the like from a bundle of bars and from each other. The feed cradles are provided with elements having a walking beam type of movement. The shuffle bed modules comprise mainly walking and fixed beam components, the walking beam components functioning also to activate the aforesaid feed cradle elements. The bar feeders have incorporated therein bar stops effective to temporarily restrain movement of the unscrambled bars, and have also incorporated therein bar selectors designed to individually move the restrained bars to a transfer mechanism or the like, the movements of the bar selectors being synchronized to avoid interference with the bars as they move to the bar stops. Provision is also made for adjusting the position of the bar stops to accommodate bars of different sizes or dimensions.

3,670,903
SKID INVERTING DEVICE
Otis L. Hamilton, 425 East 4450 North, Provo, Utah
Filed Dec. 3, 1969, Ser. No. 881,757
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q 11 Claims



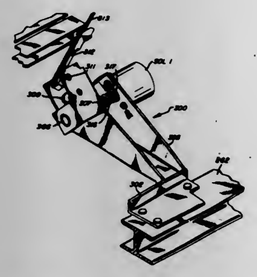
A device for inverting a generally planar object which comprises a means for holding said object on its upper plane and its lower plane, means for tilting said object about a fixed axis so that said planes are generally vertical, said object and said holding means being rotatable about the vertical axis of said object 180° and means for re-tilting said object so that said object returns inverted to its original position.

3,670,904
APPARATUS FOR COLLECTING GLASS TUBES AT THE END OF A PRODUCTION
Vandrido Olivetto, Via Carlo Capelli 85, Turin, Italy
Filed Feb. 17, 1971, Ser. No. 116,017
Claims priority, application Italy, March 23, 1970, 67984 A/70
Int. Cl. B65g 47/74
U.S. Cl. 214—1 P 4 Claims



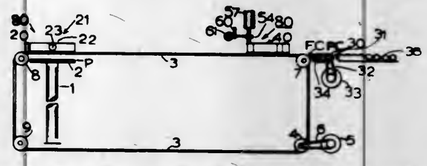
A glass tube production line in which glass tube sections are conveyed lengthwise along a conveyor at high speed is provided with frictional braking means for annulling the lengthwise speed of each tube section, permitting collection of the latter on a surface at one side of the conveyor. The braking is effected by ejecting the glass tube sections laterally from the conveyor so that they enter transverse passages defined between respective pairs of braking elements, each passage tapering in width so that each tube section is braked by contact with surfaces of friction material on the braking elements as it passes through said passages.

3,670,905
OBSTRUCTION DETECTION MEANS FOR MATERIAL HANDLING DEVICE
Arthur R. Burch, Plainwell, and Charles E. Bates, Battle Creek, both of Mich., assignors to Clark Equipment Company
Division of Ser. No. 543,229, April 18, 1966, Pat. No. 3,536,209. This application July 23, 1970, Ser. No. 57,747
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 1 Claim



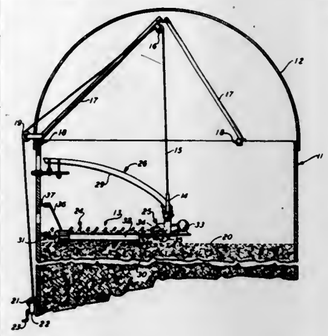
An obstruction detecting device is disclosed for material handling systems such as an automatic storage system wherein a stacker vehicle with a lateral platform is utilized to transfer material units between the vehicle and a selected storage bin. Probe means are mounted adjacent the lateral platform and a probe element is adapted to move through a portion of the selected bin to detect the presence of an obstruction in the bin. The probe element includes an actuator which causes pivotal motion thereof in response to positioning of the platform in alignment with the bin. The probe means is provided with signal means to disable the power operator for the lateral platform if a material unit or other obstruction is encountered in the bin and to enable the power operator if the bin is empty.

3,670,906
ARTICLE LOADING SYSTEM
Frank H. Miller, Jr., Louisville, and David L. Witherspoon, Anchorage, both of Ky., assignors to Miller Engineering Corporation, Louisville, Ky.
Filed Jan. 14, 1970, Ser. No. 2,777
Int. Cl. B65g 57/24
U.S. Cl. 214—6 P 5 Claims



Discloses a feed conveyor and a main or receiving conveyor in the form of an endless belt trained over two or more sprockets and containing a series of openings or apertures through which articles on the conveyor are fed gravitationally onto an elevator. A fixed stop is located over the elevator so that articles, fed onto the conveyor, are selectively turned so as to form an open pattern in an accumulating zone on said conveyor and ultimately come into abutting relation with the stop. The open pattern is closed and is held in fixed position until one of said apertures comes into registry with the elevator below the fixed stop so that the layer or pattern of articles held in said position pass gravitationally through said aperture onto a pallet on said elevator platform. A unique control system involves the use of an auxilliary control conveyor driven in synchronism with the main conveyor and which contains actuating members in the form of cams judiciously placed so as to actuate control members, such as limit switches or pneumatic valves to perform specific functions at specific points on said conveyor.

3,670,907
SILO UNLOADER
James H. Downing, Mineral, Va., assignor to Harris Company, Inc., Mineral, Va.
Filed April 30, 1970, Ser. No. 33,298
Int. Cl. B65g 65/38
U.S. Cl. 214—17 DB 16 Claims



A leveling device for the wheel-driven frame of a silo unloader which encloses means for transporting ensilage over

which it travels, the inner end of which is supported at about the silo center and the outer end of which is rotatable thereabout near the silo wall, comprising means for raising or lowering said outer end depending upon the angle the frame makes with the wall of the silo, said means comprising a wall-engaging wheel, a first arm on which said wheel is mounted to position it at a selected location above the frame, a shaft pivoted in said frame and to which said arm is rigidly connected, a second arm rigidly connected to said shaft, generally parallel to the frame and shorter than the first arm, a bar extending through a slot in and at approximately right angles to the frame to move up and down therein, means pivotally connecting the free end of said second arm to said bar, and means connecting the ends of said bar to the respective unloader driving wheels, so that as the wall wheel moves up or down along said wall it simultaneously effects lowering or raising of the frame outer end with respect to said driving wheels.

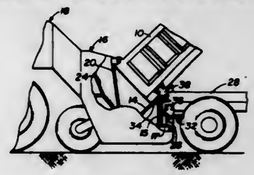
3,670,908
GLASS FURNACE WITH TRIPLE BATCH CHARGING AND METHOD
James F. Stevenson, West Hartford, Conn., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Jan. 15, 1971, Ser. No. 106,701
Int. Cl. C03b 3/00
U.S. Cl. 214—24 9 Claims



The upstream end of a rectangular glass melting furnace is provided with a doghouse of isosceles trapezoidal shape having three openings through which batch material is introduced in discrete elongated masses, or charges by three batch chargers. Two out of three batch chargers in these openings are operated simultaneously in a predetermined sequence. The two side batch chargers operate along angularly related lines of action which converge with one another at a point also located on the line of action of the center batch charger. During operation of the two angularly related side chargers a composite batch, or mass, is formed so as to travel in a downstream direction in the furnace, and by operation of the center batch charger with one or the other of the two side batch chargers a composite mass or batch is directed angularly outwardly with respect to the downstream direction. Thus, operation of three batch chargers, in pairs, in a sequential fashion, provides a convenient means and method for charging a furnace at a rate double the rate possible with a single charger, or with two chargers operated alternately. Further, the three chargers can be operated in alternate pairs at their respective optimum speeds to provide the desired distribution of batch across the furnace.

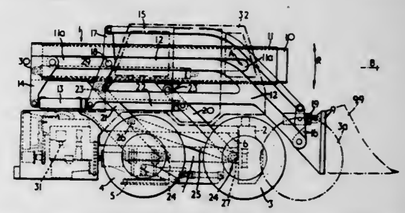
3,670,909
AGGREGATE HANDLING METHOD AND SYSTEM
John H. Holland, Norman, Okla., assignor to The J. H. Holland Company
Filed April 6, 1970, Ser. No. 25,681
Int. Cl. B65g 67/02
U.S. Cl. 214—43 4 Claims

A method for transferring crushed rock from a dump truck to the hopper of a paving machine without danger of spillage by interlocking the rear end of the dump bed with the upper portion of the hopper when the dump bed is raised into position to dump into the hopper. The hopper is provided with an upwardly extending centrally located bumper which is adapted to engage and push the rear end of the truck frame



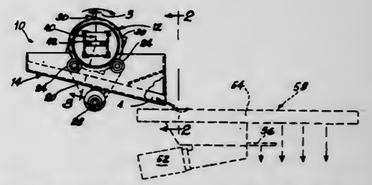
during the time the dump bed is raised to transfer aggregate from the dump bed into the hopper while permitting the truck to pivot relative to the hopper.

3,670,910
MOBILE LOAD HANDLING OR LIFTING MACHINES
Donald George Shaw, Allbrighton, England, assignor to Shaw, Trew & Smith Limited, Shifnal, Shropshire, England, a part interest
Filed July 23, 1970, Ser. No. 57,536
Int. Cl. E02f 3/00
U.S. Cl. 214—141 2 Claims



A mobile machine for load handling or lifting purposes is disclosed in which an attachment head, for receiving load handling means attached to it, is carried for raising and lowering movement by forwardly extending parallel motion linkage pivotally connected to a forwardly extendible and rearwardly retractable member of a telescopic boom longitudinally carried by an extendible wheeled chassis of the machine, the boom being also arranged to be bodily advanced or retracted relative to the chassis by support linkage which is linked to the chassis for fore and aft extension of the latter to counteract the machine against forward tipping movement on such bodily advance of the telescopic boom.

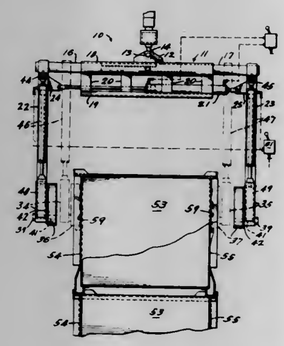
3,670,911
SILVERWARE LOADING APPARATUS
Ralph Ettinger, Jr., Highland Park, and Frederick P. Strobl, Jr., Park Ridge, both of Ill., assignors to Avent Industries, Inc., Wheeling, Ill.
Filed July 31, 1970, Ser. No. 59,940
Int. Cl. B65b 21/02
U.S. Cl. 214—312 8 Claims



An apparatus for loading silverware onto an adjacent surface such as a silverware sorting construction. The apparatus

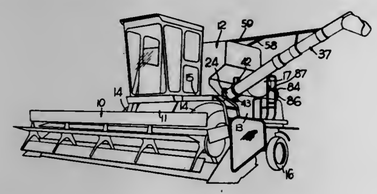
comprises a rotating drum having an opening or openings in its side wall for the passage of silverware out of the drum. A removable receptacle may be located in the drum for loading the drum with silverware. As the drum rotates, the silverware is removed from the drum at a relatively regular rate.

3,670,912
CONTAINER HANDLING APPARATUS
Glenn G. Dunbar, 2608 Overlook Drive, Toledo, Ohio
Filed March 16, 1970, Ser. No. 19,873
Int. Cl. B65g 7/00
U.S. Cl. 214—313 3 Claims



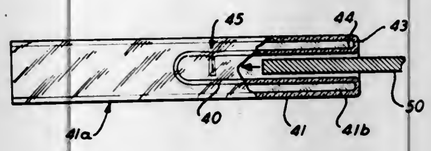
This invention relates to a container handling apparatus for use with a container having opposed geometrically enclosed female members on its sidewalls. Two opposed shoulder members extend outwardly from a support frame. A cylinder and guiding mechanism equally and simultaneously move the shoulder members. A depending arm is attached to each of the shoulder members and a rotatable male engaging member is connected to the distal end of each of the depending arms. The male engaging members have a shape complementary with the enclosed female members and power cylinders are provided for rotating the male engaging members.

3,670,913
BIN UNLOADER BREAK BACK SYSTEM
Robert S. Reaves, Blue Springs, Mo., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed April 19, 1971, Ser. No. 135,304
Int. Cl. B60p 1/42
U.S. Cl. 214—522 10 Claims



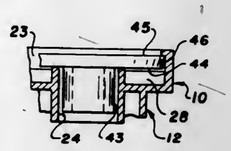
This disclosure is concerned with providing an improved swingable unloading auger conveyer for a combine harvester in that it provides assistance in swinging the auger conveyer from a transport to the unloading position; it provides an automatic means of aligning the driving elements of the auger so that they become properly indexed during the previously mentioned positioning operation; and it provides a safety release in case the unloading conveyer when in unloading position hits some obstruction this safety release being in the nature of a break back brace member having a frictional engagement and with the aforementioned swinging assist functioning as an energy absorbing element during the break back.

3,670,914
BREAK SEAL
Stephen D. Poulsen, Jr., Florham Park, N.J., assignor to Airco, Inc., New York, N.Y.
Filed May 21, 1970, Ser. No. 39,193
Int. Cl. B65d 47/10
U.S. Cl. 215—32 5 Claims



This invention relates to an improved form of break seal which is especially adapted to be used as a closure for a container or which may otherwise be used to form a hermetic seal in laboratory equipment. In its preferred form the break seal is fabricated from soft or borosilicate glass and takes the form of an external tube joined to an internal test tube having an indentation in its sidewall. The indentation forms a weak point in the sidewall of the test tube and in the event that the seal is to be broken an actuating device is pressed against the indentation causing a rupture in the sidewall of the glass tube.

3,670,915
MULTI-PURPOSE STOPPER
William E. Forman, 4817 Glendale Avenue, Delta, British Columbia, Canada
Filed Feb. 12, 1971, Ser. No. 114,859
Int. Cl. B65d 41/28
U.S. Cl. 215—48 10 Claims

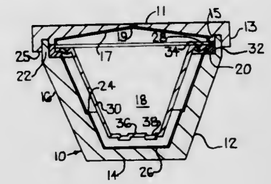


A stopper having a tubular adapter provided with flexible flanges which are deflected into sealing engagement with the side of an opening in a wine jug when the adapter is pressed therein. The tubular adapter will support a fermentation lock in operating position on the jug or, alternatively, a cap is fitted to the adapter in one position to act as a normal closure for the jug and in another inverted position to serve as a combined closure and safety valve.

3,670,916
FOOD CONTAINERIZATION
Arnold L. Alpert, 633 Olmstead Avenue, Bronx County, N.Y.
Filed Feb. 19, 1970, Ser. No. 12,686
Int. Cl. B65d 25/18
U.S. Cl. 220—9 F 9 Claims

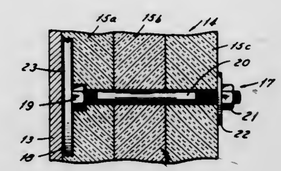
An insulated food container is provided having an outer vessel formed at least in part of heat-resistant material and having sides which terminate in a peripheral rim portion with an inwardly disposed peripheral ledge. An inner vessel adapted to hold the food has a peripheral flange which rests on the ledge of the outer vessel and positions the inner vessel inwardly with

respect to the outer vessel to define an insulating air space therebetween. A protective annular ring fabricated from material of higher heat distortion resistance than the outer vessel is disposed on the peripheral ledge of the outer vessel beneath the flange of the inner vessel. The container is closed



by a lid having suitable means to sealably engage the rim portion of the outer vessel and has a conically shaped portion, the vertex of which is fracturable under high internal pressure to provide relief of the vapor pressure that may accumulate within the container.

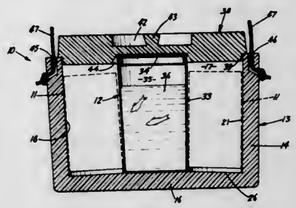
3,670,917
STORAGE TANKS FOR ULTRA LOW TEMPERATURE LIQUIDS
Ko Nishimaki, and Isamu Yoshikawa, both of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd.
Filed Nov. 4, 1970, Ser. No. 86,850
Int. Cl. B65d 7/22
U.S. Cl. 220—10 7 Claims



Fastening means for attaching a heat-insulating layer to an ultra low temperature liquid storage tank, comprising a fastening member of the same material as the tank and bonded to the outer surface of the tank by a low temperature adhesive thereby substantially preventing stresses from developing in the adhesive layer between the fastening member and the tank as a result of large variations in temperature. A nut is welded to the fastening member and a fastening bolt made of a synthetic resin of low thermal conductivity is studded in the nut. The bolt is used to fasten the heat-insulating layer to the outer surface of the tank, thereby firmly fastening the beat-insulating layer to the tank while satisfactorily suppressing heat transfer between the tank interior and the outside.

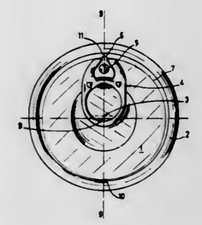
3,670,918
THERMAL CONTAINER ASSEMBLY
Kenneth A. Mitchell, 4704 Stevens Avenue South, Minneapolis, Minn.
Filed Sept. 4, 1970, Ser. No. 69,799
Int. Cl. B65d 1/24
U.S. Cl. 220—20 21 Claims

A hexagonal-shaped container having an upright wall formed with inside upright recesses for positioning a plurality of cans or bottles around a member for holding a solid or fluid,



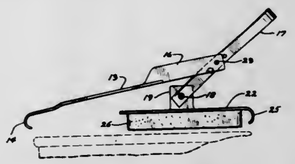
as water or heat sink material. A cover, located over the member, closes the top of the container.

3,670,919
EASY OPENING LID FOR CANS
Gerard Prayer, and Jean-Marie Perrat, both of La Fleche, France, assignors to Cebal GP, Paris, France
Filed Feb. 8, 1971, Ser. No. 113,400
Claims priority, application France, Feb. 27, 1970, 7007117
Int. Cl. B65d 17/24
U.S. Cl. 220—54 5 Claims



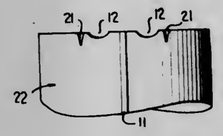
The invention relates to lids known as "easy complete opening lids" in which the tear line is in the form of a circle which is eccentric with respect to the lid.

3,670,920
SEALING DEVICE FOR EASY OPENING CANS
Myles A. Rohrlick, 5 Maume Circle, Hampton, Va.
Filed Dec. 22, 1970, Ser. No. 100,694
Int. Cl. A47J 27/08
U.S. Cl. 220—57 6 Claims



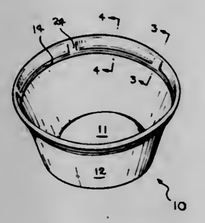
An external sealing device that can be easily manufactured, and provides positive sealing for the openings of previously opened quick opening cans. The device is made to form a lever action so that positive sealing can be achieved.

3,670,921
STRESS RELIEVED CONTAINER AND METHOD OF MAKING SAME
Herbert D. Bartels, Palos Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,304
Int. Cl. B65d 7/34
U.S. Cl. 220—75 14 Claims



This disclosure relates to a metal container, and more particularly to a thin walled, metal can having a welded side seam and wherein at least one end thereof is necked-in and then outwardly flanged so as to receive an end of a reduced diameter. In order to prevent edge cracking during the flanging operation adjacent the welded seam, the necked-in edge of the can body is provided with a shallow notch on each side of the welded seam. In addition, in order to prevent wrinkling of the metal in alignment with the notches during the necking-in operation and subsequent fracture along the areas of wrinkling during flanging, the end edge portion of the blank from which the can body is formed is provided with stress relief indentations adjacent the notches.

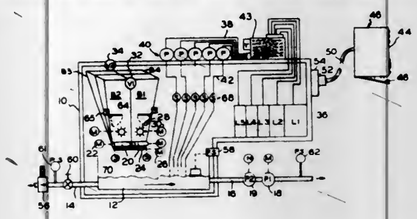
3,670,922
NESTABLE CUP
Julius Phillips, Bronx, N.Y., assignor to Owens-Illinois, Inc.
Filed Dec. 4, 1970, Ser. No. 95,255
Int. Cl. B65d 21/00, 43/10
U.S. Cl. 220—97 C 3 Claims



A one-piece nestable cup is provided with a top rim portion which serves as the upper stacking shoulder for supporting a like container nested therein. A lower stacking shoulder having a greater peripheral extent than the minimum peripheral extent of the top rim is spaced from the top rim and is joined thereto by means of an upwardly and inwardly inclined stacking ring. The stacking ring is provided with a plurality of circumferentially spaced apart lead-in portions to facilitate the engagement of a disc-type lid in an annular groove positioned below the lower shoulder.

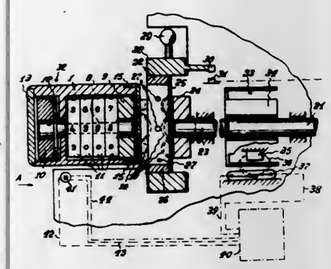
3,670,923
CONTROL SYSTEM FOR MULTIPLE INGREDIENT DISPENSING APPARATUS
Roland J. Hawes, Jr., and Milton P. Daniel, both of Boise, Idaho, assignors to said Hawes, by said Daniel
Filed May 4, 1970, Ser. No. 34,325
Int. Cl. B67d 5/14
U.S. Cl. 222—2 25 Claims

A dispensing apparatus meters a plurality of different microingredient feed additive supplements for livestock or poultry simultaneously into a fluent carrier material which conveys the various supplements to a feedmill, a drinking water supply or any other desired point. Each different supplement is stored and metered separately and independently of the others through an electric motor-driven metering device.



Control and monitoring of the machine operations takes place at a remote control panel and box. Decisions as to what combination of supplements to feed and in what amounts are preprogrammed using prepunched plates inserted over a bank of microswitch plungers at the control box which determine which motors at the machine operate and at what speed.

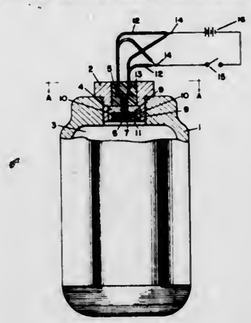
3,670,924
VENDING SYSTEM USING A VALUE STORING KEY
Theodor Asper, Bergwerkstrasse 37, Horgen, Switzerland
Filed Sept. 1, 1970, Ser. No. 68,660
Claims priority, application Switzerland, Sept. 19, 1969, 14200/69
Int. Cl. G07f 13/00
U.S. Cl. 222—2 8 Claims



A self-service system for obtaining vendible products or services in which a release key is used, this key incorporating a tally which is set for the purchase of products or services up to a certain value and also having sensing means to co-operate with a product or service dispenser, so that the tally is devalued according to the value dispensed with the tally indicating goods or service value dispensed, the key being ineffective when the set value is exhausted, the sensing means operating by co-operating permanent magnets between the key and dispenser and pulse producing control means.

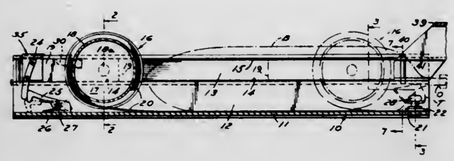
3,670,925
EXPLOSIVELY ACTIVATED GLASS VALVE
Donald A. Moyant, Phoenixville, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
Filed Oct. 28, 1969, Ser. No. 871,923
Int. Cl. B67b 7/00
U.S. Cl. 222—3 13 Claims

A valve having an internally stressed, hermetically sealed glass barrier to the passage of fluids. An explosive charge opens the valve by pulverizing the glass barrier. Three embodiments are disclosed: a charge imbedded in the glass, a



shaped charge directed at the glass, and a charge placed near the edge of the glass outside the conduit for the fluid.

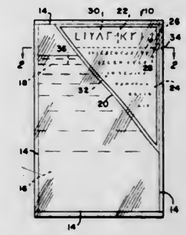
3,670,926
INTRAVENOUS FEEDING APPARATUS
Charles C. Hill, Ann Arbor, Mich., assignor to Power Technology Corporation, Ann Arbor, Mich.
Filed Sept. 11, 1969, Ser. No. 857,151
Int. Cl. B67d 5/22
U.S. Cl. 222—47 18 Claims



An intravenous feeding device comprising a base, a drum movable along a track on said base and a constant tension coiled spring having one end thereof fixed to the drum and the other to the base so that when a collapsible container is positioned, the drum acts upon the collapsible container to dispense the contents of the container. A latch is provided for locking the drum with the spring in its extended position and acceleration and position responsive means are provided for locking the drum in the event that the drum is released during loading or in the event that the material is dispensed at excessive speed or in the event that one end of the base is elevated beyond a predetermined angle. Gauge means are provided for indicating the rate at which fluid is dispensed.

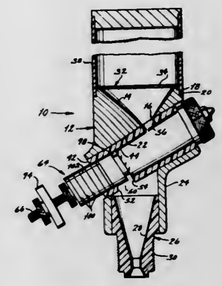
3,670,927
METHOD AND MEANS PROVIDING DOSAGES OF ORAL HYGIENIC SUBSTANCE
Alan M. Hubbard, 62 Hill Street, Morristown, N.J.
Filed March 25, 1970, Ser. No. 22,557
Int. Cl. B65d 33/38, 77/38
U.S. Cl. 222—107 1 Claim

Envelope of supple material, such as plastic, having a sealed chamber confines the substance. The chamber is formed with a narrowing portion, and the envelope has a cut in one side adjacent the narrowing portion to insure a tearing open of the envelope across the narrowing portion. Thus, a restricted pouring nozzle is provided. The envelope has a stiffener therewithin to make it handy to hold during pouring. Also, the



stiffener cooperates with the cut to facilitate a tearing of the envelope across a predetermined line.

3,670,928
POWDER METERING DEVICE FOR LOADING AMMUNITION
Roy R. Hanson, 155 Cumberland Drive, Maryland Heights, Mo.
Filed Jan. 26, 1970, Ser. No. 5,620
Int. Cl. G01f 11/06
U.S. Cl. 222—288 28 Claims



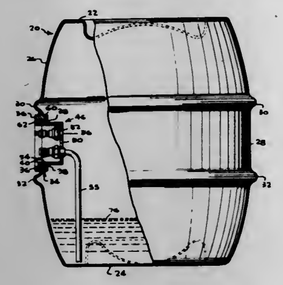
A powder metering device includes a powder reservoir, a pouring conduit below the reservoir and an elongated cylindrical channel between the reservoir and the pouring conduit. Inlet and outlet openings provide communication into the channel from the reservoir and the pouring conduit, respectively. A cylindrical slide having a reduced diameter portion intermediate its length is slidably mounted in the channel. The reduced diameter portion provides a metering chamber for receiving powder from the inlet conduit and for emptying the powder out of the outlet conduit. The opposite ends of the metering chamber are movable toward and away from one another so as to vary the size of the metering chamber.

Grooves on the slide prevent shearing off of powder particles as the slide moves past the inlet opening. Emptying means on the powder reservoir permit the removal of unused powder without the necessity of inverting the metering device.

3,670,929
BEVERAGE DISPENSING KEG
Harry E. Berry, Hollywood, Fla., assignor to Richard Kerek; John Kerek, Cleveland, Ohio and R. E. De La Hunt, part interest to each
Filed Jan. 27, 1970, Ser. No. 6,150
Int. Cl. B65d 83/00
U.S. Cl. 222—400.7 3 Claims

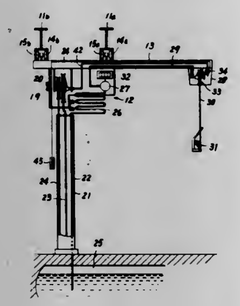
A beer keg construction having only a single access aperture opening midway between the top and bottom of the side

wall of the keg with first and second male component quick-connect connectors being mounted inwardly of the aperture in the keg on an endwall of a cylindrical cup-like support member which can be removed from the aperture to enable



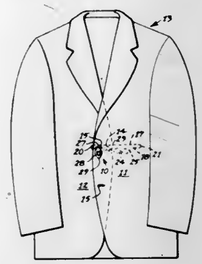
cleaning and filling of the interior of the keg and with two female component quick-connect connectors on a pressure hose and lager hose being connectable to the male component connector members to enable liquid dispensing and keg pressurization with a minimum of difficulty.

3,670,930
OVERHEAD TRAVELING TYPE FUEL SUPPLYING APPARATUS
Yoshihiko Irie, Kawasaki, and Fumio Kimura, Tokyo, both of Japan, assignors to Tokyo Ltd., Kanagawa-ken, Japan
Filed March 22, 1971, Ser. No. 126,525
Claims priority, application Japan, March 23, 1970, 45/24262
Int. Cl. B67d *5/60*
U.S. Cl. 222—527 **6 Claims**



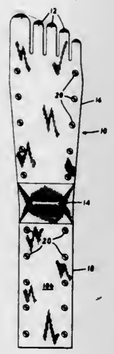
A fuel supplying apparatus consists of a traveling unit which moves in either of opposite directions, a delivery unit which communicates with the traveling unit and has a fuel hose carrying a fuel supplying nozzle at one end thereof and being lowered and raised, a fixed conduit which communicates with a reservoir and extends uprightly near to the traveling unit, and a folding tube which connects the fixed conduit with the traveling unit. The folding tube is composed of a plurality of non-flexible rigid tubes each of which is pivotally connected and internally communicates with its adjacent tubes at its ends. As the traveling unit moves, the folding tube stretches or contracts without deforming the component tubes.

3,670,931
GARMENT FORM RETAINER
William F. Hosey, Hermitage, Tenn., assignor to Old Hickory Mfg. Co., Old Hickory, Tenn.
Filed April 28, 1971, Ser. No. 138,233
Int. Cl. A41b *5/00*; **A41f** *1/00*
U.S. Cl. 223—71 **7 Claims**



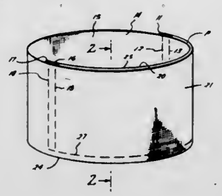
A garment form retainer for overlapping front panels of a coat comprising an elongated flat body of stiff but slightly flexible plastic material. Formed in the body are a plurality of longitudinally spaced button-receiving slots. Formed adjacent the end of the body is a tab fixed to, and offset from, the front surface of the body and converging down toward the plane of the body.

3,670,932
SOCK IRONING DEVICE
Luis Sentis Anfruns, Panama Street 2 and 4, Barcelona, Spain
Filed April 13, 1970, Ser. No. 27,821
Claims priority, application Spain, April 12, 1969, 147,380
Int. Cl. D06c *5/00*; **D06f** *59/00*
U.S. Cl. 223—75 **1 Claim**



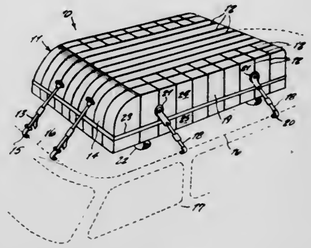
Disclosed herein is an iron for ironing socks or stockings so that the sole portions thereof are disposed in a plane which is perpendicular to the plane of a conventionally ironed sock. That is, the iron comprises an elongated flat member having a projecting portion fixed transversely thereto and defining a portion for extending into the heel section of a stocking which is to be ironed. Thus, the iron disclosed therein functions to iron stockings or socks into a form which more closely approximates the form of a human foot.

3,670,933
PERSONAL MONEY CONTAINER
Cherry E. Jones, 10213 Caxton, Houston, Tex.
Filed July 13, 1970, Ser. No. 54,108
Int. Cl. A44c *5/00*
U.S. Cl. 224—28 B **1 Claim**



The specification discloses a personal money container which can be worn on or about the person such as on an arm or a leg for carrying money or other valuables in a concealed or inconspicuous manner. One embodiment discloses a container for money or other valuables which can be clipped or otherwise attached inside of an article of underclothing such as a brassier or, if desired may be attached to a swim suit or the like.

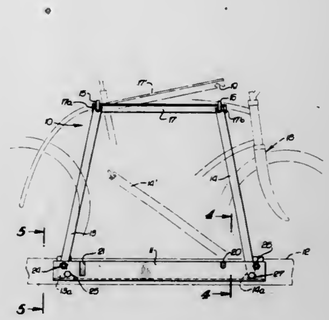
3,670,934
BUDGET CARRIER
Maurice A. Krasciasky, 7118 Jones Valley Drive, Huntsville, Ala.
Filed Aug. 25, 1970, Ser. No. 66,793
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 E **1 Claim**



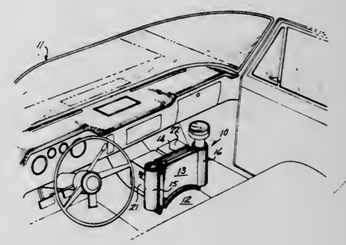
A carrier for placement upon the roof of an automobile, the carrier comprising an inexpensive telescopic two part construction made of non-cracking plastic material and comprising a case having molded ribs for providing rigidity thereto, the carrier being provided with adjustable straps each of which is provided with a hook for hooking to the automobile roof gutters.

3,670,935
COLLAPSIBLE CYCLE CARRIER
Paul R. Hinkston, 10723 Cushdon Avenue, Los Angeles, Calif.
Filed Nov. 9, 1970, Ser. No. 87,952
Int. Cl. B62d *43/00*
U.S. Cl. 224—42.03 B **13 Claims**

A collapsible cycle carrier for an automobile or like vehicle. The carrier comprises a pair of support arms pivotally connected to opposite ends of a channel bar, and a crossbar which extends between the free ends of the support arms when the arms are set upright for cycle carriage. A bicycle may be supported on cycle hooks extending from the support arms. Vehicle bumper attachment members extend rearwardly from the channel bar. Stability of the carrier is insured by appropriate support arm rotation limiting means attached to the channel bar. To collapse the cycle carrier, the crossbar arm is detached from one support arm, swung into alignment with the other arm to which it is pivotally connected, and the support arms and crossbar folded into the channel bar.

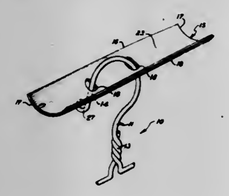


3,670,936
AUTOMOBILE ACCESSARY HOLDER
Charles F. Pronovost, 6429 195 Avenue, and Dale L. Prangley, 8407 184th Lane East, both of Sumner, Wash.
Filed Sept. 30, 1970, Ser. No. 80,514
Int. Cl. B60r *7/04*
U.S. Cl. 224—42.42 **3 Claims**



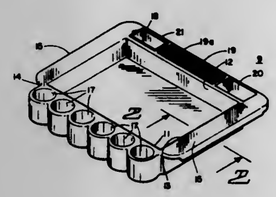
The disclosed automobile accessary holder comprises a flat map case, a padded flashlight holder on each side of the map case, means for mounting radio transmitters, or the like, on one surface of the map case, and arcuate ends formed on lower edges of the map case along with a padded map case bottom for fitting on the transmission shaft tunnel on most automobiles. A very efficient, compact, and sturdy automobile accessary holder is thus formed.

3,670,937
CARRIER FOR HOOK TYPE COAT HANGER
Michael S. Bradshaw, 1546 West Mulberry, Kokomo, Ind.
Filed March 4, 1970, Ser. No. 16,412
Int. Cl. A47g 25/06
U.S. Cl. 224—45 T 4 Claims



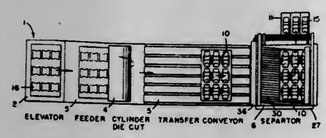
Sheet of plastic, or similar material capable of being comfortably carried in the palm of the hand is provided with slotted spaced openings to support the wire hook of one or more coat hangers for transporting garments.

3,670,938
DISH TRAY
Samuel C. Brocato, 501 South Apacheway, Scottsdale, Ariz.
Filed Oct. 19, 1970, Ser. No. 82,008
Int. Cl. A47g 23/06
U.S. Cl. 224—48 R 3 Claims



An improved flat bottom compartmentalized tray for holding and carrying dishes, food products, and eating accessories wherein the compartments are arranged along the sides of the tray.

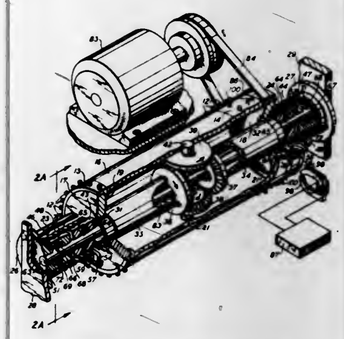
3,670,939
STRIPPING MACHINE
Arthur R. Mueller, Jr., 1776 E. 40th Street, Cleveland, Ohio
Filed Dec. 5, 1969, Ser. No. 882,680
Int. Cl. B26f 3/02
U.S. Cl. 225—99 12 Claims



Disclosed is a machine for separating cards from the scrap of paperboard sheets from which they have been die cut except for small integral connecting tangs. The cards may include one or more interior cutouts for hanging the merchandise holding cards on display racks.

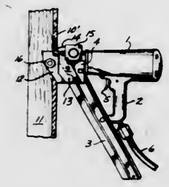
The machine of the invention includes a base having one side higher than its opposite side and spaced chain driven parallel transverse feed shafts journalled in bearings mounted on the opposite sides. The feed shafts rotate in a single direction toward two pairs of shafts mounted on the end of the frame. The first pair of shafts has vertically disposed opposing rotating surfaces which engage the scrap areas of the sheets to drive the sheets forward against a card and scrap separating tool which supports and holds the card rigid in the region of separation the rest of the way. The second pair of vertically disposed opposing rotating surfaces receives the card only on one of the tool sides and propels them forward to a bin into which they are stacked for ultimate removal from the machine. As the cards pass through the two pairs of vertically disposed rotating surfaces, a downwardly biased sprigg member is dragged over them to separate any internal cutouts from the card. The rotating surfaces of the first, or scrap engaging, pair of vertically disposed shafts rotates at a speed slower than the rotating surfaces of the card engaging pair such that the integral tangs connecting the two are severed near their region of support by the tools by a twisting transverse force, and the scrap from the sheet falls down to a collection area below the separating knife. To avoid bending of the cards, the cards travel in a substantially straight line from the time they leave the feed rolls. The feed rolls have floating spheres which act as hold-down means to provide more positive forward drive to the cut sheets as they enter the first pair of vertically disposed rotating surfaces. The apparatus is designed to be automatically fed by means of a belt-type transfer conveyor which receives the die cut paperboard sheets from the die cutting machine. The entire system may be automated by conventional elevator and feeder means for providing printed paperboard to the cutter die. In the alternative, the separator machine may be hand fed. The tools, rotating surfaces and spring members may be adjusted for different shapes, numbers and dimensions of card, scrap and interior cutouts.

3,670,940
ENERGY CONSERVING INTERMITTENT MOTION DEVICE AND METHOD
David A. Dahl, Fort Collins, Colo., assignor to Teletype Corporation, Skokie, Ill.
Filed Oct. 30, 1970, Ser. No. 85,502
Int. Cl. B65h 17/22
U.S. Cl. 226—8 14 Claims



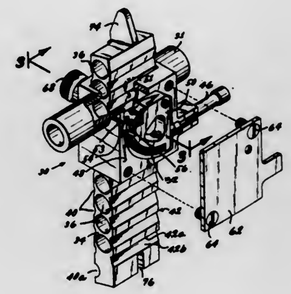
In an energy conserving intermittent motion device, energy is alternately stored and released by twisting and untwisting a torsion rod to intermittently rotate a driven member, e.g., a feed platen. The torsion rod is twisted and untwisted by selectively restraining and releasing opposite ends thereof through pairs of clutch devices. Frictional losses in the system are compensated for by a servo-controlled variable torque motor which is controlled so as to supply just enough torque to compensate for the frictional losses.

3,670,941
RETRACTABLE GUARD AND GUIDE FOR NAILER
Fred I. Grinnell, 2122 63rd, Seattle, Wash., and Clark J. Hall, 8509-17th Place, N.E., Seattle, Wash.
Filed March 2, 1970, Ser. No. 15,479
Int. Cl. B25c 7/00
U.S. Cl. 227—8 5 Claims



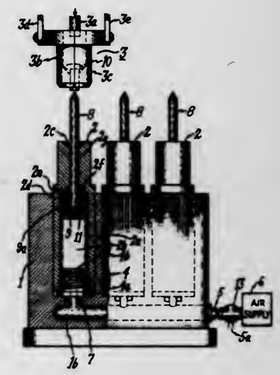
A guide and guard plate pivoted on the head of a driver for nails or staples projects beyond the head for engagement with an edge of a crate, for example, to guide the driver head for inserting fasteners along the margin of the work. In such projected position the plate shields the safety prongs from being depressed inadvertently to condition the driver for operation. The plate can be swung into retracted position for face nailing spaced farther from the work edge by grasping a handle on it, and a spring-tensioned strip attached to the plate will return it to projected position when the handle is released.

3,670,942
AUTOMATIC FEEDING OF FASTENERS
Raymond Visher Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Oct. 15, 1970, Ser. No. 80,915
Int. Cl. B25c 1/14
U.S. Cl. 227—10 3 Claims



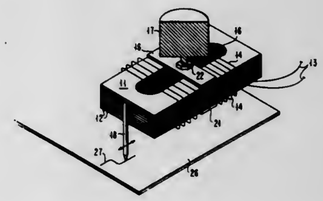
A feeding clip having relief portions enabling the clip to be gripped and moved forward in response to an actuating device of the fastening tool, and further including indexing means for registering a fastener held in the clip with the driving ram of the fastening tool. The indexing means operates as the tool is cocked in readiness for firing. The clip is advanced forward to move a fastener into position. Upon firing, a driving ram in the tool drives the fastener through the clip and into the work surface. Release of the tool followed by further cocking in readiness for a second firing advances the clip through the tool to align the next successive fastener with the driving ram.

3,670,943
RIVETING DEVICE
John G. Berger, Flat Rock, N.C., assignor to General Electric Company
Filed Jan. 6, 1971, Ser. No. 104,270
Int. Cl. B21j 15/34
U.S. Cl. 227—60 9 Claims



Riveting device includes an anvil structure having a movable piston and attached pin for guiding a rivet to riveting position. The piston is movable by air under pressure and has an O-ring gasket which frictionally engages the walls of a bore in the base member below the anvil in which the piston moves. The O-ring enables the guide pin to retain the rivet in position prior to reaching the anvil, and holds the pin in retracted position to enable the riveted parts to be readily removed.

3,670,944
MINIATURE ULTRASONIC BONDING DEVICE
Sherman Z. Dushkes, and Rohinton J. Surty, both of Redwood City, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 12, 1970, Ser. No. 10,964
Int. Cl. B23k 1/06, 5/20
U.S. Cl. 228—1 5 Claims

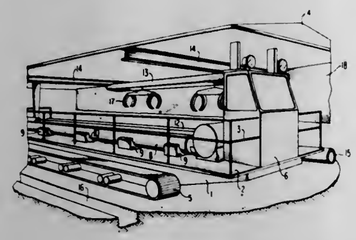


An ultrasonic bonding system is arranged so that the magneto-strictive transducer is situated above and at right angles to a bonding tip. The transducer is held by a mounting means and lateral straps which are affixed at the node on the body of the transducer. The mounting means is above the transducer. The bonding tip is fastened directly to the transducer without intervening driver or horn.

3,670,945
MOBILE ASSEMBLY FOR THE INSTALLATION OF CONDUITS BY WELDING SUCCESSIVE TUBULAR ELEMENTS

Jean Furstenberger, Bois D'Arcy; Guy Lebrun, Vignieres-Annecy Le Vieux, and Denis Girault, Annecy, all of France, assignors to Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique (Alcatel), Paris, France

Filed June 3, 1970, Ser. No. 43,152
Claims priority, application France, June 6, 1969, 6918854
Int. Cl. B23k *1/00*
U.S. Cl. 228—4 7 Claims

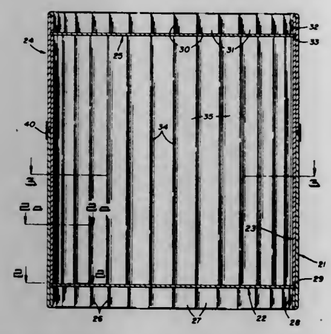


One or two vehicles have automatic driving units for lining up the spindles of the operating units joined to hollow shafts inserted in the units which are to be welded. Each shaft bears, at its free end, a mandrel to be friction fitted simultaneously in the unit to be welded and in the previously welded unit to ensure that the ends of the two tubes coincide precisely while they are being welded.

3,670,946
DRUM-LIKE CONTAINER OF TELESCOPING TYPE SET-UP FROM FOLDED FLATS OF SHEET MATERIAL

Thomas E. Croley, Worthington, Ohio, assignor to Corco, Inc., Columbus, Ohio

Filed Feb. 16, 1971, Ser. No. 115,312
Int. Cl. B65d *3/00*
U.S. Cl. 229—4.5 10 Claims

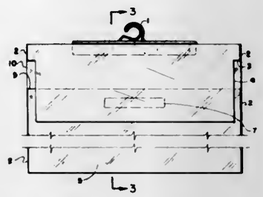


A drum-like container comprising upper and lower bodies of substantially drum-like form telescopically interfitting. Each of the bodies is set up from one or more flat blanks of sheet material which is scored to provide a plurality of panels connected together at scored vertical fold lines. One horizontal edge of a blank for the upper or lower body is turned inwardly to provide an axially inwardly flange providing a shoulder at its inner extremity. The respective ends of the blank are laterally overlapped and secured together at a vertical seam. The blank is folded flat about two of the vertical fold lines to provide superimposed sections, each section consisting of a plurality of connected vertical panels. This folded and collapsed flat can be expanded into polygonal tubular form with upper and lower open ends and with the inwardly disposed shoulder at one end. To maintain the tubular form, a rigid disc of proper diameter is moved axially into and tightly fitted therein in contact with the shoulder.

3,670,947
HANGER BAG WITH FLAP CLOSURE

Albert Joseph Tangredi, and Marc Robert Zuckerman, both of Bayside, N.Y., assignors to W. R. Grace & Co, Duncan, S.C.

Filed Aug. 10, 1970, Ser. No. 62,322
Int. Cl. B65d *31/00, 33/06*
U.S. Cl. 229—54 R 5 Claims

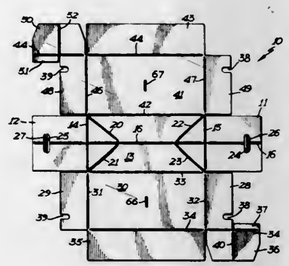


A hanger bag is formed from a single, elongated, sheet of flexible thermoplastic film by cutting a series of spaced apart notches in one of the longitudinal edges of said film, the distance between said notches being the desired width of the finished bag; doubling back the opposite longitudinal edge of the sheet to the desired height of the finished bag; folding the notched edge over the opposite edge; heat-sealing a hanger or handle member to the upper folded over edge between the spaced apart notches; and, heat-sealing and severing the folded film transversely, said heat seal passing through said notch, whereby a finished bag is formed.

3,670,948
COLLAPSIBLE CARTON

Max H. Berg, Minneapolis, Minn., assignor to Peter Berg & Co., Inc., Minneapolis, Minn.

Filed Sept. 24, 1969, Ser. No. 860,711
Int. Cl. B65d *5/22*
U.S. Cl. 229—33 1 Claim

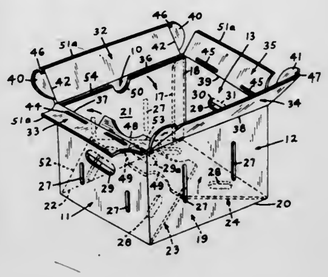


A collapsible unitary carton is formed of corrugated cardboard or paper board from a single blank and is folded and scored to provide seamless load-bearing members at the areas requiring the greatest strength. The ends and side members are joined so that a seamless bottom is provided and all the seams are removed from the corners or edges of the carton and only a single thickness of the material is used where the members must be folded to provide as flat a carton as possible when collapsed.

3,670,949
COLLAPSIBLE CARTON

Hector J. Galanes, Rio Piedras, P.R., assignor to International Paper Company, New York, N.Y.

Filed June 3, 1970, Ser. No. 42,990
Int. Cl. B65d *5/02*
U.S. Cl. 229—39 R 9 Claims

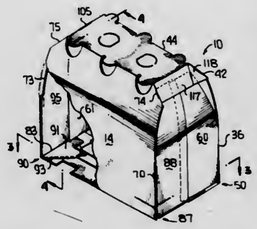


A collapsible carton and the single blank from which same is prepared are provided, said carton and blank comprising foldably connected outer wall panels and further characterized by an inner and outer bottom panel, each of which is foldably connected to an opposed outer wall panel, and a pair of opposed inner wall panels which are foldably connected to said outer bottom panel. The outer bottom panel, to which the internal side panels are attached, is maintained in a supportive position by the restraining force exerted against the vertical edges of the inner wall panels by the outer side wall panels in the assembled position. The inner bottom panel rests atop the first bottom panel and is supported thereby. The carton may be further provided with ventilation and handle apertures, cover panels, and a variety of other modifications.

3,670,950
TUBULAR CARTON WITH AXIALLY CLOSED ENDS

Harry J. Rossi, Parsippany, N.J., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 1, 1970, Ser. No. 51,422
Int. Cl. B65d *75/08*
U.S. Cl. 229—40 4 Claims

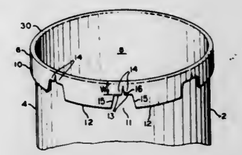


This disclosure relates to a carton blank and a carton formed therefrom which includes top, side and bottom panels with the side panels each including an end panel joined thereto along a fold line whereupon being set up into a generally tubular configuration the end panels close axially opposite ends of the carton. Novel locking panels are also associated with the top and side panels to maintain the upper end portions of the end panels generally normal to both the top and side panels.

3,670,951
CONTAINER AND LID

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company

Filed June 11, 1970, Ser. No. 45,387
Int. Cl. B65d *43/10*
U.S. Cl. 229—43 7 Claims

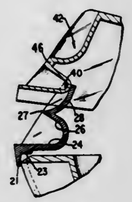


A container has a container flange on an upper end portion of the container extending about the outer surface of the container. The container flange has at least one first portion for contacting and engagement with a tab of a lid of the container for releasably locking the lid to the container.

3,670,952
EGG CARTON

Richard Joseph Venuti, 56 Laurel Road, Wilbraham, Mass.; Jerold Julius Golner, 32 Hanson Terrace, Lowell, Mass., and Anthony Salvatore Amato, 34 Berkeley Drive, Chelmsford, Mass.

Filed Feb. 3, 1971, Ser. No. 112,278
Int. Cl. B65d *85/32*
U.S. Cl. 229—44 R 5 Claims



An egg carton having a latching arrangement which includes inwardly projecting lugs on the front panel of the carton cover which extend into corresponding lug receiving recesses on the latching flap attached to the carton tray, said flap having indented vertical channels above the top wall of said lug receiving recesses permitting the lugs to pass within said channels and to slide over the top rim of the lug receiving recesses into locking position with said recesses, said front panel also having indented vertical channels above each lug for receiving the lug of another carton in open nesting relationship.

3,670,953
BAG

Howard L. Leventhal, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,854
Int. Cl. B65d *33/00*
U.S. Cl. 229—57 4 Claims

A container made from thin-wall, flexible, gusseted, tubing material that opens into a bag having a rounded, generally flat,

high-strength bottom. The bag, when folded flat for packaging, has three superimposed panels provided by longitudinal



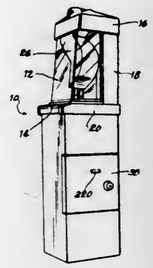
fold lines. The panels include a pair of outer plies and a pair of inner plies. One end of the bag is heat sealed to provide a bottom closure for the bag.

3,670,954
BAG
Howard L. Leventhal, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Filed Dec. 10, 1970, Ser. No. 96,855
Int. Cl. B65d *33/00*
U.S. Cl. 229—57 3 Claims



A container made from thin-wall, flexible, gusseted, tubing material that opens into a bag having a rounded, generally flat, high-strength bottom. The bag, when folded flat for packaging, has four superimposed panels connected by alternating longitudinal fold lines to provide a bag with Z or accordion folds. The panels include a pair of outer plies and a pair of inner plies. One end of the bag is heat sealed to provide a bottom closure for the bag.

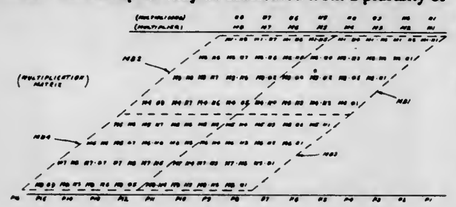
3,670,955
EXACT FARE SYSTEM
George G. Dominick, 198 Payson Street, Hoffman Estates, Ill.; Rinaldo Sciacero, 1115 East Rockwell, Arlington Heights, Ill.; George I. Wimpffen, 23W602 Saint Charles Road, Wheaton, Ill., and Theodore L. Kardos, 4656 North Central Park Road, Chicago, Ill.
Filed March 19, 1970, Ser. No. 20,884
Int. Cl. G07b *15/00*
U.S. Cl. 232—7 28 Claims

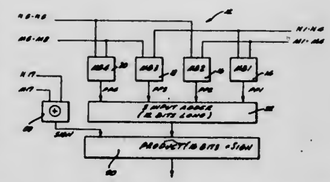


A construction for collecting exact fares comprising a housing having an inspection surface for temporarily holding fares deposited and manually operable means for dumping fares from said inspection surface into a cash box area. A removable cash box is received in a cash box receptacle, and closure means are provided in the cash box for blocking an access opening to normally prevent access to the interior of the cash box. Means are located in the receptacle to normally lock the closure means against movement relative to said access opening, and key means operate to unlock the closure means upon insertion of the cash box into the receptacle to thereby permit rotation of the cash box to locate the cash box in a position such that the access opening will receive fares dumped from the inspection surface. An interlock arrangement is included in the receptacle door to prevent tampering and pilfering. The total exact fare system includes a vault associated collecting means with security features to prevent pilfering after removal of the cash box from the cash box receptacle.

3,670,956
DIGITAL BINARY MULTIPLIER EMPLOYING SUM OF CROSS PRODUCTS TECHNIQUE
Donald F. Calhoun, Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 762,852, Sept. 26, 1968, abandoned. This application April 23, 1971, Ser. No. 136,808
Int. Cl. G06f *7/52*
U.S. Cl. 235—164 6 Claims

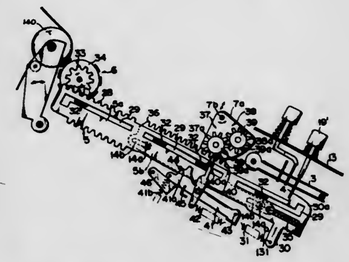
A high-speed digital multiplier which includes a plurality of functionally and structurally similar multiplier modules which are independent and operate in parallel. The multiplicand and multiplier bits are ANDed and selectively applied to the multiplier modules in accordance with a geometrically similar partitioning of the multiplication matrix. The multiplier modules provide partial products which are then added together to form the final product. The disclosed multiplier may be expanded for longer word lengths by using additional multiplier modules. The multiplier may be fabricated from a plurality of





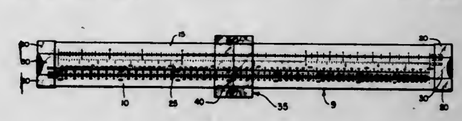
single type gated full adder circuits which is advantageous for large scale integration techniques.

3,670,957
ADDING, SUBTRACTING AND TOTALING CALCULATOR
Harutaro Oba; Toshihiko Sawazu; Sugio Takeuchi, and Masaru Chikata, all of Shizuoka-ken, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Feb. 4, 1970, Ser. No. 8,675
Claims priority, application Japan, Feb. 6, 1969, 44/8407; Feb. 6, 1969, 44/8408; Feb. 10, 1969, 44/9929; Sept. 4, 1969, 44/69876; Feb. 6, 1969, 44/10340; Feb. 10, 1969, 44/11497
Int. Cl. G06c *29/00*
U.S. Cl. 235—60 TN 4 Claims



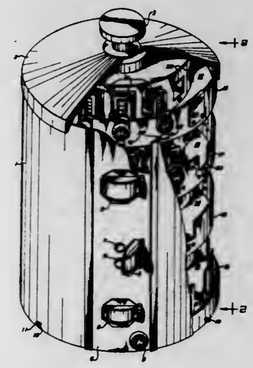
A portable calculator comprising a plurality of memory transmitting units engageable with memory pins, guide plates for guiding memory transmitting units, accumulators, a carry mechanism consisting of carry members mounted on respective counter wheels, transfer members engageable with the corresponding carry members, levers pivotally supporting the transfer members and operating members for raising the rear end of the supporting members, and a credit balancing mechanism, the calculator simultaneously making different sets of calculations including addition, subtraction, subtotaling and totaling and locking the credit balancing mechanism when the balancing operation is not conducted.

3,670,958
SLIDE RULE
Svetislav M. Radosavljevic, 9807 South Seely Avenue, Chicago, Ill., and John Maniotes, 1637 Holly Lane, Munster, Ind.
Filed June 17, 1970, Ser. No. 47,006
Int. Cl. G06g *1/02*; G09b *19/02*
U.S. Cl. 235—70 A 8 Claims



A mechanical analog computing device of the slide rule type is disclosed wherein the multiplication and/or division of numbers from an other than decimal number system (e.g., binary, octal, duodecimal, and hexadecimal) may be performed by combined operations in progressive manipulations. The disclosed device includes a slide and body upon which scales are graduated in accordance with the logarithm to the other than decimal base concerned. This device can be also used for finding the reciprocal or inverse of numbers from the other than decimal numeral system.

3,670,959
KEY OPERATED METER MONITOR
Leland B. Larson, and Clyde H. Clement, both of Phoenix, Ariz., assignors to Eugene G. Shaheen, Scottsdale, Ariz., a part interest
Filed July 21, 1971, Ser. No. 164,501
Int. Cl. G06m *1/00*
U.S. Cl. 235—94 R 5 Claims



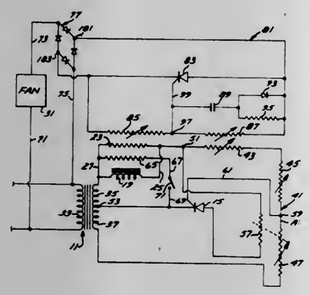
Apparatus is provided for accurately accounting for the amount of gasoline, diesel fuel, or the like, withdrawn from a single source by each of a plurality of users. A drumlike outer cover is provided with a plurality of vertically aligned access ports for receiving a key unique to the individual user. A secondary port provides identification of the key unit aligned with the port. Rotatable, multi-tiered structure within the cover includes a plurality of circumferentially distributed key control units on a plurality of vertically spaced tiers. The key control units are slightly offset from one another from tier to tier such that only a single key control unit may be aligned in the key receiving position at one time. Means are provided for manually rotating the multitiered structure in order that a user may bring his individual key operated control unit into the key receiving position. When the operator inserts and rotates his

key, his individual controlled key operated unit is moved radially inwardly by cam structure turned by the key. In the fully inward position, a counter gear on the key operated control unit meshes with a gear driven from the dispensing source. Additionally, a projection from the key operated control unit actuates switch means for energizing the dispensing source which may then be utilized in the usual manner with the amount of dispensed liquid being recorded on the individual counter carried on the key control unit. When the operator has received the desired amount of liquid, typically fuel, he turns his key to pull his key operated control unit out of engagement with the counter advancing mechanism and also thereby disengages the energizing means to the dispensing source. After his key is removed, a subsequent operator is free to bring his individual key operated control unit into alignment with the appropriate one of the ports at which time the procedure may be repeated and the amount of liquid dispensed recorded on his key operated control unit. The counters may therefore be read periodically to bill or otherwise require accounting from each individual user.

3,670,960
CONTROL APPARATUS

William W. Chambers, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 814,939, April 10, 1969, abandoned. This application Sept. 14, 1970, Ser. No. 72,215
Int. Cl. G05d 23/24
U.S. Cl. 236—11 8 Claims

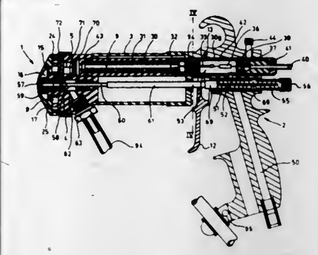


A control apparatus comprising a switch controlling current flow to an inductance means which is coupled with a controlled element. A free wheeling resistor is connected in parallel with the inductance means and defines a path for reverse flow of induced current therethrough during collapse of the magnetic field in the inductance means. A heat responsive control circuit is provided for controlling a controlled device and includes a heat responsive element disposed in heat exchange relationship with the resistor whereby when the switch is turned on current during positive going half cycles will be directed through both the resistor and inductance means, and the current induced by collapse of the magnetic field in the inductance means will flow in the reverse direction through the resistor thereby permitting continued flow in the forward direction through the inductance means and after a selected time the self-heating of the resistor will heat the temperature responsive element to actuate the control circuit and, consequently, the controlled device.

3,670,961
ELECTROSTATIC SPRAY GUN

Roger Tholome, Corenc, France, assignor to Tunzini-Sames, Grenoble, France

Filed July 13, 1970, Ser. No. 54,543
Claims priority, application France, Aug. 1, 1969, 6926387
Int. Cl. B05b 5/00; F23d 11/28
U.S. Cl. 239—15 7 Claims

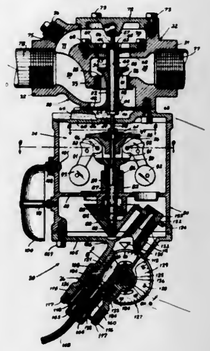


This invention relates to an electrostatic spray gun for the atomization and spraying of coating products. The gun includes an electro-aerodynamic generator having a conduit for the flow of a gaseous fluid at least partially at supersonic speed from an upstream convergent-divergent region containing ionization means to a downstream zone at high potential adjacent the atomization nozzle. According to the invention, means for shutting of the flow of gaseous fluid are arranged downstream of the electro-aerodynamic generator, for example on the nozzle body. The electro-aerodynamic generator is preferably constructed as a removable cartridge, and means are also provided for adjusting the angle and velocity of the output spray from the gun.

3,670,962
FLOW CONTROL ASSEMBLY AND METHOD

Douglas Johnston, Decatur, Ala., assignor to Decatur Foundry & Machine Co. Inc., Decatur, Ala.

Filed Nov. 19, 1969, Ser. No. 877,977
Int. Cl. B05b 3/16
U.S. Cl. 239—62 8 Claims



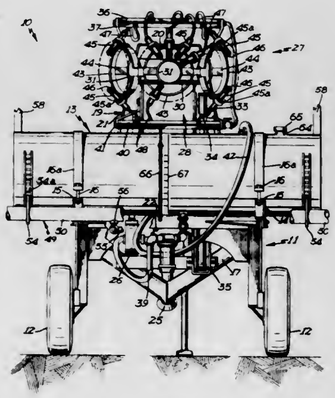
The present control structure is a centrifugal governor operated relatively low pressure diaphragm valve for a wheeled liquid applicator including a tank for liquid under applied air pressure, the governor being driven from a ground wheel of the applicator by a friction wheel-flexible cable drive, or a belt and pulley drive, or the like. This structure controls

the applicator nozzle pressure so that the output, in gallons per minute, is proportioned to the speed, thereby providing a constant gallons per acre output, regardless of the speed. An adjustable drive assembly including a friction wheel-cone provides means for varying the rate of fluid output.

3,670,963
LIQUID FERTILIZER APPLYING APPARATUS

Maurice G. Stroebel; Terryl T. Stroebel, and Merle J. Stroebel, all of Danvers, Minn.

Filed Sept. 4, 1970, Ser. No. 69,576
Int. Cl. A01n 17/08
U.S. Cl. 239—77 3 Claims



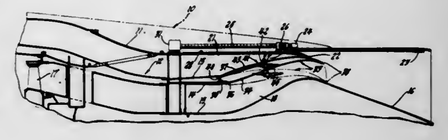
A mobile apparatus for applying liquid fertilizer, herbicide, pesticides and the like to crops comprises a mobile chassis having a chambered fertilizer (or weed killer) containing tank and a mist producing device mounted thereon. The mist producing device includes a fan housing having rearwardly facing outlets around which are arranged nozzle mechanisms through which the liquid fertilizer is discharged. The fine jets of liquid fertilizer or weed killer are broken up into a mist or atomized condition by the high velocity streams of air and the mist is applied to the crops as the apparatus is moved through the crops to be fertilized or treaded. A foldable sectional boom is also mounted on the chassis and is selectively usable with respect to the mist producing device to thereby permit foliage feeding of the crops or the application of a weed killer to the crops in a controlled manner. The chambered tank permits fertilizer and weed killer to be applied simultaneously but obviates the need for mixing.

3,670,964
JET NOZZLE

George H. Pedersen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 18, 1971, Ser. No. 107,081
Int. Cl. B63h 11/10
U.S. Cl. 239—265.19 4 Claims

A jet nozzle for a turbofan-ramjet type engine in which leaves in the termination of the boundary between a fan duct and a turbine outlet duct are movable between an outer wall and a tailcone to throttle or close either duct, the outer wall

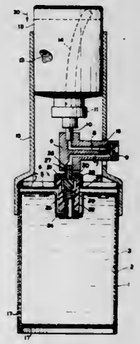


further including an axially shiftable shroud to vary the discharge outlet area between it and the tailcone.

3,670,965
NON PRESSURIZED PRODUCT DISPENSING SYSTEM

Jean Marand, Norwalk, Conn., assignor to Ciba-Geigy Corporation

Filed June 4, 1970, Ser. No. 43,417
Int. Cl. B05b 7/30
U.S. Cl. 239—308 8 Claims



A dispenser for spraying a fluid product includes a product container housing the product. The product is in communication with a product flow passage through a valve of the container. The stem of the valve is connected to a coupler-aspirator. A conventional aerosol propellant cartridge is also connected to the coupler-aspirator aligned with the product container. When the propellant cartridge is depressed, both the valve thereof and the container valve are opened. Thus the product is then aspirated by the propellant through the coupler-aspirator.

3,670,966
SPRAY CONTROL VALVE

Gerhard F. Korda, Franklin Park, Ill., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.

Filed Feb. 1, 1971, Ser. No. 111,412
Int. Cl. B05b 7/32; F23d 13/04
U.S. Cl. 239—337 8 Claims

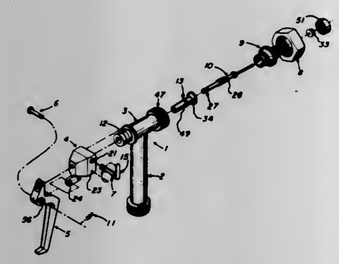
A hand operated sprayer includes a tank containing liquid to be sprayed under pressure connected to a flexible hose with an extension tube having a nozzle at its discharge end for controlling the spray pattern. A leakproof control valve is interposed between the hose and extension tube to turn on and shut off the flow of liquid to the extension tube. Such valve embodies a valve body with the liquid flowing in at one end and out at the other end. A plunger slidable within the body can be moved either to seal off the outlet opening or to unseal such opening and permit liquid to flow through by-pass chan-

nels in the plunger. A thumb knob passes through a slot in the valve body and is affixed to the plunger for easy movement.



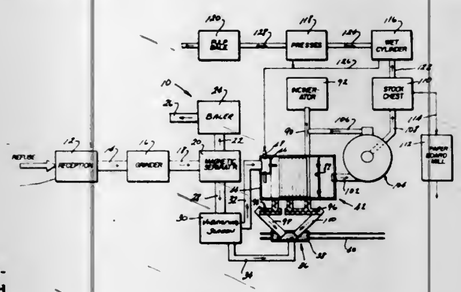
The plunger is provided with an elliptical or rectangular channel holding an O-ring to prevent leakage around the slot and thumb knob.

3,670,967
SANITARY SPRAY GUN
James R. Fahlin, Bloomington, and Gerald D. Hagfors, Columbia Heights, both of Minn., assignors to Graco Inc., Minneapolis, Minn.
Filed March 11, 1971, Ser. No. 123,134
Int. Cl. B05b 7/12
U.S. Cl. 239—412 **10 Claims**



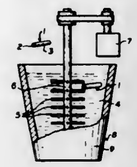
An airless sanitary spray gun which can be easily disassembled by hand. The fluid outlet housing of the gun has a valve to normally block the flow of fluid. Mounted on this housing is another housing designating the valve actuating housing. The device to join these two housings may consist of two locking members. One is a rotatable rod and groove combination wherein the rod extends through an opening in the valve actuating housing and is rotated to a locking position by engaging a groove in the top of the outlet housing. The other device, used to prevent rotation of the two housings relative to each other, may be one or more pins in the lower portion of the valve actuating housing with each pin engaging a notch in the upper portion of the outlet housing. Two types of valves are also disclosed. One embodiment is a small apertured spring biased needle type used for fine spraying operations. The other valve is a larger apertured dispensing type biased by a remote spring that utilizes a forced differential pressure principle to aid in keeping the valve seat seated. The gun may have its valve actuated either manually or automatically.

3,670,968
SYSTEM AND PROCESS FOR RECOVERY OF CELLULOSIC FIBROUS MATERIAL FROM REFUSE
Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed June 2, 1970, Ser. No. 42,686
Int. Cl. B02c 21/00
U.S. Cl. 241—21 **9 Claims**



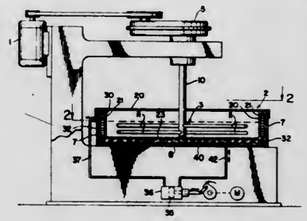
A system and process for recovering the cellulosic fibrous material contained in refuse, particularly municipal refuse, and converting it into pulp suitable for various paper product manufacturing purposes. The novel system of this invention features unique defiberation apparatus which, in combination with a magnetic separator and a vibrating screen, separates the cellulosic fiber from the remainder of the refuse. This system is well suited to be utilized in conjunction with a composting plant and/or a municipal sewage treatment plant to completely process all municipal refuse and/or sewage sludge while simultaneously removing the reuseable cellulosic fiber therefrom.

3,670,969
METHOD OF SEPARATING INSULATION FROM INSULATED WIRES AND CABLES
Manzo Terada, Kitakatsuragi-gun, Japan, assignor to Nissho-Iwai Company Limited, Osaka, Japan
Filed Dec. 2, 1969, Ser. No. 881,484
Claims priority, application Japan, Dec. 20, 1968, 43/93939; Dec. 23, 1968, 43/94369
Int. Cl. B02c 13/18
U.S. Cl. 241—27 **1 Claim**



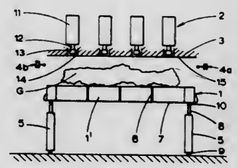
A method of separation and sorting of the insulation-cover from the metal core of various electric wires and cables, comprising an agitation-tank providing an impact agitating force to small cut pieces of various insulated electric wires and/or cables in the middle of the tank which is filled with a liquid, at room temperature or properly heated, and a bath filled with a particular liquid which is lighter in its specific gravity than the metal core, but heavier than the insulation-cover, enabling perfect sorting of the insulation-cover from the metal core in the middle of the bath.

3,670,970
METHOD AND APPARATUS FOR COMMINUTING AND REACTING SOLIDS
Andrew Szegvari, c/o Union Process Inc., 1925 Akron-Peninsula Road, Akron, Ohio
Filed Oct. 19, 1970, Ser. No. 81,811
Int. Cl. B02c 17/16
U.S. Cl. 241—27 **21 Claims**



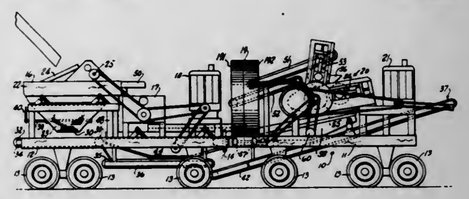
The grinding or comminution of solids, such as metal powders, and certain inorganic substances in the absence of a liquid continuum is accomplished at a relatively rapid rate in activated media of high momentum and low ball pressure, by rotating one or more rigid agitators through a relatively flat but properly proportioned (depth to diameter), bed of grinding media, such as relatively small balls, pebbles, etc. at a sufficiently high speed to cause the apparent volume of the grinding media to increase substantially in the agitated condition over that in the unagitated condition. The mean free paths between contacts of separate elements of the grinding media are therefore greatly increased, and the peening or burring energy applied to the material in process by contact between separate grinding elements is enlarged because of the increased momentum of contact. Unique chemical or structural properties are obtained in the comminuted product, especially when the dry grinding is continued beyond the point where appreciable decrease in average particle size occurs. Means is also provided in the apparatus to decrease or prevent caking of the partially ground material in portions of the apparatus.

3,670,971
CRUSHING MACHINE FOR COARSE CRUSHING OF BRITTLE MATERIALS
Paul Adrian Schneider, Oslo, Norway, assignor to A/S Ardal og Sunndal Verk, Oslo, Norway
Filed Dec. 17, 1970, Ser. No. 99,019
Int. Cl. B02c 1/14
U.S. Cl. 241—69 **20 Claims**



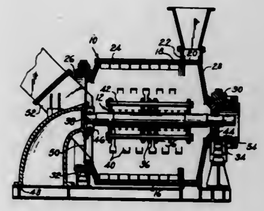
A crushing machine for the coarse crushing of brittle materials, such as anode butts in the aluminum electrolysis industry, by utilizing impact energy. The combination of a table or a grate with openings the size of which is dimensioned in accordance with the desired degree of crushing is used. Holding means cooperate with the grate and by relative movement of the holding means and the grate hold the goods to be crushed. One or more striking tools when the goods are held fast, preferably in an intermittent way, exert an impact effect on the goods. The grate and the holding means are pressed together continuously against the goods during the operation of the striking tool.

3,670,972
CRUSHING PLANT
John N. Quinn, Madison, Wis., assignor to Johnson Welding & Equipment Co., Inc., Madison, Wis., a part interest
Continuation-in-part of Ser. No. 882,197, Dec. 4, 1969, Pat. No. 3,622,089. This application June 1, 1971, Ser. No. 148,722
Int. Cl. B07b 1/28; B02c 21/02
U.S. Cl. 241—76 **18 Claims**



A crushing plant having elevator means located primary and secondary crushers, each comprising first and second stage crushing devices. Input material is fed into a receiving unit is separated thereby into pieces of finish size which are discharged onto a delivery conveyor, and pieces of two different larger sizes. The latter are separately fed to the primary crusher stages, which discharge onto separate screens located above the delivery conveyor. Carryover material on the screens is separately conducted by means including said elevator to the two secondary crusher stages, which discharge onto a common finish screen member also located above the delivery conveyor.

3,670,973
CRUSHER
Robert Lucas, Paris, France, assignor to Fives Lille-Cail, Paris, France
Filed July 20, 1970, Ser. No. 56,279
Claims priority, application France, July 23, 1969, 6925038
Int. Cl. B02c 17/00
U.S. Cl. 241—188 R **7 Claims**

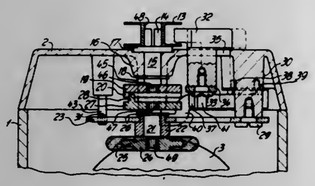


The bearings for the rotor of a crusher are positioned substantially in the end walls of a rotary drum concentrically surrounding the rotor, one of the bearings being mounted on a fixed support extending to an opening in one end wall, and the other bearing being mounted in the other end wall.

3,670,974
RELEASABLE WINDING MECHANISM FOR SEWING MACHINES

Odette Ueltschi, Steckborn, Switzerland, assignor to Fritz Gegauf AG Bernina-Nahmaschinenfabrik, Steckborn, Switzerland

Filed Jan. 21, 1971, Ser. No. 108,517
Claims priority, application Switzerland, Feb. 6, 1970, 1780/70
Int. Cl. B65h 54/18; D05b 59/00
U.S. Cl. 242—22 10 Claims

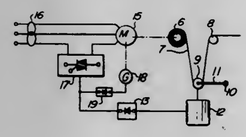


The winding mechanism is used with sewing machines of the type having a fixedly positioned winder shaft with a bobbin-receiving pin protruding from the machine casing, and a friction wheel for driving the winder shaft and having a friction wheel shaft separated from the winder shaft but operatively connected with the winder shaft and engageable with the driving wheel of the machine to selectively operate the winding mechanism. The inner end of the winder shaft has fixed thereto a disk with a slot extending diametrically thereof, and an end of the friction wheel shaft carries a cooperating disk having a pin or lug engageable in the slot. The friction wheel is mounted on a carrier which is spring biased to an operating position and a rest position. The driving connection between the two shafts is maintained at all times within the range of displacement of the friction wheel shaft between the operating and rest positions.

3,670,975
CONSTANT TENSION CONTROLLER DEVICE FOR WINDER

Yoshio Tomimatsu, Neyagawa-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1969, Ser. No. 876,284
Claims priority, application Japan, Nov. 20, 1968, 43/102210; Nov. 20, 1968, 43/102211
Int. Cl. B65h 59/38
U.S. Cl. 242—45 4 Claims

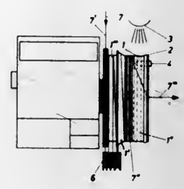


A constant tension controller device for a winder which comprises a differential transformer for generating an output voltage in response to a vertically movable roller moved up and down according to the tension of a yarn, and a tacho-generator connected with a three-phase induction motor for driving a spool for rotation, whereby electric current in one of three power lines of the three-phase induction motor is controlled by a thyrister as a function of the difference between the output voltage of the tacho-generator and the output voltage of the differential transformer so that the yarn of nylon or like material are wound on the spool with a constant tension.

3,670,976
DELIVERY DEVICE FOR THREADS ON WEAVING MACHINES, KNITTING MACHINES, OR THE LIKE

Giuseppe Vischiani, Como, Italy, assignor to Firma Sobrevin Soc. de Brevets Industriels, Mauren, Liechtenstein

Filed April 16, 1970, Ser. No. 29,042
Claims priority, application Germany, June 10, 1969, P 19 29 485.0
Int. Cl. B65h 51/20
U.S. Cl. 242—47.12 6 Claims

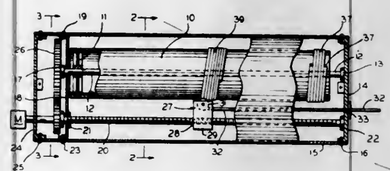


A delivering device for threads on weaving machines, knitting machines, or the like, which comprises a motor and a drum which is rotated by the motor and adapted to store intermediately a predetermined thread supply prior to each thread removal. A thread supply surveillance device is arranged for stopping the motor upon reaching a nominal-thread supply. The motor comprises an asynchronous two-phase motor. A current valve circuit is provided for feeding current to the motor. The surveillance device emits a motor stopping-command signal in both phases in the stopping position, and the current valve circuit is transferred by the command signal for either positive or negative half-waves.

3,670,977
SELF-CONTAINED CABLE REEL

Roger L. Boneck, W-140, N-5550 Lilly Road, Menomonee Falls, Wis.

Filed Sept. 15, 1970, Ser. No. 72,270
Int. Cl. B65h 57/28, 75/00
U.S. Cl. 242—54 R 4 Claims



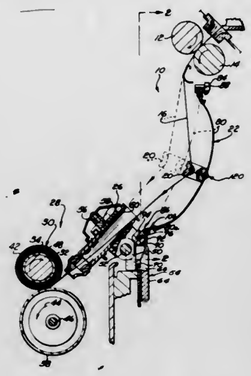
A self-contained reel unit includes an outer housing having a rotary drum mounted therein. A cable is pulled into the housing and wound upon the drum. A feed screw and cable guide and support member deposits the cable uniformly across the surface of the drum. The feed screw and cable guide reverses to play out the cable as it is unwound from the drum.

3,670,978
COMPENSATOR DEVICE

Myron Dragisich, Fairview Park, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Oct. 2, 1970, Ser. No. 77,621
Int. Cl. B65h 54/28; D01h 13/06
U.S. Cl. 242—54.4 8 Claims

An improved compensator device is provided to maintain a constant sliver path length between a pair of calender rolls and a reciprocable twister assembly of a balling mechanism. The compensator device includes a guide through which the sliver passes and a resilient link which carries the guide and flexes to enable the guide to move during reciprocation of the twister.

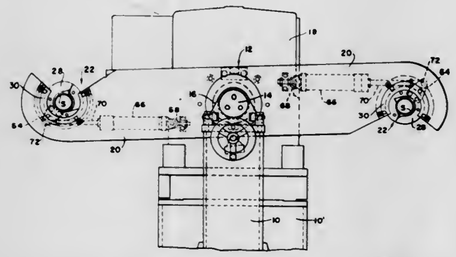


The resilient link is formed by a plurality of flexible strips which extend between a universal joint mounted in a fixed relationship with the calender rolls and a second universal joint which is connected with the twister.

3,670,979
WEB HANDLING APPARATUS AND SPINDLE CHUCK THEREFOR

Philip B. Seay, Richmond, Va., assignor to Inta-Roto, Inc., Richmond, Va.

Filed April 17, 1970, Ser. No. 29,476
Int. Cl. B65h 75/34
U.S. Cl. 242—64 10 Claims

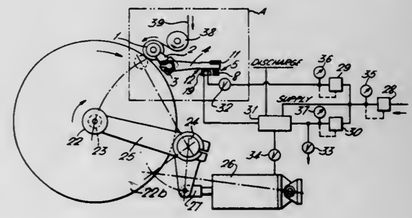


The spindle receiving chuck of a web handling apparatus comprises a holder of arcuate configuration and having a segmental gap therein which is wide enough to permit the passage of a spindle into and from the chuck. The interior of the holder body is spherical and a chuck assembly having a spherical outer surface is rotatably and swively mounted within the holder. The chuck assembly includes a U-shaped yoke and an arcuate segment pivotally connected at one of their respective ends and jointly defining a ring when their other respective ends are in abutment. A crank arm is secured to the ring for rotating it within the holder to move the segment into and from alignment with the segmental gap to permit loading and unloading a spindle, and locking the spindle within the ring. The web handling apparatus has pairs of arms with a spindle chuck carried by each arm to jointly support a spindle between said arms, said holders being positioned with their gaps on the upper sides of the arms in spindle loading position and means being provided to operate both chucks in each pair of arms simultaneously.

3,670,980
APPARATUS FOR CONTROLLING THE CONTACT PRESSURE BETWEEN A CONTACT ROLLER AND A WINDING UP ROLL IN WINDERS

Hideo Mukai, and Kimihiro Wada, both of Kyoto, Japan, assignors to Nishimura Seisakusho Co., Ltd., Kamitoba, Minami-ku, Kyoto, Japan

Filed July 28, 1970, Ser. No. 58,876
Claims priority, application Japan, July 30, 1969, 44/60221
Int. Cl. B65h 23/00, 17/02
U.S. Cl. 242—67.1 5 Claims

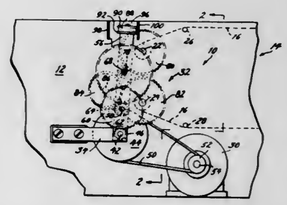


A apparatus for controlling the contact pressure between a contact roller and a winding roller of winding machines includes means for supporting the contact roller in such rigid manner as substantially considered to be a fixed support, means for detecting at the contact roll the contact pressure between the contact roller and winding roller and means for urging the winding roller toward the contact roller to provide a contact pressure therebetween. The pressure detected at the contact roller by the pressure detecting means is fed to a pneumatic control means which operates in response to the detected pressure to automatically regulate the contact pressure applied through the winding roller at a predetermined level.

3,670,981
SELF-REVERSING RIBBON DRIVE

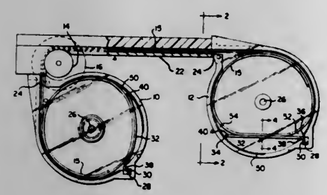
James J. Cavella, Somerdale, N.J., assignor to Datadyne Corporation, King of Prussia, Pa.

Filed May 6, 1970, Ser. No. 34,957
Int. Cl. G11b 15/44
U.S. Cl. 242—67.4 14 Claims



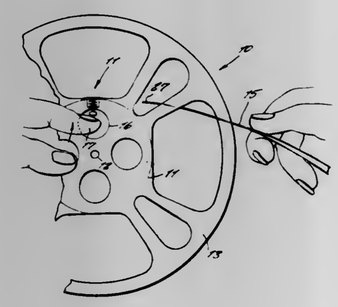
A self-reversing drive mechanism for a ribbon or other web-like article is disclosed. The mechanism includes a pair of spools, spaced to serve alternately as supply and take-up spools, and a driver gear shiftable in response to radial gear tooth forces thereon between positions wherein it is drivingly coupled to first one and then the other of the spools. The radial tooth forces are determined by tension in the ribbon, and reach the values necessary to effect shifting of the driver gear after the ribbon is fully unwound from the supply spool.

3,670,982
FILM CANISTER
James L. Henry, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Dec. 2, 1969, Ser. No. 881,421
Int. Cl. G03b 1/04, 23/06
U.S. Cl. 242—71.2 7 Claims



A canister for film, tape, or like material wherein the film is propelled by means exterior of the canister during the winding and unwinding thereof. The canister includes a deflection spring pivotally connected thereto, extending in the free state across a chordal portion of the canister, and adapted to be moved in a direction to conform with the interior surface of the canister wall when film is pressed against the spring upon winding of the film within the canister. The spring is deflected by reason of the increasing pressure of the film loops thereagainst to permit a greater length of film to be coiled inside the canister.

3,670,983
HOLD DOWN CLAMP
Myron E. Osburn, deceased, late of P.O. Box 1455, Enid, Okla. (Leanie McDowell, administratrix)
Filed July 23, 1969, Ser. No. 844,009
Int. Cl. B65h 75/28
U.S. Cl. 242—74.2 2 Claims



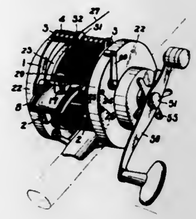
An improved reel upon which film is wound up, the reel including a hold down clamp to which one end of the film is removably secured, the hold down clamp comprising a spring loaded clip under which the end of the film is inserted when the clip is raised manually.

3,670,984
LINE PICK-UP FOR FISHING REELS
Jean-Paul Lemery, Cluses, France, assignor to Carpano & Pons, Cluses, France
Filed June 18, 1970, Ser. No. 47,391
Claims priority, application France, June 20, 1969, 6920777
Int. Cl. A01k 89/00
U.S. Cl. 242—84.2 G 6 Claims



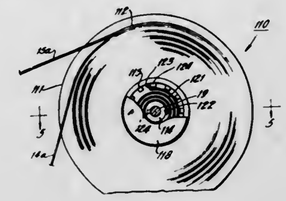
A line pick-up device for a fishing reel comprises a semicircular body having an end reduced in size with respect to the remainder of the body, a plastic cone molded over the reduced-size end and diverging in a direction towards the end tip of the reduced-size end, and line guiding means at the end tip of the reduced-size end and adjacent the base of the plastic cone for guiding a fishing line during winding thereof on the fishing reel. The line guiding means comprises either a fixed or rotatable flared member.

3,670,985
FISHING REEL
Yasomatsu Morishita, Kure, Japan, assignor to Kabushiki Kaisha Ryobi Seisakusho, Hiroshima-ken, Japan
Filed July 10, 1970, Ser. No. 53,950
Claims priority, application Japan, July 16, 1969, 44/68135; July 21, 1969, 44/69170; Aug. 2, 1969, 44/73465
Int. Cl. A01k 89/02, 89/04
U.S. Cl. 242—84.43 4 Claims



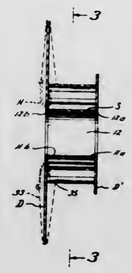
A fishing reel having side plates connected in spacer relation by stems to define a frame for a rotatable spool. A clutch lever on one plate is selectively pivoted to declutch the spool from its crank operated drive. A pair of levers are pivotally mounted intermediate their ends on a rear one of said stems. The forward ends of the levers are connected by a reversely threaded roller means. During winding, a line guiding wheel on the roller has a follower in the roller threads and is caused by the line to rotate and thereby reciprocate the guide wheel along the roller to evenly distribute line on the spool. The rear ends of said levers carry brake shoes. The intermediate portions of the levers are connected by a sleeve having a thumb lever portion depressable against a light spring bias to engage the brake shoes on the lever with the spool to retard rotation of same. To cast, the clutch is disengaged permitting free rotation of the spool while tension in the unwinding line lifts the brake shoe free of the spool until slackness occurs in the line allowing the brake to reengage the spool to prevent undesired overrunning.

3,670,986
SUPPLY REEL FOR BANDING APPARATUS
Robert D. Farkas, 5601 First Avenue, Brooklyn, N.Y.
Filed Dec. 29, 1970, Ser. No. 102,439
Int. Cl. B65h 75/48
U.S. Cl. 242—107.1 11 Claims



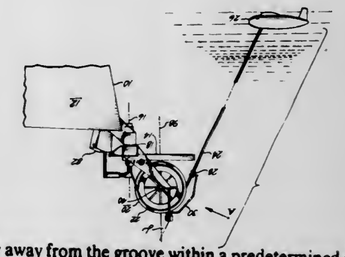
A heat seal type banding machine, in which tapes are fed in opposite directions into a working space, is provided with a tape supply means in which the tapes are double wound so that substantially equal lengths of each tape are dispensed simultaneously. A spring means is provided to constantly exert forces on the tapes, urging them in directions opposite to those directions in which the respective tapes move into the working space of the apparatus. Keying means prevents mounting of the tape supply means in an improper operating position.

3,670,987
TROTLINE STORAGE REEL
James J. Roebuck, P.O. Box 213, Mont Belvieu, Tex.
Filed Nov. 12, 1969, Ser. No. 876,007
Int. Cl. B65h 75/14, 75/28
U.S. Cl. 242—118.4 7 Claims



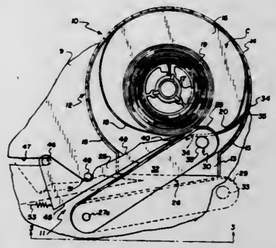
A trotline storage reel for storing a trotline in a coiled position comprising a central spool for receiving the main support line to which individual stagings, which are short lengths of line having a fish hook thereon, are connected to the main support line at longitudinally spaced intervals. The spool is provided with a radially extending flange adjacent one end thereof for supporting the individual stagings in an extended position and a plurality of openings are formed in the flange member for securing the fish hooks therein.

3,670,988
WINCH APPARATUS FOR FAIRED TOWLINE
Donald E. Leonard, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Aug. 3, 1970, Ser. No. 60,498
Int. Cl. B65h 54/28; B63b 21/56
U.S. Cl. 242—158 R 10 Claims



To protect a faired towline against adverse loading, a winch apparatus is provided with a helically grooved drum which is mounted on an assembly that can rotate automatically about a vertical axis upon command from a towline fleet angle sensor means. The helical drum groove has a cross-sectional configuration which allows for lateral bending of the towline, tangentially away from the groove within a predetermined arc, which feature, in combination with the fleet angle sensor control, will minimize lateral loads to the towline during towing and winching procedures.

3,670,989
CARTRIDGE LOADING MOTION PICTURE PROJECTION APPARATUS
Peter Andrews, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed March 18, 1970, Ser. No. 20,507
Int. Cl. G03b 23/02; G11b 15/32; B65h 12/14
U.S. Cl. 242—192 12 Claims



A cartridge for a cartridge-loading motion picture projector has an opening or slot therein for receiving portions of a film feeding mechanism that is used for extracting film from a film roll within the cartridge and for feeding the film to automatic or self threading devices of the motion picture projector. The cartridge has a deflectable member, such as a spring or tongue, positioned with respect to said opening so that entrance of the film feeding mechanism into the cartridge deflects such member from its normal position to a film guiding position within the cartridge. The deflectable member is located in the cartridge so that during rotation of the film roll in an unwinding direction by the film feeding mechanism the leading end of the film engages the member and is guided by it to a tip end of a film engages the member and is guided by it to a tip end of a film stripping finger. The finger then lifts the leading end of the film from the roll and delivers it through a guide slot or channel to automatic threading devices of the projector. The apparatus of this invention also comprises improved film feeding mechanisms that are useful with the cartridge disclosed herein as well as with other cartridges. Such film feeding mechanisms comprise means for deflecting the deflectable member as the mechanism enters the film cartridge, and means for narrowing the normal slot or channel between a film drive belt and the film stripping member, thereby to improve film feeding operations of the mechanism and to deliver

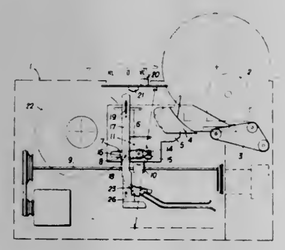
film from the device properly oriented for reception by an automatic threading device of the projector.

3,670,990

STRIP-HANDLING APPLIANCE FOR PROCESSING INFORMATION

Gottfried Pammer, Sudstadt, and Erwin Krob, Vienna, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Feb. 1, 1971, Ser. No. 111,483
Claims priority, application Austria, Feb. 3, 1970, A 980/70
Int. Cl. G03b *1/04*; **G11b** *15/32*
U.S. Cl. 242—192 **24 Claims**



Strip-handling means are provided for handling a record strip forming a coil on a spool and having a leading end on the outside periphery of said coil. A threading device is movable between an inoperative position and an operative position and is adapted in said operative position to engage the outside periphery of said coil and to remove said leading end from said coil. A final control member has an engaging surface and is operatively connected to said threading device and slidable to an inoperative position and an operative position to move said threading device to its inoperative and operative positions, respectively. A drive member is disposed adjacent to said engaging surface and rotatable on an axis and movable in a direction which is generally radial to said axis into and out of engagement with said engaging surface. Said drive member in engagement with said engaging surface is rotatable to move said final control member to its operative position. A mode control switch is movable to a predetermined position. The strip-handling means are adapted to initiate the unwinding of said strip from said coil when said switch is in said predetermined position. An intermediate control member is operatively connected to said switch and said drive member and arranged to move the latter into engagement with said engaging surface in response to a movement of said switch to said predetermined position.

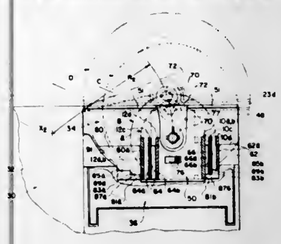
3,670,991

CARTRIDGE MOUNTING STRUCTURE FOR A CARTRIDGE LOADING MOTION PICTURE PROJECTOR OR THE LIKE

Daniel J. Stark, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 23, 1970, Ser. No. 31,183
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—197 **8 Claims**

A cartridge loading motion picture projector has a spindle that is movable along an arcuate path to each of several positions wherein it is adapted to be engaged with a reel within one of several sizes of cartridges that are mountable on the projector. Each of the cartridge sizes has similar locating structures, the projector spindle is received through openings in the cartridges. The openings and locating structures are positioned with respect to each other so that the openings are located along a second arcuate path if the cartridges are superimposed with their locating structures in alignment. The projector has cartridge mounting structure for positioning each of the similar locating structures on the cartridges at different positions on the projector so that the openings in the cartridges are located along the path of travel on the spindle.

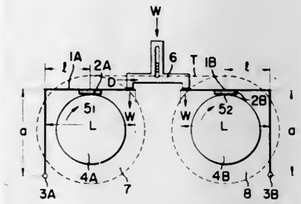


3,670,992

REEL BRAKE DEVICE FOR TAPE RECORDER

Takeshi Goshima, and Nobuhiro Imai, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,866
Claims priority, application Japan, Sept. 26, 1969, 44/91783
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—204 **13 Claims**



A brake device used with tape recorders or the like of this invention includes a first brake member acting in the cut-in direction and a second brake member acting in the escape direction, the first and second brake members being disposed adjacent to braked members provided on the take-up and supply sides, respectively. Two brake members are selectively operable so that the selected brake member may act solely in the escape direction irrespective of the rotational direction of the braked members, whereby brake force can be exerted solely in the escape direction without erroneously breaking or severing a tape or the like running between the supply and take-up sides.

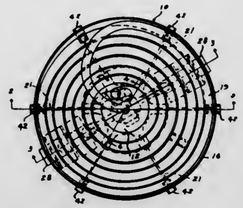
3,670,993

COMPACT HIGH CAPACITY BURNER FOR HOT AIR BALLOONS

Byron L. Kay, and Walter H. Thurn, Jr., both of Akron, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 12, 1970, Ser. No. 79,784
Int. Cl. B64b *1/62*
U.S. Cl. 244—32 **2 Claims**

A burner for a hot air balloon having a conically shaped preheat coil supported by and spaced from a substantially conical shaped flame deflector. A manifold, with a plurality of radially positioned holes which direct the flame toward the flame deflector, is connected to the preheat coil so that fuel is supplied to the manifold through the preheat coil. Air is supplied through holes in the manifold support. Igniters, operated by the pressure of the fuel supplied to the preheat coil, direct a starting flame into the space between the flame deflector and the preheat coil.

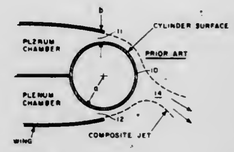


3,670,994

VARIABLE DEFLECTION THRUSTERS FOR JETS

Apostolos P. Kizilos, Minnetonka, Minn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 13, 1970, Ser. No. 63,369
Int. Cl. B64c *21/04*
U.S. Cl. 244—42 CC **2 Claims**



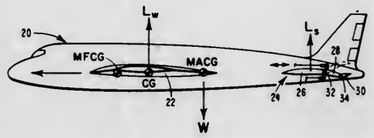
Variable deflection thrusters center body of improved design for jets for overcoming stream detachment at high mach numbers and high pressure ratios.

3,670,995

LONGITUDINAL STABILITY CONTROL DEVICE FOR FIXED WING AIRCRAFT

Edward J. Swearingen, San Antonio, Tex., assignor to Swearingen Aviation Corporation, San Antonio, Tex.

Filed May 20, 1970, Ser. No. 38,987
Int. Cl. B64c *17/02*
U.S. Cl. 244—80 **9 Claims**



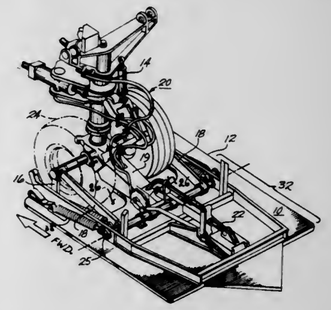
This device permits the aft center of gravity loading limit of an aircraft to be increased beyond its normal range without reducing the location of the most forward center of gravity loading limit. The means by which this is accomplished comprises an elongated spring member which has one end connected to the underside of the elevator control surface and which has its other end connected to a spring tension adjusting linkage mounted in the aircraft. The adjusting linkage causes the spring to pull the elevator downwardly to increase the nose down pitching moment about the center of gravity of the aircraft when the device senses a nose up pitch attitude, and releases the tension in the spring in response to a nose down condition. The device includes a feedback member which acts to relocate the spring member to hold the elevator in the desired position in order to trim the aircraft for a given center of gravity and airspeed.

3,670,996

LANDING GEAR GRAVEL AND WATER DEFLECTOR

Robert W. Jenny, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 20, 1969, Ser. No. 867,473
Int. Cl. B64c *25/32*
U.S. Cl. 244—103 **12 Claims**



A gravel and water deflector plate for preventing gravel and water, which is energized into motion during operation of the landing gear, from damaging other airplane parts. The plate is mounted in a horizontal plane and surrounds the wheel adjacent the ground or runway. The plate extends in all horizontal directions from the wheel for distances which are sufficient to intercept the upthrown gravel trajectories.

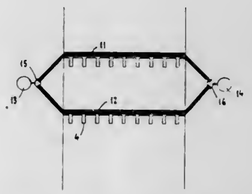
In addition, the deflector plate may be a separate operational element or may also be utilized as a closing door for the landing gear well during flight.

3,670,997

AIRCRAFT ARRESTING DEVICE

Per Borje Fonden, Hejdezatan 3, and Karl Ove Torgny Walander, Elas Brandstrom gata #5, both of Linkoping, Sweden

Filed Dec. 11, 1969, Ser. No. 884,157
Claims priority, application Sweden, Dec. 13, 1968, 17101/68
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **3 Claims**



An arrangement for arresting landing aircraft in which a cable is usually disposed in the path of the aircraft, the present invention comprising a plurality of parallel cables instead of a single cable, said cables being normally disposed below the

surface of the landing field and being capable of being lifted one at a time or lifted together or in other arrangements and numbers, to the raised arresting position.

3,670,998
SEVERANCE OF POLYCARBONATE MATERIAL CANOPY TRANSPARENCY
Joseph L. Charleville, Kirkwood; Mart E. De Tienne, St. Louis County, and Charles W. Lammert, St. Charles, all of Mo., assignors to The United States of America as represented by the Secretary of the Air Force
Filed July 10, 1970, Ser. No. 53,727
Int. Cl. B64c 1/14
U.S. Cl. 244—121 **1 Claim**



Method for permitting the emergency bail-out from an aircraft having a frangible polycarbonate material canopy transparency by a person in an ejection seat. A flexible linear shaped charge is used to sever the polycarbonate canopy transparency in lieu of jettisoning the canopy. The charge, after ignition and explosion, severs the canopy transparency around the forward arch, back along the canopy side frame, and up the canopy to the rear of the seat to a point which leaves an unsevered section, of preselected length, of the canopy transparency. This unsevered section serves as a hinge and as a retaining means, and as the seat is ejected from the aircraft the severed section of the canopy transparency moves backwardly away from the seat, thereby precluding any contact between the canopy transparency and the person in the ejection seat.

3,670,999
PARACHUTE FORCE TRANSFER MECHANISM WITH BUILT-IN OPEN LINK
James E. Leger, Enon, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 5, 1970, Ser. No. 87,216
Int. Cl. B64c 1/22; B64d 1/08
U.S. Cl. 244—137 **6 Claims**



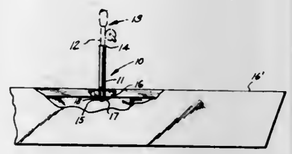
A parachute extraction line force transfer mechanism having a first link connected to the extraction line of an extraction parachute and a second link connected to the extraction line of the main parachute. A crank arm engages tripping fixture on the floor of the aircraft to turn a shaft with cams which operate a mechanism to interconnect the two links and to release the interconnected links so that the extraction parachute can deploy the main parachute. A solenoid which can be energized by the load master acts to release the link connected to the extraction parachute without releasing the link connected to the main parachute. Disconnect type terminal blocks act to connect the solenoid of only the aft most platform to the power supply to prevent the releasing of the extraction parachute link without the main parachute link after the platform has moved a predetermined distance.

3,671,000
SIGHT-THRU TELESCOPIC SIGHT MOUNT
Paul D. Williams, Davison, Mich., assignor to Williams Gun Sight Co., Davison, Mich.
Filed June 12, 1970, Ser. No. 45,841
Int. Cl. F41g 1/38
U.S. Cl. 248—205 R **5 Claims**



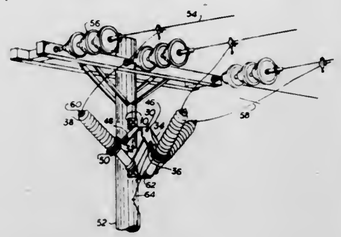
A telescopic sight mount for operatively securing a telescopic sight to the receiver or similar portion of a firearm and comprising a pair of apertured base members adapted to be installed directly on the firearm and detachably support pairs of split ring retaining members fixedly secured to an associated telescopic sight, the sight mount permitting use of standard "iron" sights on the firearm without requiring removal of the telescopic sight and providing a new and improved means for conveniently interchanging telescopic sights.

3,671,001
FISHING ROD HOLDER FOR BOATS
Harold H. Hall, Sr., 1975 Ocala Road, North Palm Beach, Fla.
Filed April 16, 1970, Ser. No. 29,032
Int. Cl. A01k 97/10
U.S. Cl. 248—43 **1 Claim**



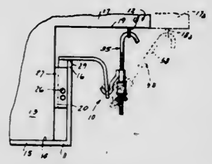
A device for supporting a fishing rod on a boat while the rod is unattended. This device includes a sleeve portion for receiving the butt of the fishing rod, the other end having an extension that will be received within the oar lock of the boat. The device also includes a pivotable member for preventing the device from coming out of the oar lock and falling overboard.

3,671,002
TRIPLE ARRESTOR MOUNT
Ernest A. Elliott, Detroit; John W. Kane, Pontiac, and Randolph A. Pasen, Dearborn Heights, all of Mich., assignors to The Detroit Edison Company, Detroit, Mich.
Filed Aug. 13, 1970, Ser. No. 63,477
Int. Cl. F16m 13/02; F16l 3/08
U.S. Cl. 248—300 **7 Claims**



A mount designed for attachment to a stand-off insulator bracket having three downwardly and outwardly diverging legs provided with means adjacent their lower ends to support three elongated arrestors in laterally spaced upwardly and outwardly diverging relation.

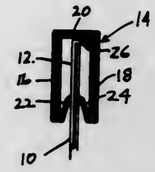
3,671,003
CAMPER HOLD-DOWN BRACKET
Samuel H. Henson, 1201 W. Prospect Street, Kewanee, Ill.
Filed Sept. 2, 1970, Ser. No. 68,914
Int. Cl. B60p 3/32; B65j 1/22
U.S. Cl. 248—361 R **3 Claims**



A bracket for attaching camper bodies to truck beds equipped with stake pockets wherein the bracket includes a portion extending into the stake pocket for attachment thereto and an outwardly and downwardly extending plate attached to the top of the stake pocket received portion, the plate terminating in a portion having apertures therethrough and a connecting member for adjustable positioning between the apertures and a camper body carried bracket, the connecting member including a J-bolt having its long leg threaded and a hook having a long leg attached to a cylindrical member received around the long leg of the J-bolt and retained thereon by an adjustable nut threaded onto the end of the J-bolt.

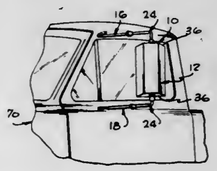
3,671,004
HANGER FOR MATERIAL IN SHEET FORM
Robert S. Cram, Detroit, Mich., assignor to Design Creations, Inc., Detroit, Mich.
Filed Sept. 4, 1970, Ser. No. 69,825
Int. Cl. A47g 1/16
U.S. Cl. 248—467 **1 Claim**

A hanger for decorative sheet material such as posters, pictures, record covers and the like, comprises a channel member of generally U-shaped cross-section having a longitudinal opening or slot at one side thereof defined by inwardly bent, oppositely towards each other inclined tabs extending from the ends of the leg portions of the U-channel member which clamp the sheet material in between them or permit their engagement with a hook provided on the sheet material over a



selected tab for support of the sheet material. Selectively, one side of the U-channel type hanger member maybe provided with pressure sensitive adhesive portions to secure the hanger member to a supporting surface such as a wall or the like.

3,671,005
SIDE MOUNTED REAR VIEW AUTOMOTIVE MIRROR ASSEMBLY AND MOUNTING BRACKET THEREFOR
Odetta B. Schultz, 1326 South San Gabriel Boulevard, San Gabriel, Calif.
Filed Oct. 15, 1970, Ser. No. 80,883
Int. Cl. B60r 1/04
U.S. Cl. 248—480 **7 Claims**

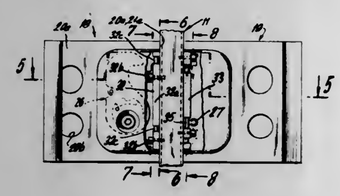


A side mounted rear view automotive mirror assembly including a mirror frame and mounting brackets at the frame ends having support arms extending transversely of the frame, pivoted bracket members at one end of the arms for attachment to the side of an automotive vehicle, and coupling means, such as L-shaped coupling members, at the opposite ends of the arms rotatably and telescopically joining the arms and frame in the manner which permits angular adjustment of the frame about its longitudinal axis as well as about a transverse axis generally parallel to the bracket support arms, endwise adjustment of the frame along its longitudinal axis, lateral adjustment of the frame lengthwise of the bracket arms, and installation of mirror frames of different sizes and shapes. A mounting bracket for the mirror assembly.

3,671,006
REFRIGERATOR WALL PANELS WITH PANEL FASTENERS AND APPARATUS FOR MAKING SAID PANELS
Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Hardware Corporation, Binghamton, N.Y.
Filed July 1, 1970, Ser. No. 51,635
Int. Cl. B22d 19/04
U.S. Cl. 249—97 **20 Claims**

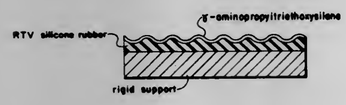
The panels are molded. Frame members for the edges of the panel are assembled with thin, parallel spaced side walls, and with complementary panel, hook and pin fastener members in registry with appropriate openings or slots in the frame members, ro form the molds for the panels. Fixtures are provided to properly align each panel hook fastener member molded into one panel with a complementary panel pin fastener member molded into another panel fastener. These fixtures

cut down the time necessary for positioning the panel fastener members preparatory to molding, and to ensure proper posi-



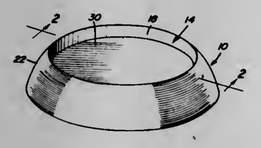
tioning of the fasteners in correct positions so that each hook fastener member matches exactly with a complementary pin fastener member.

3,671,007
COATED SILICONE RUBBER MOLD
James L. Bailey, Dover, and Franklin A. Rodgers, Brookline, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 788,707, Jan. 3, 1969, Pat. No. 3,620,895. This application Dec. 7, 1970, Ser. No. 95,478
Int. Cl. B29d *1/04*
U.S. Cl. 249—114 **2 Claims**



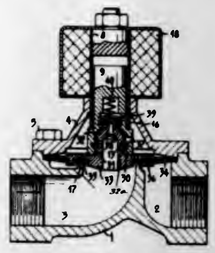
A mold comprising a support, a silicone rubber layer of predetermined configuration and a layer of γ-aminopropyltriethoxysilane.

3,671,008
FOOD MOLD
Fred A. Villalba, Jr., 9100 Rex Court, El Paso, Tex.
Filed Aug. 28, 1970, Ser. No. 67,938
Int. Cl. A23g *1/22, 3/12, 3/18;* **F25c** *7/20*
U.S. Cl. 249—155 **2 Claims**



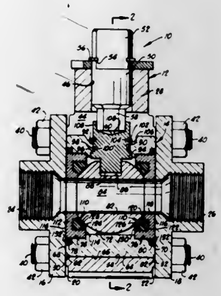
A tortilla mold comprising a frame defining a central circular molding cavity which contains a vertically adjustable base disk for varying the thickness of the molded tortilla. The frame includes a series of sockets in the bottom of the mold cavity which receive downwardly projecting guides on the undersurface of the disk for guiding the vertical adjustment of the disk which is effected by several adjusting screws extending upwardly into the disk guides through the bottom of the frame. Gauge marks are associated with each screw so as to visionally indicate the adjustment of the disk. The wall of the molding cavity is circular and smooth, terminating in an upward cutting edge. The mold receives a thin overlayer of plastic within which the cornmeal is pressed, cut and formed.

3,671,009
FLUID-CONTROLLING VALVE
Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland
Filed March 20, 1970, Ser. No. 21,336
Claims priority, application Switzerland, April 15, 1969, 163/70; Jan. 8, 1970, 164/70
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 **1 Claim**



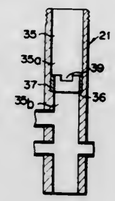
An electromagnetically controlled valve, wherein the closure-member is connected with the movable core of the controlling electromagnet in a simple and smooth manner by means of a coupling the members of which are rigid respectively with the core and with the closure-member, one of said members housing with a clearance the other member and defining with the latter a space inside which an O-ring is held with an axial clearance. Said O-ring fitted in an annular groove extending outwardly of the housing transmits the motion of the core to the closure-member so as to raise it off its seat.

3,671,010
VALVE ASSEMBLY WITH DROP-TYPE STEM
Domer Scaramucci, 3245 South Hattie, Oklahoma City, Okla.
Filed Dec. 5, 1968, Ser. No. 781,310
Int. Cl. F16h *51/00*
U.S. Cl. 251—151 **43 Claims**



A valve assembly, particularly useful between flanges, which utilizes a housing unit and a separate valve unit. The housing unit provides a supporting housing adapted to be supported between the flanges and to include a valve operator and a first valve stem. The valve unit is sized to be inserted in the housing unit and includes the valve member, seats, and at least one additional valve stem. The valve stem carried by the housing unit is insertable lengthwise into connection with the valve stem of the valve unit. In an assembled position, the valve unit is sealed against the flanges and prevents the housing unit from being contacted by fluid controlled by the valve.

3,671,011
VALVE ASSEMBLY FOR CORNETS, TRUMPETS AND LIKE INSTRUMENTS
Yukihiro Oguma, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Dec. 4, 1970, Ser. No. 95,039
Claims priority, application Japan, Dec. 5, 1969, 44/115354
Int. Cl. G10d *9/04;* **F16k** *3/26*
U.S. Cl. 251—323 **3 Claims**



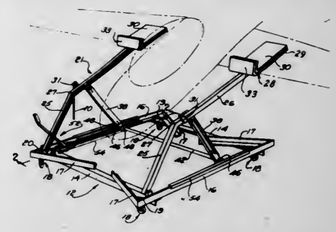
A valve assembly comprises a valve cylinder and a piston valve slidable in the cylinder. The cylinder is formed of a one-piece tubular body and has a cylindrical bore formed therein, the bore being divided into two sections one of which is larger in diameter than the other so as to form an annular step therebetween. A tubular collar is tightly fitted in the bore so as to seat on the step and has a pair of cut-out portions formed at an annular edge thereof. The cut-out portions receive both ends of a guide member permitting the lengthwise movement of the valve and holding the valve against turning in the cylinder.

3,671,012
GREASE COMPOSITIONS CONTAINING POLYMERS
William P. Scott, and Lynn C. Rogers, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed March 16, 1970, Ser. No. 20,039
Int. Cl. C10m *5/22*
U.S. Cl. 252—33.4 **15 Claims**

This disclosure concerns compositions comprising a major amount (e.g. at least 75 weight percent) of a thixotropic, grease-like composition consisting essentially of a nonvolatile diluent oil, an oil-soluble dispersing agent, an alkaline earth metal carbonate and a minor amount (e.g. 0.1 to 25 weight percent) of a polymer. The composition is particularly useful as a lubricating grease and also is useful as a rust inhibitor.

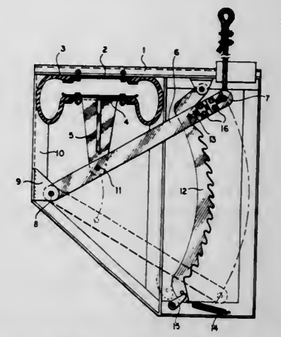
3,671,013
AIRCRAFT HANGARING SUPPORT
Kirke B. Everson, Jr., R.F.D. 2, P. O. Box 471, and Stefan F. Eisen, R.F.D. 2, P. O. Box 516, both of Danielson, Conn.
Filed May 25, 1970, Ser. No. 40,095
Int. Cl. B60p *1/48*
U.S. Cl. 254—8 R **5 Claims**

An aircraft hangaring support having a base framework mounted on rollers, the framework having pivotally attached thereto arms carrying aircraft wing engaging means, the arms



being mechanically pivoted to raise the aircraft fuselage by the wings.

3,671,014
DEVICE FOR FASTENING OF LOAD
Gote Sixten Karlsson, Masugnsbyn, Sweden
Filed Nov. 19, 1969, Ser. No. 878,040
Claims priority, application Sweden, Nov. 21, 1968, 15837/68
Int. Cl. B66f *1/00*
U.S. Cl. 254—51 **10 Claims**

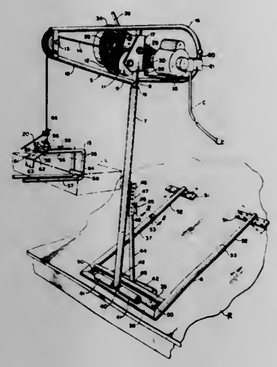


A device for tensioning and fastening a flexible elongated member, such as a chain or wire. A frame has a pressure bellows and a lever mounted thereon. The pressure bellows is operatively connected to the lever by a shank member whereby the stroke of the pressure bellows is multiplied by the leverage ratio of the lever so that the free end of the lever goes through a increased stroke to tension a flexible elongated member attached to the free end of the lever.

3,671,015
PORTABLE HOISTING UNIT
Gene F. Sullivan, Dubuque, Iowa, assignor to Howard W. Brown, Dubuque, Iowa
Filed Feb. 26, 1970, Ser. No. 14,493
Int. Cl. B66c *23/60*
U.S. Cl. 254—142 **7 Claims**

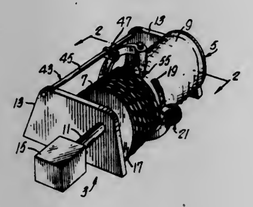
A foldable base structure has a base frame that is fastened to a roof or other deck and a standard that is pivoted on the frame is raised to a substantially vertical position, in which it is rigidly supported by a brace pivoted at its one end to the frame and fastenable at its other end to the standard. A separate removable crane unit has a post which telescopes in the standard, and swivels relative thereto, and it carries a motor and a winch driven thereby on its upper end in nicely balanced rela-

tionship to the post, the hoisting line extending from the winch over a pulley on the outer end of the frame in which the motor and winch are provided. The motor is reversible by manual



control and a sprag is manually controlled to lock the winch through its drive gearing in a selected position for safer handling of a load. A hoisting hook of novel design is attached to the line to carry the load.

3,671,016
CABLE HOLD-DOWN DEVICE
Wiktor Gladysz, Dollard des Ormeaux, Quebec, Canada, assignor to Atlas Hoist & Body Inc., Montreal, Quebec, Canada
Filed March 31, 1970, Ser. No. 24,098
Int. Cl. B66d 1/36
U.S. Cl. 254—190 7 Claims



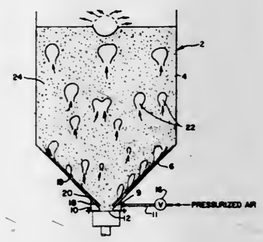
A cable hold-down device comprising a frame which can be positioned to extend adjacent and about a portion of the circumference of a cable drum. The frame carries a rotatable pulley to press against the last section of cable wound on the drum. The frame rides on the drum and has means for biasing the pulley against the cable.

3,671,017
FENCE DROPPER
Roger Norman Sachs, Brisbane, Queensland, Australia, assignor to National Nail Pty. Ltd., Mayne Junction, Brisbane, Queensland, Australia
Filed June 8, 1970, Ser. No. 44,036
Int. Cl. E04h 17/02
U.S. Cl. 256—47 2 Claims



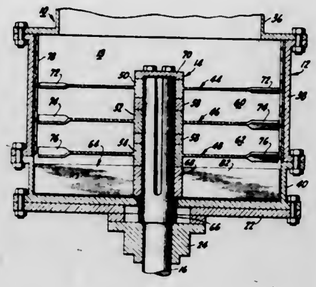
A wire fence dropper with top and bottom grips for engaging top and bottom wires of a fence has intermediate catches for intermediate fence wires, each catch being two opposite U-bends one above the other, interconnected by a transverse S-bend in one curve of which the fence wire seats.

3,671,018
BUBBLE-BLENDING PARTICULATE SOLIDS
Charles W. McKibben, Grove, Okla., and Robert C. Robinson, La Marque, Tex., assignors to Union Carbide Corporation, New York, N.Y.
Filed Nov. 19, 1970, Ser. No. 91,030
Int. Cl. B01f 13/02
U.S. Cl. 259—4 11 Claims



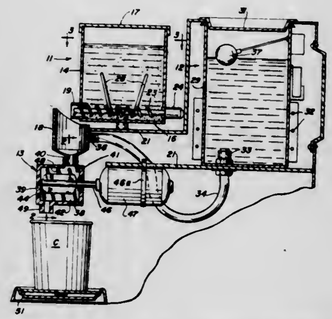
Particulate solids such as normally solid polymer particles can be blended to achieve complete homogeneity in a storage vessel containing a volume up to about 10,000 cubic feet of resin by rapidly introducing gas bubbles at the base of the vessel. The gas is introduced through nozzles protruding from a plenum located at the bottom of the vessel with the nozzle orifices located parallel to the vessel walls adjacent to the plenum.

3,671,019
APPARATUS FOR MATERIAL FLUFFING
Jesse J. Tapscott, and Harold T. Andersen, both of Santa Rosa, Calif., assignors to Rietz Manufacturing Co., Santa Rosa, Calif.
Filed Dec. 10, 1970, Ser. No. 96,724
Int. Cl. B01f 7/22, 7/26
U.S. Cl. 259—8 10 Claims



Apparatus for the fluffing, delumping, pulping, or blending of various materials (e.g. moist fibrous filter or press cake). The infeed material is advanced through a fluffing chamber by a rotor having fluffing discs. A scuff plate surrounding the rotor is provided with rows of projections which create high turbulence in the air column carrying the material. The material is momentarily retained in dwell regions in the chamber for agitation.

3,671,020
APPARATUS FOR PRODUCING A BEVERAGE BY MIXING A POWDERED BASE INCLUDING SUGAR AND A COLD LIQUID
Donald E. Krup, Elgin, Ill., assignor to Karma Division of Brandt Automatic Cashier Company, Addison, Ill.
Filed Oct. 9, 1970, Ser. No. 79,391
Int. Cl. B01f 7/04
U.S. Cl. 259—10 3 Claims



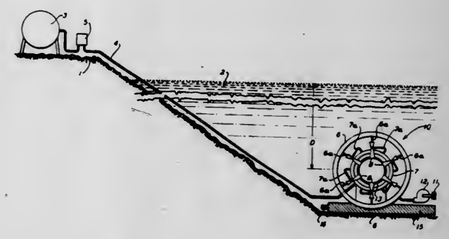
An apparatus for mixing and vending beverages made from a mixture of a water soluble powder admixed with granulated sugar or other non-readily dissolvable sweetener agent and cold water. The apparatus includes a powder dispensing assembly and water dispensing assembly each discharging predetermined quantities of powder and water into a pre-mixing chamber and thence to a final mixing chamber which includes an agitating blade. Disposed in the chamber is a helically wound wire member which serves to shift the undissolved powder and sugar back to the inlet end of the chamber to be mixed by the agitator blade for blending with the water.

3,671,021
EXTRUDER AND SCREW THEREFOR WITH UNDERCUT MELT CONDUCTING CHANNEL
Anthony W. Pomper, Edison, and Lloyd Kovacs, Somerset, both of N.J., assignors to Midland-Ross Corporation
Filed Aug. 26, 1970, Ser. No. 66,915
Int. Cl. B01f 7/02; B29f 3/02
U.S. Cl. 259—109 9 Claims



A screw type extruder for reducing a solid thermoplastic material to a fluid wherein a spiral body of uniform width of the material is maintained in continuous contact with the barrel of the extruder and the screw is formed with a secondary or subchannel arranged substantially underneath a solid body supported within the main channel for conducting the melted material toward the discharging end of the extruder.

3,671,022
METHOD AND APPARATUS FOR THE MICRODISPERSION OF OXYGEN IN WATER
William Burton Laird, Murray Hill; Roy L. Williams, Millington, and Allen V. Muska, Berkeley Heights, all of N.J., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed Oct. 6, 1969, Ser. No. 863,870
Int. Cl. B01f 3/04
U.S. Cl. 261—29 17 Claims

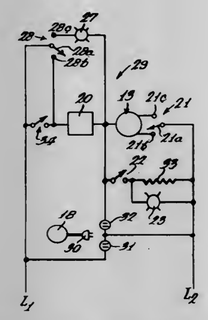


Method and apparatus are disclosed for oxygenating river water or the like. According to the invention a localized flow of water is established beneath the surface of the river, e.g. by impelling water at the river bottom through a conduit. Simultaneously, small volumes of water are mixed with oxygen at pressures under the river, and are immediately injected into the localized flow whereby the minute oxygen bubbles therein are dispersed before substantial agglomeration of bubbles can occur.

3,671,023
HUMIDIFIER

Lewis W. Sell, Grayslake, Ill., assignor to Cory Corporation

Filed Feb. 12, 1970, Ser. No. 10,814
Int. Cl. B01f 3/04
U.S. Cl. 261—26 3 Claims

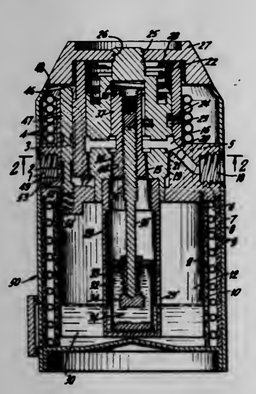


A humidifier having a belt, means for moisturizing the belt, means for moving air against the belt and delivering air moisturized thereby to the ambient atmosphere, and means for selectively driving the belt *a* whenever the air moving means is operated, or *b* continuously.

3,671,024
EXPANSION TEMPERATURE SENSING MEANS, IN PARTICULAR FOR MEDICAL APPARATUS

Hans Georg Breiling, Gross Gronau, Germany, assignor to Dragerwerke Aktiengesellschaft, Lubeck, Germany

Filed April 30, 1970, Ser. No. 33,361
Claims priority, application Germany, May 2, 1969, P 19 22 403.4; May 2, 1969, P 19 22 404.5
Int. Cl. B01f 3/04; A61m 17/00
U.S. Cl. 261—39 R 6 Claims

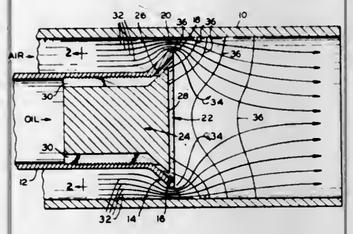


A temperature responsive device for controlling the flow of fluid particularly for medical devices, such as a breathing apparatus and a vaporizer for anaesthetics, comprises a housing which has a supply inlet for the gas and includes a chamber at its lower end which is adapted to contain a liquid such as an anaesthetic. The interior of the housing defines a first pressure compensating passage for the gas in which a part of the inflow of the gas flows through a spiral around a top portion of the housing and then down to a lower spiral defined around the fluid chamber for the liquid, such as the anaesthetic. A second partial gas flow passage extends in the form of a by-pass from the inlet through a valve passage to the outlet. Flow from the fluid chamber to the discharge are regulated by means of two concentric rearranged movable valve members, the first valve member containing the expansible means which is located in the anaesthetic material includes a surface which is spaced from a valve surface of the second movable member and which defines the flow passage from the fluid chamber to the outlet. The second movable member defines a flow passage with a fixed portion of the housing and it is biased in a downward direction against the housing but is movable against this biasing pressure to vary the passage in the by-pass line. In addition, this same second movable member defines a surface which, together with the first movable member, defines the control passage from the fluid chamber to the outlet.

3,671,025
FLUID MIXING DEVICE

Perry R. Elliott, Route 1, Box 950, Eugene, Oreg.

Continuation of Ser. No. 746,438, July 22, 1968, abandoned.
This application May 3, 1971, Ser. No. 139,931
Int. Cl. B01f 5/04
U.S. Cl. 261—76 11 Claims

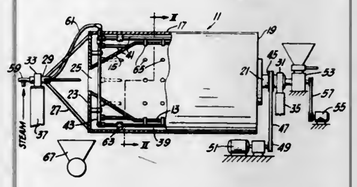


A fluid mixing device suitable for oil burner use comprises an outer cylindrical tubular member and an inner cylindrical tubular member provided with a flared bell at one end thereof. The outer peripheral lip of the bell has a diameter thereacross which is at least half the inner diameter of the outer tubular member, for defining a narrow annular venturi orifice of substantially constant radial dimension. Air flowing in the outer tubular member increases in velocity and decreases in pressure at the orifice for drawing oil from the inner tubular member in order to produce a finely mixed fog beyond the flared bell.

3,671,026
DEVICE FOR EXPANSION OF EXPANDABLE POLYMER BEADS

Frank J. Mills, Beaver; John T. Sadowski, Aliquippa; Harwood H. Squires, Georgetown, and James J. Uebelhart, Beaver, all of Pa., assignors to Sinclair-Koppers Company

Filed Nov. 2, 1970, Ser. No. 85,841
Int. Cl. F27b 15/00
U.S. Cl. 263—21 B 6 Claims

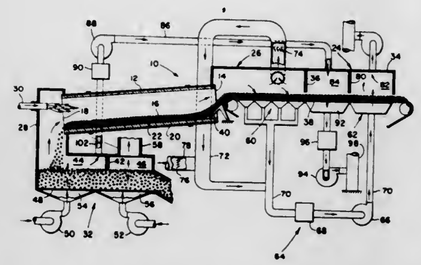


An apparatus is provided wherein large low-density interlocking particles are made by expanding thermoplastic polymer beads containing a normally liquid organic blowing agent. The beads are expanded by heating to the temperature of expansion with steam in a rotating tube. Gentle agitation is provided by a combination of the tumbling action of the rotating tube and the action of the steam rising through the expanding beads. The resultant uniformly expanded particles are not crushed or shredded. The particles are suitable for use in loose-fill packaging of shock-sensitive materials.

3,671,027
HEAT PROCESSING OF MINERALS

Robert D. Frans, Middleburg Hts., Ohio, assignor to The Hanna Mining Company, Cleveland, Ohio

Filed Sept. 24, 1970, Ser. No. 75,090
Int. Cl. F27b 7/02
U.S. Cl. 263—32 R 7 Claims

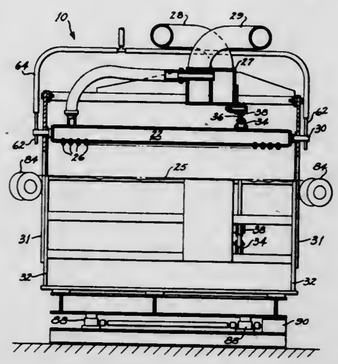


Heat processing apparatus of the type including a rotary kiln, drying and preburning sections at the material inlet end to pretreat the material prior to burning in the kiln, and a cooler at the discharge end of the kiln. The drying section is divided into two in-series chambers, with hot gases from the preburning section circulated through the first such chamber and from the cooler through the second chamber.

3,671,028
QUENCH SYSTEM FOR PIPES

Klaus H. Hemsath, Sylvania, Ohio, assignor to Midland-Ross Corporation, Toledo, Ohio

Filed Jan. 18, 1971, Ser. No. 107,082
Int. Cl. C21d 1/62
U.S. Cl. 266—6 S 12 Claims

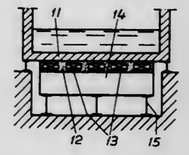


A quench system for pipes in which jet streams of quench liquid are directed against only the outside surface of an open ended pipe as it passes therethrough. The jet stream nozzles are designed to deliver solid jet streams and are arranged in parallelly spaced apart and coaxially disposed annular groups. The nozzles of each group are directed so that the axes of their jet streams lie in a single plane that is perpendicular to the pipe axis. The axes of the jet streams of each group are also uniformly and adjustably offset or angled with respect to radial lines extending from the pipe axis. The jet streams of a planar group become confluent on the surface of the pipe and the confluent portion has centrifugal components of force which induce the quench fluid to separate from the surface of the pipe. This arrangement enables the spent quench fluid to be expelled through the space between the planes of the incoming jet streams without accumulation of quench fluid from non-adjacent planes. A barrier may be provided ahead of the first group of liquid jet nozzles to limit the frontal flow of quench fluid.

3,671,029
FURNACE FOR NON-FERROUS METALS

Karl Gosta Karlsson, and Jan Olof Gustaf Bostedt, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 8, 1970, Ser. No. 44,229
Claims priority, application Sweden, June 24, 1969, 8928/69
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 2 Claims

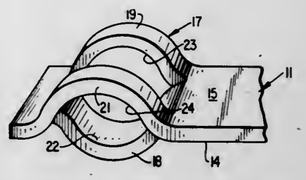


A furnace for non-ferrous metals or alloys is provided with a base supporting the furnace. Under the bottom, but supported by the base are arranged at least one electromagnetic stirrer of multiphase type.

3,671,030
SPRING LEAF AND METHOD OF MAKING

John P. Marion, Valparaiso, Ind., assignor to North American Rock Corporation, Pittsburgh, Pa.

Filed June 1, 1970, Ser. No. 42,289
Int. Cl. F16f 1/18, 1/26
U.S. Cl. 267—54 5 Claims



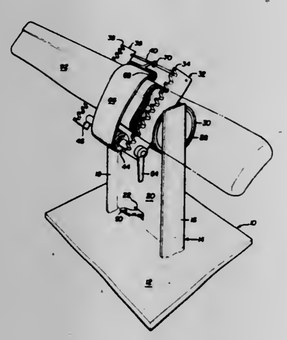
A vehicle spring leaf has at least one of its opposite ends formed with closed eyes for connection to frame or shackle pivots. The spring leaf is slitted parallel to its length near the end and subjected to a deformation operation whereby an intermediate portion of the leaf is oppositely displaced with respect to the displacement of adjacent edge portions to provide opposed semi-cylindrical loops defining the eye. The deformation operation may occur either simultaneously with or subsequent to the slitting of the leaf.

3,671,031
FURNITURE SPRING CLIP AND ASSEMBLY
C. Leonard Krakauer, Roslyn Heights, N.Y., assignor to Kay Manufacturing Corp., Brooklyn, N.Y.
Filed Nov. 12, 1970, Ser. No. 88,831
Int. Cl. A44b 21/00; F16f 3/00
U.S. Cl. 267—110 5 Claims



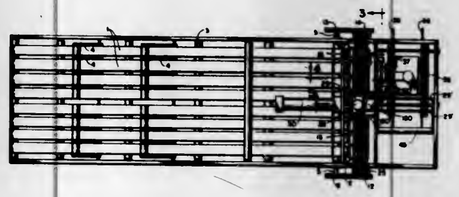
A clip of sheet material adapted for pre-assembly, or pre-assembled, to a tension spring for the seats of backs of upholstered furniture, is attached or attachable to a slotted furniture frame element merely by passing the free end part of the clip through the slot of the frame element and tensioning the spring. The clip is L-shaped at one end and has a loop at its other end adapted to embrace or embracing the wire of the spring.

3,671,032
ADJUSTABLE HOLDING DEVICE
John F. Gettinger, 1500 N.W. First Avenue, Fort Lauderdale, Fla.
Continuation-in-part of Ser. No. 837,380, June 30, 1969, Pat. No. 3,595,559. This application June 22, 1970, Ser. No. 48,093
Int. Cl. B23q 1/04
U.S. Cl. 269—72 5 Claims



An adjustable holding device for holding automobile bumpers or the like while work is being performed on them. The device includes a support base having a vertical component defining a cradle, and a rotatable cylinder horizontally mounted on the cradle for adjustable swinging movement. At least two engaging elements for engagement with the edges of a bumper are mounted in parallel on the rotatable cylinder. Also included is a holding mechanism mounted on the engaging elements which is used for holding a bumper in position when it is engaged with the engaging elements, and a brake mechanism for holding the rotatable cylinder on the cradle in any adjusted position.

3,671,033
MACHINE AND METHOD FOR FOLDING PLASTIC BAGS AND THE LIKE
John B. Coast, Baton Rouge, La., assignor to Coast Machinery, Inc., Baton Rouge, La.
Filed Nov. 23, 1970, Ser. No. 92,087
Int. Cl. B65h 45/12
U.S. Cl. 270—83 20 Claims



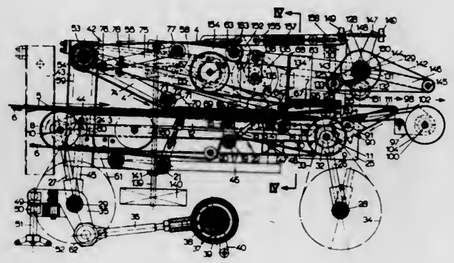
An automatic, variable speed, plastic-bag-folding machine which takes flat plastic bags, rolls, folds, flattens and packages the bags; the machine consists of a conveyor belt assembly (FIGS. 1 & 2) fed by the discharge of a plastic-bag-making machine which feeds the bags into rolling, folding (FIGS. 6 & 7) and multi-bag packaging sections (FIG. 8), synchronized by a pneumatic control system (FIG. 9); the preferred embodiment produces the tubular, rolled bag by a circularly disposed set of interdigitated rollers (FIGS. 3–5); a second embodiment utilizes a continuous belt having a geometric circular rolling section therein to produce the tubular rolled bag (FIGS. 10 & 11).

Having formed the rolled bag; a vertical pin located at the middle of the tubular bag is thrust perpendicular to and against the tubular roll pulling the flexible bag from the rolling section and producing a half-fold; as the bag is pulled from the rolling section it is passed between two inwardly biased rollers to flatten the bag and then pushed into the multi-bag packaging section consisting of a tightly fitted pin slot on a set of conveyor chains which holds and secures the folded bag as the pin is retracted in preparation for the next bag folding cycle; when the appropriate number of bags have been folded and secured, a commercial packaging box is fitted beneath the loaded slots and a set of fingers are activated to push the bags out of the slots into the box.

3,671,034
APPARATUS FOR STACKING SHEETS
Gerardus Johannes de Ridder, Baarn, Netherlands, assignor to Ingenieursbureau De Kidder N.V., Baarn, Netherlands
Filed June 30, 1970, Ser. No. 51,184
Claims priority, application Netherlands, June 30, 1969, 6909977
Int. Cl. B65 29/14; B65h 31/30
U.S. Cl. 271—68 22 Claims

An apparatus for stacking loose sheets, such as newspapers, periodicals and the like, which are fed in a continuous flow of imbricated sheets, each lying with its leading edge part under the preceding sheet of said flow, to a stack forming station having a stop forming an abutment for the leading edges of the oncoming sheets whereby each sheet is pushed underneath the preceding sheets forming a stack at the stacking station. The station is provided adjacent the stop with rotating star wheels engaging the leading edge of each oncoming sheet to lift said edge and to support the stack being formed at a small distance above the plane of feed so as to reduce the friction between the oncoming sheets and the growing stack. Further lifting means may be provided at the trailing lower edge of the stack

being formed. When a stack of the requisite number of sheets is formed, a movable separating device is inserted underneath



the stack so lifted for further raising and removing the completed stack.

3,671,035
CONVEYOR APPARATUS
Walter Reist, Hinwil, Zurich, Switzerland, assignor to Ferag AG, Zurich, Switzerland
Continuation of Ser. No. 745,596, July 17, 1968, abandoned. This application May 6, 1970, Ser. No. 37,367
Claims priority, application Switzerland, July 21, 1967, 10389/67
Int. Cl. B65h 29/12, 29/28
U.S. Cl. 271—76 12 Claims

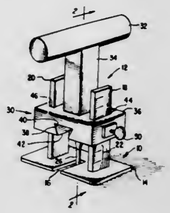


Conveyor apparatus for transporting an imbricated formation of objects, such as a succession of folded newspapers, comprises a conveyor track adjoining the trailing edges of the newspapers, and pairs of grippers moving along the conveyor track and gripping the trailing edges of the newspapers. A distribution or device is disposed ahead of the conveyor track to provide the intervals between successive newspapers of the imbricated formation so that the distance between successive trailing edges of the newspapers corresponds to a predetermined value.

3,671,036
GOLF TEE SETTER
Joseph Rubino, Earlton, N.Y.
Filed Aug. 4, 1970, Ser. No. 60,797
Int. Cl. A63b 57/00
U.S. Cl. 273—33 1 Claim

This invention relates in general to golf tees setters, and, in particular, is a device for setting golf tees so that the top of each will be the same distance as the others above the ground. The device comprises a hollow cylinder in length equal to the distance that the tee is desired to be set above the ground, and having two holes diametrically opposite each other in the sidewalls thereof, said holes being large enough to admit fingers placed on opposite sides of the cylinder almost to meet at the central longitudinal axis of the cylinder, for holding the tee.

3,671,037
GOLF TEE SETTER-POSITIONER
John E. Murdock, Jr., Route 2, Mount Blanco, Chester, Va.
Filed Aug. 13, 1969, Ser. No. 849,680
Int. Cl. A63b 57/00
U.S. Cl. 273—33 16 Claims

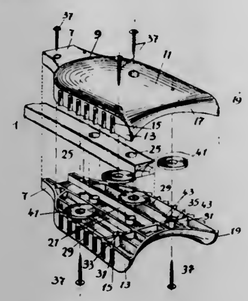


A golf tee setter and positioner has a base comprised of a foot portion and a gauge portion. A tee holder is slidably mounted with respect to the base so as to be adjustably secured to the base at selected heights above the bottom of the foot portion. In this manner, the tee head is selectively positioned at a predetermined height above the ground. The tee holder is comprised of a dovetail opening that is cut into the structure's body portion which extends upwardly to terminate at a handle for setting the tee. In one embodiment, both the body portion and the base portion are split into halves along the structure's midline. The halves are pivotally separable so as to more conveniently withdraw the structure from over a tee that has been set and positioned in long grass.

3,671,038
STICK FOR ICE BALL GAME

Maurice Liard, 276 Salaberry Street, Joliette, Quebec, Canada

Filed Dec. 29, 1969, Ser. No. 888,710
Claims priority, application Canada, Jan. 3, 1969, 39,253
Int. Cl. A63b 59/00
U.S. Cl. 273—67 R 2 Claims

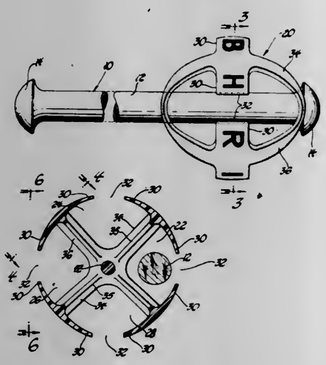


A stick for ice ball game having a straight handle and a ball-handling member at the end of the handle. The ball-handling member has the opposed ball-stricking faces formed with shovel-like cavities and straight parallel lateral edges. It has a ball-striking forward edge at the end away from the handle.

3,671,039
BAT AND SPHERE GAME PIECES

Ronald A. Niewolak, 28675 Adler Drive, Warren, Mich.

Filed Aug. 24, 1970, Ser. No. 66,506
Int. Cl. A63b 63/00
U.S. Cl. 273—95 R 15 Claims

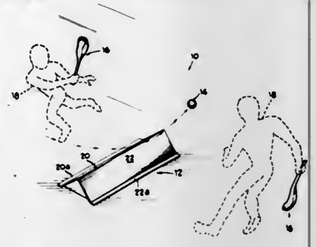


A game apparatus comprising an elongated bat having a substantially constant diameter shaft with hemispherical enlargements at either end which prevent the sphere from sliding off the end of the bat, and the sphere includes capturing members comprising at least one opening having a pair of flexible tabs marked with different indicia extending toward one another from opposite sides of the opening thereby defining an entrance to the opening. When the bat strikes the sphere in substantial alignment with the entrance to the opening, the tabs allow the bat to snap therebetween and be retained in the opening.

3,671,040
SURFACE REBOUNDING APPARATUS INCLUDING BALL, RACKET, AND REBOUND SURFACE

Burton C. Meyer, Chicago, and Robert S. McKay, Morton Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 3, 1970, Ser. No. 94,784
Int. Cl. A63b 63/00
U.S. Cl. 273—96 R 5 Claims

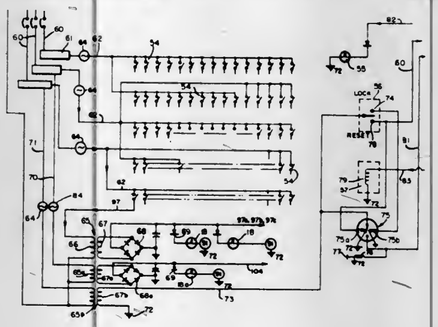


A competitive action game of the type wherein a reboundable ball is launched toward, and returned by, opposing participants with the aid of a racquet-like instrument, characterized by the provision of an intermediate rebounding surface which the ball must strike in its path of flight towards an opposing player, the rebounding surface including opposed inwardly and upwardly directed portions.

3,671,041
ELECTRICALLY OPERATED BINGO GAME APPARATUS

Floyd R. Taylor, 3346½ Walnut Avenue, and Robert B. Whitaker, 5049 Bowman Oaks Way, both of Carmichael, Calif.

Continuation-in-part of Ser. No. 654,736, July 20, 1967, abandoned. This application Jan. 30, 1970, Ser. No. 7,203
Int. Cl. A63f 3/06
U.S. Cl. 273—135 A 13 Claims



An electrical "Bingo" game comprising a player console having a plurality of groups of playing boards, each board including a series of numbers on a translucent panel, at least some of said numbers appearing on more than one panel, a light containing compartment behind each number, all of said lights in a single group being mounted in current conducting relation to a common metallic base plate, a master control board having a switch corresponding to each number, a source of electrical energy and an electrical interconnection between each switch on the one master control board and the lights serving to illuminate the corresponding number on each of the individual playing boards, said lights in each group being connected to ground through said metallic base plate and each having a diode which prevents the flow of current from the direction of ground, whereby a possible feedback causing a false lighting of one or more numbers is prevented. Coin actuated switches are provided for energizing selected groups of boards, as are coin return means and lock means precluding energization of a board after play has started. Visual and audible "Bingo" signals are provided for the player console.

3,671,042
GOLF COURSE

Alexander Garber, 261 Church Street, Apt. 34, Kingston, Pa.

Filed Feb. 17, 1971, Ser. No. 116,002
Int. Cl. A63b 67/02
U.S. Cl. 273—176 AB 7 Claims



A golf course layout having a plurality of holes in which each hole includes a T-area, at least one landing zone having a limited landing area, and a green having a cup therein. The landing area may be a depression, inclined toward the tee, delineated by surface markings and made either of a turf-like putting grass material or a material such as sand to impede the ball. The game is played so that the player must land the ball in the limited landing area prior to advancing the ball toward the green for eventual sinking of the ball in the cup. The layout provides different paths of varying difficulty for each of the different stages of play so that the rules may be tailored to accommodate the game to the skill of the player. Varying degrees of difficulty are provided by interposing hazards in the direct path between the tees and the landing areas which require the player to advance the ball airborne over the hazard or putt the ball along the ground surface around the hazard in a curved circuitous path. Assistance is provided in maintaining the ball in the curved path by banking the ground surface in a manner to assist the circuitous travel of the ball.

3,671,043
DEVICE FOR POSITIONING A MAGNETIC HEAD TO A SELECTED TRACK OF A MULTI-TRACK RECORDING TAPE

Joseph James Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

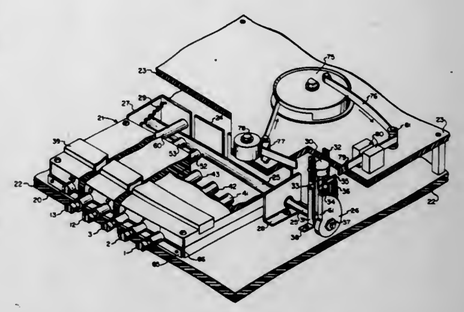
Filed June 4, 1970, Ser. No. 43,462
Int. Cl. G11b 5/56
U.S. Cl. 274—4 A 6 Claims

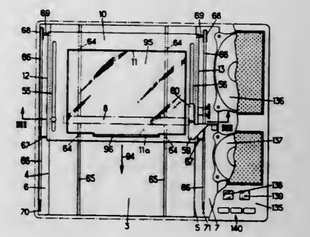
A device for positioning a magnetic head to a selected track of a multi-track recording tape, wherein a rotatable follower plate is controlled by a plurality of mechanically interlocking push buttons, each having an individual different length actuator bar, with the amount of angular rotation of the follower plate being predetermined in accordance with the length of each actuator bar. The interlocking arrangement of the push buttons is so arranged that each last-operated push button unlocks the previously operated push button and thereafter locks itself operated. In the device, a cam is attached to the end of the shaft of the follower plate, with the cam surface engaged by a follower arm attached to the magnetic head, whereby operation of any push button simultaneously causes a specific deflection of the follower plate and a correspondingly specific rotation of the cam to enable the follower arm to raise or lower the magnetic head to the track on the tape corresponding to the operated push button.

3,671,044
MAGNETIC RECORDING AND PLAYBACK INSTRUMENT AND SUPPORT FOR MAGNETIC RECORDING

Milos Blazevic, 62, rue Georges Ferrand, Bonneuil-sur-Marne, and Joseph Kohn, 146 Boulevard de Grenelle, Paris, both of France

Filed July 7, 1969, Ser. No. 839,471
Claims priority, application France, July 4, 1968, 68157948
Int. Cl. G11b 25/04
U.S. Cl. 274—4 J 6 Claims





Apparatus designed for playback of magnetic tracks from one side of a rectangular simultaneously with visual reading of a printed text corresponding to the recorded program on the opposite side. A movable marker, always moving from left to right across the lines of the text, provides a continuous indication correlating the audio replay with the text, the distance being transversed by the magnetic head from either side of the card being equal to the distance traversed by the marker from the left side of the card.

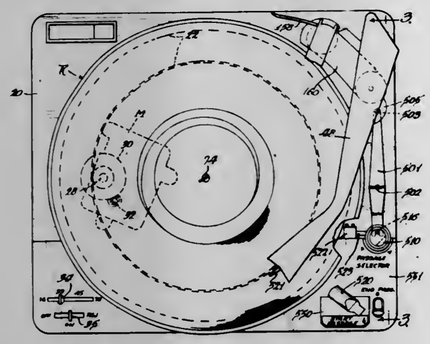
3,671,045
RECORD CHANGER

Edward S. Bara, Elmwood Park, Ill., assignor to Warwick Electronics Inc.

Filed Jan. 19, 1970, Ser. No. 3,887
Int. Cl. G11b 15/00, 17/06
U.S. Cl. 274—10 R 9 Claims

A record changer having a manually operable mechanism for cuing a tone arm to place the tone arm at a desired set-

down position on a record. Also, a record changer having settable structure for automatic repeat playing of a chosen



band or passage selected at random between the beginning and end of the grooves of the record.

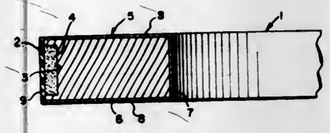
3,671,046
RING SEAL WITH SPECIAL GROOVE CONFIGURATION
Foster M. Hagmann, 130 N. Bristol Avenue, Los Angeles, Calif.
Filed March 3, 1970, Ser. No. 16,008
Int. Cl. F16j 15/06
U.S. Cl. 277—170 **22 Claims**



A fluid seal in which an endless sealing element composed of resilient deformable material and having a polygonal cross-section is deformed into a groove formed with an inclined sidewall which progressively reduces the depth of the groove on one side, the volume-void relationship of the groove and the element being such that one exposed side of the element is wedged along the inclined sidewall to a reduced thickness and to an intermediate position along the incline when the element and groove are of nominal dimension conditions, and is wedged a greater or lesser distance along the incline with other variations within permissible tolerances. Alternative embodiments include a closure with a sealing element on one side; a retainer with sealing elements in back-to-back relation; and a second retainer with sealing elements on the remote sides of two separable retaining rings and with a double element between the rings, the retaining rings being specially joined and formed to accommodate separation of the sealed surfaces while maintaining an effective seal.

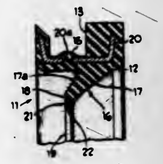
3,671,047
PISTON RING AND PROCESS OF MAKING THE SAME
Kouji Umezawa, Konosu, Japan, assignor to Nippon Piston Ring Kabushiki Kaisha, Toyko, Japan
Filed Nov. 10, 1970, Ser. No. 88,320
Claims priority, application Japan, Nov. 18, 1969, 44/92388
Int. Cl. F16j 9/12
U.S. Cl. 277—235 R **4 Claims**

A cast iron piston ring is provided with a friction reducing packing of bonded iron oxide nd carbon powder in a groove of its outer circumferential face, and with a hard chromium electrodeposit on all other surfaces by first applying a packing composition including a heat curing bonding agent, thereafter coating the packing with an aqueous polytetrafluoroethylene dispersion, drying and sintering the resin into a continuous



film while simultaneously curing the packing, and thereafter electrodepositing chromium, the cured packing being protected against attack by the chromium plating bath by the resin film.

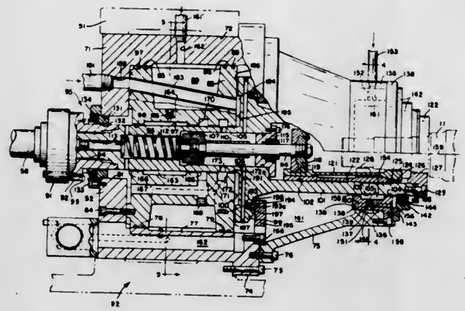
3,671,048
LIP TYPE SEAL
Emeric J. Gyory, Park Ridge, and Otmar E. Teichmann, Lincolnwood, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Filed June 12, 1970, Ser. No. 45,748
Int. Cl. F16j 15/32
U.S. Cl. 277—227 **5 Claims**



A lip type seal adapted to provide a seal between a housing and a relatively rotatable shaft including a sealing lip in sealing engagement with the shaft. The lip includes a non-woven mat of randomly disposed interconnected fibers of a synthetic polymer such as polytetrafluoroethylene, polyester, polyamide or the like impregnated with a synthetic elastomer such as oleophobic silicone rubber. Fibers forming the mat are partially exposed at the lip for contact with the shaft.

3,671,049
FRICTION WELDING APPARATUS
Alex F. Stamm, Rochester, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Division of Ser. No. 650,505, June 30, 1967, Pat. No. 3,575,334. This application Oct. 1, 1970, Ser. No. 77,208
Int. Cl. B23b 31/30; F16c 7/04; B23k 27/00
U.S. Cl. 279—4 **10 Claims**

A friction welding apparatus is particularly adapted for the friction welding of relatively heavy workpieces, as for example the center section and wheel bearing end spindles of a drive axle housing, and comprises special hydrostatic bearing equipped devices for mounting the rotating workpieces. Each such device is mounted for axial displacement and comprises a rotatable arbor assembly to which the rotatable workpiece, such as a wheel bearing end spindle, is clutched and the arbor assembly is rotatably supported in a housing by two axially spaced hydrostatic journal bearings. Front and rear hydrostatic thrust bearings are provided between the arbor assembly and the housing. Oil under suitable pressure is supplied to both the journal and thrust hydrostatic bearings, and controls are provided for attaining and maintaining suitable fluid pressure levels at these bearings. One aspect of control insures that the workpiece is not secured to the arbor assembly until journal bearing oil pressure reaches a certain level. Oil is forced under high pressure into the bearings through specially ar-



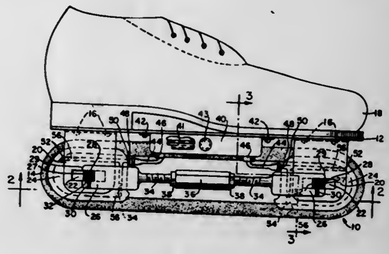
ranged passages and after being discharged from the hydrostatic bearings returns to a sump at lowered pressure.

3,671,050
CHUCKS
Ake Paul Andersson, and Per Augustin Wegmar, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden
Filed March 11, 1970, Ser. No. 18,658
Claims priority, application Sweden, March 24, 1969, 4100/69
Int. Cl. B23b 31/04
U.S. Cl. 279—47 **2 Claims**



A chuck for holding a tool comprises a chuck support having a conical recess which accepts a conical clamping sleeve. A clamping nut carrying a freely rotatable ring is threaded onto the chuck support. The ring has means for engaging the chuck support in such a way to permit relative axial movement therebetween but no relative rotational movement. Shoulders on the clamping sleeve and the ring are so arranged that in one relative position axial movement therebetween is blocked while in another relative position the clamping sleeve can pass through the ring.

3,671,051
VEHICLE
August R. Werft, 233 Dixon Boulevard, Uniontown, Pa.
Continuation-in-part of Ser. No. 871,823, Oct. 28, 1969, abandoned. This application Aug. 11, 1970, Ser. No. 62,985
Int. Cl. A63c 17/10
U.S. Cl. 280—11.1 ET **28 Claims**



An endless belt vehicle which, for example, might take the form of a sled, scooter, wagon or skate. The endless belt passes over nonrotating belt housings having belt retaining grooves in the periphery thereof with a coating of a material which when lubricated provides a substantially frictionless surface, while not being adversely affected by the lubricant. Means can also be provided to adjust the belt tension and thus to control the speed.

3,671,052
SKI BINDINGS
Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.
Continuation-in-part of Ser. No. 717,114, March 29, 1968, Pat. No. 3,543,595. This application Jan. 16, 1970, Ser. No. 3,463
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **34 Claims**

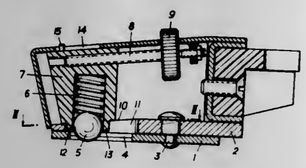


Ski bindings for gripping the heel and toe portion of a ski boot. The heel and toe bindings are separate units which release by a snap action in response to the application of a predetermined force through the heel or toe of the boot to the respective bindings. A snap action blade provides the force for resisting lifting movement of the heel of the boot and for resisting swinging movement of the toe of the boot relative to the ski. Both the release force and the degree of movement permitted by the respective bindings is adjustable.

3,671,053
SKI BINDING
Thomas G. Smolka, Wien-Mauer, Austria, assignor to Wiener Metallwarenfabrik Smolka & Company, Wien-Mauer, Austria
Filed July 18, 1969, Ser. No. 842,957
Claims priority, application Austria, July 29, 1968, A 7363/68
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **12 Claims**

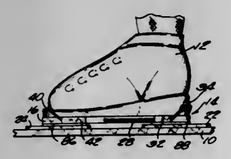
Releasable ski binding for precise adjustment of release tension. Binding has a pivotal member and varies radial distance

of locking component from pivot point of pivotal member for adjusting release pressure. Further control features if desired
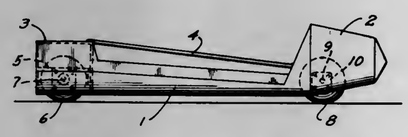


may be provided for adjusting tension of spring bearing against locking member.

3,671,054
RELEASABLE BINDING MECHANISM FOR SKIS
Robert A. Mittelstadt, 15117 Orchard Drive, Burnsville, Minn.
Filed Oct. 6, 1969, Ser. No. 870,476
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 M 13 Claims



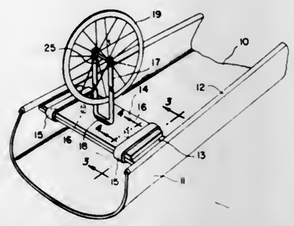
A releasable binding mechanism for a ski including a boot support member resiliently mounted on the ski and a releasable cable means for securely holding the boot on the support member. A plurality of micro-switches mounted within the boot support member and adapted for actuation upon relative movement between the boot support member and the ski. An explosive charge and an electric igniter therefor adapted for energization when one or more of said micro-switches is closed. The gas pressure released upon ignition of the explosive charge actuates a cable release mechanism to thereby release the skier's boot from the ski.

3,671,055
COASTER VEHICLE
Carl P. Aarup, Springfield, Ill., assignor to Dura Corporation, Springfield, Ill.
Filed Jan. 29, 1971, Ser. No. 110,971
Int. Cl. B62k 9/00
U.S. Cl. 280—87.01 6 Claims



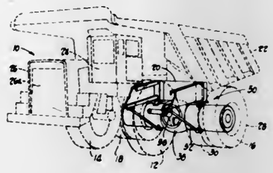
The invention herein disclosed relates to a coaster vehicle comprising a body having a rider compartment with handrails running along the top lateral edges of said compartment. The body of the vehicle is continuously curved upwardly and outwardly in transverse cross-section and decreases in width from the rear to the front. Mounted on transverse axes adjacent to the front and rear end of the body and projecting outwardly through openings in the bottom thereof are spherical rollers, the centers of which lie in the longitudinal vertical plane of the vehicle. By reason of these spherical rollers the vehicle will operate on a surface having a high coefficient of friction. Steering is effected by the rider leaning to one side or the other to effect drag of the bottom portion of the vehicle.

3,671,056
BOAT TRANSPORT DEVICE
Kenneth C. Windemuth, Mount Savage, Md.
Filed Aug. 18, 1970, Ser. No. 64,701
Int. Cl. B62b 1/18
U.S. Cl. 280—47.32 2 Claims



Many times boats have to be transported over land in order to reach a body of water. Such boats can be readily transported by attaching a single wheeled device, preferably to the center seat board of the boat, inverting the boat, and by use of handles on the stern board of the boat guiding and propelling the boat to the body of water. The single wheeled device is firmly attached to the boat in a way that there will be no play between the transport device and boat as the boat is being transported. Further, the single wheeled device may also carry a seat board reinforcing member.

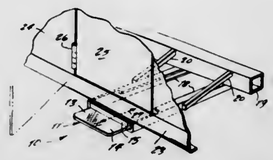
3,671,057
VEHICLE SUSPENSION
Ronald M. Cheers, Mentor, Ohio, assignor to Euclid, Inc., Cleveland, Ohio
Filed July 6, 1970, Ser. No. 52,243
Int. Cl. B60g 9/00
U.S. Cl. 280—124 R 13 Claims



A vehicle suspension is disclosed in which the vehicle frame is suspended on driven vehicle wheel assemblies. The new suspension includes a radius arm connected between an axle housing and the vehicle frame. A suspension spring unit is also connected between the axle housing and the frame.

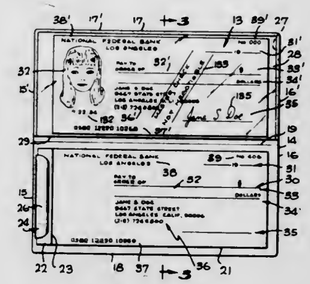
The suspension spring unit includes a piston member connected to the axle housing and a housing defined by the frame for receiving the piston. The piston member is resiliently supported against vertically upward movement relative to the frame as well as against lateral and longitudinal movement relative to the frame.

3,671,058
ROLL OUT STEP FOR PICK UP TRUCKS
Miles L. Kent, 1330 Hawley Highway, Belding, Mich.
Filed June 25, 1970, Ser. No. 49,834
Int. Cl. B60r 3/02
U.S. Cl. 280—166 1 Claim



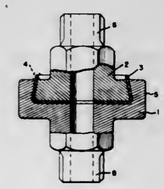
A retractable step for a pick-up truck, the step being normally stored below the rocker panel where it extends under the pick-up truck door, the step being connected by a mechanism to the door step slides inwardly or outwardly according to the opening and closing of the door.

3,671,059
CHECK BOOK HOLDER HAVING MASTER CHECK
Helen D. Zeller, 424 South Los Robles, Pasadena, Calif.
Continuation of Ser. No. 826,580, May 21, 1969, abandoned.
This application Dec. 14, 1970, Ser. No. 98,071
Int. Cl. B42d 15/00
U.S. Cl. 283—7 3 Claims



A check book holder detachably carrying a book of personalized blank checks each having printed thereon the name and address of the person or persons authorized to negotiate the checks, and with the holder also carrying a master check printed in a manner similar to the check blanks, with the name and address of the same person or persons as on the blank checks for comparison therewith, and with a picture of the authorized person or persons also printed on the master check for assistance in identification at the time of negotiation of a check.

3,671,060
INSULATING FITTING AND METHOD FOR MANUFACTURING
Hans Kyburz, Bruggweg 40, Dornach, Switzerland
Filed Feb. 27, 1970, Ser. No. 14,972
Int. Cl. F16l 11/12
U.S. Cl. 285—54 5 Claims

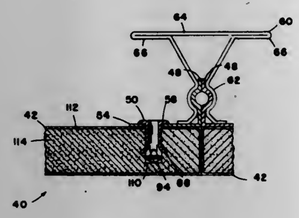


An article of manufacture and a method of manufacturing electrically insulated metal pipe couplings both of the fixed or separable union type. The couplings may be insulated at one or both ends. The couplings includes an external body member component and a separate internal sleeve or thimble-like component which has an insulation layer interposed between radial and axial wall portions of said external and internal members, which insulation layer may be of generally preformed cup-like shape or by use of suitable jigs, to hold the respective body members it may be injected in a fluid state therebetween. The radial peripheries of the corresponding body parts are complementally tapered so as to preclude disassembly of the unitary finished coupling. When using preshaped complementary components of generally circular form, rather than various polygonal shapes, the complementally shaped surfaces of the metal components which abut against the sandwiched-in insulating layer are pretreated mechanically by special knurling or surface grooving, and possibly also chemically treated with a special solvent, thereby assuring an aggressively tight and leak proof seal when assembled which will resist torsional separation. The method of assembly for one form which includes an external socket member having an outer deformable peripheral wall is to have it in initially sufficiently open condition and placing it upon the reversely tapered internal member in nesting relationship with the insulation piece and internal socket component, and while applying an axial assembly force, simultaneously applying a radial compressing force to the deformable peripheral wall to form it tightly around the internal tappered portion to form a sealed insulated coupling. The insulation preferably projects axially beyond the joined components and also is radially spaced from the main portion of the socket component. Another form of assembly utilizes an internally inserted tool to apply a radially outwardly directed expansion force to sealingly seat the internal coupling member and insulating member tightly into unitary assembly with the external jacket or main coupling body. In still other forms the internal component may be formed with progressively thickened or inwardly tapered end spigot portions which are adapted to be forced radially outwardly by an internal expansion tool against an interposed insulation layer strategically placed therebetween, while applying an axial assembly force to assure a completely tight sealed assembly of both the radial and axial wall portions of the insulating member between the corresponding portions of the external and internal metallic coupling components. The coupling embodying an external jacket or sleeve preferably will have two such internal components assembled therewith in opposite ends. The method of assembly is carried out preferably in two steps including applying a slight initial expansion to the internal member of the assembled components in a slightly warmed up condition of about 80°, and the subsequent step is completing the expansion at approximately the normal room temperature.

3,671,061
GYPSUM BOARD FASTENER
Jack A. Dawdy, Kenmore, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.
Filed July 2, 1970, Ser. No. 51,760
Int. Cl. F16b 5/00
U.S. Cl. 287—20.92 W 2 Claims

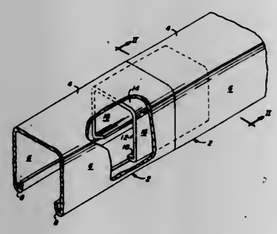
Gypsum wallboard having an unbroken front face and means for affixing the wallboard to a support consisting

preferably of a blind fastener extending into the body of the board through the back face, grasping the board by enlarged



portions of the fastener disposed within the body of the board.

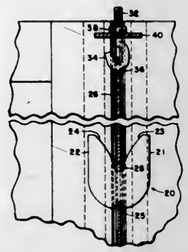
3,671,062
INTERNAL COUPLING FOR CONNECTING U-SHAPED RAILS
James E. Ashworth, Moraga, Calif., assignor to United States Steel Corporation
Filed May 13, 1971, Ser. No. 142,872
Int. Cl. F16d *1/00*
U.S. Cl. 287—127 **3 Claims**



A U-shaped coupling is received snugly within two U-shaped rails which are to be connected. Each rail has an inwardly directed lip at the end of each leg extending toward its base. The coupling has an inwardly extending flange at the end of each leg forming an angle of less than 90° with its associated leg, the flange bearing against the free end of the associated lip. Engagement of the flanges with the lips force the coupling into tight engagement with the rails.

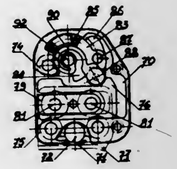
3,671,063
CONNECTOR
James D. Slayden, Nashville, Tenn., assignor to Avco Corporation, Nashville, Tenn.
Filed Oct. 5, 1970, Ser. No. 77,955
Int. Cl. F16b *5/06*
U.S. Cl. 287—189.36 C **4 Claims**

The frames of two adjacent panels are interconnected and locked together by means of a V-shaped anchor plate. The anchor plate is mounted within a slot in a bar located between the adjacent frames, both ends of the V in the anchor plate ex-



tending through corresponding slots in the adjacent frames. Force applied to the bar positively wedges the anchor plate simultaneously with both frames, thereby locking the structure together.

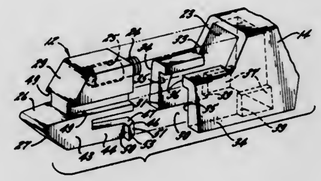
3,671,064
BALL OR ROLLER FASTENING DEVICE
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle de Mechanismes, Courbevoie, France
Filed Oct. 23, 1970, Ser. No. 83,372
Claims priority, application France, Nov. 28, 1969, 6941078
Int. Cl. E05c *3/16*
U.S. Cl. 292—45 **3 Claims**



A fastening device for latching a door, an engine bonnet or a trunk of a vehicle including a striking plate having a rocking recess along its periphery defining a striking nose at the forward end and a casing formed with chamber for the reception of the striking plate and formed with a housing opening into the recess in fastening position of the device. A locking member is provided in the housing to normally protrude from the housing into the chamber to be received in the locking recess, and a rocking section is also provided in the housing, this sector resiliently biassing the locking member out of the housing into the chamber. A hooking nose is formed on the rocking sector forwardly of the locking member with respect to the inserting movement of the striking plate in the chamber and the hooking nose is spaced a distance from the locking member such as to hold therein the striking nose in inserting movement of the striking plate whereby to achieve a first or safety latching of the door, bonnet or trunk.

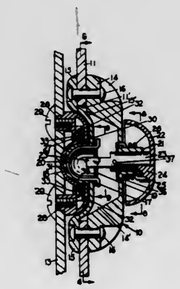
The sector is mounted in the housing for resilient rocking about a pivot and biasing of the locking member into the chamber. The locking member is a roller and a resilient spiral connection is provided on which the roller is mounted and which limits the frictional engagement of the roller to differential rolling movement between the rocking sector and the striking nose.

3,671,065
SLIDABLE BOLT CATCH
Bruce N. Bingham, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 11, 1970, Ser. No. 97,074
Int. Cl. E05c *1/10*
U.S. Cl. 292—175 **7 Claims**



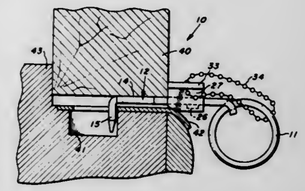
A catch for mounting on a swingable door including a support with a slidable bolt mounted within a chamber for movement between projected and retracted positions and urged toward the projected position by a spring. Two prongs formed integrally with and resiliently hinged to the bolt snap into a pair of elongated recesses in the chamber walls to prevent the bolt from sliding past its projected position. Flanges extending from the walls and into the chamber fit in corresponding grooves formed integrally in the bolt to guide the latter as it moves between its projected and retracted positions.

3,671,066
BAG LOCK ASSEMBLY
John W. Gilmore, 2222 S.E. Ankley Street, Portland, Oreg.
Filed Jan. 25, 1971, Ser. No. 109,449
Int. Cl. E05c *3/04*
U.S. Cl. 292—228 **1 Claim**



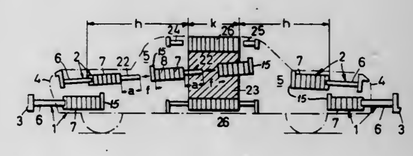
A lock designed for a bag having a flap extending over part of the top and part of the outside face of one wall of the bag, the lock consisting of a portion on the bag wall and a cooperating companion portion on the flap, the portion on the flap of the bag being so positioned as to overlie and mate with the portion on the bag wall, the two portions so constructed that the portion on the bag wall will be locked within the portion on the flap when the flap is pressed against the bag wall. When the two portions are locked in this manner they can be unlocked only by giving a 90° turn to a locking knob on the outer portion.

3,671,067
MULTI-PURPOSE KEY RING TOOL AND DOOR LOCK
Albert Wegner, 223 Sylmer Court 9, Calimesa, Calif., and Wilfred Tunstall, 12874 2nd Street, Yucaipa, Calif.
Filed Oct. 21, 1969, Ser. No. 868,105
Int. Cl. E05c *19/18*
U.S. Cl. 292—292 **3 Claims**



A flat metal stamping about an inch and one-half long and 1 inch deep terminating at one end in an apertured laterally bent nose for receiving a key ring and at the other end in a laterally bent offset screw driver which cooperates with a pin extending from said stamping, and a deeply slotted wedge block backed up by said pin to lock any door from the inside. Embodied with upper and lower edges of the stamping are a bottle opener, a safety bottle cap applicator and remover, which may also be used as a golf shoe cleat replacing wrench.

3,671,068
SHOCK ABSORBING VEHICLE
Otto Gerhard, Wohrdstrasse 95, 84 Regensburg, Germany
Filed May 20, 1968, Ser. No. 730,496
Claims priority, application Germany, May 22, 1967, G 50150
Int. Cl. B60r *19/00*; B61g *11/16*; F16d *63/00*
U.S. Cl. 293—1 **4 Claims**

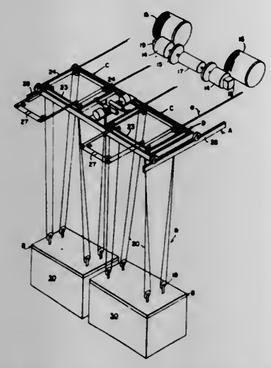


A car or motor vehicle having an undivided chassis with deformation zones therein and having means which can be deformed and destroyed. A plurality of at least two-part kinetic energy dissipating devices, in which the parts are displaceable one against another, are attached with their ends to respective ends of the deformation zones for bridging the latter. The energy dissipating devices consist mainly of push rods coaxially arranged with corresponding housings containing breaker plates which are pierced by the rods.

3,671,069
CARGO CONTAINER LIFTING AND SPACING APPARATUS
John Frank Martin, and Charles Dean Ramsden, Alameda, both of Calif., assignors to Fruehauf Corporation, Detroit, Mich.
Filed July 15, 1970, Ser. No. 54,960
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 SF **3 Claims**

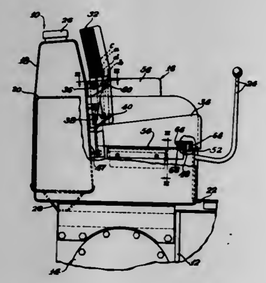
Cargo container loading apparatus in which the containers are carried on a pair of spreaders, each suspended from a

separate platform mounted on a trolley. The spacing between the containers is adjustable, independently of the spreaders,



by means of motor operated screws which move the platforms toward or away from each other on the trolley.

3,671,070
COMBINATION FUEL TANK AND OPERATOR'S SEAT FOR TRACTORS
Robert W. Johnson, Winfield, and Harvey B. Karpiel, Roselle, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Aug. 17, 1970, Ser. No. 64,481
Int. Cl. B60n 1/06
U.S. Cl. 296—65 R **2 Claims**



A combination body-tank-seat assembly for tractors wherein the tractor operator is seated forwardly of the tractor fuel tank, and wherein the operator, his seat, and the fuel tank are all located between box-like body structures provided at the sides of, and in assembly with, the overall combination.

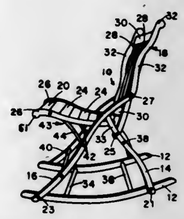
3,671,071
CONVERTIBLE GOLF CAR
Ralph S. Evinrude, Jensen Beach, Fla., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed May 16, 1969, Ser. No. 825,207
Int. Cl. B60n 1/10
U.S. Cl. 296—69 **10 Claims**

A four-wheeled vehicle has a rear seat and a rear seat back independently adjustable to convert for alternative provision of a passenger carrying seat, a well in which golf



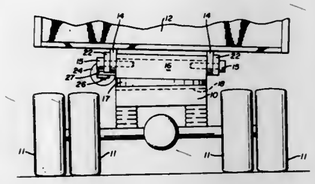
bags and clubs are supported vertically, and a luggage carrying deck with horizontal baggage space.

3,671,072
FOLDING ROCKING CHAIR WITH FOLDING SEAT SUPPORT
Chester H. Holt, 14 Murdock Ave., Winchendon, Mass. 01475
Filed July 31, 1969, Ser. No. 846,467
Int. Cl. A47c 3/029
U.S. Cl. 297—32 **1 Claim**



A folding rocking chain of wood has the front legs partially supported by bearing against an extension of the rear legs and has a pair of foldable, angled, metal braces pivotally supported on a front leg rung with the forward ends of the braces pivotally received and hidden, in slots in the seat frame elements. A round, beaded seat edge thus appears to be cantilevered and free of ungainly bracing while actually firmly supported. The seat edge is received in the angle of the metal braces when folded. L shaped metal seat hinges are similarly received and hidden in slots in back frame elements.

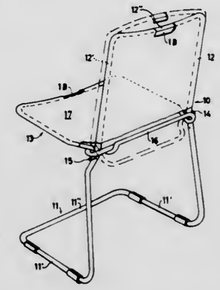
3,671,073
TILTABLE MOUNTING FOR DUMP TRUCK BODIES
Michael Bilas, 2730 Columbiana-New Castle Road, New Springfield, Ohio 44443
Filed Nov. 12, 1970, Ser. No. 88,629
Int. Cl. B65g 67/32
U.S. Cl. 298—17 S **5 Claims**



A tiltable mounting for dump truck bodies positions a rotatable wedge shaped member on the dump truck frame

in oppositely disposed matching relation to a fixed wedge shaped member positioned thereon and carrying the dump truck body in pivotal relation thereto. Means for imparting rotation to the rotatable wedge shaped member on the dump truck frame alters the relative positioning of the wedge shaped members and enables the dump truck body to be maintained on a transversely level plane despite transverse tilting of the truck frame axles and wheels as occurs when one of the wheel assemblies sinks into a soft supporting surface.

3,671,074
CHAIRS
Berit P. Bergstrom, Mellansjovagen 50, Huddinge, Sweden
Filed July 6, 1970, Ser. No. 52,314
Int. Cl. A47c 3/04
U.S. Cl. 297—239 **4 Claims**



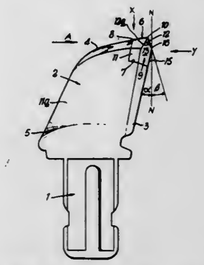
A chair having a frame, a seat and a seat carrying member mounted upon the frame and provided with at least one loop. The seat has a rear end fitting into the loop so that the seat carrying member is subjected to two opposed forces when the seat is subjected to a vertical load.

ERRATUM

For Class 298—17 see:
Patent No. 3,671,073

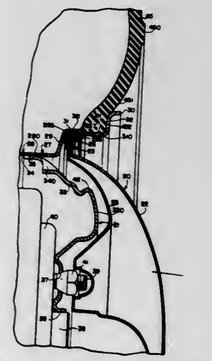
3,671,075
CUTTER PICKS
Brian Eyre, Sheffield, and John Bland, Epping, England, assignors to Padley & Venables Limited and Sir Robert McAlpine & Sons Limited
Filed Dec. 7, 1970, Ser. No. 95,863
Claims priority, application Great Britain, Dec. 30, 1969, 63,184/69
Int. Cl. E21c 35/18
U.S. Cl. 299—79 **11 Claims**

A cutter pick having a head carrying an insert of hard material and having a longitudinally extending shank by which it is removably held in a pick box for transversing movement in a longitudinally extending cutting plane of the pick; the insert has a convex top face and a face which is intended to lead during traversing movement of the pick which leading face comprises a convex front face part and an intermediate face part, the latter being formed by relieving the corner portion of the insert where the front face part and top face would normally intersect; the insert has a top edge constituted by the line of junction between the leading face and the top face; the intermediate face part is set by a side which coincides with the top edge and by a front edge part constituted by at least one line of junction between the intermediate face part and the front face part; and the front face part has a positive rake angle in the cutting plane and the intermediate face part has a rake angle in the cutting



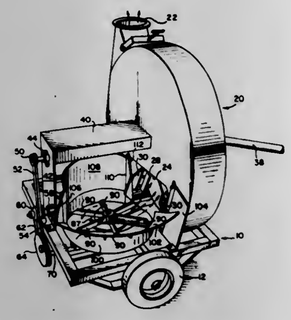
plane which is less than the rake angle in the cutting plane of the front face part.

3,671,076
VEHICLE WHEEL TRIM
Charles B. Aske, Jr., 1278 Pilgrim, Birmingham, Mich. 48009
Filed May 21, 1970, Ser. No. 39,260
Int. Cl. B60b 7/04
U.S. Cl. 301—37 R **2 Claims**



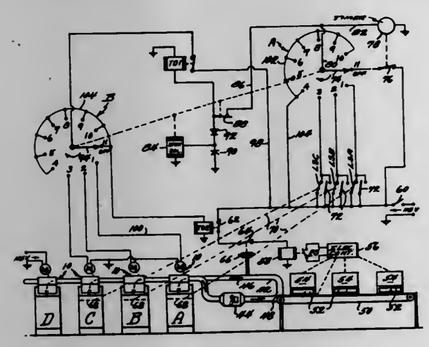
Vehicle wheel trim for modern vehicle wheels in the form of a wheel trim assembly telescopically mounted within the tire bead seat annulus of vehicle wheels preferably comprising a clear, tinted, or colored transparent plastic outer bubble and an opaque ornamental plastic inner plastic disc preferably chrome plated, chrome plated and painted, or painted in whole or in part to produce a variety of highly desirable aesthetic effects. The outer plastic bubble and inner plastic ornamental disc are of the same diameter and terminate in mating peripheral flanges over which is telescopically disposed an improved, simplified and positive resilient anchorage means which substantially seals the peripheries of the wheel trim elements together and removably secures the ornamental wheel trim assembly on the vehicle wheel within the tire bead seat annulus thereof, the said anchorage means providing for relative thermal expansion and contraction differentials of the metal vehicle wheel rim and the plastic wheel trim elements. The anchorage means alternately may include a metal brightly finished spring expansion ring which is not only ornamental but also serves as an auxiliary anchorage element. Also, alternatively, a single ornamental wheel cover element may be substituted for the outer bubble and inner disc elements.

3,671,077
FORAGE BLOWER
Charles T. Hoyt, John W. Haun, and Dwight L. Hensel, Brillion, Wis., Clarence M. Hansen, East Lansing, Mich., Walter G. Lovely, Ames, Iowa, and Hjalmar D. Bruhn, Madison, Wis., assignors to Brillion Iron Works, Inc., Division of Beatrice Foods Co., Brillion, Wis.
Filed Sept. 24, 1969, Ser. No. 860,496
Int. Cl. B65g 53/08, 53/46
U.S. Cl. 302—8 4 Claims



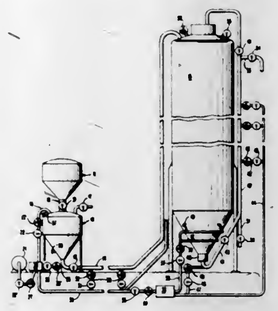
A fan is supported for rotation about a horizontal axis within a fan housing having an outlet at the top thereof and an inlet at the lower side portion thereof. A feeder means includes a rotor supported for rotation about a vertical axis and including a plurality of radially extending blades. This rotor is surrounded by a hopper open at the top thereof, the hopper including a sloping front wall and a substantially vertically extending rear wall. An outlet portion of the hopper is adapted to direct material from the feeder means into the fan housing.

3,671,078
MATERIAL DISTRIBUTING SYSTEM
Cecil S. Wise, Dallas, N.C., assignor to Fiber Controls Corporation, Gastonia, N.C.
Continuation-in-part of applications Ser. No. 217,154, Aug. 15, 1962, Ser. No. 444,885, Mar. 2, 1965, Ser. No. 538,437, Mar. 3, 1966, Ser. No. 561,579, June 29, 1966, and Ser. No. 694,268, Dec. 28, 1967. This application July 9, 1969, Ser. No. 848,133
Int. Cl. B65g 53/04
U.S. Cl. 302—28 45 Claims



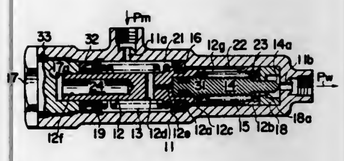
A system for distributing fibers pneumatically from a source to any of a plurality of distributors and electrical control circuitry for determining which distributors receive fibers in which order. Several electrical control circuits for sequentially checking each of the distributors in a system to determine which of them is demanding fibers and to sequentially satisfy the demands for fibers by opening valves associated with the distributors so that the air stream containing the fibers is drawn into a distributor, wherein the air stream and the fibers are separated, are disclosed. Also disclosed are a number of different distributors suitable for removing fibers from air streams.

3,671,079
METHOD AND APPARATUS FOR HANDLING MATERIAL
Walter D. Huffaker, Kodak, Tenn., assignor to Ma-Tran Corporation, Knoxville, Tenn.
Filed Apr. 16, 1970, Ser. No. 29,005
Int. Cl. B65g 53/16, 53/36
U.S. Cl. 302—29 8 Claims



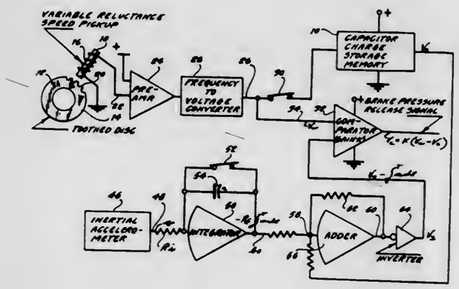
A fluidizer receives material from a source. After the fluidizer is filled with material, the material therein is aerated. Then, the material is conveyed to a storage tank by pressurized air. The material in the lower portion of the storage tank is aerated whenever material is to be delivered from the storage tank.

3,671,080
DEVICE FOR REGULATING THE PRESSURE BETWEEN FRONT AND REAR BRAKE CYLINDERS
Hiroshi Kawaguchi, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed Jan. 21, 1971, Ser. No. 108,516
Claims priority, application Japan, Jan. 22, 1970, 45/5,415
Int. Cl. B60t 13/00
U.S. Cl. 303—6 C 6 Claims



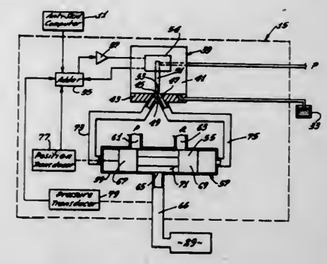
A regulating device for controlling the brake pressure between front and rear brake cylinders in response to the operation of a brake pedal causing the discharge of a pressure fluid from a master cylinder includes a system in which the master cylinder is connected to the cylinders of the front wheels for actuating them. The system includes a regulating device disposed between the front wheel fluid pressure connection and the rear wheel fluid pressure connection for providing a pressure balanced actuation of the rear wheel brake cylinders. The regulating device includes a housing having an inlet for the pressure fluid supplied by the master cylinder and an outlet spaced from the inlet for delivering the pressure fluid to the rear wheel brake cylinders. The housing defines a first inlet chamber which is connected to the inlet of the device and a second chamber which is connected to the discharge and two valve members are arranged to move within the respective chambers. The valve members are constructed and arranged such that the first one regulates the flow from the first chamber into the second and the second one regulates the flow through the outlet. The two valve members affect opening and closing of the respective chambers in accordance with the relationship between the effective cross-sectional areas of the both valve members and the force of two biasing springs. Communication between the first and second fluid chambers is thus established intermittently and causes an increase of the fluid pressure delivered to the rear wheels at a rate smaller than that which is delivered by the master cylinder. When the fluid pressure of the master cylinder exceeds a predetermined value, the second piston closes the outlet of the housing because of the fluid differential pressure between the two fluid chambers to maintain a constant fluid control pressure on the rear wheel control cylinders.

3,671,081
ELECTRONIC CONTROL SYSTEM FOR ANTISKID VEHICLE BRAKES
Zbigniew J. Jania, Northville, and Lawrence J. Vanderberg, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 15, 1970, Ser. No. 3,122
Int. Cl. B60t 8/08
U.S. Cl. 303—21 BE 12 Claims



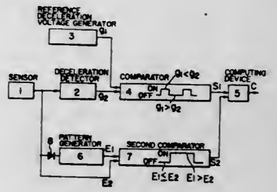
An antiskid brake system for wheeled vehicles comprising a brake pressure modulator for the vehicle wheel brakes which responds to wheel slip at the wheel road interface, the wheel slip being determined by a slip detecting system comprising two independent control signal sources, one signal being proportional to vehicle wheel speed and the other being a synthesized vehicle velocity signal resulting from integration of a deceleration signal, and a fast acting feedback system that induces a correction in anticipation of the control system response at the wheel brakes, thereby avoiding an instantaneous periodic locking of the brake system during the vehicle braking mode of operation as incipient skidding occurs.

3,671,082
ANTISKID SYSTEM
Curtis Edgar Stevens, Irvine, Calif., assignor to Bertea Corporation, Irvine, Calif.
Filed Mar. 4, 1970, Ser. No. 16,088
Int. Cl. B60t 8/08
U.S. Cl. 303—21 P 12 Claims



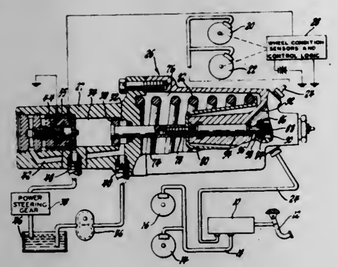
An antiskid system for a vehicle including a antiskid computer responsive to one or more skid parameters for providing an electrical control signal and a movable valve member for controlling the pressure of the fluid supplied to the brakes of the vehicle to thereby control the braking force. A position transducer provides a position feedback signal variable in accordance with the position of the valve element and a pressure transducer provides a pressure feedback signal variable in response to the absolute pressure of the fluid supplied to the brake. All of these signals are combined to provide a resultant signal, and a control device responsive to the resultant signal controls the position of the valve element to thereby control the pressure of the fluid supplied to the brake.

3,671,083
BRAKE PRESSURE CONTROL SYSTEM
Yoshihiro Matsumura, Yokosuka, Japan, assignor to Nippon Air Brake Company, Ltd., Fukiai-ku, Kobe, Japan
Filed Apr. 13, 1970, Ser. No. 27,898
Claims priority, application Japan, Apr. 21, 1969, 44/30,231
Int. Cl. B60t 8/08, 8/12
U.S. Cl. 303—21 BE 4 Claims



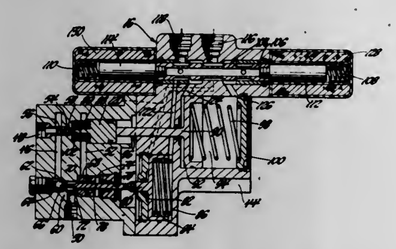
A brake pressure control system for a vehicle in which the deceleration detected by a sensor is compared with a reference deceleration for the on-off control of brake pressure. In the system, an additional on-off signal line is provided so as to eliminate undesirable locking of the wheels which is encountered inevitably with the conventional means for the on-off control of brake pressure.

3,671,084
ANTILOCK MODULATOR WITH MECHANICALLY RESETTABLE CONTROL VALVE
Charles D. Woodward, Louisville, Ky., assignor to General Motors Corporation, Detroit, Mich
Filed Oct. 6, 1970, Ser. No. 78,465
Int. Cl. B69t 8/10
U.S. Cl. 303—21 F 4 Claims



An antilock brake pressure modulator includes a spring supported piston which holds the modulator check valve unseated and a normally open modulator control valve which is mechanically resettable when the piston reaches the end of its brake releasing stroke.

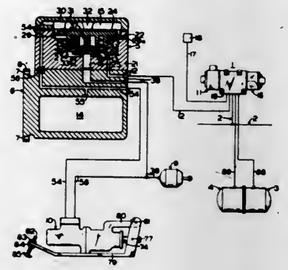
3,671,085
ANTILOCK BRAKE MODULATOR
James E. Pasek, Saginaw, Mich., and Charles D. Woodward, Louisville, Ky., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 12, 1970, Ser. No. 80,006
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 3 Claims



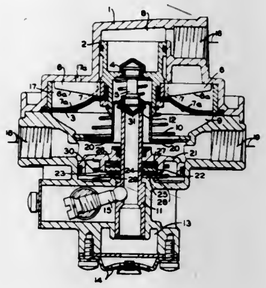
A brake antilock modulator of the type having a plunger forming a wall which is movable by hydraulic pressure in response to the sensed wheel condition to cyclically decrease and increase the brake fluid pressure applied to the controlled brake is provided with a valve which normally allows free fluid communication between the master cylinder and the controlled brake while blocking fluid communication with the modulator plunger to eliminate the need for a plunger supporting spring.

3,671,086
EMPTY-LOAD CHANGEOVER APPARATUS
Daniel G. Scott, Apollo, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Dec. 16, 1970, Ser. No. 98,564
Int. Cl. B60t 8/18
U.S. Cl. 303—23 R 16 Claims

This invention relates to a brake cylinder pressure proportional valve device for interposition in a brake control pipe connecting a brake control valve and a brake cylinder and a novel mechanism adjustable accordingly as the vehicle is empty or loaded to cause the proportional valve device to operate only while the vehicle is empty and subsequent to a chosen build-up of an inshot pressure in the brake cylinder, to cut off flow of fluid under pressure from the brake control valve to the brake cylinder at a value proportional to the pressure established in the control pipe by the brake control valve for the reduction of pressure effected in the brake pipe.

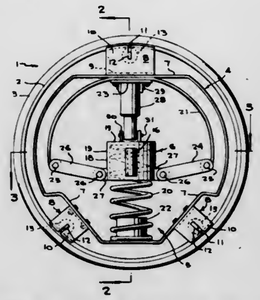


3,671,087
VARIABLE LOAD RELAY VALVE WITH BELLEVILLE SPRING TYPE LOCK FOR EXHAUST VALVE SEAT POSITIONED ACCORDING TO LOAD
Ewald Pekrul, Nienstedt, Germany, assignor to Westinghouse Bremsen- und Apparatebau G.m.b.H., Hannover, Germany
Filed Oct. 28, 1970, Ser. No. 84,824
Int. Cl. B60t 11/34
U.S. Cl. 303—60 7 Claims



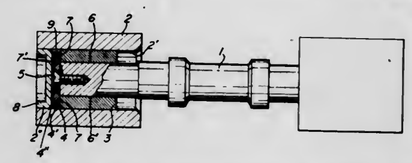
This invention relates to a fluid pressure operated Belleville spring type lock for a hollow sleeve member at one end of which is formed the exhaust valve seat of a paraboloidal type self-lapping variable load relay valve. This hollow sleeve is arranged to be held in a position to which it may be adjusted according to the load on a vehicle by the gripping action of the inner periphery of the smaller end of a Belleville spring in response to a fluid pressure force applied to the larger end by a piston subject to the delivery pressure supplied by the relay valve to one or more brake cylinders for effecting a brake application on the vehicle.

3,671,088
FLEXIBLE WHEEL
William P. Woolley, 3921 Cambridge St., Jackson, Miss. 39216
Filed July 22, 1970, Ser. No. 57,287
Int. Cl. B60b 9/02
U.S. Cl. 305—7 3 Claims



An internally sprung wheel wherein the wheel rim is rotatably supported upon rollers carried at circumferentially spaced points by a frame, and the frame is resiliently supported from a center member for attachment to a vehicle frame. The resilient mounting includes a coil spring from the center member to the base of the frame, and a leaf spring attached at its center to the frame top and having its free ends connected to links pivotally carried by the center member. A shock-absorber may be mounted between the center member and the frame top if desired.

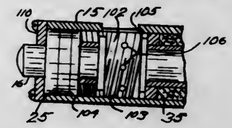
3,671,089
TOP ROLLER FOR SPINNING MACHINE
Nobukazu Morisaki, Nagoya, Japan, assignor to Daido Metal Company Ltd., Kita-ku, Nagoya, Japan
Filed Jan. 5, 1971, Ser. No. 104,017
Claims priority, application Japan, May 11, 1970, 45/39,984
Int. Cl. F16c 33/20, 35/02
U.S. Cl. 308—20 5 Claims



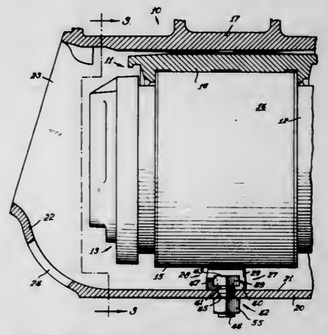
A top roller for a spinning machine, in which a self-lubrication oilless bearing is used for both a radial and thrust rotational sliding member.

3,671,090
CHOPPING MACHINE
Harold E. Galanty, 36 Montgomery Road, Livingston, N.J. 07039
Continuation-in-part of application Ser. No. 690,946, Dec. 15, 1967. This application Sept. 11, 1970, Ser. No. 71,574
Int. Cl. F16j 15/54
U.S. Cl. 308—36.1 3 Claims

A chopping machine adapted to be connected to a duct, particularly, a pipeline through which pieces of solid material are being transported by a stream of fluid and comprising a grating unit having slots and a cooperating chopper unit having chopper blades. The blades pass through the slots with a small clearance whereby the larger size pieces are chopped to a size which will pass through the slots and the blades continuously clean the surfaces of the slots to maintain a low flow resistance. The stuffing box structure has an adjusting member which extends laterally thereof so as to be operable in a readily-accessible side location and which may also serve to eject a shaft bearing. The mounting structure is supported from an end flange and extends some distance therefrom while remaining within the space defined by the planes of the side surfaces of the flange.



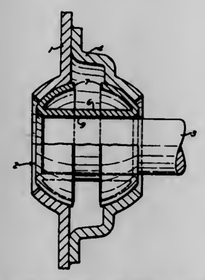
3,671,091
STOP BLOCK ASSEMBLY FOR RAILWAY CAR ROLLER BEARING JOURNAL BOX
Rudolf E. Nadherny, 125 Tupelo Drive, Naperville, Ill. 60540
Continuation-in-part of abandoned application Ser. No. 21,710, Mar. 23, 1970. This application May 28, 1971, Ser. No. 148,072
Int. Cl. F16c 13/02, 35/00
U.S. Cl. 308—40 17 Claims



To limit relative movement between the concave inner surface of the bottom wall of a railway journal box and an axle journal assembly therein, a stop block assembly is secured to the bottom wall. Prior to insertion of the axle journal assembly in the journal box, a cap screw is inserted from the inside of the journal box through an aperture in its bottom wall with the threaded end projecting therebelow. After insertion of the axle journal assembly in the journal box an arcuate stop block having an intermediate transverse slot is inserted underneath the axle journal assembly and underneath the head of the cap screw. The under surface of the stop block has less convexity than the concavity of the inner surface of the bottom wall so that when a locknut on the projecting end of the cap screw is tightened, the juxtaposed surfaces are brought into intimate contact. Flexing of the stop block is facilitated by grooving its upper surface adjacent the sides of the slot. The head of the cap screw fits into a socket in the stop block to prevent relative turning when the locknut is tightened. This also prevents accidental removal of the stop block should the locknut become loose. Modifications include arrangements for application of the cap screw from underneath the bottom wall eccentrically and centrally of an opening therein large enough to receive the head of the cap screw. A shoulder depending from the under surface of the stop block enters the large opening to locate the stop block and to elimi-

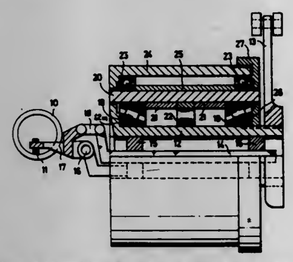
nate shear forces on the body of the cap screw resulting from impact on the stop block by the housing of the roller bearing. The stop block may be held in place by a "Huckbolt" pin having a hexagonal head or a round head with locking grooves to which a metal collar is applied by a suitable tool.

3,671,092
SELF-ALIGNING BEARING
Walter G. Krellner and Erle I. Shobert II, St. Marys, Pa., assignors to Stackpole Carbon Company, St. Marys, Pa.
Filed Mar. 29, 1971, Ser. No. 128,846
Int. Cl. F16c *23/00*
U.S. Cl. 308—72 7 Claims



A self-aligning bearing is formed from a one-piece metal member having a tubular central portion for receiving a rotating shaft, and supporting end portions for the tubular portion integral with its opposite ends. These supporting end portions are disposed around the outside of the tubular portion and are curved back over it. The outer surfaces of the supporting portions lie in an imaginary spherical surface having its center at the axis of the tubular portion of the bearing midway between its ends. This bearing is mounted in an opening through a bearing support provided with an encircling side wall curved to fit against the outer surfaces of the supporting end portions of the bearing so that the bearing can tilt in the opening in any direction.

3,671,093
BEARING, PARTICULARLY FOR THE DRIVING MEANS OF AN OSCILLATING TOOL
Karl Wieck, Stuttgart, Germany, assignor to SUPFINA, Wieck & Hentzen, Remscheid, Germany
Filed July 30, 1970, Ser. No. 59,515
Int. Cl. F16c *19/02*
U.S. Cl. 308—183 6 Claims



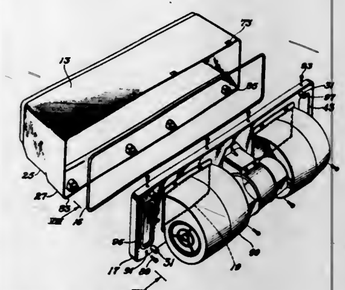
In a bearing assembly for a shaft oscillating with an amplitude of less than 360°, in order to eliminate localized wear of the track and rollers of the roller bearing forming part of the assembly, one of the races of said roller bearing is caused to rotate unidirectionally, driven by a freewheeling member connected to the oscillating shaft or its oscillating driving means.

3,671,094
COVER APPARATUS
Lyman H. Turner, Pittsford, and John A. Adamek, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 14, 1970, Ser. No. 71,776
Int. Cl. A47b *88/00, 95/00;* F05b *43/00*
U.S. Cl. 312—319 3 Claims



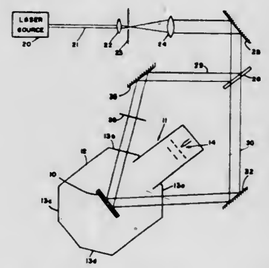
Cover apparatus for use with a sheet stacking unit in which the cover of the unit is connected to the frame by one or more rods which act against two different springs. One spring is relatively stiff to urge the cover to a slightly opened position when the cover is unlocked. The other spring is relatively compressible to act against the rod when the cover is raised to its fully opened position. Circuitry is coupled to the cover locking device to effect a pop open action when a signal is received to unlock and also to a tray below the cover to raise the tray when the cover is fully extended.

3,671,095
ENCLOSURE FOR HEAT EXCHANGE DEVICE
Randall W. Johnson, 421 Circle View Drive N., Hurst, Tex. 76053
Filed Aug. 24, 1970, Ser. No. 66,364
Int. Cl. A47b *77/08*
U.S. Cl. 312—352 16 Claims



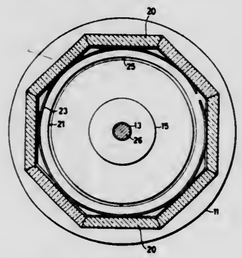
An enclosure for a heat exchange device in which air is blown past a heat exchange coil, characterized by a one-piece coil case having a length longer than any of the heat exchange coils that may be employed with it and readily cut off at an appropriate length to fit the selected heat exchange coil; a dam or seal adapted to be fastened along the bottom rear of the coil case and having a drainage connector for draining condensate from within the coil case, and a removable back plate for connecting with the coil case. The removable back plate has a relatively large aperture for connection with the blower means circulating the air past the heat exchange coil and a plurality of other apertures arranged so that the back plate may be rotated 180° to facilitate most advantageous use of space. Other specific structural features and the method of forming the enclosure are also disclosed.

3,671,096
ERASABLE HOLOGRAPHIC RECORDING
Arthur S. Mackin, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 3, 1971, Ser. No. 112,167
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 13 Claims



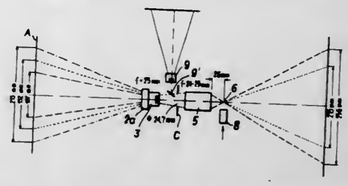
A holographic system records optical information on alkali halide crystals. The crystals are irradiated with an electron beam producing defects in the crystalline structure. The primary defect is in the F band although a small number of M bands are formed at the same time. The wavelength of a laser beam used for recording falls within the F absorption band. This converts the F centers to R and M centers. Reconstruction of the hologram can be made with light whose wavelength falls within either the F, R or M absorption band, the F band being destructive and the R and M bands nondestructive. The recorded information can be erased by exposing the crystal to an electron beam.

3,671,097
ARRANGEMENT IN OPTICAL CHARACTER READING
Nils Evert Johan Stahl, Hjortstigen 18, Stocksund, Sweden, and Per Skonare, Tyresovagen 355, Enskede, Sweden
Filed July 12, 1968, Ser. No. 744,403
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 1 Claim



Characters are read from a character carrier by means of a rotatable mirror having two brackets with slots and a plurality of reflecting elements located in these slots and forming a substantially continuous optical surface.

3,671,098
OPTICAL DEVICE HAVING TWO PARTS PRODUCING FIXED INTERMEDIATE IMAGE
Johann Rotter, Ernest Thun-Str. 6, 5020 Salzburg, Austria
Filed Sept. 2, 1969, Ser. No. 854,423
Claims priority, application Germany, Sept. 4, 1968, P 17 97 250.8
Int. Cl. G02b *21/00, 23/00*
U.S. Cl. 350—8 12 Claims



An optical device comprising two optical parts, each of which has an image-forming member. In operation, one optical part is disposed nearer an object and the other is disposed nearer an image formed by the device, the optical parts being spaced apart so as to form a real intermediate image therebetween. The effective field diameter of one or both image-forming members is variable by alteration of at least one optical part.

3,671,099
ZOOM OPTICAL SYSTEM FOR A MICROSCOPE
Arthur H. Shoemaker, East Aurora, and Milton H. Sussman, Buffalo, N.Y., assignors to American Optical Corporation, Southbridge, Mass.
Filed Apr. 1, 1971, Ser. No. 130,396
Int. Cl. G02b *7/04, 1/00, 15/04*
U.S. Cl. 350—43 4 Claims

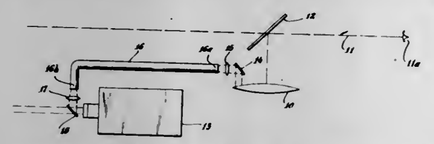


A ten component microscope system having a variable magnification of 90×–550× and a variable NA of respectively 0.16–0.55.

3,671,100
SYSTEM FOR INTEGRATING GUNSIGHT RETICLE IMAGE AND IMAGE RECEIVED BY A CAMERA
Bliss M. Bushman, Claremont, and William D. Schultz, Bradbury, Calif., assignors to The Perkins-Elmer Corporation, Norwalk, Conn.
Filed Oct. 23, 1970, Ser. No. 83,485
Int. Cl. G02b *21/00, 23/00*
U.S. Cl. 350—19 7 Claims

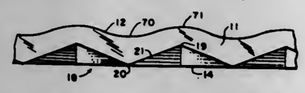
For integrating an aircraft gunsight or HUD (head up display) reticle image and an image received by a camera mounted in the aircraft with its lens aimed to photograph a view corresponding to the view through the reticle, an image of the reticle from an edge portion of a collimating lens which is associated with the gunsight

reticle is focussed onto one end of the bundle of optical fibers. At the other end of the bundle the reticle image is



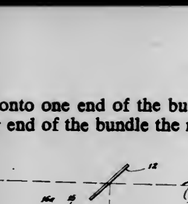
collimated and superimposed on the image received by the camera.

3,671,101
LIGHT CONTROL MATERIAL
Ran M. Finch, Berkeley, Calif.
(200 Arlington Ave., Kensington, Calif. 94707)
Filed July 25, 1969, Ser. No. 845,005
Int. Cl. G02b 5/12
U.S. Cl. 350—109 **3 Claims**



A sheet of light transmitting material is provided on its light exit side with a plurality of geometric surfaces, preferably right regular hexaginal pyramids, whose surfaces define an angle with the plane of said sheet sufficient to totally reflect all light rays entering the light entrance side at an angle of incidence exceeding a given angle and which have not passed through the sheet.

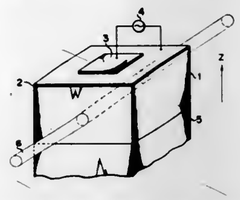
3,671,102
LAMELLAR EUTECTIC INSB SB FILMS AS INFRARED POLARIZERS
Arthur R. Clawson, San Diego, Neil M. Davis, Riverside, and Harry H. Welder and David A. Collins, San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Jan. 15, 1971, Ser. No. 106,800
Int. Cl. G02b 5/30
U.S. Cl. 350—147 **1 Claim**



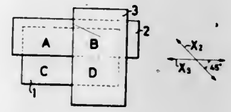
An optical polarizer of lamellar eutectic InSb+Sb films grown by electron beam microzone crystallization, for use in the infrared region beyond 6 microns wavelength.

3,671,103
DI-LEAD MOLYBDATE ULTRASONIC LIGHT DEFLECTOR
Naoya Uchida, Tokyo, Yoshiro Ohmachi, Tokorozawashi, and Nobukazu Niizeki, Shintaro Miyazawa, and Hiroshi Iwasaki, Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Mar. 31, 1971, Ser. No. 129,860
Claims priority, application Japan, Apr. 9, 1970, 45/30,383; July 13, 1970, 45/61,673, 45/61,674, 45/61,675
Int. Cl. G02f 1/24
U.S. Cl. 350—149 **6 Claims**

A single crystal of di-lead molybdate, Pb_2MoO_5, that is $2PbO \cdot MoO_3$, is used as a medium for ultrasonic deflection of light. The light deflecting medium of the present invention enables light and ultrasonic waves transmitting therethrough to be interacted acousto-optically with higher efficiency than that of the prior art and that using tellurium dioxide as the single crystal. The present light deflecting medium displays various effects by several combinations of the propagation directions of light and acoustic waves.

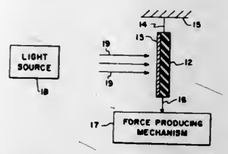


3,671,104
METHOD AND APPARATUS FOR MASKING IMAGES BY POLARIZATION
Kuniki Seino, Amagasaki, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Nov. 12, 1970, Ser. No. 88,778
Int. Cl. G02b 27/28
U.S. Cl. 350—157 **9 Claims**



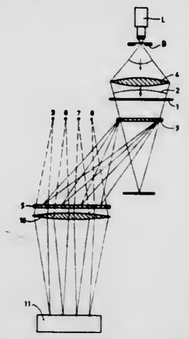
Two doubly refracting plates whose optic axes are at 45° with each other and an image-bearing film are placed between two optical polarizers which are so disposed that their optic axes (principal crystallographic axes) are rotatable. By rotating the optical polarizers, the polarizers are set at such position that their optic axes are at a right angle or in parallel with each other, while at the same time either one of the optical polarizers and either one of the doubly refracting plates are set in such position that their optic axes are at an angle of 45° with each other. Thus, part of the image can be masked as desired.

3,671,105
LIGHT REGULATOR
Jerry G. Williams, Hampton, and Joseph H. Judd, Newport News, Va., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Apr. 28, 1971, Ser. No. 138,227
Int. Cl. G02f 1/36
U.S. Cl. 350—161 **4 Claims**



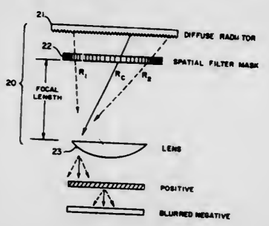
A thin absorbing metallic film deposited on a low-modulus transparent substrate and a mechanism for stretching the substrate. As the substrate is stretched, the thickness of the thin film decreases and microfractures occur thereby allowing an increase transmission of visible light through the thin film.

3,671,106
OPTICAL MULTIPLEX FILTER SYSTEM
Gunther Groh, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,339
Claims priority, application Germany, Sept. 5, 1969, P 19 45 085.2
Int. Cl. G02b 5/18
U.S. Cl. 350—162 SF **10 Claims**



A character recognition apparatus uses a holographic image multiplier to project an observed image in angularly separated beams. In the path of each beam an optical spatial filter is placed. By virtue of the image multiplication the shape of the observed character may be simultaneously processed.

3,671,107
OPTICAL LOW-PASS SPATIAL FILTERS
George Biernson, Concord, Raymond Euling, Sudbury, and Paul W. Jones, Franklin, Mass., assignors to Sylvania Electric Products Inc.
Original application Oct. 29, 1968, Ser. No. 771,585, now Patent No. 3,615,433. Divided and this application Oct. 5, 1970, Ser. No. 78,266
Int. Cl. G02b 27/00
U.S. Cl. 350—162 SF **1 Claim**



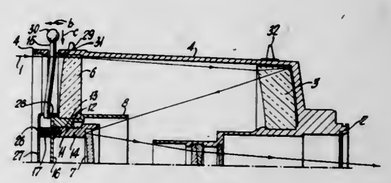
An optical low-pass spatial filter for low pass spatially filtering photographic imagery information. The low-pass spatial filter includes a source of diffused illumination, a mask disposed in front of the source of diffused illumination and having a circularly-symmetric transmissivity pattern, and a lens spaced in front of the mask a distance equal to the focal length of the lens for refracting illumination directed thereon from the source of illumination after passage through the mask.

3,671,108
TEMPERATURE COMPENSATING DEVICE AND LENS SYSTEM INCLUDING SAME
Alfred Kilgus, Biberacher Strasse 2, Stuttgart-Wangen, Germany
Filed July 10, 1970, Ser. No. 53,878
Claims priority, application Germany, July 12, 1969, G 69 27 722.1
Int. Cl. G02b 7/02
U.S. Cl. 350—253 **11 Claims**



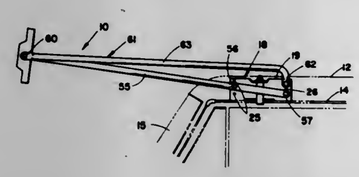
A lens system includes an annular temperature compensating ring disposed between lens components, the ring having a thermal coefficient of expansion which is sufficiently high to compensate for changes in the focal length of the lens system resulting from temperature-induced changes in the refractive index of the lens elements. In a preferred embodiment, the temperature compensating device comprises a plurality of V-shaped projections extending axially from one side of the annular ring, the shape of the projections and of the notches defined thereby being such that the axial length of the projections changes with temperature-induced changes in the size of the ring.

3,671,109
FOCUSING MECHANISM FOR CATADIOPTRIC OBJECTIVE
Shigeaki Sugano, Tondabayashi, and Kyozo Uesugi, Sakai, Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan
Filed June 16, 1970, Ser. No. 46,714
Claims priority, application Japan, June 19, 1969, 44/48,607
Int. Cl. G02b 5/10, 7/10, 17/08
U.S. Cl. 350—299 **9 Claims**



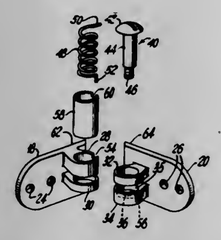
An adjustable focus multi-reflector optical device such as of the cassegrainian or catadioptric type includes a main barrel supporting a stationary first reflector, and a smaller diameter internally threaded sleeve coaxially mounted in the main barrel. An externally threaded collar mounting a second reflector is located in and engages the thread in the sleeve and a handle extends radially from the collar through a peripheral slot in the main barrel and is rotatable with the collar and connected thereto so as to be resiliently axially and radially movable relative to the collar.

3,671,110
REAR VIEW MIRROR ATTACHMENT
Sarfen V. Van Wassenhove, 2173 18th St., East Moline, Ill. 61244
Filed July 8, 1970, Ser. No. 53,190
Int. Cl. G02b 5/08
U.S. Cl. 350—307 10 Claims



A rear view mirror that is positioned outside of the automobile and forwardly of the windshield at a level above the roof of the automobile. The mirror is supported in cantilever fashion by supporting structure connected to brackets fixed to the respective left- and right-hand gutters running lengthwise of the edges of the automobile roof.

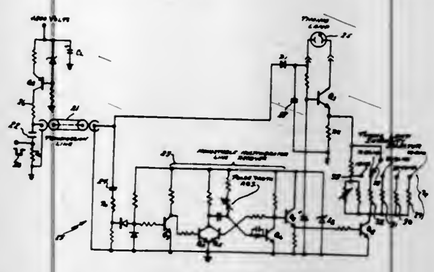
3,671,111
BIASED HINGE FOR SPECTACLE FRAMES
Lake Okner, Short Hills, N.J., assignor to Standard Optical Mfg. Company, Livingston, N.J.
Filed Oct. 12, 1970, Ser. No. 79,843
Int. Cl. G02c 5/16
U.S. Cl. 351—113 10 Claims



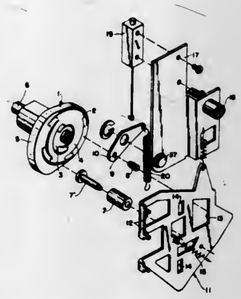
A biased hinge, particularly suited for joining the temple arms of spectacle frames to the lens-engaging means of spectacle frames. Two hinge plates are fastened to the members to be joined and have knuckle ears which extend from each of the hinge plates to coact and form a hinge barrel. A hinge tube is disposed within a hinge barrel and a resilient means is positioned within the hinge tube and connected to each of the hinge plates to bias the hinge in the desired position. A hinge pin extends through the hinge tube to hold the hinge assembly in operative position.

3,671,112
REFERENCE TIME SCALE APPLICATION TO HIGH SPEED FILM AT HIGH PULSE REPETITION RATES
Andrew E. Leunert and Frank L. Crosswy, Tullahoma, and Henry T. Kalb, Manchester, Tenn., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Mar. 18, 1971, Ser. No. 125,571
Int. Cl. G03b 41/00
U.S. Cl. 352—84 4 Claims

An apparatus for applying a reference time scale to high speed film utilizing a neon timing light source, a timing signal generator and a transmission line to connect the generator to the light source. Timing pulses having fast rise and fall times are produced at high pulse repetition rates to provide a reliable application of timing marks to the film.



3,671,113
FILM FEEDING MECHANISM FOR MOTION PICTURE PROJECTORS
Robert B. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,092
Int. Cl. G03b 1/00
U.S. Cl. 352—173 8 Claims

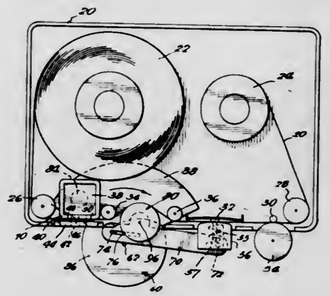


In a film feeding mechanism of the type wherein the engagement of the film claw is effected by a cam follower cooperating with a constant speed cam, the cam is formed with a "still" projection surface and a "motion" projection surface. The follower is locatable on either surface to establish still projection and motion projection at a set rate, and slower projection rates are achieved by an electrically actuable device which moves the follower from the "still" projection surface to the "motion" projection surface at selected frequencies.

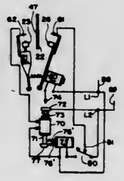
3,671,114
ECCENTRIC DRIVE FILM ADVANCING SYSTEM
Michael D. Thomas, 640 Fern Court, Elmhurst, Ill. 60126, and Sidney Milovac, 10521 S. Kostner, Oak Lawn, Ill. 60453
Filed Apr. 28, 1970, Ser. No. 32,649
Int. Cl. G03b 1/34
U.S. Cl. 352—185 23 Claims

A film advancing system for use with non-apertured continuous film (such as motion picture film) that carries successive areas for pictures, together with sequencing signals coordinated with the successive areas. While the forward portions of the film near the exit end of the film

advancing path are driven at a constant speed, the following portions of the film are advanced intermittently by a member that periodically applies a lateral force against an intermediate portion of the film to pull a length of the film past an aperture plate. The intermittent film advancing mechanism is driven in response to the sequencing signals carried by the constantly advancing film, which signals are picked up by a magnetic head, and a light stopping means (such as a shutter member) cooperates with the intermittent film advancing mechanism to stop the light from radiating along its normal path to the film while the film is being advanced past the aperture plate, and to allow light to impinge on the film when the film is stationary adjacent the aperture plate.

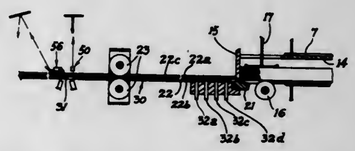


3,671,115
AUDIO-VIDEO SYSTEM EMPLOYING SOUND TRACK TAPE BELTS MOVABLY MOUNTED ON PROJECTION SLIDES
Sam Larkin, 254 Beach 140th St., Belle Harbor, N.Y. 10013
Filed Jan. 30, 1970, Ser. No. 7,052
Int. Cl. G03b 21/64, 31/04
U.S. Cl. 353—19 12 Claims



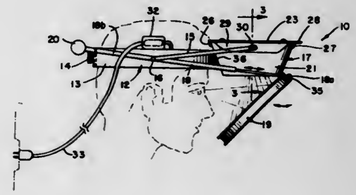
The system shown includes a slide projector with a slide changer, and a magnetic tape record associated with electronic apparatus akin to a tap recorder including a magnetic pick-up head, all dealing with projection slides on which the tape, an endless belt, is movably mounted. The belt, arranged in square formation around the transparency, is flattened so its four flights are parallel to the general plane of the slide; there being a 45 degree fold line in the belt across each corner where it is supported on edges on the slide body. The sound track is along a line once around one face of the belt with a conductive spot between start and finish. Opposite cut-outs in the slide expose both belt surfaces. The magnetic head is one jaw of a normally open clamp form while a powered friction drive wheel is the other jaw. The clamp is closed upon actuation of a solenoid, whereupon said magnetic head and rotating wheel enter the cut-outs to pinch the tape, thus causing it to move and its track played. Conductive spring fingers on the clamp arms also pinch the tape upon the closing of the clamp, and making contact with said spot, constitute a switch in a circuit including said solenoid and a locking relay device, operating automatically to cause the clamp to open when playing is done.

3,671,116
READER FOR INFORMATION CARRIERS IN SHEET FORM
Manfred Leutwein, Rommelshausen, and Heinz Streicher, Echterdingen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,792
Claims priority, application Germany, Dec. 19, 1968, P 18 15 762.5
Int. Cl. G03b 23/08
U.S. Cl. 353—27 16 Claims



Apparatus is disclosed for projecting images from information bearing media such as microfiche cards having at least first, second and third image portions, the projection apparatus including first and second stations (or magazines) for receiving a plurality of the image bearing media, a feed path disposed between the first and second stations, first and second projection stations for receiving one of the information bearing media as it is directed along the feed path, and first and second projection assemblies disposed with respect to one of the projection stations for projecting the first and second images from the information bearing medium. In a preferred embodiment, the first and second image portions may be displayed upon a projection screen and one of the lens systems may be movable with respect to the information bearing medium to thereby project the third image portion.

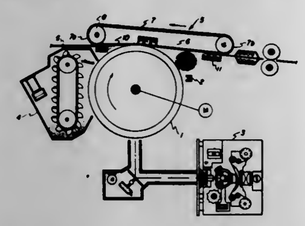
3,671,117
VIEWING DEVICE
David W. Tibbets, 7850 Lime Grove Ave., West Melbourne, Fla. 32901
Filed Sept. 14, 1970, Ser. No. 71,642
Int. Cl. G03b 21/00, 21/06, 21/26
U.S. Cl. 353—28 7 Claims



A supporting frame positioned on the head of a viewer carries a transparent reflecting screen and an episcope type projector which includes a holder for an object to be viewed and illuminating means, arranged so that an image of the object is projected on the screen. An inclination-responsive switch in circuit with the illuminating means energizes the latter only when the viewer's head

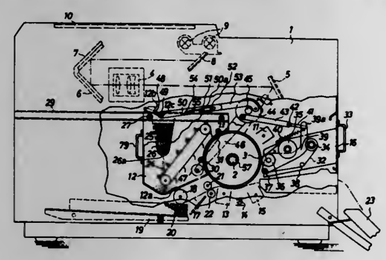
is level, and de-energizes the same when the viewer's head is tilted forwardly and downwardly for viewing another object in coordination with the projected image.

3,671,118
APPARATUS FOR CREATING DUPLEX REPRODUCTIONS
Joseph Fantuzzo, Webster, and Frazer D. Punnett, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Dec. 24, 1969, Ser. No. 887,845
Int. Cl. G03b *27/32*
U.S. Cl. 355—3 **7 Claims**



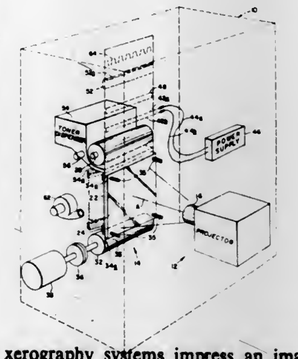
A duplexing method and apparatus for producing duplicate reproductions of original subject matter on opposite surfaces of a support material. Two oppositely reading latent electrostatic images of subject matter to be reproduced are created on a photosensitive surface and are developed with developer material wherein one of the images comprises a right reading image which is transferred to a storage medium after development. The other image being in wrong reading or mirror form remains on the photosensitive surface to be directly transferred therefrom to one side of a support material whereupon the developed image retained on the storage medium is transferred to the other side of the support material to create a duplex reproduction.

3,671,119
ELECTROSTATIC COPYING APPARATUS
Herbert Engel, Munich, Karl Hartwig, Unterhaching, and Gunther Schnall, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 10, 1970, Ser. No. 96,937
Claims priority, application Germany, Dec. 10, 1969, P 19 61 834.9
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **10 Claims**



A xerographic carrier has a photoconductive layer which is to be uniformly charged preliminary to transfer of latent images to the layer. A source of powdered electroscopic developer material supplies such material to a conveying device located adjacent the path and capable of displacement between two positions in one of which it is directly proximal to the layer and in the other of which it is remote therefrom so as to permit withdrawal of the carrier from its normal operating position. A reversible drive normally drives the conveying arrangement in a sense conveying the powdered developer material onto the layer of the carrier, and a displacing arrangement serves for displacing the conveying device from its normal operating position to its remote position. Reversing means is provided which serves to reverse briefly the drive when the displacing means is operated, for displacing the conveying arrangement from its normal operating position to its remote position.

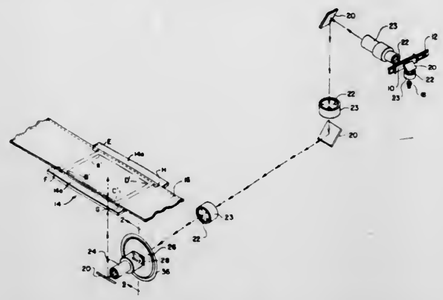
3,671,120
SYSTEM FOR PROCESSING LARGE XEROGRAPHIC PRINTS
Manfred R. Kuehnle, Lexington, Mass., assignor to Audac Corporation, Burlington, Mass.
Filed Sept. 28, 1970, Ser. No. 75,921
Int. Cl. G03g *15/00, 15/10*
U.S. Cl. 355—8 **13 Claims**



Present xerography systems impress an image on an electrostatic sheet or film by charging the entire area of the sheet and then exposing that area to the image and then applying toner to that area to develop the image impressed on the film to permanent visible form. The present system charges, exposes and tones a large area electrostatic sheet or film in sections by positioning a vertically moving curtain between the film and the lens system. Horizontal corona discharge producing electrodes, a horizontal window and a horizontal wiper blade are spaced one above the other on the curtain. As the curtain moves downward, the electrodes charge progressively lower areas of the film across its full width. Then the downwardly moving horizontal window exposes these areas, in turn, to progressively lower portions of the image projected from the lens system so that a latent image is found on the film. Finally, the downwardly moving wiper blade spreads toner from an adjacent supply uniformly over progressively lower areas of the exposed film so that a high-quality visible image is impressed on the film.

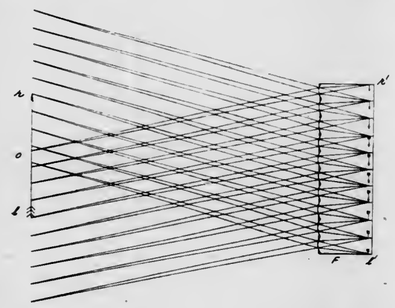
3,671,121
EXPOSURE DEVICE FOR CONTROLLING CHARGE ON A PORTION OF A CHARGED SURFACE BORDERING AN IMAGE FRAME PROJECTED ON THE CHARGED SURFACE
Donald J. Albert, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,119
Int. Cl. G03g *15/00*
U.S. Cl. 355—7 **25 Claims**

A mechanism and method is disclosed for controlling charge on a portion of the surface of a photoconductive member bordering an image frame, containing an image and a background portion projected onto the photoconductive surface from an original such as microfilm, wherein positive microfilm is dark or opaque between and around adjacent image frames and negative microfilm is transparent or light transmitting between and around adjacent image frames. The mechanism has an aperture through which the image frame is projected, surrounded by an opaque mask portion for preventing illumination of the border area on a charged photoconductive surface surrounding the image frame projected onto the photoconductive surface for those situations in which positive prints



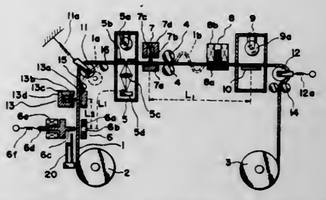
are made from negative microfilm. The mechanism further includes a light directing mask portion surrounding the aperture which, when activated, directs illumination onto a portion of the charged surface of the photoconductive surface bordering the image frame projected thereon for discharging the border portion for those situations in which positive prints are made from positive microfilm. Thus, in all situations the charge on the border portion of a photoconductive surface adjacent the image frame is maintained at substantially the same potential as background portions within the image frame.

3,671,122
METHODS OF PRINTING STEREOSCOPIC INTEGRAL PHOTOGRAPH FROM PSEUDOSCOPIC ORIGINAL
Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.
Original application July 26, 1968, Ser. No. 747,996. Divided and this application Oct. 2, 1970, Ser. No. 77,606
Int. Cl. G03b *35/02*
U.S. Cl. 355—22 **2 Claims**



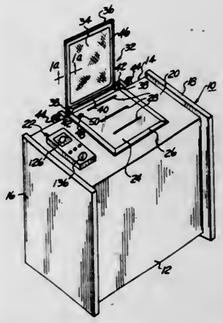
Photographs of the integral type are provided which exhibit the effect of parallax about both horizontal and vertical axes, the photographs being recorded on a spherically lenticulated film or on a spherically lenticulated screen-film combination; and a method, comprising a sequential printing technique, is provided by which the elementary images constituting the composite pictures are so transposed that a stereoscopic reproduction from a pseudoscopic integral photograph is achieved.

3,671,123
DEVICE FOR INSURING REGISTRATION OF THE PICTURE FRAME WITH THE PRINTING STATION IN MAKING PRINTS FROM A FILM
Tomoji Murata, Sakai-shi, Osaka-fu, and Atsuyuki Tanaka, Toyonaka-shi, Osaka-fu, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 22, 1970, Ser. No. 39,827
Int. Cl. G03b *27/04*
U.S. Cl. 355—97 **9 Claims**



A printing apparatus for sequential printing of pictures from images appearing in a plurality of frames disposed in sequence on a film not provided with perforations, including a first detecting means for detecting the passing of a front edge of a picture frame of the film transported by a transport means, and a second detecting means, actuated when said first detecting means detects the front edge of a certain picture frame to operate a film stop means and an exposure means when a film travel distance corresponding to the distance between the first detecting means and said exposure means is detected.

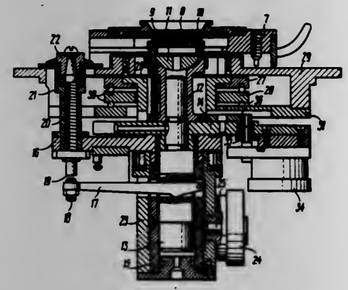
3,671,124
MICROFILM DUPLICATOR AND METHOD OF PHOTOCOPYING MICROFILMS
William Amolsch, Detroit, and Robert J. Maher, Farmington, Mich., assignors to Douthitt Corporation, Detroit, Mich.
Filed Sept. 4, 1970, Ser. No. 69,826
Int. Cl. G03b *27/04*
U.S. Cl. 355—124 **8 Claims**



An apparatus to simultaneously duplicate a large plurality of microfilm negative material supported on a transparent sheet by ultra-violet photo process in which the

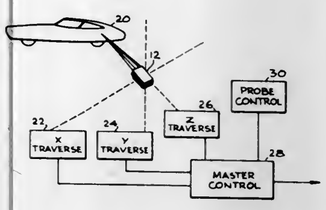
apparatus has a glass window which supports the transparent sheet and a photosensitive lamina placed on top of the transparent sheet, an ultra-violet rays emitting device is supported in the lower section of the apparatus which also supports an automatic fast acting shutter mechanism disposed between the ultra-violet ray emitting device and the glass window which supports the microfilm transparency. In the process of photo-copying a cover is displaced over the glass window to keep out sun rays or artificial, external light rays and the space between the cover and the glass window, when the cover is closed, is automatically evacuated of air to tightly press the photosensitive lamina onto the transparent microfilm sheet just prior to opening the shutters, to expose the microfilm negative to the ultra-violet rays for transfer of the image to the photosensitive lamina. The operating mechanisms for the shutter and for evacuating of the protective cover are correlated and provided with suitable controls to function in timed sequence.

3,671,125
DEVICE FOR ALIGNING PREFABRICATED CIRCUIT WITH A PHOTOGRAPHIC PLATE TO MAKE PRINTED CIRCUITS
Anatoly Matveevich Lutchenkov, Ulitsa Opernaya 9b, kv. 1; Mikhail Petrovich Shekhodanov, Ulitsa Shirotnaya 7–8; Sergei Alexandrovich Siyanov, Ulitsa Gorlovskaya 7/9, kv. 62; Ivan Stepanovich Korovin, Ulitsa Radistov 8a, kv. 16; Nonna Alexandrovna Kholstova, Ulitsa Ulyanova 9, kv. 7; Valentina Nikolaevna Kreptseva, 1 Nagorny mikroraion 28–88; and Nina Petrovna Leskovskaya, Ulitsa Zayarskaya 18, kv. 8, all of Gorky, U.S.S.R.
Filed Nov. 13, 1970, Ser. No. 89,372
Int. Cl. G02b 7/00
U.S. Cl. 355—133 **3 Claims**



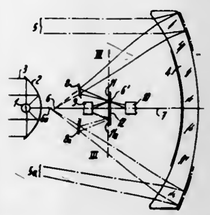
A device for aligning a prefabricated circuit with a photographic plate and exposing the plate to produce printed circuits and solid circuits, which comprises a microscope and a manipulator including a main micrometer mounted in a bushing and having at its one end a dial for setting the optimal value of the gap between the prefabricated circuit and the photographic plate, and terminating at its other end in a screw tip; the device is further provided with a mechanism for vertically moving the prefabricated circuit, fashioned as a rod with a flange, mounted in a movable sleeve, said movable sleeve also having a second flange on which the flange of the rod rests, the upper end of the rod having a support bub loosely mounted thereon and carrying a hemisphere which has a microscope table disposed thereon, the sleeve having a lever pivotally secured thereon, resting upon the rod and operatively connected with the pivot of the main micrometer screw, and the flange of the sleeve having a bushing of the main micrometer screw rigidly secured therein. The device provides a very accurate and precise alignment of a prefabricated circuit with a photographic plate, which alignment does not get disturbed during subsequent securing of the circuit and the photographic plates prior to exposure of the photographic plate.

3,671,126
NONCONTACTING OPTICAL PROBE
Gilbert E. Erb, Los Angeles, Calif., assignor to Atl, Inc.
Filed Feb. 19, 1970, Ser. No. 12,574
Int. Cl. G01c 3/08
U.S. Cl. 356—4 **14 Claims**



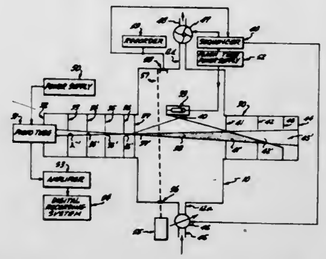
A distance measuring device for deriving contour information without contacting the surface being measured and without the use of internal moving parts. The device utilizes an optical system and geometric triangulation techniques to develop electrical output signals which may be used to drive readout displays, numerically controlled machine tools or the like.

3,671,127
LIGHT BEAM RANGE-FINDER
Giovanni Odone, la Rosiaz S/Lausanne, and Christian Lietar, Yverdon, Switzerland, assignors to Paillard S.A., Sainte-Croix, Switzerland
Filed Sept. 14, 1970, Ser. No. 71,926
Claims priority, application Switzerland, Sept. 10, 1969, 15,233/69
Int. Cl. G01c 3/08
U.S. Cl. 356—4 **6 Claims**



A range-finder comprising a projector directing a light beam on the subject, the distance of which has to be measured, and an optical converging system collecting rays diffused by the luminous spot obtained on the subject and a photo-sensitive device for measuring the focusing distance of the collected rays. The photo-sensitive device comprises a movable screen having an edge adapted to separate the rays near the converging point to differentially direct them onto two photo-elements. Means are provided to prevent parasitic light rays to impinge on the photoelements.

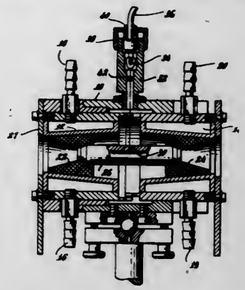
3,671,128
AUTOMATIC CLOUD CONDENSATION NUCLEI COUNTER
Lawrence F. Radke, Seattle, and Peter V. Hobbs, Bellevue, Wash., assignors to Battelle Development Corporation, Columbus, Ohio
Filed Aug. 25, 1969, Ser. No. 852,786
Int. Cl. G01n 1/00, 15/00
U.S. Cl. 356—37 **8 Claims**



An apparatus and method for the automatic measurement of the concentration of condensation nuclei contained in an air sample that form cloud droplets under conditions closely approximating those of natural clouds. An air sample containing condensation nuclei is introduced into a thermal diffusion chamber which is maintained at a supersaturation approximating that of natural clouds and the condensation nuclei are allowed to grow to a certain uniform size. The droplet size is measured directly by means of a photocell observing the light scattered by the droplets at a forward angle from a monochromatic light source. When the droplets reach the desired size, an enhancement in scattered light occurs which is detected by the photocell. Alternatively, the droplet size is measured indirectly by a timer which defines a fixed time interval after the air sample introduction, given the supersaturation in the thermal diffusion chamber. An electrical signal from either the photocell or the timer then triggers an integrating nephelometer which simultaneously measures the extinction coefficient due to light scattering of the cloud droplets. The known droplet size and observed extinction coefficient are combined in a simple manner to determine the concentration of cloud condensation nuclei.

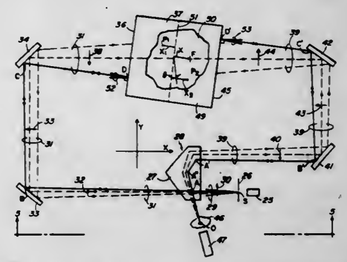
3,671,129
GRAPHITE TUBE SPECTROSCOPY SAMPLE CELL INCLUDING ILLUMINATION AND OBSERVATION STRUCTURE
Elmar Wiedeking, Sipplingen am Hasirain, Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen (Bodensee), Germany
Filed Jan. 12, 1971, Ser. No. 105,916
Claims priority, application Germany, Feb. 11, 1970, G 70 04 574.8
Int. Cl. G01j 3/02
U.S. Cl. 356—85 **2 Claims**

A known graphite tube cell apparatus used for heating an atomic absorption sample includes an outer housing within which the heated graphite tube is completely enclosed (except for the open ends of the tube), both to maintain the non-oxidizing protective gas on the surfaces of the graphite tube to avoid its being oxidized at the high temperatures used to dissociate the sample, and to contain the radiation from the red-hot graphite tube when so heated. Because of the closed and opaque nature of the housing, it is difficult to introduce the sample into a small inlet opening in the graphite tube. A hollow attachment on and extending through the outer housing is provided, in which a light source is contained for illuminating the sample inlet opening. The end of the attachment remote from the cell is sealed, and the inlet for the protective gas extends through the wall of the attachment at a position between the light source and the other end



near the cell so as also to cool the lamp when the cell is heated. A visual observing device is preferably provided on and extending through the housing, the axis of which also intersects the sample inlet, so that the user may conveniently see this inlet when introducing the sample.

3,671,130
INTERFEROMETER OF THE CENTER BALANCE TYPE
John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.
Filed July 10, 1970, Ser. No. 53,770
The portion of the term of the patent subsequent to Aug. 3, 1988, has been disclaimed
Int. Cl. G01b 9/02
U.S. Cl. 356—106 **16 Claims**

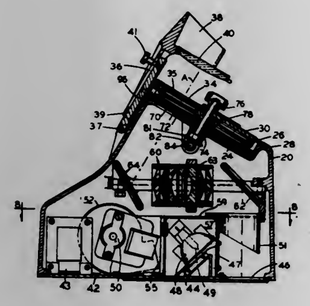


An interferometer of the center balance type incorporating a substantially isotropic, coherent light source, a retro-reflector having a beam splitting surface and a stage plate comprising a pair of opposed parallel mirrors in the optical path. The optical path difference is proportional to the distance from the optical fiducial to a plane equidistant from and parallel to the mirrors of the stage plate, and is invariant with respect to other translations or rotations of the stage plate so long as the mirrors remain in the optical path.

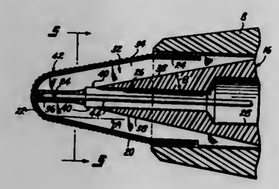
3,671,131
LITHOGRAPHIC COLOR ANALYZER USING INTERFERENCE MAGNIFICATION
Ralph C. Wicker, Fairport, N.Y., assignor to Chesley F. Carlson Company, Minneapolis, Minn.
Filed Nov. 24, 1969, Ser. No. 879,016
Int. Cl. G01j 3/52
U.S. Cl. 356—175 **6 Claims**

Lithographic color analyzer having a base with a viewing aperture and means for establishing a viewing plane

for a lithographic print or the like, a casing having an inclined deck, a pair of manually rotatable turret disks pivotally mounted on the deck, one having four dark half tone screens rotatably mounted therein and of different periodicity and a density as great as 99½%, and the other having color filter disks, a lens system having a 1 to 1 ratio within the casing on a substantially horizontal axis, a reflector above the aperture and in alignment with and on one side of the lens system, and a second reflector below the deck in alignment with and on the other side of the lens system, the reflectors and lens system being disposed on an optical axis extending normal to the viewing plane and normal to the plane of said half tone screen with the optical distance between the viewing plane and the optical center of the lens system being the same as the optical distance from the lens system center to the half tone screen plane, illumination for the viewing plane, forced air circulation for cooling the casing and establishing an above atmospheric pressure therein, a viewing lens disposed above the deck and the dark screen plane, means for manually rotating the half tone screens relative to the turret in which they are mounted, and a dial indicator above the deck for indicating the angle of rotation of the half tone screen.

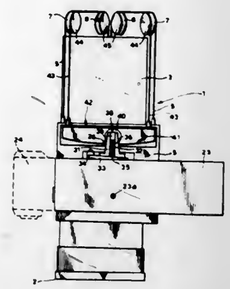


3,671,132
APPLICATOR WICK FOR A WRITING INSTRUMENT
Frederick R. Wittnebert, Whitewater, Wis., assignor to The Parker Pen Company, Janesville, Wis.
Filed Nov. 30, 1970, Ser. No. 93,751
Int. Cl. B43k 5/02
U.S. Cl. 401—292 13 Claims



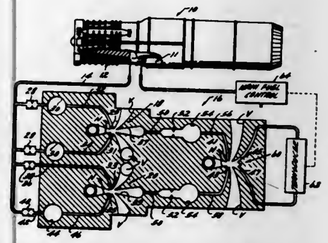
A self-cleaning writing point for a writing instrument, comprising a nib having a generally conical tip that terminates in a rounded apex, and about which is wrapped an applicator wick comprising a helix of fine resilient wire. The nib has feed channels therein for supplying ink to the applicator wick.

3,671,133
BALANCE COMPENSATED MACHINE TOOLS
Maso Galbarini, Pavia, and Francesco Cotta Ramusino, Milan, Italy, assignors to Innocenti Societa Generale per l'Industria Metallurgica e Meccanica, Milan, Italy
Filed Nov. 2, 1970, Ser. No. 86,050
Claims priority, application Italy, May 22, 1970, 68,759/70
Int. Cl. B23b 47/26
U.S. Cl. 408—235 13 Claims



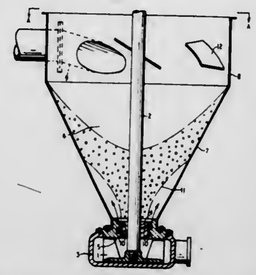
A large machine tool having a bed, and an upright extending above the bed, the upright carrying vertical guideways for a slide which carries horizontal guideways for a workhead. The workhead is adapted to carry a range of different attachments. In order to relieve the guideways, as far as possible, from the weight of the slide, the workhead and its attachments, the slide is suspended, by a pulley system, from the top of the upright; a counterbalancing hydraulic actuator being provided on the far side of the upright; the workhead is mounted on an intermediate member which is suspended in the same way as the slide. The intermediate member carries a track along which the workhead can slide; the track is curved in a vertical plane to compensate for the extension of the cables as the workhead moves along the horizontal guideways of the slide. A cam and follower arrangement is provided to compensate for the shift in the centre of gravity as different attachments are connected to the workhead.

3,671,134
FLUIDIC SIGNAL DETECTION AND PREVENTION OF STALL IN COMPRESSORS FOR GAS TURBINE ENGINES
Willis A. Boothe, Scotia, N.Y., assignor to General Electric Company
Filed Sept. 27, 1967, Ser. No. 679,584
Int. Cl. F04d 27/02
U.S. Cl. 415—13 9 Claims



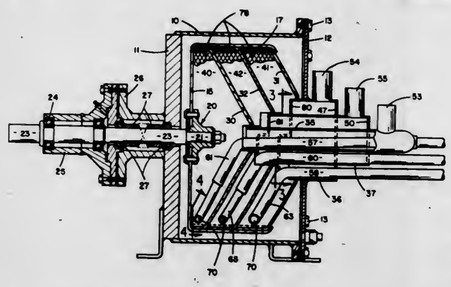
The disclosure shows fluidic means for detecting incipient stall of an axial flow compressor employed in a gas turbine engine. Fuel flow is modified as a result of such detection to move the operating point of the compressor away from a stall condition. Rapid fluctuations in the output pressure of the compressor, preferably in the range of 250 to 1,000 cycles per second, actuate the fluidic system to cause the change in fuel flow.

3,671,135
FROTH PUMP
Charles Harold Warman, Castlecrag, New South Wales, Australia, assignor to Warman Equipment (International) Ltd., Belmont, Western Australia, Australia
Filed May 15, 1970, Ser. No. 37,583
Int. Cl. F04d 1/00, 9/00; B01d 47/00
U.S. Cl. 415—53 7 Claims



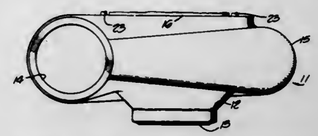
Centrifugal pumps having an impeller at the lower end of a vertical spindle, a casing surrounding the impeller, an intake opening through the upper wall of the casing and a feed chamber surrounding the spindle and communicating with the intake opening are modified, in order to handle frothy fluids by vaning the periphery of the opening in the casing so that part of the feed is returned to the feed chamber with increased energy causing a shearing vortex motion in the feed chamber.

3,671,136
MULTICOMPARTMENT PUMP STRUCTURE
Raymond D. O'Mara, Brewerton, and Charles K. Griffin, Auburn, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,745
Int. Cl. F04d 1/14
U.S. Cl. 415—89 9 Claims



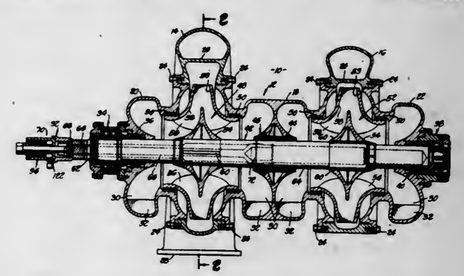
A cylindrical cup-shaped rotor is journaled in a closed casing and has a plurality of axially spaced-apart, frustoconical partition members forming fluid receiving compartments. An assemblage of inlet tubes is arranged in concentrically spaced relation about the axis of the rotor. The inlet tubes convey liquid to the rotor compartments respectively. A discharge tube is associated with each inlet tube and is formed with an inner end portion extending toward the periphery of the compartment supplied with liquid by the inlet tube with which the discharge tube is associated. The inner end portions of the discharge tubes incline in a direction from the axis of the rotor on an angle comparable to the partition members and have fluid pickup heads positioned contiguous to the periphery of the rotor compartments. The inner ends of the discharge tubes are arranged in a common plane.

3,671,137
CENTRIFUGAL PUMP WITH HYDROSTATIC BEARING
Rowland E. Ball, Long Beach, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 22, 1970, Ser. No. 48,369
Int. Cl. F04d 29/66, 7/00; B61f 17/00
U.S. Cl. 415—104 7 Claims



A vertical shaft, centrifugal pump has a steady bearing in the form of a radial hydrostatic bearing that journals the shaft, the hydrostatic bearing being energized by liquid circulated to it from the discharge zone of the pump impeller, the circulation of the bearing-energizing liquid being accomplished by an auxiliary centrifugal impeller driven by the shaft, the auxiliary impeller preferably being mounted on the main pump impeller.

3,671,138
COMPOSITE KNOCKDOWN PUMP
Rowland E. Ball, Long Beach, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Feb. 2, 1971, Ser. No. 111,962
Int. Cl. F01d 11/00
U.S. Cl. 415—111 21 Claims

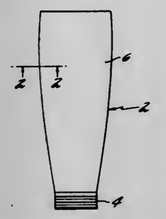


A centrifugal fluid pump suitable for assembly into an operable unit within a confined space including a plurality of impellers each mounted within respective fluid discharge members and in respective association with a plurality of fluid suction inlet members; such impellers being mounted on a composite drive shaft having a plurality of members integrally assembled to provide a high degree of radial and axial alignment and a high torque transfer capability.

3,671,139
COMPOSITE BLADE CONSTRUCTION
James S. Plowman, Longmeadow, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Sept. 11, 1970, Ser. No. 71,531
Int. Cl. F01d 5/28
U.S. Cl. 416—61 5 Claims

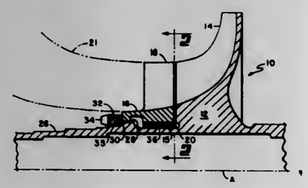
A fan blade or compressor blade is made up of a plurality of very thin plies of fibers for maximum

strength and these fibers are subject to damage by foreign objects that may engage the blades specially along its leading edge and thereby weaken the blade. To permit visual inspection of a blade to determine the



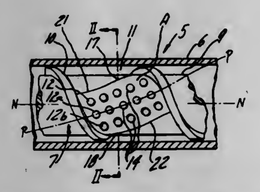
extent to which the plies have been worn away, one ply is made visibly different from the others and is positioned in the stack of plies at the limit position to which the blade surface can be worn away before replacement.

3,671,140
DAMPED TURBOMACHINE ROTOR ASSEMBLY
Wayne C. Shank, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.
Filed Oct. 5, 1970, Ser. No. 77,969
Int. Cl. F01d 25/28
U.S. Cl. 416—183 3 Claims



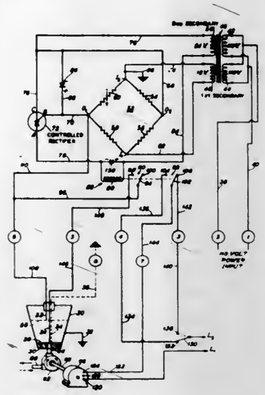
The disclosure illustrates a centrifugal compressor comprising an inducer hub telescoped over an adjacent shoulder of an impeller hub. The inducer hub has an inner annular surface which receives an annular relatively thin split ring element. When the compressor rotates at high r.p.m.'s the split ring frictionally engages the inner annular surface of the inducer hub to damp vibrations.

3,671,141
EXTRUDER COMPRISING A SCREW HAVING PEGS
Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Jan. 8, 1971, Ser. No. 105,011
Int. Cl. B29f 3/02
U.S. Cl 416—176 2 Claims



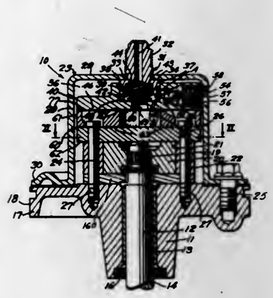
A specially constructed screw for an extruder of potentially plasticizable materials, e.g., so-called thermoplastic resins, which comprises radially-aligned pegs based in a non-eccentric undercut channel area of the screw core.

3,671,142
LIQUID LEVEL CONTROL
Ronald V. Calabrese, Forest Park, Ill., assignor to Lumenite Electronic Company, Franklin Park, Ill.
Filed June 22, 1970, Ser. No. 48,270
Int. Cl. F04b 49/06
U.S. Cl. 417—36 11 Claims



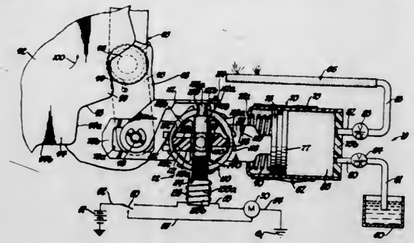
Liquid level control or indicator circuit in which a resistance bridge is unbalanced by change of liquid level in a container. Bridge is normally slightly unbalanced, and the degree of this slight unbalance may be variable to change the sensitivity. Change in liquid level significantly unbalances the bridge to bias a controlled rectifier, thereby triggering energization of a pump, valve, or signal or indicator device.

3,671,143
FLAT SIDE VALVE FOR PRESSURE BALANCED POWER STEERING PUMP WITH IMPROVED ASPIRATOR ACTION
Hubert M. Clark, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio
Filed Nov. 5, 1970, Ser. No. 87,050
Int. Cl. F04b 49/08
U.S. Cl. 417—79 8 Claims



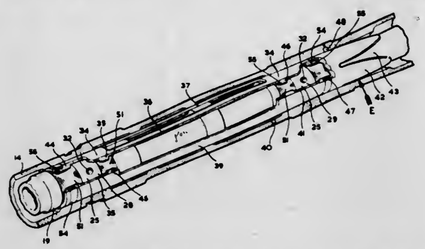
Pump bypass is channeled into an annulus and thence into a single flow passage constructed to obtain maximum aspiration at an oil makeup port so as to obtain maximum inlet supercharge.

3,671,144
TAILGATE WINDOW WASHER MECHANISM
Lloyd L. Kuck, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 23, 1970, Ser. No. 91,813
Int. Cl. F04b 17/06
U.S. Cl. 417—231 4 Claims



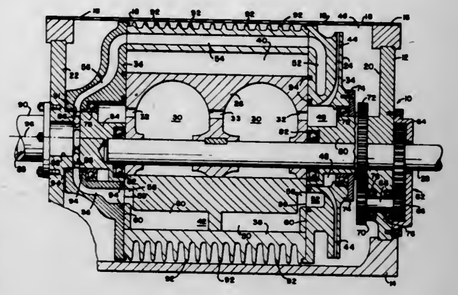
In a preferred form, this disclosure relates to a window washer unit for washing a tailgate window of a station wagon vehicle. The window washer unit includes a reciprocable washer pump, an actuating means including a drive means drivingly connected with a window regulator mechanism for raising and lowering the tailgate window and which has an interruptible driving connection with the reciprocable pump, and a control mechanism which is operable to establish a driving connection between the drive means and the reciprocable pump in response to the window regulator mechanism being actuated to raise the window and for interrupting the driving connection therebetween just prior to the window reaching its closed position and when the window is being lowered whereby the washer pump is only actuated to squirt washer fluid against the window when the latter is being raised from its open position towards its closed position.

3,671,145
IMPROVEMENTS IN OR RELATING TO BEARINGS
Frederick William Walton Morley, Derby, and Wilfred Thomas Watts, Edgware, England, assignors to Rolls-Royce Limited, Derby, England
Filed Aug. 18, 1970, Ser. No. 64,789
Claims priority, application Great Britain, Sept. 2, 1969, 43,325/69
Int. Cl. F04b 3/00, 5/00, 25/00; F16c 17/16
U.S. Cl. 417—247 7 Claims



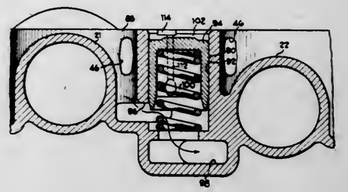
An inter-shaft bearing assembly for a multi-shaft gas turbine engine comprising a coaxial arrangement of an inner shaft mounted within a hollow outer shaft for relative rotation between the shafts with a sleeve disposed between the shafts and drivingly engaged by the outer shaft. The sleeve has a bearing surface which co-operates with a bearing surface on the inner shaft. Two annular projections on the sleeve disposed one each side of the bearing surface project radially inwardly thereof so that in operation oil which is supplied to the bearing surfaces is retained on the surfaces by the projections.

3,671,146
FLUID ENERGY MACHINE
William T. Alderson, W. Main St., Brookside, N.J. 07926
Filed Feb. 10, 1971, Ser. No. 114,128
Int. Cl. F01c 1/00; F03c 3/100; F04c 17/00
U.S. Cl. 417—243 21 Claims



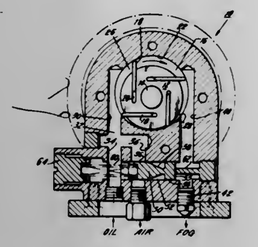
A gas compressor, of the sliding vane-type, having at least one vane slidably mounted in a rotor. The rotor, is rotatable within a rotary cylinder on an axis offset from the cylinder axis. The cylinder and rotor are in synchronism, that is, they rotate at the same angular velocity, and the vane is slidably movable therebetween. The vane is channeled, and cooperates with inlet and outlet cylinder ports for admission and discharge of the gas being compressed.

3,671,147
HERMETIC COMPRESSOR
F. Michael Laucks, 4178 Wiltshire Drive 17402, and Robert S. Vaughn, 395 Randolph Drive 17403, both of York, Pa.
Filed Dec. 30, 1969, Ser. No. 889,104
Int. Cl. F04b 17/00, 39/06, 49/00
U.S. Cl. 417—286 3 Claims



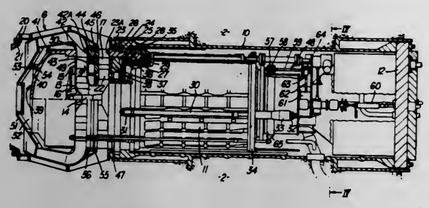
A multi-cylinder hermetic compressor with means for varying its capacity by positively closing off the flow of suction gas from the low side of the system to one or more cylinders. The suction gas is normally delivered to a chamber which supplies at least one cylinder at all times. The gas then flows through a passage to another chamber supplying a second cylinder or group of cylinders. A fluid operated capacity control valve is arranged in this passage to positively shut off flow to the second chamber to prevent gas from being supplied to cylinders receiving gas from the second chamber. The capacity control valve is operated by high pressure discharge gas, the flow of which is controlled by an internally mounted solenoid valve located in a line between the capacity control valve and a source of discharge gas within the compressor.

3,671,148
PUMP PRIMING AND FLOW CONTROL VALVE FOR PUMPING TWO DIFFERENT FLUIDS
Paul H. Reeve, River Vale, N.J., assignor to Auto Research Corporation, Boonton, N.J.
Filed Jan. 27, 1971, Ser. No. 110,024
Int. Cl. F04b 49/08
U.S. Cl. 417—295 13 Claims



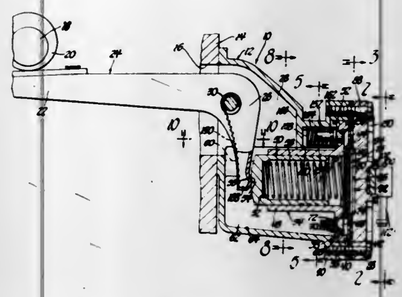
In a pump for pumping fluids of differing viscosities, a valve element which is shiftable to both block and regulate the flow of the fluid of lower viscosity; the valve normally blocks the flow of lower viscosity fluid until the pump is primed; outlet pressure from the pump, which is developed only when the pump is primed, moves the valve away from the blocking position, against a biasing means, to open the conduit of lower viscosity fluid; the biasing means controls the extent to which the valve is opened, and thereby regulates the ratio of low viscosity to high viscosity fluid that is pumped.

3,671,149
COOLING-GAS CIRCULATORS FOR NUCLEAR-POWER STATIONS
William Milton Fraser, Busby, Glasgow, Walter John Cairns, Bearsden, Glasgow, and Ian Norman McDonald, Larga, Scotland, assignors to James Howden & Company Limited, Glasgow, Scotland
Filed Oct. 9, 1968, Ser. No. 766,211
Int. Cl. F04d 25/06
U.S. Cl. 417—360 7 Claims



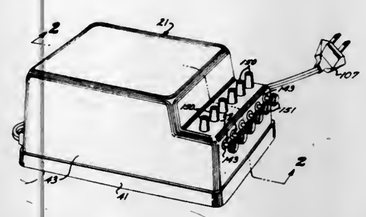
A circulator for the pressurized gas in the cooling circuit of a nuclear reactor power station is of a kind having an electric motor withdrawably mounted in a wall-mounted pressure vessel, and a motor-driven gas blower in the gas space at the inner end of the vessel. Provision is made for isolating the inner end of the vessel from the reactor to enable withdrawal of the blower with the motor, the isolating means including an axially reciprocable ring closing an annular gap between the blower casing and ducting in the gas space, and an axially reciprocable dome in the gas space; the ring engaging the vessel and the dome engaging the ring to effect sealing of the vessel from the reactor.

3,671,150
ENGINE CAM OPERATED AIR COMPRESSOR FOR VEHICLE LEVELING SYSTEM
George W. Jackson and James E. Whelan, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 73,845
Int. Cl. F04b 43/06, 45/00; F15b 7/00
U.S. Cl. 417—395 6 Claims



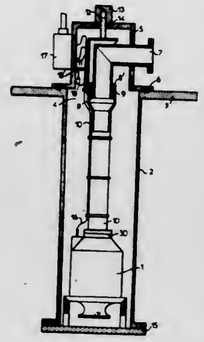
In preferred form, a compressor having an open ended housing adapted to be connected to a cam port on an engine block. An operating arm is driven by an engine cam to reciprocate a piston within an oil filled cylinder which includes an intake valve to a sump in the housing and a relief valve for flow of excessive oil from the cylinder back to the sump. A pump diaphragm is operated by reciprocation of the piston in the cylinder to draw air into and discharge air from an air pumping chamber which includes a plurality of shallow, narrow relief passageways therein to reduce re-expansion of compressed air in the chamber. An improved oil baffling arrangement prevents aeration on the oil side of the diaphragm.

3,671,151
COMBINATION AQUARIUM PUMP AND GANG VALVE
Bernard Duke, Deal, N.J., and David Z. Levensohn, New York, N.Y., assignors to Miracle Pet Products, Inc., Jersey City, N.J.
Filed May 11, 1970, Ser. No. 35,988
Int. Cl. F04b 17/00, 35/04; F10l 11/00; F16k 31/44
U.S. Cl. 417—411 4 Claims



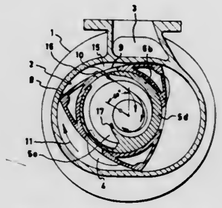
A housing having a pump mounted therein and including a valve manifold having an inlet chamber with a plurality of stem-receiving bores in communication therewith, and outlet ports extending transversely thereof. The bores are formed with valve seats interposed between the inlet chamber and respective outlet ports and include threaded sections. Valve stems are inserted in the respective bores and are threaded for engagement with said threaded sections whereby the combination pump and valve may be installed as a unit to provide air at selected flow rates from the respective outlet ports.

3,671,152
ELECTRIC PUMP ASSEMBLY FOR USE IN PUMPING EXPLOSIVE OR DANGEROUS LIQUIDS
Paul Andre Guinard, Saint Cloud, France, assignor to Etablissements Pompes Guinard, Saint Cloud, France
Filed Feb. 10, 1970, Ser. No. 10,258
Claims priority, application France, Feb. 20, 1969, 69,044
Int. Cl. F04b 17/00, 35/04; H02k 5/10
U.S. Cl. 417—422 3 Claims



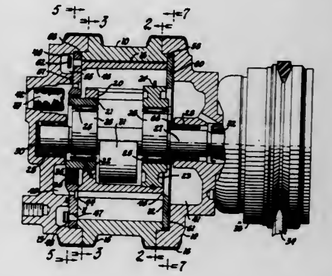
This invention relates to an electric pump assembly for use in pumping explosive or dangerous liquids in containers, the assembly comprising a fluid tight container, an electric pump mounted within said cointainer, a pump liquid inlet within the container, and a pump liquid outlet, the pump comprising an electric pump motor, said electric pump motor including a winding for submerging in a liquid in the container, said winding comprising at least one wire, a covering insulating said wire, which covering resists the liquid, sealing means through which said wire extends without discontinuity to the exterior of the container, and electric power input terminals on said wire.

3,671,153
ROTARY PISTON COMPRESSOR
Friedrich Luck, Berlin, Germany, assignor to Firma Wankel GmbH, Lindau, and Firma Borsig GmbH, Berlin-Tegel, Germany
Filed Aug. 24, 1970, Ser. No. 66,278
Claims priority, application Germany, Aug. 26, 1969, P 19 43 338.6
Int. Cl. F01c 1/02, 1/42; F03c 3/00
U.S. Cl. 418—61 4 Claims



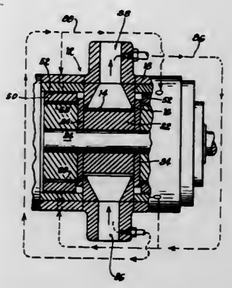
A circular piston compressor having a stationary housing with a trochoidal inner boundary and a rotary piston mounted on the eccentric of a shaft so that its axial centerline describes a circular path during its rotation. Inlet apertures are provided in the end walls or cover of the housing or both for entry of the working medium and outlet apertures are provided in the flanks of the piston. A passage adapted to communicate with the outlet aperture occupies virtually the inside diameter of the eccentric and diminishes spirally in the pin towards the outlet for outlet of the compressed medium.

3,671,154
EPITROCHOIDAL COMPRESSOR
William H. Kolbe, Birmingham, Alexander J. Sagady, Warren, and Taro Suzuki, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 8, 1970, Ser. No. 79,194
Int. Cl. F01c 1/02, 17/02, 19/08
U.S. Cl. 418—61 6 Claims



A compressor of the epitrochoidal rotor type has a rotor with N hollow lobes and a stator housing with $N+1$ lobes, a common discharge and inlet side plate on one side of the rotor and an inlet side plate on the opposite side of the rotor loaded against the rotor by fluid pressure led from the discharge cavity of the compressor.

3,671,155
HYDROSTATIC BEARING
Terence N. Dubinsky, Racine, Wis., assignor to J. I. Case Company
Filed Apr. 13, 1970, Ser. No. 27,472
Int. Cl. F01c 21/04; F16c 13/02, 33/66
U.S. Cl. 418—73 4 Claims



The present disclosure relates to an apparatus for supporting a rotating element relative to a housing of a fluid translating device by primary and secondary bearing means.

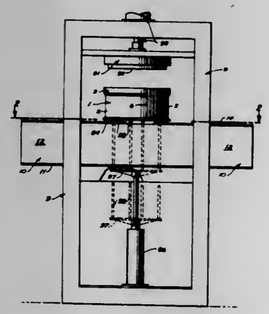
The secondary bearing means includes first and second sleeves surrounding the rotor supporting shaft with each of the sleeves having a plurality of outer recesses cooperating with the housing to produce pockets or chambers and a plurality of inner recesses cooperating with

the shaft to produce inner pockets or chambers. Each outer pocket receives diverted pressured fluid from the port which is in opposed relationship on the rotor or shaft and the outer pocket communicates with the inner pocket to direct this fluid into the area between the shaft and the bearing sleeve. The internal surface of the sleeve has two opposed circular segments having equal radii with the centers of the segments spaced from each other with the radii being substantially equal to the diameter of the shaft. The inner pockets are divided into first and second axially spaced portions so that any axial misalignment between the sleeves and the bearing will increase the flow path between the bearing and the shaft along one edge of the sleeve and decrease the flow path along the opposite edge to produce a pressure differential thereby automatically aligning the sleeve and shaft.

3,671,156
PRESS FORMING MACHINE

James L. Robbins, West Covina, Calif., assignor to Brooks Products, Inc., El Monte, Calif.

Filed Sept. 4, 1970, Ser. No. 69,797
Int. Cl. B29c *1/00*
U.S. Cl. 425—130 5 Claims



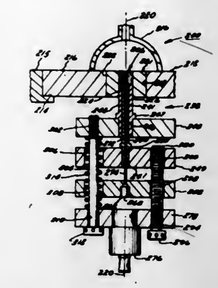
A machine and method of press forming an initially flocculent cementitious mixture to produce a rectangular, round or other shaped open boxlike product such as a meter housing, the machine including a core mounted between guide walls in angular relation therewith, a pair of opposed horizontally movable presser dies having angularly related surfaces parallel to corresponding sides of the core and slidable between the guide walls to compress the mixture against the core, and a vertically movable presser die ring slidable between the core and the opposed presser dies to effect a supplementary vertical pressing of the mixture and to shape the top portion of the product; the method involving the initial pressing of a portion of the product to a predetermined density, and the remainder to a predetermined lesser density, then pressing the remainder in a vertical direction to essentially the same density.

3,671,157
DIE AND PUNCH ASSEMBLY FOR COMPACTING POWDER MATERIAL

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of applications Ser. No. 782,918, Dec. 11, 1968, now Patent No. 3,593,366, and Ser. No. 49,800, June 25, 1970. This application Jan. 25, 1971, Ser. No. 109,375
Int. Cl. B30b *11/02*
U.S. Cl. 425—78 14 Claims

A die and punch assembly for use on a powder compacting press for making articles compacted from a powder material. The assembly comprises a die plate appropriately mounted to the press and includes one or more die cavities, each die cavity having telescopically arranged inner and outer punches adapted for movement relative to each other to form various shaped articles. The outer punch is actuated by a first punch support which, in turn, is carried by a pair of posts extending below the die plate to permit reciprocal movement of the outer punch within the die cavity, while the inner punch is carried by a second punch support which, in turn, is slidably carried by the post in a position below the first punch support. An

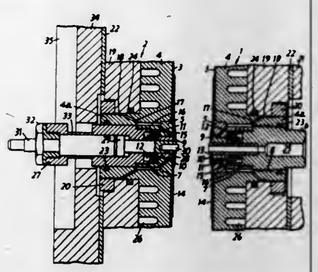


actuating stem, operatively connected to one of the punch supports, is adapted to impart a reciprocal movement thereto and includes an adjustable abutment member adapted to engage the other punch supports to displace the latter in an upward direction together with the first punch support as a unit after the actuating stem has moved the first punch support a predetermined distance toward the die cavity. The second punch support has an adjustable abutment member cooperating with the actuating stem to retract both punch supports as a unit away from the die cavity after an article has been compacted in the die cavity.

3,671,158
MOULDING OF GRAMOPHONE RECORDS

Walter Leslie Rand, Gerrards Cross, and John Ernest Simmons, Ruislip, England, assignors to EMI Limited, Hayes, Middlesex, England

Filed Mar. 26, 1970, Ser. No. 22,952
Claims priority, application Great Britain, Mar. 26, 1969, 15,700/69
Int. Cl. B29d *17/00*
U.S. Cl. 425—129 9 Claims



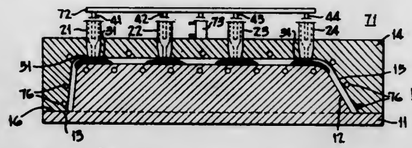
Gramophone records are moulded by a combined injection-compression process. Mouldable material is injected into the mould prior to final closing of the mould. The tip of the injection nozzle extends into the mould cavity and when the final closing of the mould occurs, a counterpiece and the nozzle tip close together intermediate the record surfaces to form the centre hole in the

record. A poppet valve in the centre region of each mould part is open prior to the injection step and a record label is held at the centre of each mould part by suction applied to the valve opening. The pressure of the injected material is sufficient to close the valves which are spring biased to their open positions.

3,671,159
EJECTING GIANT ARTICLES FROM INJECTION MOLD

Walter H. Greenberg, Syosset, N.Y., and Walter D. Voelker, Philadelphia, Pa. (both of 220 Miller Road, Hicksville, N.Y. 11801)

Filed Mar. 6, 1970, Ser. No. 17,253
Int. Cl. B29f *1/14*
U.S. Cl. 425—155 1 Claim

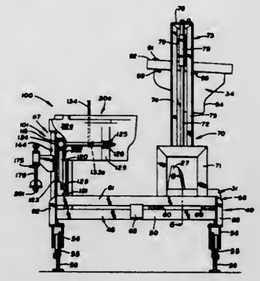


Apparatus for molding giant plastic articles of cellular plastic includes a plurality of injection nozzles having plungers which are generally kept at their advanced position with the plunger tips at the nozzle tips. After the article is adequately cooled by the cold liquid in heat transfer conduits, a timing means controls an actuating means to shift a plurality of the plungers of the nozzles to a super-advanced position, thereby knocking out the giant article from the fixed portion of the mold. Compressed gas jets from adjacent the tips of the plungers desirably accelerate the enlargement of the separation zones for deadhering the giant article from the fixed portion of the mold.

3,671,160
APPARATUS FOR A SYSTEM TO EXTRICATE INTRICATE, CERAMIC SHAPES FROM MULTIPLE PIECE MOLDS

Fred L. Derror, Lucas, Ohio, assignor to Mansfield Sanitary, Inc., Perrysville, Ohio

Filed Oct. 13, 1969, Ser. No. 865,863
Int. Cl. B28b *21/08*
U.S. Cl. 425—161 12 Claims

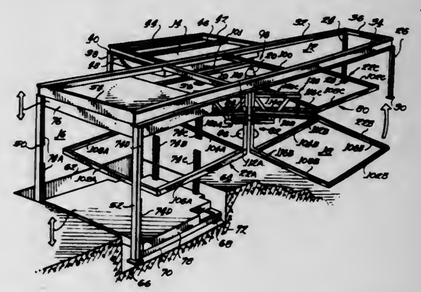


Apparatus for extricating an intricate ceramic casting from a multiple piece mold. This concept is adapted for use with multiple piece molds which have at least two, opposed, side sections that form a cradle by which the casting may be supported. The cradle is grasped and subsequently positioned at a receiving locus. So positioned, the support for the weight of the casting is shifted from the cradle onto a bat in order that the casting will float within the cradle. Thereafter, the sections of the mold forming the cradle are separated to extricate the casting therefrom. For some ceramic shapes it is highly desirable to invert the cradle prior to the deposit of the casting at the receiving locus. The subject concept includes such a method step. The apparatus disclosed comprises a carriage on which a plurality of multiple piece molds may be supported, means to separate the cradle from any other sections of the mold, an inversion mechanism for turning the cradle upside down, gripper means to grasp the cradle, transfer means within which the gripper means is supported and by which the cradle can be moved from the inversion mechanism to a receiving locus, a lift means at the receiving locus by which the support for the weight of the casting may be shifted from the cradle onto a bat and actuating means by which the gripper means—and thus the mold sections forming the cradle—can be separated after the weight of the casting is fully supported on the bat.

3,671,161
MOLDING MACHINE

Robert E. Kostur, Oak Brook, and Robert J. Brown, Chicago, Ill., assignors to Comet Industries, Inc.

Filed May 26, 1970, Ser. No. 40,568
Int Cl. B29c *1/00*
U.S. Cl. 425—195 7 Claims



To reduce the vibrating of the molding machine during a molding operation, the frame of the molding machine includes two parallel I beams extending across the top of the machine from the outer end of the molding station to the outer end of the loading station with a rotary drive shaft and plastic sheet carrying assembly being centrally mounted with respect to the I beams for easy assembly and replacement. The rectangular sheet-holding frames of the rotary sheet carrying assembly are vertically supported at each end by turnbuckles connected to trusses by which the horizontal angle of the frames is adjusted. To permit easy assembly of the dies to movable platens within the molding station, the movable platens include longitudinally extending grooves adapted to receive T-bolts having outwardly extending shanks whereby the base for the dies is bolted to the platen.

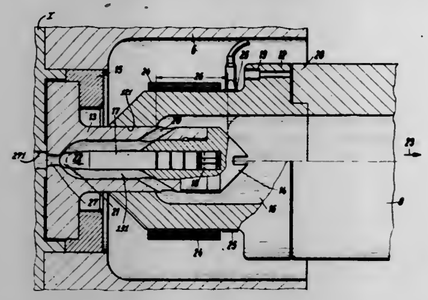
3,671,162
NOZZLE CONSTRUCTION FOR INJECTION MOLDING MACHINES

Albert Lohmann, Niederkruchten, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchen-Gladbach, Germany

Filed Apr. 26, 1971, Ser. No. 137,583
Int. Cl. B29f *1/03*
U.S. Cl. 425—245 2 Claims

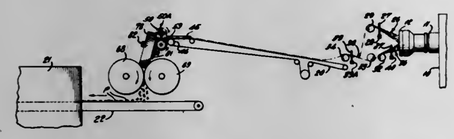
An injection molding machine with two molds are filled in tandem operation by a common injection unit

with a distributor and two nozzles. These nozzles are constructed in that tubular nozzle torpedoes extend from each mold sprue and are telescopically received by heads on the distributor, opening and closing channels in the nozzle torpedoes in dependence upon the position of the



injection unit between the two molds. Spring biased stopper pins in the torpedoes open and close the sprues in dependence upon pressure within the torpedoes. That pressure develops in dependence upon channel opening and closing.

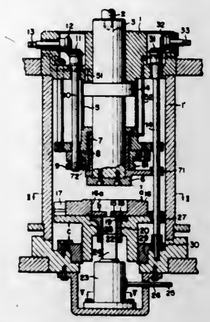
3,671,163
SNACK FOOD FORMING APPARATUS
Arthur J. Grisser, Wyckoff, N.J., and William A. Blain, Spring Valley, N.Y., assignors to Nabisco, Inc.
Filed June 2, 1969, Ser. No. 829,430
Int. Cl. A21c *7/06, 9/02, 11/10*
U.S. Cl. 425—297 **10 Claims**



An apparatus in which a high pressure housing holds a pre-cooked potato or other vegetable mixture such as corn to be extruded as a plurality of dough strands therefrom through a die plate having a multiplicity of openings in such arrangement that emerging dough strands in upper and lower groups may be integrated for parallel feeding through cutting means and subsequently fed to flaking rolls so that parallel strands of the dough after cutting will form dough pieces otherwise known as collets or puffable half products.

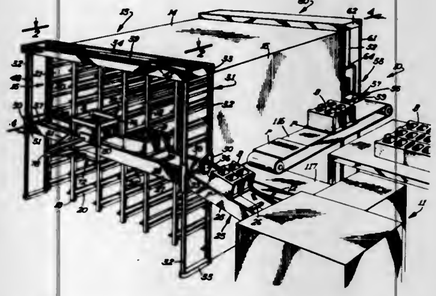
3,671,164
CORE ROD STOPPING AND RELEASING DEVICE IN A POWDER MATERIAL FORMING PRESS
Ei Hara and Shohachi Suzuki, Tokyo, Japan, assignors to Tamagawa Kikai Kinzoku Kabushiki Kaisha, Tokyo-to, Japan
Filed July 23, 1970, Ser. No. 57,695
Claims priority, application Japan, Sept. 29, 1969, 44/77,304
Int. Cl. B30b *11/02, 15/00*
U.S. Cl. 425—414 **4 Claims**

A stopping and releasing device for a core rod employed in a powder material forming press whenever an article having a stepped hole is produced from a powder material comprises a plurality of radially displaceable catches each having a radially inwardly extended tongue-like portion and a radially outwardly located rising portion of a predetermined height. Means are provided for displacing the plurality of catches radially inwardly or outwardly, whereby when the plurality of catches are displaced radially inwardly, the core rod is



stopped by the upper ends of the rising portions of the catches, and when the catches are displaced radially outwardly, the core rod is released for a predetermined distance until it is supported by the radially inwardly extended tongue-like portions of the catches.

3,671,165
APPARATUS FOR MAKING CONCRETE BLOCKS
Donald D. Schwellenbach, 124 S. Filmore, Pierre, S. Dak. 57501
Continuation-in-part of application Ser. No. 646,373, June 15, 1967. This application Aug. 28, 1969, Ser. No. 853,914
The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed
Int. Cl. F27b *3/18*
U.S. Cl. 425—445 **4 Claims**



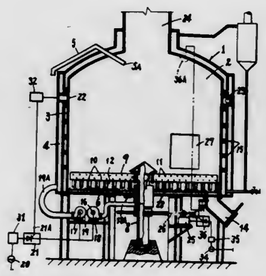
A high capacity apparatus for curing concrete building blocks comprising a kiln having open front and rear ends and having a plurality of support elements therein to define a plurality of passages arranged in horizontal rows, one above the other. A vertically shiftable horizontally oriented infeed conveyor mechanism positioned transversely of and closely adjacent the front end of the kiln for conveying uncured blocks to the kiln, and a vertically shiftable horizontally oriented removal conveyor mechanism positioned transversely of and closely adjacent the rear end of the kiln for receiving cured blocks from the kiln. Means for simultaneously shifting the conveyor mechanisms vertically and a block shifting mechanism carried by the infeed conveyor mechanism for successively feeding uncured blocks, one at a time into the passages.

3,671,166
FLASHBULB WITH PERCUSSION IGNITION AND PRE-FORMED IGNITION TUBE
Werner Schilling, Heidenheim, and Wolfgang Ott, Augsburg, Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany
Filed July 30, 1970, Ser. No. 59,517
Claims priority, application Germany, July 31, 1969, P 19 39 085.3
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **11 Claims**



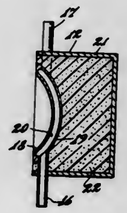
An ignition tube with one end sealed into a flashbulb and its other end projecting externally of the bulb is filled with flash material (such as shredded zirconium foil). The end of the ignition tube projecting externally of the bulb is pre-formed in a specified region and shaped to have a rectangular or similar cross-section so that it has one long and one short cross sectional dimension, to avoid the necessity of substantial deformation upon being struck an ignition blow; the percussive type ignition material is located, at least partly, in the deformed region, preferably encapsulated as a separate structural element.

3,671,167
INCINERATOR FOR WASTE OIL AND THE LIKE
Satoru Nakano, Ootsushi, Japan, assignor to Iwatani & Co., Ltd., Osaka, Japan
Filed Jan. 15, 1971, Ser. No. 106,743
Claims priority, application Japan, June 12, 1970, 45/51,131, 45/51,132
Int. Cl. F23l *9/00*
U.S. Cl. 431—190 **11 Claims**



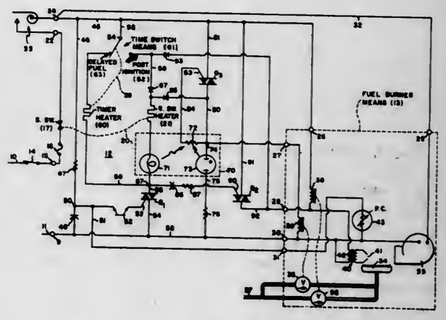
This invention provides an incinerator adapted to dispose of waste products containing water and earth, which are otherwise difficult to completely burn, in which the substance is atomized by a jet of primary air, and burned in an admixture with secondary and tertiary air, under automatic control of the air supply, and includes stirring of the substance by rotating vanes in accordance with its burning condition.

3,671,168
LOW HEAT CAPACITY MOLD FOR INJECTION MOLDING
Frank J. Nussbaum, New York, N.Y., assignor to Bischoff Chemical Corporation, Hicksville, N.Y.
Continuation of abandoned application Ser. No. 752,518, Aug. 14, 1968. This application June 9, 1971, Ser. No. 149,901
Int. Cl. B29c *1/00*
U.S. Cl. 425—242 **1 Claim**



Thin walled molds having a thickness within a range from about 0.4 mm. to about 4 mm. and having a heat capacity less than the heat capacity of the molded article are provided in apparatus for injection molding of plastic foam. In certain embodiments, heat transfer fluid is circulated in a zone adjacent the thin walled mold face. In some embodiments of the invention, an outer shell can provide supplemental structural strength, while being insulated by closed pore insulation from the temperature changes and heat capacity features of the mold face.

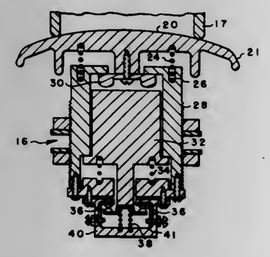
3,671,169
DELAYED FUEL AND POST IGNITION TIMED BURNER CONTROL SYSTEM
Roland L. Hron, Bloomington, Minn., and Franciscus A. Jannink, Sleen, Netherlands, assignors to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 15, 1971, Ser. No. 124,129
Int. Cl. F23n *5/20*
U.S. Cl. 431—67 **8 Claims**



A substantially all solid state control system which is adapted to be connected to control a fuel burner means

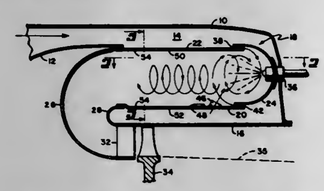
is disclosed and provides a delayed fuel and post-ignition timing period using a heater operated bimetal switch. The system is adapted to be energized through a line voltage thermostat to provide power to a fuel burner means which may include two stages of fuel control, along with an ignition means and flame detection means. The system includes a diode connected between a Triac, which controls the first stage of fuel, and the safety switch heater that is normally contained in such a system. This diode provides a safe mode of failure in the event the Triac short circuits and also provides a current path for safety switch heater current in the event of a flame failure during normal operation.

3,671,170
SAFETY CONTROL
James A. Sink, Jr., and Richard J. Watson, Taylors, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed Jan. 11, 1971, Ser. No. 105,407
Int. Cl. F23n *5/24*
U.S. Cl. 431—88 **4 Claims**



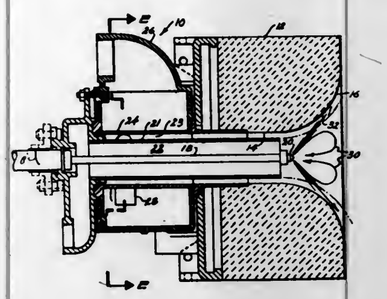
Improved method and apparatus to cut off the fuel supply to a liquid or gas fired heater if such heater is dislodged in any manner from the position where it is installed.

3,671,171
ANNULAR COMBUSTORS
Brian W. Doyle, Shelton, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Nov. 27, 1970, Ser. No. 93,120
Int. Cl. F23l *1/00, 9/00*
U.S. Cl. 431—116 **5 Claims**



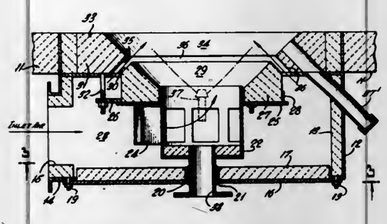
The disclosure illustrates an annular combustor having air inlets in the upstream end of the combustor to establish a vortex flow of combustion gases adjacent the combustor fuel nozzles. A pair of relatively large laterally spaced ducts downstream of each fuel nozzle direct a flow of air toward the head end of the combustor to reinforce the vortex flow and deflect it into a horseshoe shape having downstream extending legs. The air from the laterally positioned ducts promotes circumferential recirculation near the fuel nozzles to stabilize combustion. A pair of relatively smaller downstream ducts provide streams of air that stabilize the downstream extending legs of the vortex flow.

3,671,172
MULTIFUEL BURNER
Jacques Chedaille and Gerben Koopmans, Paris, France, assignors to Midland-Ross Corporation, Toledo, Ohio
Filed Mar. 30, 1970, Ser. No. 24,644
Claims priority, application France, Mar. 28, 1969, 6908209
Int. Cl. F23c *4/00*
U.S. Cl. 431—174 **3 Claims**



A burner capable of operating on a gaseous and a liquid fuel separately and in combination with each other to produce a flame which has a greater extent in lateral directions than in an axial direction. A flared tunnel extends through a refractory wall and has its axis normal to the inner planar surface of the wall. The flared section of the tunnel is symmetrical in lateral planes and is smoothly contoured into the inner planar surface of the wall. A conical stream of liquid fuel particles is injected into the small end of the flared section so that its conical angle is substantially tangent to the surface of the midsection of the flared section. Surrounding the liquid fuel supply tube is a gaseous supply tube for supplying an annular column of gaseous fuel to the entrance of the flared section. Means are provided for supplying a helically swirling annular column of combustion air adjacent the tunnel surface around the fuel stream or streams.

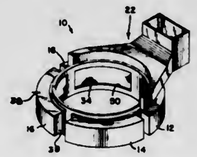
3,671,173
CHAMBERLESS HIGH INTENSITY BURNER EMPLOYING AUXILIARY AIR FLOW
Robert P. Guerre, Dover, and Ross R. Ruland, Hopatcong, N.J., assignors to Esso Research and Engineering Company
Filed July 6, 1970, Ser. No. 52,341
Int. Cl. F23m *9/08*
U.S. Cl. 431—182 **15 Claims**



A chamberless, high intensity burner especially suited for the incineration and combustion of contaminated fuels and waste streams by achieving a high, concentrated degree of mixing and, therefore, a high temperature, in a relatively small but structurally unconfined volume. The

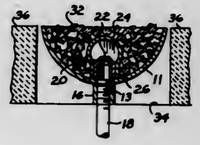
device utilizes the principal of vortex air flow from swirling air jets to achieve a high degree of recirculation local to the point of fuel injection, together with one or more coaxially-oriented annular-shaped streams of air to provide intimate mixing of fuel and air as well as to shape, control and contain the flame envelope. Utilizing the air required for combustion in this manner eliminates the need for a refractory-lined chamber which otherwise would be required to confine the combustion process in order to generate the extreme temperatures sometimes required for complete incineration. The burner is, of course, not limited to such applications, but offers particular advantage where contaminants are present in the fuel and which are incompatible with or otherwise destructive to mechanically formed combustion chambers.

3,671,174
DEEP FAT FRYER
Edward A. Reid, Jr., Columbus, Ohio, assignor to Columbia Gas System Service Corporation, New York, N.Y.
Filed Feb. 10, 1970, Ser. No. 10,126
Int. Cl. F23d *13/14*
U.S. Cl. 431—326 **8 Claims**



A deep fat frying unit having a glass cooking vessel adapted to hold a supply of cooking oil. The unit is heated by an annular infrared radiant gas burner assembly which heats the oil primarily by infrared radiation passing from the burner assembly directly through the vessel wall. The burner assembly is above the bottom of the vessel so that there is a cool zone at the bottom of the vessel which eliminates burning food sediment deposited therein. The radiant heat is absorbed by the oil in an annular zone adjacent the vessel wall and this produces oil circulation by convection upwardly along the wall and downwardly at the center of the vessel, but without overheating the oil.

3,671,175
FIREPLACE LOG BURNER
Billy G. Campbell, 617 N. Hobson, Shawnee, Okla. 74801
Filed Oct. 26, 1970, Ser. No. 84,006
Int. Cl. F24b *1/18*; F24c *3/04*
U.S. Cl. 431—328 **3 Claims**



An elongated trough-like body is centrally connected with a gas supply pipe in a fireplace area. A mandrel, secured to the inner surface of the trough in communication with the gas supply, supports a tubular gas distributor in the bottom portion of the trough and longitudinally coextensive therewith. The trough is filled with granular material for further distributing and burning the gas.

CHEMICAL

3,671,176
STABLE, HIGHLY CONCENTRATED DYE SOLUTION OF ANTHRAQUINONE DYES IN WATER MISCIBLE SOLVENTS
Otto Kaufmann, Ludwigshafen, Manfred Daeuble, Frankenthal, Heinz Guenter Witsch and Enno Luebcke, Ludwigshafen, and Dimiter Bayew, Mannheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Sept. 8, 1969, Ser. No. 856,185
Claims priority, application Germany, Sept. 12, 1968, P 17 94 132.1
Int. Cl. C09b *1/34*
U.S. Cl. 8—39 **4 Claims**

Stable concentrated solutions of anthraquinone dyes in solvents which are miscible with water and which are useful for the preparation of dye liquors for dyeing natural or synthetic polyamides.

For dyeing or printing nitrogenous fibrous material, for example wool, silk or snythetic polyamide fibers, it is principally anionic dyes which are used. These dyes are usually supplied in the form of finely ground powders, containing standardizing agents, which have to be dissolved or dispersed in the dye liquor for dyeing. Apart from the unpleasant dust development of the intensely coloring dyes caused by the powder form and the risk of agglomeration of the dye powder, it is by no means easy to dissolve or disperse the solid dye in the dye liquor because the dye usually has inadequate solubility in water.

3,671,177
AZO DYESTUFFS AND A PROCESS FOR DYEING OR PRINTING POLYESTER FIBERS WITH SUCH DYESTUFFS
Klaus Artz, Muttenz, Switzerland, Nalin Bindupraead Desai, Goregaon, Bombay, India, and Hans Wilhelm Liechti, Oberwil, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 734,247, June 4, 1968. This application Aug. 7, 1970, Ser. No. 62,166
Claims priority, application Switzerland, June 7, 1967, 8,066/67
Int. Cl. D06p *1/02*
U.S. Cl. 8—41 C **4 Claims**

Polyester fibers dyed with azo dyestuffs containing an aromatic diazo component and, as a coupling component, a 3-hydrocarbylcarbonylamino-aniline.

3,671,178
SINGLE BATH PROCESS FOR ORANGE TO BROWN MINERAL DYEINGS, WITH AND WITHOUT FUNGICIDE, USING IRON, MANGANESE, AND ZIRCONIUM (ZIRC-OX PROCESS)
Charles J. Conner, Metairie, La., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed May 19, 1970, Ser. No. 38,900
Int. Cl. D06p *3/60*; A61l *13/00*
U.S. Cl. 8—52 **15 Claims**

Orange to brown mineral dyeings are conventionally prepared from two bath systems, where the fabric is

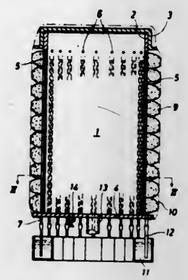
wetted with one bath containing an iron salt, and then wetted with another bath containing alkali, to cause the colored iron oxide to deposit in the fabric as a mineral dye. This has been necessary up to now, since it has been chemically incompatible to have the iron in the same alkaline bath with the alkali. This invention demonstrates that a heat decomposable complex of the iron, with or without manganese, can be compatible with alkaline zirconyl ammonium carbonate solutions in the same bath, when cellulosics can be wetted in this bath, and subsequently mineral dyed by heat curing, when the complex of iron decomposes to deposit iron oxide with zirconia, the zirconyl ammonium carbonate decomposing at the same time to deposit zirconia. When heptavalent manganese ($KMnO_4$) is incorporated into the bath with the complexed iron, it is soluble and compatible, producing manganese dioxide (MnO_2) by reduction products from the iron complex, resulting in various shades of orange to brown with the iron oxide and zirconia also deposited. This process makes it possible to deposit orange to brown wash-fast mineral dyeings from a single bath. The deposited zirconia attributes a degree of water repellency and algaecidal resistance to the fabric, and a copper or phenyl-mercury salt can be incorporated into the zirconyl ammonium carbonate component of the system to deposit a fungicidal mineral dye of orange to brown shade on heat curing, making it possible to apply an iron and/or manganese mineral dye with or without fungicide from a single bath, reducing conventional dyeing procedures from two or more baths, to a single bath requiring only a simple pad, dry, and cure procedure to effect the dyeing. The fabrics are not seriously tendered, and the residual by-product salts may or may not be removed by washing, since the fabric is not stiffened by their presence and the dyed colors are unaffected on standing.

3,671,179
BLEACHING PROCEDURE FOR FIBERGLASS FABRICS
Allen J. Jinnette, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
No Drawing. Filed Feb. 16, 1971, Ser. No. 115,760
Int. Cl. D06l *3/00*
U.S. Cl. 8—101 **6 Claims**

Fiberglass fabrics and other siliceous fiber fabrics in the greige condition are rendered clean and white prior to applying dye or finish by heat-treating the fabrics at a temperature sufficient to set crimp in the glass yarns, to volatilize volatile components of the sizing on the fabric and to dextrinize the starches in the sizing, then treating the fabric with a concentrated bleaching solution, drying at relatively high temperature, and washing and rinsing.

3,671,180
METHOD OF DYEING OR IMPREGNATING TEXTILES AND AN APPARATUS FOR CARRYING THE METHOD INTO EFFECT
Bent Koch, Kornagervej 81, Lyngby, Denmark
Filed Nov. 17, 1970, Ser. No. 90,334
Claims priority, application Denmark, Nov. 19, 1969, 6,129
Int. Cl. B05c *8/02*
U.S. Cl. 8—149 **7 Claims**

Textile material is placed in a container having a flexible wall portion and air is evacuated from the material which is compressed by the flexible wall portion simultaneously with impregnating or dyestuff liquid being sucked in and flows into the textile material from supply pipes which are connected with containers for dyestuff or impregnating liquid. Then the pressure difference between the outer and the inner side of the container is equalised during elastic expansion of the textile material. In this way blurred colours after completion



of the impregnation are avoided and the consumption of dyestuff liquid is very small.

3,671,181
PROCESS FOR THE PRODUCTION OF PRINTS AND PAD-DYEINGS FAST TO RUBBING WITHOUT REQUIRING AN AFTER - TREATMENT ON NITROGEN-CONTAINING FIBROUS MATERIALS
Erich Feese and Sieuling Ong, Lorsbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 28, 1970, Ser. No. 41,587
Claims priority, application Germany, June 25, 1969, P 19 32 149.4
Int. Cl. D06p *5/02*
U.S. Cl. 8—165 **5 Claims**

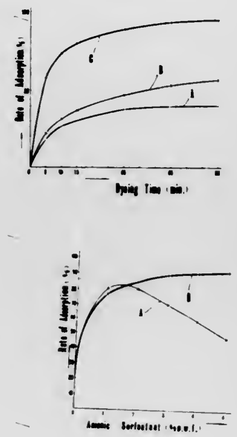
Process for the production of prints and pad-dyeings fast to rubbing without requiring an after-treatment on nitrogen-containing fibrous materials, by using printing pastes or padding baths which contain, in addition to dyestuffs suitable for these fiber types as well as emulsion thickenings, also aqueous dispersions of styrene homopolymers, and fixing the prints and pad-dyeings by a treatment with steam and/or hot air and/or by exposure to radiation energy.

3,671,182
PROCESS FOR THE DYEING OF CELLULOSE DIACETATE FIBERS FROM BASIC DYE BATHS CONTAINING SULFURIC ESTER SALTS
Minoru Ozutsumi, Kazuo Kawakami, Sumio Ishizaki, and Masatoshi Kurosawa, Tokyo, Japan, assignors to Hodogaya Kagaku Kabushiki Kaisha, Minato-ku, Tokyo, Japan
Filed Oct. 6, 1969, Ser. No. 864,010
Int. Cl. D06p *3/40, 5/04*
U.S. Cl. 8—170 **5 Claims**

Dyeing of cellulose diacetate fibers as well as yarns, threads and textile fabrics made thereof with basic dyestuffs. The dyeing is carried out in the presence of a salt of sulfuric ester of aliphatic alcohol represented by the formula:

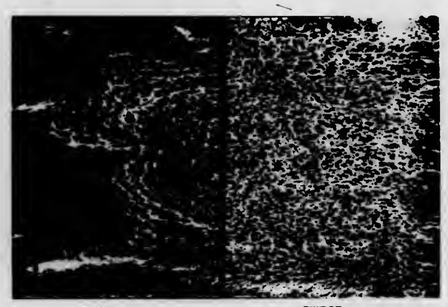
$$R_1-\underset{R_2}{\underset{|}{C}}H-O-SO_3M$$

wherein R_1 is a normal alkyl radical, R_2 is a hydrogen atom or a normal alkyl radical provided that the sum of the carbon atoms contained in the radicals R_1 and R_2 is nine, and M is member selected from the group of Na, K and NH_4. The dyeings thus obtained are characterized by their deep and brilliant shades having outstanding fastness properties, especially light fastness as compared with those of the dyeings obtained by the use of other



salts of sulfuric esters of aliphatic alcohols containing less or more than ten carbon atoms.

3,671,183
MANUFACTURING A SENSITIVE NON-FLAMMABLE DYE PENETRANT
Orlando G. Molina, Westminster, Calif., assignor to North American Rockwell Corporation
Filed Mar. 5, 1970, Ser. No. 16,806
Int. Cl. D06p *1/68*
U.S. Cl. 8—85 **7 Claims**

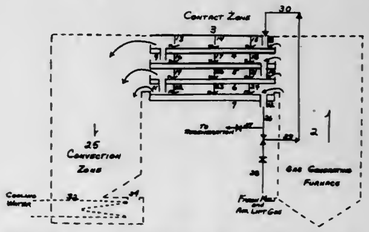


A first homogeneous aqueous liquid fluorescent dye penetrant, containing a major proportion of water, is processed into a second homogeneous liquid dye penetrant, formed by extracting the first liquid with a volatile, stable halocarbon, liquid at room temperature. The second liquid, a halocarbon extract, noticeable less fluorescent than the first aqueous liquid penetrant, is a more sensitive liquid dye penetrant microcrack detector. The halocarbon dye penetrant is also nonflammable.

3,671,184
MODIFYING CELLULOSIC FABRIC WITH DICARBOXYLIC ACIDS TO IMPART WATER-DISPERSIBILITY
John Anthony Cuculo, Raleigh, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 26, 1969, Ser. No. 827,975
Int. Cl. D06m *13/20*; A61f *13/16*
U.S. Cl. 8—120 **4 Claims**

Cellulose half-acid esters are prepared by impregnating cellulosic material with a concentrated aqueous solution of an organic dicarboxylic acid anhydride and ammonia, heating the impregnated cellulose material at 160° to 210° C. for about 10 to 60 seconds until the desired ester substitution has occurred, washing the esterified cellulose, and neutralizing the free carboxyl radicals with a solution containing metal ions. The examples illustrate the effect of varying the temperature and time on the degree of substitution obtained with succinic, phthalic and maleic anhydrides. Cellulosic fibers can be modified so that fabrics will disperse readily in water.

3,671,185
PURIFICATION OF WASTE GASES
Philip A. Lefrancois, Cranford, and Kenneth M. Barclay, Stockton, N.J., assignors to Pullman Incorporated, Chicago, Ill.
Filed Aug. 12, 1968, Ser. No. 751,933
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 R **17 Claims**



Compounds of sulfur and of nitrogen and fly ash are removed from gases by absorption at between 1500° F. and 2000° F. under atmospheric to 5 atmospheres pressure in a molten carbonate salt of sodium, potassium and/or lithium, and the decontaminated combustion gas stream is cooled and vented to the atmosphere.

3,671,186
METHOD FOR PREPARING ZIRCONIUM TETRACHLORIDE AND HAFNIUM TETRACHLORIDE
Hiroshi Ishizuka, 19–2 Ebara 6-chome, Shinagawa-ku, Tokyo, Japan
Filed Jan. 6, 1970, Ser. No. 934
Claims priority, application Japan, Jan. 11, 1969, 44/2,179
Int. Cl. C22b *59/00*
U.S. Cl. 23—24 Z **6 Claims**

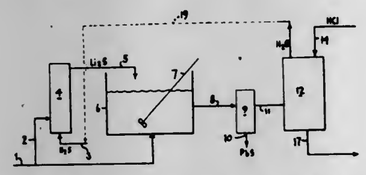
A method for preparing zirconium tetrachloride having a low hafnium content and high purity hafnium tetrachloride from raw material zirconium tetrachloride containing hafnium tetrachloride in a relatively large amount, by forming a double salt between a salt and the raw material zirconium tetrachloride present in a larger amount than that required for formation of the double salt with the salt, decomposing the resulting double salt allowing vapors resulting from the decomposition, to react with the salts again to form a double salt, and repeating the decomposition, formation and decomposition of the double salt in a multi-stage manner to separate the hafnium content, to obtain zirconium tetrachloride having a low hafnium content, and at the same

time concentrating the resulting hafnium tetrachloride contained in the raw material to obtain high purity hafnium tetrachloride.

3,671,187
REMOVAL OF DISSOLVED LEAD FROM ALKALI METAL CHLORIDE CONTAINING SOLUTIONS

Ephraim A. Cuevas, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 13, 1970, Ser. No. 54,406
Int. Cl. C01d 3/04, 11/02
U.S. Cl. 23—89 6 Claims



A process is described for the removal of lead from alkali metal chloride containing solutions by precipitation of the lead ions as a lead sulfide. The method involves utilizing an alkali metal sulfide as the precipitating agent in lieu of hydrogen sulfide. The use of alkali metal sulfide as the precipitating agent precipitates the lead in large particle sizes rendering filtration easy. The quantity of sulfide ions in the solutions necessary to accomplish precipitation of dissolved lead is also minimized. Treatments of solutions by the proposed scheme show reductions of the lead content of solutions treated from quantities of 0.6 percent by weight to 18 parts per million or less lead. The process is described in particular in connection with the treatment of lithium chloride-lithium hydroxide solutions containing contaminating lead ions and utilizing lithium sulfide as the precipitating agent.

3,671,188
PROCESS FOR RECOVERING BORON IN PRODUCTS RESULTING FROM ALKALINE ATTACK ON BOROCALCIC ORES

Pierre Mathis, Dombasle-sur-Meurthe, France, assignor to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,852
Claims priority, application Belgium, Sept. 30, 1968, 64,114, Patent 721,615
Int. Cl. C01b 25/00
U.S. Cl. 23—59 9 Claims

Borocalcic ore is treated with an aqueous solution containing a carbonate, bicarbonate, hydroxide, or mixture thereof of at least one alkali metal compound. The resultant aqueous solution is filtered and then washed with an aqueous solution which contains at least one of the alkali metal compounds present in the treating solution. The spent washing solution is recycled and used for the treatment of additional ore.

3,671,189
TREATMENT OF PHOSPHATE ROCK WITH ACIDS

Anson G. Betts, Plainfield, Mass.
(West Cummington, Mass. 01026)

No Drawing. Continuation-in-part of application Ser. No. 361,207, Apr. 20, 1964, which is a continuation-in-part of application Ser. No. 153,741, Mar. 20, 1961, which in turn is a continuation-in-part of application Ser. No. 768,554, Oct. 21, 1958. This application June 16, 1966, Ser. No. 559,371
Int. Cl. C01b 25/22; C01f 7/50
U.S. Cl. 23—88 10 Claims

Phosphate rock is decomposed by treatment with solution of acid selected from the group of acids named in the specification, using a proportion of acid sufficient to substantially complete the decomposition of the calcium fluophosphate of the used portion of the phosphate rock. There is provided and used in the acid treatment of the phosphate rock a reacting compound of aluminum used in the proportion stated in the specification, with the result that the fluorine of the treated phosphate rock chemically reacts and combines with aluminum of the used compound of aluminum to form a compound of aluminum and fluorine. Separate compounds of (1) substantially fluorine-free artificial phosphate and (2) of aluminum-fluorine compound result, which may be recovered separately in an artificial phosphate product and a solid fluoaluminate product.

Sulphurous acid formed when a stream of gas from combustion of a sulphur-containing substance is brought into an aqueous solution, may be used as the acid of treatment of phosphate rock, myself having discovered that while phosphate rock is refractory toward so-obtained sulphurous acid, phosphate rock is chemically decomposable by such solution of sulphurous acid containing a reactable aluminum compound. As a result of my discovery the recovery and utilization of sulphur dioxide from gas streams resulting from the burning of sulphur-containing substances is made practical and useful. New and useful phosphate products result from the use of my said discovery.

3,671,190
SYNTHETIC CLAY-LIKE MINERALS OF THE SMECTITE TYPE AND METHOD OF PREPARATION

Barbara Susan Neumann, Redhill, England, assignor to Laporte Industries Limited

No Drawing. Continuation of abandoned application Ser. No. 664,298, Aug. 30, 1967. This application Nov. 10, 1970, Ser. No. 88,394
Int. Cl. C01b 33/22
U.S. Cl. 23—111 14 Claims

Synthetic clay-like mineral of the smectite type having the general structural formula

$$[Si_8Mg_aLi_bH_{4+c}O_{24}]^{(12-2a-b-c)-}\cdot M(12-2a-b-c)^+$$

and having

(i) M as a sodium, a lithium or an equivalent of an organic cation

(ii) the value of a, b and c such that either

$$a<6;\ b>0;\ c>0$$

and

$$b+c<2;\ \pm(a+b+c-6)<2$$

or

$$a<6;\ b=0;\ \pm c<2$$

and

$$\pm(a+c-6)<2$$

(iii) a cation exchange capacity of about 50 to 120 meq./100 g.

(iv) when M is Na^+ or Li^+, a Bingham yield value of at least 40 or 50 dynes/cm.^{2} as a 2% dispersion in tapwater.

3,671,191
PREPARATION OF HIGH SILICA SYNTHETIC FAUJASITE

Philip Kenerick Maher, Baltimore, Edwin Wolf Albers, Annapolis, and Carl Vance McDaniel, Laurel, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Sept. 16, 1970, Ser. No. 72,872
Int. Cl. C01b 33/28
U.S. Cl. 23—113 5 Claims

High silica crystalline aluminosilicates are prepared by forming an aqueous reaction mixture with sources of

sodium hydroxide, silica, alumina, and nucleation centers (seeds), a portion of the excess sodium hydroxide being neutralized by the addition of a strong mineral acid or ammonium sulfate, and crystallizing the reaction mixture at an elevated temperature. Sodium silicate solution can be used as the silica source. Partial neutralization of the sodium silicate solution with a strong mineral acid such as sulfuric acid prevents excess solubilization of the silica and thereby increases the silica to alumina ratio in the final product.

3,671,192
METHOD OF STABILIZING ACRYLIC POLYMER FIBERS PRIOR TO GRAPHITIZATION

Herbert M. Ezekiel, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed May 28, 1968, Ser. No. 732,514
The portion of the term of the patent subsequent to Jan. 18, 1972, has been disclaimed
Int. Cl. C01b 31/07
U.S. Cl. 23—209.1 9 Claims

A method of stabilizing acrylonitrile polymer fibers prior to carbonization or direct graphitization is described. The method comprises the step of heating the fibers at 265–290° C., preferably at 275° C., in an oxidizing atmosphere for, for example, about 3–7 hours, in a manner such as to dissipate the heat of reaction and allow controlled oxidation. The stabilization step when followed by graphitization of a polymer fiber or yarn at a temperature within the range of 1800–3200° C. leads to a graphite fiber of high tensile strength, high modulus of elasticity, and a fiber of improved graphitic character.

3,671,193
ZINC OXIDE CRYSTAL BULK-EFFECT OSCILLATOR AND METHOD OF PREPARING THE SAME

Stanley V. Jaskolski, N76 D22144 Chestnut Hill Road, Sussex, Wis. 53089, and Martin A. Seitz, 9133 W. Custer Ave., Milwaukee, Wis. 23225

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,635
Int. Cl. C01g 9/02; G03c 5/00
U.S. Cl. 23—148 5 Claims

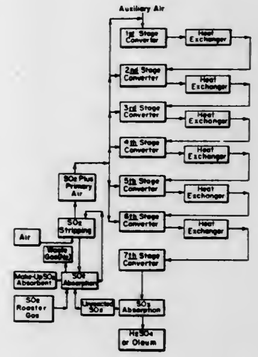
To provide a commercial zinc oxide single crystal with predetermined electrical characteristics it is cleaned, embedded in zinc oxide powder, and heated (e.g., for 1–3 hours at 750°–800° C.) in an atmosphere having a predetermined oxygen partial pressure (e.g., one part oxygen to 10,000 parts argon). Temperature and oxygen partial pressure are controlled to determine the resistivity characteristics. To shorten such treatment the crystal can be subjected to a preliminary heat treatment in air or oxygen at near-atmospheric pressure at about 750° C. for 3–18 hours.

3,671,194
SULFUR DIOXIDE CONVERSION

Edward S. Roberts, Bayside, N.Y., assignor to Treadwell Corporation, New York, N.Y.

Filed May 1, 1970, Ser. No. 33,614
Int. Cl. C01b 17/76, 17/72
U.S. Cl. 23—176 7 Claims

A multi-stage method for catalytic conversion of SO_2 to SO_3 which can utilize a high concentration of SO_2 in the feed gas and which is capable of producing a high SO_3 concentration in the product gas is provided. The process involves distributing a portion of the feed gas to each of a series of catalytic converters, and mixing such portion at each stage with the off-gas from the preceding stage. Some oxygen for the process may be supplied in admixture with the feed gas, and the remainder

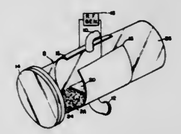


is admixed with the portion of feed gas delivered to the first converter stage. The feed gas and air supplied to the first stage, and the feed gas and off-gas supplied to subsequent stages, are proportioned so that the temperature rise of the gases in the converter does not exceed the safe value for the catalyst. The off-gas from each stage is cooled to near the ignition temperature for the conversion reaction before being introduced into the next stage.

3,671,195
METHOD AND APPARATUS FOR ASHING ORGANIC SUBSTANCE

Richard L. Bersin, Kensington, Calif., assignor to International Plasma Corporation

Filed Aug. 19, 1968, Ser. No. 753,593
Int. Cl. G01m 31/12, 1/00; H05h 1/16
U.S. Cl. 23—230 PC 6 Claims



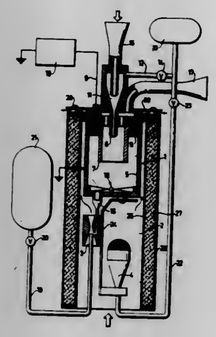
A support structure for a specimen to be treated in the chamber of a plasma machine wherein excited gas flows through the chamber for reaction with the specimen, such structure being fabricated of a fibrous material shaped to be supported inside the reaction chamber and to carry the specimen, the material itself being a substance which is inert to the excited gas yet permeable thereto, whereby the excited gas flows through as well as around the support structure and thus into substantial contact with the surfaces of the specimen to be treated.

3,671,196

APPARATUS FOR A QUANTITATIVE ANALYSIS OF A GAS OR GAS MIXTURE IN RESPECT OF ITS CONTENT OF ORGANIC SUBSTANCES

Arnold Brantte, Hasselstigen 4, Solna, Sweden; Bengt Harald Ivar Frostling, Kruthornsvagen 32A, Sollentuna, Sweden; and Per-Henning Lindgren, Ringgatan 20C, Uppsala, Sweden

Filed Nov. 10, 1969, Ser. No. 875,095
Claims priority, application Sweden, Nov. 14, 1968, 15,440/68
Int. Cl. G01n 27/62, 31/12
U.S. Cl. 23—254 R 5 Claims



An apparatus for analyzing gas comprising an ionization detector, a gas ejector for sucking gas through said ionization detector, and a catalytic gas burner for supplying heat to the chamber surrounding said detector and ejector.

3,671,197

TREATMENT OF PYRITES

Nicholas E. Mascio, Verona, and Robert F. Burke, Riverdale, N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Feb. 5, 1970, Ser. No. 8,837
Int. Cl. C21b 1/04
U.S. Cl. 23—200 13 Claims

Process for treating pyrites wherein the pyrites is directly contacted with an inert gas under conditions to produce pyrrohtite by freeing the labile sulfur from the pyrites, the inert gas providing the heat requirements for the sulfur distillation. The sulfur is recovered from the inert gas and the inert gas indirectly heated by an off-gas produced in roasting the pyrrohtite for subsequent passing to the sulfur distillation.

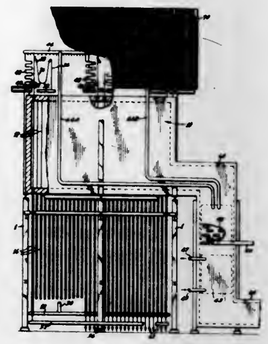
3,671,198

CRACKING FURNACE HAVING THIN, STRAIGHT SINGLE PASS REACTION TUBES

Bruce Alden Wallace, White Plains, N.Y., assignor to Pullman Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 683,703, Nov. 16, 1967. This application June 15, 1970, Ser. No. 46,043
Int. Cl. B01j 3/00; C10b 1/04; C10g 9/04
U.S. Cl. 23—277 10 Claims

The present invention concerns a method and apparatus for treating a hydrocarbonaceous process fluid by indirectly heating such fluid to high temperatures in extremely short periods of time and then rapidly cooling. The process fluid is passed into the straight single pass reaction tubes of the novel heater of this invention, such reaction tubes being contained in a refractory enclosure. The tubes are each connected to an individual quench tube wherein the process fluid may be rapidly cooled either by a coolant flowing through a plurality of jackets



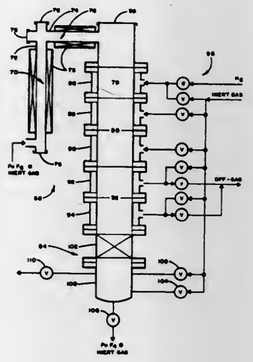
each surrounding each individual quench tube or, in another embodiment, the process fluid may be cooled by having the quench tubes immersed in a liquid bath. In another embodiment of this invention a method and apparatus is provided for carrying out the aforementioned method while simultaneously decoking individual reaction tubes.

3,671,199

PLUTONIUM HEXAFLUORIDE REDUCTION

Orville E. Heady, Broomfield, John F. Towell, Denver, and Richard L. Standifer, Arvada, Colo., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 4, 1969, Ser. No. 804,198
Int. Cl. B01j 1/14
U.S. Cl. 23—284 6 Claims



An apparatus and method for reducing plutonium hexafluoride to plutonium tetrafluoride by heating the plutonium hexafluoride in a first zone, then mixing the heated plutonium hexafluoride with hydrogen in a second zone and collecting solid plutonium tetrafluoride in a third zone, while removing gas and gaseous products from the second zone.

3,671,200

METHOD OF GROWING CRYSTALS BY SHIFTING THE EQUILIBRIUM OF CHEMICAL COMPLEXES

Alton F. Armington, Lexington, and John J. O'Connor, Arlington, Mass., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed May 6, 1969, Ser. No. 822,322
Int. Cl. B01j 17/04; C01g 13/00
U.S. Cl. 23—300 4 Claims

A method for effecting the solution growth of single crystals from insoluble crystal forming materials. The method includes forming a solution of the crystal growing material by first complexing the material to render it soluble followed by the decomposition or deactivation of the complexed material. This allows the desired crystal growing material to precipitate out of solution in single crystal form. Decomposition is accomplished by heating the complexed solution at a temperature and for a period of time sufficient to shift the equilibrium of the chemically complexed material and render it insoluble.

3,671,201

NICKEL-MOLYBDENUM BONDED TITANIUM NITRIDE-TITANIUM CARBIDE

Horacio E. Bergna, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,892
Int. Cl. B22f 3/00; C04b 35/52
U.S. Cl. 29—182.5 5 Claims

Solid compositions of from 49.5 to 94 volume percent titanium nitride, and 5 to 49.5 volume percent titanium carbide bonded with from 1 to 15 volume percent of metal composed of 20 to 50 volume percent nickel and 50 to 80 volume percent molybdenum, the composition having an average grain size of less than 2 microns and a density of at least 99 percent of theoretical are prepared by hot-pressing an intimate mixture of fine powdered titanium nitride, titanium carbide and metal at a temperature between 1650° and 1900° C. and a pressure between 1000 and 5000 pounds per square inch. The dense compositions are very strong and hard and possess a very desirable combination of oxidation resistance, wear-resistance, scratch-resistance and corrosion resistance.

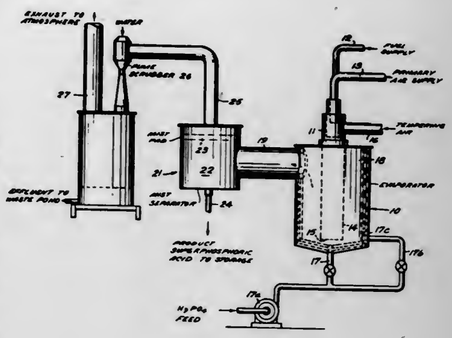
3,671,202

CONCENTRATION OF WET-PROCESS PHOSPHORIC ACID

Charles J. Esterhoy, Jr., Morris Plains, and William D. Hunter, Jr., Smokerise, Kinnelon Borough, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 21, 1964, Ser. No. 346,514
Int. Cl. B01d 1/14; C01f 25/22
U.S. Cl. 23—307 7 Claims

This invention relates to the concentration of wet-process phosphoric acid to produce superphosphoric acid by contacting wet-process phosphoric acid, preferably containing from about 50–55% P_2O_5, with a stream of hot combustion gases in such a volume and at such a velocity to substantially completely entrain all of the wet-process phosphoric acid, continuously feeding the stream of heating gas containing the entrained acid into a zone where coalescence of the acid particles is effected and



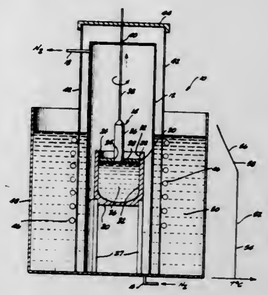
continuously removing the resulting superphosphoric acid.

3,671,203

METHOD AND APPARATUS FOR CZOCHRALSKI GROWTH OF LARGE CRYSTALS

Anthony L. Gentile, Thousand Oaks, and Oscar M. Stafsudd, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

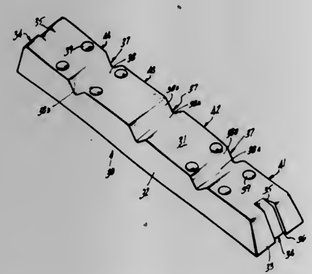
Filed May 29, 1968, Ser. No. 733,038
Int. Cl. C01g 3/12, 5/00; B01d 9/00
U.S. Cl. 23—315 19 Claims



A modified Czochralski method and apparatus for synthesizing at atmospheric pressures large single melt-drawn crystals selected from the sulfide-selenide-telluride family of the following Periodic Table Group combinations: I–B—V—VI–B, II–B—IV–B—VI–B, II–B—V—VI–B, I–B—VI–B, III—VI–B, IV–B—VI–B, and V—VI–B, which are meltable at atmospheric pressures. A stoichiometric mixture is made of the desired crystal constituents, with which a slag suppressant may be added and pre-reacted. The starting materials are placed within the Czochralski furnace crucible and a buoyant solid novel cover is placed over these materials to prevent volatilization of one or more of the crystal constituents, which otherwise would destroy stoichiometry of the melt materials and form nucleation sites. A dynamic inert atmos-

phere is utilized and the materials are heated into a melt. The crystals are then drawn through a central hole in the cover.

3,671,204
INTERLOCKING INGOT
Alan J. Foley, Athen, and Madison J. Gardner, Rinard Mills, Ohio, assignors to Ormet Corporation
Original application Apr. 9, 1968, Ser. No. 719,925, now Patent No. 3,498,451, dated Mar. 3, 1970. Divided and this application Apr. 21, 1969, Ser. No. 839,115
Int. Cl. B22d 25/02
U.S. Cl. 29—187 8 Claims



The disclosure teaches an interlocking ingot with a base portion having at least one cavity therein and a plurality of discrete nibs thereon and with a top portion having a plurality of concave portions therein to receive nibs from another like ingot to form a mechanical interlock therewith.

3,671,205
METAL MATERIALS SUITABLE FOR ORGANIC COATING
Hiromu Uchida, Akimi Umezono, Takao Saito, and Tsutomu Enari, Himeji-shi, Japan, assignors to Fuji Iron & Steel Co., Ltd., Chiyoda-ku, Tokyo, Japan
Filed Jan. 16, 1970, Ser. No. 3,432
Claims priority, application Japan, Jan. 22, 1969, 44/4,646
Int. Cl. B32b 15/04
U.S. Cl. 29—195 12 Claims

Metal materials receptive to organic coatings and having a film composed mainly of hydrated chromium oxide on the surface of metal or plated metal and a layer of water soluble vehicle containing at least one selected from the group consisting of oleoresinous resins, alkyd resins, aminoalkyd resins, phenolalkyd resins and acrylic, resins on the hydrated chromium oxide film.

3,671,206
ALLOY, FUSION OVERLAY AND PROCESS
John F. Lynch, Chester, Pa., and William Bryson Scott, Cherry Hill, and Alfred J. Paoletti, Willingboro, N.J., assignors to Marco Development Co., Inc., New Castle, Del.
Filed Jan. 12, 1971, Ser. No. 105,815
Int. Cl. B32b 15/00; C22c 19/00
U.S. Cl. 29—196.6 9 Claims

In making pump parts such as impellers, shafts, bearings and the like, a suitable backing such as steel is coated with a fused overlay of an alloy of tin, bismuth, silicon, boron, iron, molybdenum, optionally tungsten, and the balance nickel. This gives to the parts coated bearing properties and corrosion resistance without the danger of excessive porosity. The coating is deposited and fused by conventional overlay methods.



3,671,207
ALLOY, FUSION OVERLAY AND PROCESS
John F. Lynch, Chester, Pa., and William Bryson Scott, Cherry Hill, and Alfred J. Paoletti, Willingboro, N.J., assignors to Marco Development Co., Inc., New Castle, Del.
Filed Jan. 12, 1971, Ser. No. 105,816
Int. Cl. C22c 13/00; B32b 15/00
U.S. Cl. 29—196.6 9 Claims

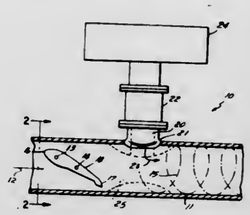


In making pump parts such as impellers, shafts, bearings and the like, a suitable backing such as steel is coated with a fused overlay of an alloy of tin, bismuth, silicon, boron, optionally chromium and the balance nickel. This gives to the parts coated bearing properties and corrosion resistance without the danger of excessive porosity. The coating is deposited and fused by conventional methods.

3,671,208
FLUID MIXING APPARATUS
Wayne G. Medsker, Mountain View, Mo. (1321 S. Lakeview, Sturgis, Mich. 49091)
Filed Oct. 9, 1970, Ser. No. 79,570
Int. Cl. B01f 3/02, 3/04
U.S. Cl. 48—180 C 4 Claims

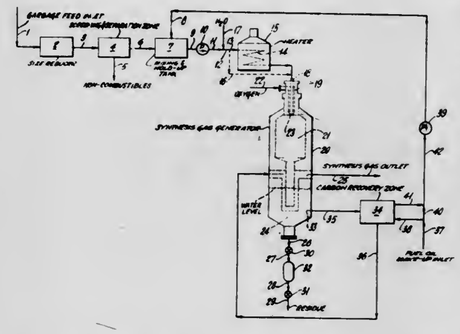
A vortex fluid mixing apparatus is provided for mixing one fluid to another in a conduit or for creating a vortex in fluid passing through a tube breaking up fluid entrained

to the sides of the tube. A tube is provided having a fluid vortex mixer attached to the inner surface of the tube for producing a vortex in the fluid passing through the tube. The vortex mixer is an elongated member and is fixedly attached to the inside of a tube either singularly or



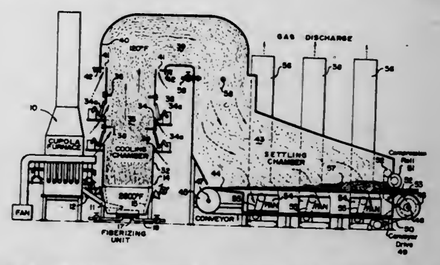
in plural numbers and may be used in mixing a second fluid with the first by having second fluid enter the tube at the beginning of the vortex being generated and may have a vortex mixer also placed in the feeder tube or may be fed into a venturi in the tube.

3,671,209
GARBAGE DISPOSAL PROCESS
Charles F. Telchmann, Houston, Tex., and Albert Brent, Dix Hills, N.Y., assignors to Texaco Development Corporation, New York, N.Y.
Filed Dec. 21, 1970, Ser. No. 100,108
Int. Cl. C10j 3/00, 3/16
U.S. Cl. 48—209 6 Claims



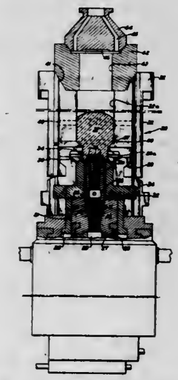
Garbage and other inorganic and organic solid waste matter is reduced to small size and mixed with a fluid selected from the group consisting of H_2O, liquid hydrocarbon fuel, liquid hydrocarbon fuel-particulate carbon slurry or particulate carbon-water slurry produced subsequently in the process, and mixtures thereof to produce a feed mixture stream. The feed mixture is preferably preheated to produce a feed dispersion stream comprising bits of garbage and solid waste matter, particulate carbon, liquid and vaporized hydrocarbon fuel, and steam. By the partial oxidation of the feed mixture or dispersion stream with a stream of oxygen-rich gas in the reaction zone of a free-flow unpacked noncatalytic synthesis gas generator at an autogenous temperature in the range of about 1500 to 3000° F. and at a pressure in the range of about 1 to 250 atmospheres, the garbage and solid waste matter are converted into a stream of synthesis gas or fuel gas, and other valuable by-products.

3,671,210
METHOD AND APPARATUS FOR FIBERIZING MOLTEN MINERAL MATERIALS
Charles D. Richardson, Muncie, Ind., assignor to Richardson Service, Inc., Muncie, Ind.
Filed Sept. 15, 1969, Ser. No. 857,847
Int. Cl. C03b 37/06
U.S. Cl. 65—5 21 Claims



This disclosure provides a method and apparatus for converting molten material such as slag, glass, rock or the like into fibers. A featheredge of molten material is provided in conjunction with a supply bath. A featheredge, by definition, is a section that is made as thin as possible. A pressurized flow of fluid medium is directed along the featheredge to cause the molten material to be forcefully transported as streamers into the area directly above the supply bath. Nozzle openings are provided along the featheredge to direct a pressurized flow of fluid medium into the featheredge of molten material. An assembly is provided in which a fiberizing vessel is fixedly mounted at the bottom of a vertically extending housing which forms a fiberizing chamber. A controlled atmosphere is established in the fiberizing chamber for obtaining the desired structural characteristics in the solidified fibers formed therein. The fiberizing chamber is operatively connected to a settling chamber in which the fiber material is collected for further processing and/or discharge from the assembly.

3,671,211
PLUNGER FOR BOTTLE MAKING MACHINE
Adam J. Lloyd, deceased, late of Millville, N.J., by Leona A. Lloyd, executrix, 338A Court Blvd., Millville, N.J. 08332
Filed July 6, 1970, Ser. No. 52,485
Int. Cl. C03b 9/36
U.S. Cl. 65—234 5 Claims



A vented plunger tip is provided for use with the Hartford I.S. Machine and similar blow and blow bottle equip-

ment to vent air trapped by the glass gob as the glass gob is being forced into the mold and into engagement with the plunger tip to eliminate temperature variations and to thereby reduce settle wave problems. Central vent holes communicate from the tip of the plunger to an axial bore and exhaust ports extend from the axial bore through the side walls of the plunger to permit trapped air from the area near the tip of the plunger to escape. Pad vents in the neck ring mold and the blank mold are also disclosed for further assisting in the elimination of temperature differentials.

3,671,212
GROWTH-PROMOTING COMPOSITIONS AND METHODS
Ernest G. Jaworski, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 883,336, Dec. 8, 1969. This application Oct. 13, 1970, Ser. No. 80,479
Int. Cl. A01n 9/12; A61k 27/00
U.S. Cl. 71—77 **12 Claims**

The growth of living organisms is stimulated by augmenting the nutrient medium utilized by the organism with 4-methylthiobutyric acid or a biological equivalent of said acid.

3,671,213
HERBICIDAL COMPOSITIONS
Brian Graham White, Bracknell, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 5, 1968, Ser. No. 742,482
Claims priority, application Great Britain, July 10, 1967, 31,669/67
Int. Cl. A01n 9/22
U.S. Cl. 71—94 **3 Claims**

Complexes of a herbicidal bipyridylium quaternary salt having 1–4 molecular proportions of a complexing agent are provided. The complexing agent has a nucleus which is aromatic or heterocyclic and bears at least 1 substituent of hydroxy, amino nitro, carboxyl or mercapto. The bipyridylium salt which is complexed is applied to inhibit the growth of vegetation.

3,671,214
INHIBITING THE GROWTH OF PLANTS WITH SUBSTITUTED INDOLE DERIVATIVES
Gerhard H. Alt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 2, 1970, Ser. No. 396
Int. Cl. A01n 9/22
U.S. Cl. 71—95 **4 Claims**

Novel process for preparing substituted indole derivatives by the reaction of an alkylated aniline with an α-hydroxy ketone and their use in herbicidal compositions.

3,671,215
SILVICIDAL COMPOSITION AND METHOD
Travis L. Bellsmith, Chicago, and Richard W. Fields, St. Charles, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Continuation of abandoned application Ser. No. 632,893, Apr. 24, 1967. This application Jan. 2, 1970, Ser. No. 490
Int. Cl. A01n 9/00
U.S. Cl. 71—97 **9 Claims**

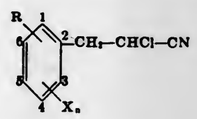
A tree killing paste composition comprising a water-soluble salt of 3,6-dichloro-o-anisic acid or 4-amino-3,5,6-trichloropicolinic acid, a water-soluble acid methanearsonate salt and water in an amount such that the composition is a paste. A process for the killing of trees which comprises applying to the cambium layer thereof, in an amount which is silvicidally toxic to said trees, a composition of this invention.

3,671,216
HERBICIDAL COMPOSITIONS
Masaru Kado, Yokohama, Ichiro Kimura, Ogasa-gun, Shizuoka, and Hironari Sugiyama, Shimizu, Japan, assignors to Kumiai Chemical Industry Co., Ltd., and Hodogaya Chemical Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 4, 1970, Ser. No. 8,715
Claims priority, application Japan, Feb. 6, 1969, 44/8,582
Int. Cl. A01n 9/12
U.S. Cl. 71—100 **10 Claims**

Herbicidal compositions having a synergistic activity, which comprises a herbicidally effective amount of a mixture of a thiocarbamate having a defined chemical formula and a diphenyl ether having a defined chemical formula. The herbicidal compositions can control perennial weeds as well as annual broad-leaved weeds from germinating period to growing period.

3,671,217
PLANT GROWTH REGULANTS
Joseph Rene Brepoels, Heppen, Limbourg, and Armand August Florent Busschots, Sint-Truiden, Limbourg, Belgium, assignors to S.A. PRB, Brussels, Belgium
No Drawing. Filed July 5, 1968, Ser. No. 742,512
Claims priority, application Belgium, July 7, 1967, 701,102
Int. Cl. A01n 9/20
U.S. Cl. 71—105 **12 Claims**

The invention relates to compounds of the formula:

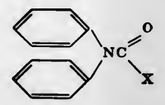


(I)

wherein R represents an alkyl group, X is a halogen atom and *n* is from 1 to 3 inclusive, the said compounds entering into compositions for regulating plant growth.

3,671,218
METHOD OF INHIBITING GROWTH OF UNWANTED VEGETATION
Erhard J. Prill, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed May 13, 1969, Ser. No. 824,312
Int. Cl. A01n 9/24
U.S. Cl. 71—115 **4 Claims**

Herbicidal compositions comprising diphenylcarbamoyl halides of the formula

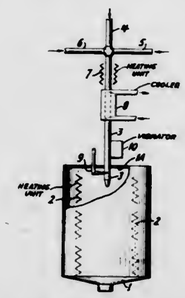


wherein X is a halogen selected from the group consisting of chlorine and bromine.

3,671,219
RIPENING OF SUGARCANE BY USE OF CERTAIN QUATERNARY AMMONIUM HALIDES
Louis G. Nickell, Honolulu, Hawaii, assignor to Hawaiian Sugar Planters' Association, Honolulu, Hawaii
No Drawing. Filed July 20, 1970, Ser. No. 56,735
Int. Cl. A01n 9/20
U.S. Cl. 71—121 **11 Claims**

Sucrose yield of sugarcane is increased by treating sugarcane a few weeks prior to harvest with a quaternary ammonium salt which is a benzyl dimethyl alkyl or substituted alkyl ammonium halide, wherein the alkyl or substituted alkyl group contains between 1 and 20 carbon atoms. Representative compounds are benzyldimethyltetradecylammonium chloride and benzyltrimethylammonium chloride.

3,671,220
PROCESS FOR THE PRODUCTION OF POWDERED METALS
Kurt Alfred Jonsson, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden
Filed May 11, 1970, Ser. No. 35,991
Claims priority, application Sweden, May 19, 1969, 7,003/69; Apr. 2, 1970, 4,529/70
Int. Cl. B22f 9/00
U.S. Cl. 75—.5 B **9 Claims**



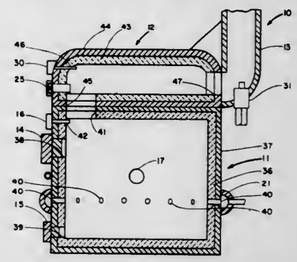
An apparatus and process are provided for reducing metal halides to metal powder low in halide content, the process comprising providing a preheated substantially uniform mixture of reactants comprising a metal halide uniformly dispersed through hydrogen at a temperature above the reaction temperature for said reactants, and then immediately feeding the preheated mixture into a reaction chamber, whereby the reaction to metal powder is substantially spontaneously effected.

3,671,221
FOAMED METAL
Currie B. Berry, Jr., Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,813
Int. Cl. B31d 3/00
U.S. Cl. 75—20 F **8 Claims**

Foamed metals having improved cellular structure are produced by melting a metal, adding dross to the molten metal, and foaming the molten by means of a heat decomposable foaming agent.

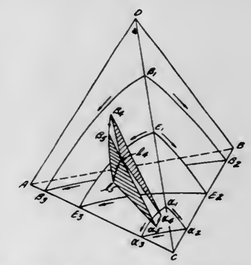
3,671,222
SILVER RECOVERY FROM PHOTOGRAPHIC WASTES
Edward B. Johnson, 4654 34th St. N., Arlington, Va. 22207
Filed Nov. 24, 1969, Ser. No. 879,144
Int. Cl. C22b 11/02, 7/00
U.S. Cl. 75—83 **2 Claims**

A method for the rendering of silver from photographic waste in which the film or other waste is ignited and brought up to a satisfactory burning temperature in a primary chamber and maintained at this temperature until the film or waste is burned by controlling the amount of oxygen supplied to the primary chamber. The burning of the photographic waste is controlled so that the temperature of the gases and particulate matter resulting from the burning of the photographic waste is above about 1200° F. and below about 1500° F. as the gases and particulate matter are about to leave the primary chamber. During the ignition and burning of the photographic waste the smoke and particulate matter is directed to a secondary chamber where it is subjected to burning at a temperature that is higher than that in the primary chamber. After the photographic waste is burned, the silver bearing ash is cooled and removed from the primary



chamber. The ash is then processed by conventional techniques to refine the silver. This method permits the economical rendering of silver from photographic waste by burning with the elimination or reduction of smoke and other air pollutants.

3,671,223
ANISOTROPIC POLYPHASE STRUCTURE OF MULTIVARIANT EUTECTIC COMPOSITION
Earl R. Thompson, Glastonbury, Conn., and Franklin D. Lemkey, Oxford, England, assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 10, 1969, Ser. No. 883,713
Int. Cl. C22c 19/00, 39/20
U.S. Cl. 75—122 **10 Claims**



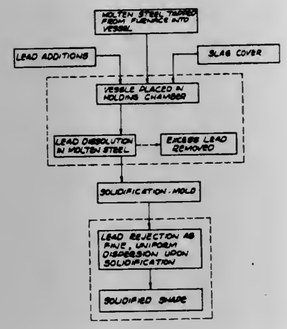
POLYTHERMAL PROJECTION OF A QUATERNARY ALLOY SYSTEM FREEZING BY THE REACTION L → α + β

Quaternary or higher order alloy systems are unidirectionally solidified to provide anisotropic polyphase structures wherein one or more phases of a whisker or lamellar morphology in substantial alignment is embedded in a matrix phase. Included in the systems described are the cobalt, nickel and iron alloys containing chromium, aluminum and/or nickel.

3,671,224
METHODS OF PRODUCING LEADED STEEL
Donald F. North, Jr., Bay Village, and Jerry D. Thomas, Bedford Heights, Ohio, and Gerald W. Worth, St. Louis, Mo., assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Aug. 17, 1970, Ser. No. 64,230
Int. Cl. C22c 39/54
U.S. Cl. 75—129 **11 Claims**

Lead additions to steel are made and an improved leaded steel product is obtained by effectively utilizing the

significant solubility of lead in steel at temperatures above the liquidus temperature of the steel. This is accomplished by control of process conditions, including adding the lead to the steel in a vessel separate from the casting mold, allowing a minimum time between the addition of the lead and the pouring and casting of the leaded steel, the use of specific amounts of lead based upon a target percentage



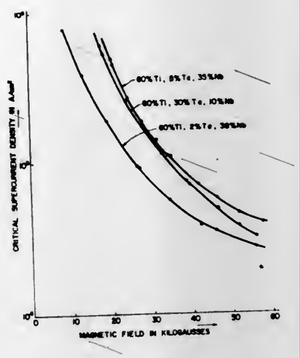
of lead to be obtained in the cast steel, which target percentage does not exceed the solubility level of lead in the steel, and the addition of the lead when the temperature of the steel is above the liquidus temperature by at least a minimum amount. The lead content in steel cast continuously or into ingots in accordance with this proces is uniformly and finely dispersed and the steel is characterized by an absence of macrosegregation of lead.

3,671,225
COPPER BASE ALLOY
Charles D. McLain, Alton, Ill., assignor to Olin Corporation
No Drawing. Continuation-in-part of application Ser. No. 649,003, June 26, 1967. This application June 29, 1970, Ser. No. 50,894
The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed
Int. Cl. C22c *9/00, 9/04*
U.S. Cl. 75—157.5 **10 Claims**

The present disclosure teaches an improved copper base alloy containing iron and aluminum and a material selected from the group consisting of phosphorus and zinc and mixtures thereof. The alloys of the present invention are characterized by improved physical properties, in particular high strength and high conductivity.

3,671,226
SUPERCONDUCTIVE ALLOYS
Toranosuke Komata, Katsumi Ishihara, and Yasuo Hashimoto, Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of application Ser. No. 617,681, Feb. 21, 1967. This application Apr. 22, 1969, Ser. No. 818,453
Claims priority, application Japan, Feb. 28, 1966, 41/11,687
Int. Cl. H01f *7/22*; C22c *15/00*
U.S. Cl. 75—175.5 **4 Claims**

The disclosed superconductive alloys comprise essentially, by atomic percent, from 20 to 80% of titanium, from 1 to 80% tantalum and from 2 to 80% of niobium. They are excellent in workability and have the magnetic field-to-critical supercurrent density characteristics substantially identical to the supercurrent-to-critical magnetic field



characteristics. In addition they do not exhibit the training effect and have a relatively high critical temperature.

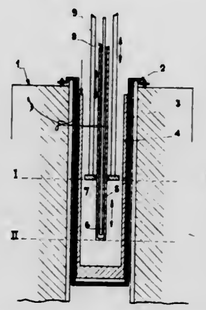
3,671,227
LOW TEMPERATURE Zn-Al-Cu CASTING ALLOY
Herbert A. Jahnle, Havertown, Pa., assignor to The Budd Company, Philadelphia, Pa.
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,482
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 AC **1 Claim**

Alloys having low melting points and high creep resistance especially adapted for casting molding tools, e.g., stamping dies consisting essentially of aluminum, zinc and copper wherein the amount of aluminum is from about 10 to about 30% by weight and the amount of copper is from about 10 to about 20% by weight, said percentages being based on the weight of the alloy. The alloy may additionally contain up to about 2% by weight of nickel and/or iron.

3,671,228
METHOD OF MAKING HIGH-DENSITY SINTERED METAL
Hoy C. McIntire and John R. Vanorsdel, Columbus, Ohio, assignors to The Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of applications Ser. No. 645,624, June 13, 1967, Ser. No. 728,038, May 9, 1968, and Ser. No. 778,580, Nov. 25, 1968. This application Oct. 30, 1969, Ser. No. 872,481
Int. Cl. B22f *1/00*
U.S. Cl. 75—207 **45 Claims**

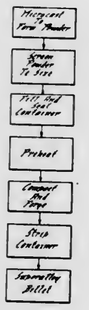
A method for making high-density (at least 90 percent of theoretically solid) metal bodies from reducible metal compounds which consists of exposing compacted particles of such compounds, at least 35 percent (by weight) of which are of less than 10 microns in diameter, to a reducing environment at a temperature within a range of from the lowest temperature at which reduction will take place to a temperature where sintering occurs and then subjecting said powders to sintering. In a preferred embodiment of the present invention metal compound powders are employed that have a mean particle size no greater than 6 microns and at least 25 percent of the powder has a particle size no greater than about 2.5 microns. Optimum results are obtained where the average apparent particle size is less than one micron.

3,671,229
PROCESS FOR PURIFICATION OF METALS
Martin Emile Ferber and Michel Georges Wintenberger, Grenoble, France, assignors to Compagnie Pechiney, Paris, France
Filed Dec. 3, 1969, Ser. No. 881,838
Claims priority, application France, Dec. 6, 1968, 176,897
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **11 Claims**



A process for purification of metals such as aluminum by cooling a portion of the metal maintained at a liquid state at slightly above melting point temperature whereby crystals form and collect at the bottom and are sintered by compacting to increase the crystal size and minimize entrainment of impure metal.

3,671,230
METHOD OF MAKING SUPERALLOYS
John W. Smythe and Philip I. Karp, Ann Arbor, Mich., assignors to Federal-Mogul Corporation
Filed Feb. 19, 1969, Ser. No. 800,541
Int. Cl. B22f *1/00*
U.S. Cl. 75—213 **6 Claims**



A process for making a superalloy having improved properties whereby a molten alloy is initially microcast in a nonoxidizing, substantially moisture-free atmosphere, forming a metallic powder of a controlled particle size and shape and having an oxygen content of less than about 100 p.p.m., and thereafter confining the powder in a deformable metal container while in a protected atmosphere and simultaneously compacting and forging the powder at an elevated temperature and at a controlled rate, forming a substantially dense solid mass characterized by its substantially uniform fine-sized wrought-type grain structure.

3,671,231
IMAGING SYSTEM
Werner E. L. Haas, Webster, and James E. Adams, Ontario, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of application Ser. No. 4,644, Jan. 21, 1970, which is a continuation-in-part of application Ser. No. 646,533, June 16, 1967. This application June 30, 1970, Ser. No. 51,258
Int. Cl. G03c *5/04*; G03g
U.S. Cl. 96—1 **16 Claims**

An imaging system wherein a liquid crystalline imaging material on a photoconductive layer is provided with a suitable overcoating, imaged by providing an electrical latent image on the above described imaging member, and erased by uniformly electrically charging the overcoated surface of the imaging member, thereby making the imaging member immediately reusable.

3,671,232
ELECTROPHOTOGRAPHIC MEMBER USEFUL AS A LITHOGRAPHIC MASTER
Charles A. Kumins, Barrington Hills, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
No Drawing. Filed Nov. 23, 1970, Ser. No. 92,191
Int. Cl. G03g *5/00, 7/00*
U.S. Cl. 96—1.8 **5 Claims**

A method of making a lithographic master using a photoconductive member which contains infrared absorbing carbon black in the photoconductive coating in the amount ranging from 0.25% to 1% by weight of the photoconductive pigment. The method calls for fusing the ink receptive thermoplastic resin powder by infrared radiation. The presence of carbon black in the face coat achieves a unique balance in the amount of heat necessary to fuse the fine lines which form a part of the image, without fusing the spurious toner particles deposited in the background which can later physically be removed.

3,671,233
PHOTOCONDUCTIVE ELEMENTS CONTAINING ALKALI-RELEASE MATERIALS
Lawrence E. Contois, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,748
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **12 Claims**

Electrophotographic elements containing alkali-release materials admixed with photoconductive compositions are described. When these elements are developed and heated, the alkali-release materials generate alkaline products which cause a shift in the absorption of the sensitizers contained in the photoconductive compositions. Such a shift generally reduces the optical opacity of the elements, thus permitting the elements to be used as masters from which further reprints can be made.

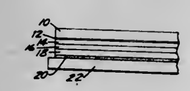
3,671,234
PROCESS OF FORMING AN ELECTROPHOTOGRAPHIC ELEMENT
George D. Casavant, Gansevoort, N.Y., assignor to International Paper Company, New York, N.Y.
Continuation of abandoned application Ser. No. 684,587, Nov. 2, 1967. This application Feb. 8, 1971, Ser. No. 113,753
Int. Cl. G03g *5/08*
U.S. Cl. 96—1.8 **2 Claims**

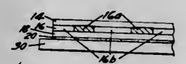
A process, and the products thereof, for improving the dispersion of a pigment in resin binders in the manufacture of electrophotoconductive recording elements used in electrophotography by regulating the temperature and the addition of ingredients during such dispersion.

3,671,235
C_8 TO C_{18} ALIPHATIC ALCOHOLS USED AS DEFOAMING AGENTS IN ZINC OXIDE-RESIN DISPERSIONS
Nario Yamaguchi, Sakae Shimizu, and Kazuo Tubuko, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Dec. 3, 1968, Ser. No. 780,786
Claims priority, application Japan, Dec. 12, 1967, 42/79,632
Int. Cl. G03g 5/08
U.S. Cl. 96—1.8 3 Claims

A light sensitive material for electrophotography comprising a base material and a light sensitive layer provided thereon, in which the light sensitive layer comprises a water soluble resin and an aliphatic alcohol having a defoaming characteristic and which has the function of improving the electrophotographic characteristics.

3,671,236
PRESENSITIZED COLOR-PROOFING SHEET
Philip C. Van Beusekom, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 18, 1968, Ser. No. 713,836
Int. Cl. G03c 1/52, 7/16; G03f 5/18
U.S. Cl. 96—15 8 Claims





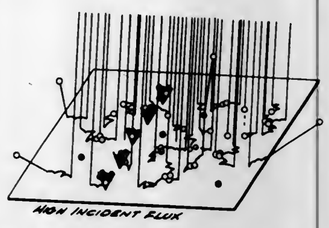


A light-sensitive color-proofing sheet for producing an image on various substrates. A light-sensitive continuous color layer is releasably attached to a carrier. Overlying the color layer is a water-insoluble transparent colorless barrier layer, to the opposite surface of which can be applied a pressure-sensitive adhesive. Upon lamination of the sheet to a substrate, and removal of the carrier, the color layer is formed into an image, photomechanically, by removal thereof in the non-image areas. Preferably the color coating is a pigmented polyvinyl formal resin, the light-sensitive component is a diazo resin (which may be in a separate coating or combined with the polyvinyl formal) and the barrier is a polyacrylate polymer.

3,671,237
METHOD FOR PRODUCING IMAGES
Werner Erwin Louis Haas and James Ewing Adams, Webster, and Bela Mechlowitz, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 9, 1969, Ser. No. 831,449
Int. Cl. G03c 5/04
U.S. Cl. 96—27 1 Claim

Method and apparatus for producing an image wherein a layer of radiation absorbing particles is caused to differentially adhere to the surface of a substrate in an imagewise pattern in areas of the layer exposed to radiation.

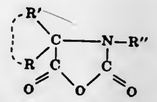
3,671,238
HIGH CONTRAST IMAGE DEVELOPMENT METHOD AND ARTICLE
Alfred F. Kaspaul and Erika E. Kaspaul, Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed Sept. 10, 1970, Ser. No. 71,043
Int. Cl. G03g 5/02
U.S. Cl. 96—27 8 Claims



Methods for improving the contrast of images formed by depositing metal vapor atoms on actinic ray imagewise-exposed nucleated surfaces of nucleation recording medium and article produced thereby. Optical densities of over 2.0 are obtained by suitable moderation of the thermal energy of the vapor atoms such that the atoms form an amorphous image film which exhibits low specular reflectance. Moderation is achieved by use of low temperature and/or large area vapor sources, chemical interactions with the source or energy exchange between the vapor atoms and secondary gases or wall surfaces within the developing chamber.

3,671,239
PHOTODECOMPOSITION OF OXAZOLIDINEDIONES AND SIMILAR ANHYDRIDES
Arnold Zweig, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Jan. 12, 1971, Ser. No. 105,978
Int. Cl. G03c 1/52
U.S. Cl. 96—27 R 4 Claims

A system for storage of information and color photography comprising the use of a dye precursor capable of photochemical conversion to a permanent visible image under light of a particular wavelength, or heat, is provided, said material being an anhydride compound of the formula:



wherein R and R' each represent hydrogen, phenyl or substituted phenyl, or taken together represent a spiro-linked fluorenyl, naphthyl, or pyrozalyl substituent, and R'' represents hydrogen, phenyl or substituted phenyl.

3,671,240
PHOTOGRAPHIC TRANSFER ELEMENTS AND PROCESSES FOR PREPARING AND USING THEM
Eugene P. Gramza and David D. Schreiber, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 10, 1970, Ser. No. 45,219
Int. Cl. G03c 5/54, 1/68
U.S. Cl. 96—29 R 32 Claims

Photosensitive elements for use in image transfer processes contain in the light sensitive layer a flocculated pigment which forms a discontinuous phase uniformly distributed in a continuous polymer layer. The light sensitive layer can be prepared by mixing and coating a solution

of the light sensitive polymer and a pigment with a surfactant to flocculate the pigment. The resultant element can be used in photothermographic image transfer processes to give images having increased transfer density.

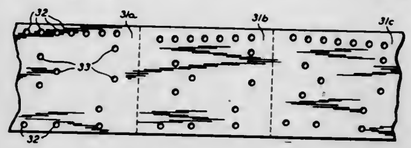
3,671,241
DIFFUSION TRANSFER IMAGE RECEIVING SHEET WITH HYDROLYZED POLYMER LAYER
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 437,799, Mar. 8, 1965. This application Oct. 16, 1967, Ser. No. 675,472
Int. Cl. G03c 5/54
U.S. Cl. 96—29 15 Claims

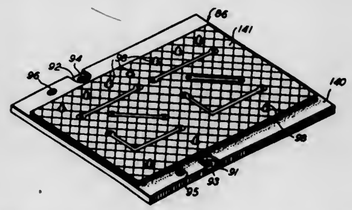
The present invention relates to photography and, more particularly, to specified photographic diffusion transfer process image-receiving elements which include a polymeric strata having associated therewith silver precipitating agent, and to specified processes for the production of and the employment of such image-receiving elements.

3,671,242
SILVER SALT DIFFUSION PROCESS
Werner Liebe, Siegfried Petersen, and Anita von Konig, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,352
Claims priority, application Germany, Jan. 25, 1969, D 19 03 741.3
Int. Cl. G03c 5/54
U.S. Cl. 96—29 2 Claims

The image tone of silver images produced by the silver salt diffusion process is unproved by performing the development in the presence of 1,2,4-triazine blue toners.

3,671,243
MASK REGISTRATION DURING CONTINUOUS PHOTOETCHING OF STRIP MATERIAL
Douglas E. Campbell and Richard A. Harris, Greensboro, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 26, 1970, Ser. No. 83,915
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 3 Claims





Printed circuits are made from a strip of insulative material having metal films bonded on opposite sides thereof. Holes are punched in successive sections of the strip to receive component leads or to provide a path for an electrical connection between circuits on opposite sides of the board. The metal films are covered with a radiant energy sensitive resist and the resist covered strip is moved continuously past a first radiant energy source adjacent a first side of the strip and past a second radiant energy source adjacent the second side of the strip. A plurality of individual masks are brought into successive engagement with the first side of the strip such that a single mask is in registration with each section as the section passes the first radiant energy source. A second plurality of individual masks are brought into successive engagement with the second side of the strip such that a single mask is in registration with each section as the strip passes the second radiant energy source. The resist material is then developed and the metal coating is etched to produce the desired circuit pattern. Electrical connections may then be formed through holes connecting circuit patterns on opposite sides of the strip.

3,671,244
PROCESS FOR FORMING DYE IMAGES
Vernon L. Bissonette, Brockport, N.Y., and Jerry B. Miller, deceased, late of Webster, N.Y., by Carol K. Miller, executrix, Webster, N.Y.; said Bissonette assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 23, 1970, Ser. No. 31,352
Int. Cl. G03c 7/00
U.S. Cl. 96—54 19 Claims

Formazan dye image densities formed by treating a photographic metal image in a hydrophilic colloid binder layer with a tetrazolium salt solution in the presence of a metal complexing ligand are enhanced by the presence in said binder layer of at least one terpolymer containing about 0.1% by weight of active methylene groups in aliphatic side chains in which the methylene groups are usually separated from the main polymer chain by at least three carbon atoms, the terpolymers being formed of an alkyl acylate or an alkyl methacrylate as one monomer, either a salt of a sulfoalkyl acrylate, a salt of a sulfoalkyl alkacrylate, acrylic acid (or salt) or an alkacrylic acid (or salt) as a second monomer, and either a cyanoacetoxyalkyl acrylate, a cyanoacetoxyalkyl alkacrylate, an acyl substituted acetoxyalkyl acrylate or an acyl substituted acetoxyalkyl alkacrylate as the third monomer.

3,671,245
IMAGEWISE HARDENING DIRECT-WRITING PHOTODEVELOPED SILVER HALIDE EMULSION
Glenn Duane Stone, South Amboy, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 24, 1969, Ser. No. 879,555
Int. Cl. G03c 5/24
U.S. Cl. 96—64 5 Claims

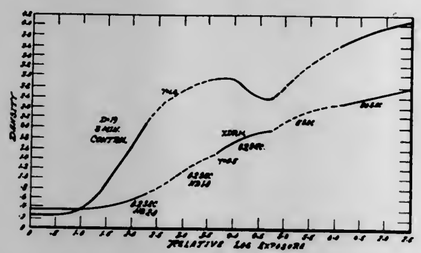
A direct writing silver halide emulsion in an unhardened colloid binder containing a tanning developing agent provides advantageous intensification and stabilization of a photodeveloped image.

A process of stabilizing direct writing images comprising developing an unhardened direct writing emulsion after imagewise exposure and photodevelopment in the presence of at least one tanning developer, followed by washing with hot water.

3,671,246
EXTENDED DYNAMIC RANGE PHOTOGRAPHIC PROCESSING
Leo D. Corben, Swampscott, William T. Kammerer, Towsend, and Allan Shepp, Lexington, Mass., assignors to the United States of America as represented by the Secretary of the Air Force
Filed Oct. 22, 1968, Ser. No. 769,761
Int. Cl. G03c 5/24, 5/26, 5/30
U.S. Cl. 96—66 6 Claims

A method for extended dynamic range processing of photographic film in which the exposed film is weakly

developed in a dilute solution of surface developer. The emulsion surface of the film is then bleached with a dilute solution of bleach for a short period of time and cleared with a salt solution. The emulsion is then developed with full strength photographic developer and stopped fixed, washed, and dried in the conventional manner to produce a negative having an extension of the exposure latitude of the film from 3 orders to about 6 orders.

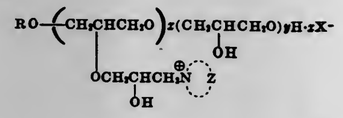


3,671,247
DEVELOPMENT OF SILVER HALIDE PHOTOGRAPHIC MATERIALS

Masakazu Yoneyama, Isao Shimamura, Haruhiko Iwano, and Reiichi Ohi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,208
Claims priority, application Japan, Oct. 22, 1969, 44/84,536
Int. Cl. G03c 5/30
U.S. Cl. 96—66.3 9 Claims

A method for the development of silver halide photographic light-sensitive materials, which comprises developing a silver halide photographic material in the presence of a compound represented by the following general formula



in which R is selected from the group consisting of a hydrogen atom and R'CO—, wherein R' is selected from the group consisting of a hydrogen atom, an alkyl group, a substituted alkyl group, an aryl group and a substituted aryl group, wherein $x+y$ is a number ranging from 3 to 50, X represents an anion, and Z represents an atomic group necessary for completing a heterocyclic ring, is disclosed.

3,671,248
STAIN INHIBITOR IN PHOTOGRAPHIC PAPER BASES

Merle K. Eldridge and Roy C. Bloom, Hilton, and Douglas C. Joseph, Victor, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1970, Ser. No. 44,965
Int. Cl. G03c 1/48, 1/86
U.S. Cl. 96—76 R 7 Claims

Photographic elements having polyolefin coated paper supports, provided with silver halide emulsion layers containing silver halide developing agents, with or without hydrophilic backing layers, exhibit stain due to migration of the developing agent to paper and to the backing layer. Stain is avoided by sizing the paper with an aldehyde bisulfite and coating any backing layer at a pH less than 7 preferably about 3 to 4.

3,671,249
PHOTOSENSITIVE CUPROUS NITRATE COMPOSITIONS AND PROCESS FOR PREPARING AND USING SAME

Thomas E. Flynn, 95 Court St., Portsmouth, N.H. 03801

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,492
Int. Cl. G03c 1/00
U.S. Cl. 96—88 10 Claims

Photosensitive compositions containing cuprous compounds, particularly cuprous nitrate, as the photosensitive component are prepared. The compositions are used in photographic materials and processes to provide copper images.

3,671,250
BIPYRIDINIUM COMPOUND PHOTOSENSITIZER

Timothy Douglas Andrews and Glyn David Short, Northwich, and Ieuan Thomas, Frodsham, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 29, 1970, Ser. No. 50,910
Claims priority, application Great Britain, May 28, 1969, 26,925/69; Sept. 12, 1969, 45,151/69; Nov. 24, 1969, 57,392/69
Int. Cl. G03c 1/00, 1/68
U.S. Cl. 96—88 11 Claims

A radiation sensitive material based on nitrogenous dications such as bipyridyls, preferably with a water soluble polymer as a support. Sensitisers and desensitisers are decribed. The materials are sensitive to X-rays, electrons and U.V. up to about 500 nm., in the presence of sensitisers.

3,671,251
SENSITIZED PYRYLIUM PHOTOBLEACHABLE DYE IN GELATIN

Conrad G. Houle, Webster, and Thomas J. Maseth, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,049
Int. Cl. G03c 1/72
U.S. Cl. 96—89 16 Claims

A light sensitive layer comprising a gelatin binder, a photo-bleachable dye such as a pyrylium dye, a pyridinium dye or a cyanine dye, a sensitizer for the dye e.g., a thiourea sensitizer, and in a preferred aspects, a tanning agent for the gelatin, when coated on a suitable support, provides a negative working lithographic plate which, upon exposure, becomes differentially ink and water receptive to such a degree that it may be used in a printing operation without additional processing.

3,671,252
PHOTOSENSITIVE CYCLIC POLYIMIDES COMPOSITION

Wolfram Neumann, Gerhard Muller, Erwin Ranz, Harald von Rintelen, and Heinz-Dieter Schutz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,196
Claims priority, application Germany, Nov. 3, 1969, P 19 55 070.0
Int. Cl. G03c 1/52
U.S. Cl. 96—90 5 Claims

A photographic material free from silver halide containing cyclic polyimides as photosensitive compounds which are converted into dark-coloured substances under the effect of light. An image formed during exposure of the recording material according to the invention can be erased spontaneously or by additional specific measures so that the material can be re-used.

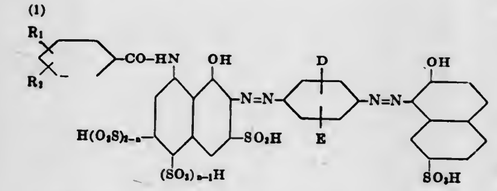
3,671,253
PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL ESPECIALLY FOR THE SILVER-DYESTUFF BLEACHING PROCESS

Alfred Froehlich, Marly-le-Grand, Bernhard Piller, Marly-le-Petit, and Thomas Stauner, Marly-le-Grand, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,952
Claims priority, application Switzerland, Mar. 25, 1969, 4,477/69
Int. Cl. G03c 1/10
U.S. Cl. 96—99 14 Claims

Photographic light-sensitive material, especially for the silver dyestuff bleaching process, is provided, which contains on a support at least one layer with at least one dyestuff of the formula

(1)



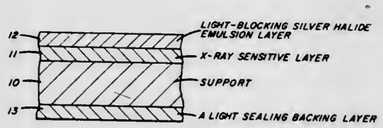
in which R_1 represents a methoxy group, a hydrogen or halogen atom, R_2 represents a halogen atom or a methyl, methoxy, nitrile, trifluoromethyl, nitro, W—CO—, X—CO—NH—, Y—SO_2—NH— or Z—SO_2— group, with W representing a hydroxyl, lower alkyl, lower alkoxy or optionally substituted phenyl group, X representing a hydrogen atom, or a hydroxyl, HOOC-alkylene, HOOC-alkenylene, phenyl, HOOC-phenylene, HO_3S-phenylene, furyl, thienyl or pyridyl group, Y representing a lower alkyl, phenyl, alkylphenylene or HOOC-phenylene group and Z representing a lower alkyl, a phenyl or an optionally substituted amino group, D and E independently of one another each denote a hydrogen or chlorine atom or a methyl, methoxy, ethoxy or hydroxyethoxy group, and n denotes 1 or 2.

These dyestuffs at the same time have excellent resistence to diffusion, form stable aqueous solutions, are insensitive to calcium ions, can be easily bleached, and have favorable spectral properties.

3,671,254
RADIOGRAPHIC ELEMENTS, COMPOUNDS AND PROCESSES

Claude Guy Dostes, Joinville-le-Pont, France, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,644
Claims priority, application France, May 29, 1970, 7019684
Int. Cl. G03c 1/36, 1/84
U.S. Cl. 96—101 23 Claims



A roomlight handling radiographic element or emulsion wherein the light-sensitive layer or layers thereof are protected from exposure to visible light; said element or emulsion comprising an X-ray-sensitive silver halide layer comprising a silver halide desensitizing compound such as a nitrothiazolinothiacyanine and a yellow dye, and coated upon said X-ray-sensitive layers a light-absorbing silver halide layer comprising a nitrogen-containing heterocyclic silver halide desensitizing compound and a yellow dye such as a phenylazopyrazol-5-one yellow dye. Processes for obtaining a radiographic image employing the roomlight handling radiographic elements and emulsions are disclosed.

Electromagnetic radiation-sensitive silver halide desensitized with a nitrothiazolinothiacyanine or containing a phenylazopyrazol-5-one yellow dye.

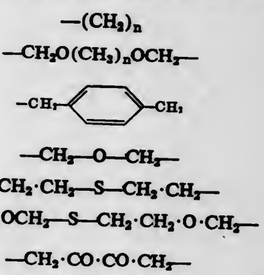
3,671,255
SILVER HALIDE EMULSION FOG INHIBITED WITH QUATERNARY AMMONIUM, TRIAZOLE AND TETRAZAINDENE COMPOUNDS

Teruhide Haga, Hisashi Yamaguchi, and Yotaro Hirao, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,141
Claims priority, application Japan, Aug. 28, 1969, 44/67,624
Int. Cl. G03c 1/34
U.S. Cl. 96—109 5 Claims

A light-sensitive silver halide photographic material, especially suited for quick development, contains as antifoggants at least one of the compounds represented by the general Formulas I, II, III and IV

wherein R_1 and R_2 are individually an alkyl or hydroxyalkyl group having 1 to 18 carbon atoms; R_3 is an alkyl or hydroxyalkyl group having 1 to 18 carbon atoms, or an aryl or aralkyl group; Z is a non-metallic atomic group necessary for formation of hetero ring by bonding to the nitrogen atom; A is an alkyl, alkenyl, aryl or aralkyl group; B is

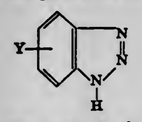


or

$$—CH_2·CO·CO·CH_2—$$

(where n is a positive integer of 1 to 10); and X is an anion, combined with 4-hydroxy-6-methyl-1,3,3a,7-tetra-

zaindene in at least one layer of the photographic material. A compound of the general formula



where Y is a hydrogen atom, a nitro group, a halogen atom or a methyl group, is further incorporated as third component.

3,671,256

POLYMERIC HARDENERS CONTAINING AZIRIDINYL UNITS ON THE SIDE CHAIN

Louis Morton Minsk and Hyman L. Cohen, Rochester, N.Y., and Elliott Frauenglass, Newington, Conn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,249
Int. Cl. G03c 1/30
U.S. Cl. 96—111 **8 Claims**

New high molecular weight linear addition polymers are provided comprising a main chain of a linear saturated substituent and a side chain of aziridinyl units separated from said main chain by a carbamyl, carbonyl or an alkylene ester group. When incorporated into photographic elements and emulsions said polymers are substantially safe and effective hardeners for hydrophilic colloids used therein as vehicles or binders and do not exhibit unwanted sensitometric effects.

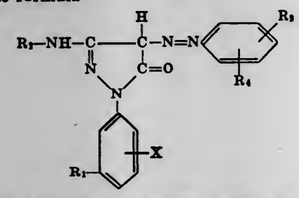
3,671,257

COLOR SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING YELLOW-COLORED MAGENTA-FORMING COLOR COUPLER

Rigobert Otto, Leverkusen, and Gerrit Pankow, Opladen, Germany, Arthur Henri de Cat, Mortsel, Belgium, and Walter Puschel, Leverkusen, and Willibald Pelz, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 20, 1968, Ser. No. 714,525
Claims priority, application Germany, Mar. 25, 1967, A 55,264
Int. Cl. G03c 1/40
U.S. Cl. 96—100 **4 Claims**

Yellow-colored magenta color-forming color couplers having the formula



make very effective integral masks that compensate undesired blue side absorption of the magenta image.

3,671,258

SPEED INCREASING COMBINATION OF STABILIZERS FOR RADIOGRAPHIC ELEMENTS

Robert C. Taber, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,636
Int. Cl. G03c 1/28
U.S. Cl. 96—107 **19 Claims**

A radiographic element, which comprises a support having thereon at least one silver halide layer, wherein said halide comprises at least about 50 mole percent chloride, a sulfocatechol and a tetrazaindene, shows an increase in speed. In a preferred embodiment said element has a total silver coverage of at least about 100 mg. per square foot per silver halide layer.

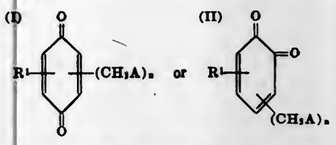
3,671,259

PHOTOGRAPHIC BLEACHING AND ANTIFOGGING AGENTS

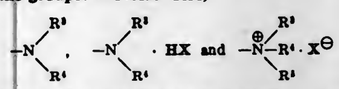
Bernard C. Cossar, Pittsford, and Delbert D. Reynolds, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 31, 1970, Ser. No. 103,288
Int. Cl. G03c 1/34
U.S. Cl. 96—109 **9 Claims**

Aminomethylquinones and salts thereof having the general formula:



wherein R^1 represents hydrogen, an alkyl group (including an aralkyl group), an aryl group or a $—CH_2A$ group; n represents an integer of from 1 to 3; A represents any one of the groups: $—NHR^3 \cdot HX$,



R^2, R^3 and R^4 each represent an alkyl group (including an aralkyl group), an alkenyl group, an aryl group, etc. or R^3 and R^4 when taken in combination with the nitrogen atom to which they are attached represent a monovalent, heterocyclic group; R^5 represents an alkyl group including an aralkyl group; and X represents an anion; with the provision that each $—(CH_2A)$ group is substituted at a position ortho to an oxo group on the quinone ring; are useful as bleaching agents and as fog inhibiting agents.

3,671,260

ORGANIC THIOETHER OR SELENOETHER SILVER COMPLEXES AS EMULSION SENSITIZERS

Edwin N. Oftedahl, Rochester, Thomas J. Huttemann, Jr., Henrietta, and Charles A. Goffe, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,531
Int. Cl. G03c 1/28
U.S. Cl. 96—122 **11 Claims**

Photographic silver bromoiodide emulsions are spectrally sensitized by adding thereto a mixture comprising a photographic spectral sensitizing dye and a complex of silver with an organic thioether or an organic selenoether.

Addition of the silver complex reduces the blue desensitization caused by the sensitizing dye and thus increases spectral sensitization efficiency. Incubation stability of the emulsion is also enhanced.

3,671,261

ARTIFICIAL SHRIMP FEED

Yaichi Ayukawa, Uhei Naruse, Tadayoshi Itoh, and Tsuneaki Miyakawa, Tokyo, Japan, assignors to CPC International Inc.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,363
Int. Cl. A23k 1/18
U.S. Cl. 99—2 R **8 Claims**

Covers an artificial texturized feed useful in growing shrimp which comprises a dough-like composition kneaded or extruded into a form resembling vermicelli and including a protein source and a gum binder. A preferred protein source is corn gluten, and a preferred gum binder is a starch gum. A particularly useful feed contains corn gluten, starch gum and yeast, and may contain other ingredients, particularly other protein sources. The feed is of a form resembling vermicelli or spaghetti and is of a size large enough to be noticed by the shrimp when feeding, and yet of a size sufficiently small so that the shrimp

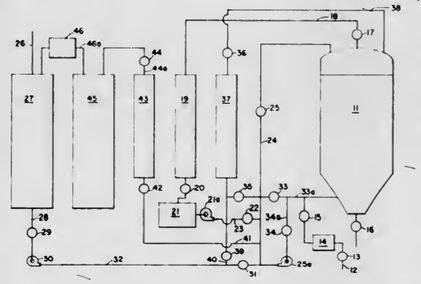
can still clutch it. It is greatly preferred that the shrimp feed be in the form of rounded pieces which have been extruded or kneaded to a length of about 4.0–6.0 mm. and a diameter of 1.0–3.0 mm. The shrimp feed provides a food of an excellent low conversion ratio, and does not cause contamination or pollution of the culture water or sand bed due to its particular configuration and relative water-insolubility.

3,671,262

DECAFFEINATION PROCESS

Alan B. Wolfson, Springfield Township, Hamilton County, Jayantilal M. Patel, Reading, and Benjamin Lawrence, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of application Ser. No. 23,653, Mar. 30, 1970. This application Feb. 23, 1971, Ser. No. 118,183
Int. Cl. A23f 1/10
U.S. Cl. 99—70 **6 Claims**



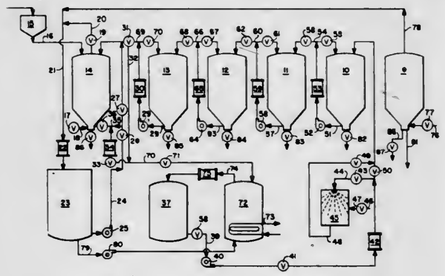
Decaffeination total process times and caffeine extraction times are substantially reduced by utilizing a high caffeine solvent velocity and a high exchange rate of solvent with respect to green coffee beans.

3,671,263

SEMI-CONTINUOUS COUNTERCURRENT DECAFFEINATION PROCESS

Jayantilal M. Patel, Reading, and Alan B. Wolfson, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of abandoned application Ser. No. 23,652, Mar. 30, 1970. This application Feb. 23, 1971, Ser. No. 118,184
Int. Cl. A23f 1/10
U.S. Cl. 99—70 **9 Claims**



A semi-continuous staged countercurrent extraction process involving high extraction temperatures, high pre-wetting moisture, high solvent exchange rates, and high solvent superficial velocity is used to substantially decrease caffeine extracting process times.

ERRATUM

For Class 99—92 see:
Patent No. 3,670,665

3,671,264

PACKAGED MIXES FOR FLAVORED FOOD PRODUCTS AND THE PROCESS OF MAKING THEM

Harvey J. Drews and Stanley P. Raffensperger, Knoxville, Tenn., assignors to The White Lily Foods Company, Knoxville, Tenn.

No Drawing. Filed May 4, 1970, Ser. No. 34,633
Int. Cl. A23l 1/00, 1/26; A21d 2/00
U.S. Cl. 99—94 **14 Claims**

Packaged dry mixes containing artificially flavored lumps in which the major ingredients functioning in the formation and texture of the lumps are high melting point hydrogenated vegetable fat, pregelatinized starch, sucrose and dextrose. The lumps are formed by blending and extrusion. The lumps are added to and packaged in combination with various dry mixes which can be stored at normal ranges of temperature and humidity for relatively long periods of time.

3,671,265

RAISIN COLORING PROCESS

Donald L. Maxwell and Philip E. Nyberg, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,027
Int. Cl. A23l 1/27
U.S. Cl. 99—104 **6 Claims**

A process for coloring raisins involving dissolving food colorings in ethyl alcohols, exposing the raisins to the solution and then manipulating the reaction to produce the color desired.

3,671,266

PROCESS FOR MAKING HEXITOL COATED NUTS

Irwin Cooper, Staten Island, N.Y., and Wilbur Allen Parker, Somerville, and Daniel Melnick, West Englewood, N.J., assignors to CPC International Inc.

No Drawing. Filed Aug. 29, 1969, Ser. No. 854,261
Int. Cl. A23l 1/36
U.S. Cl. 99—126 **30 Claims**

A process for producing a hexitol coated nut product comprising providing hexitol coated raw nuts, roasting the nuts in a hot gaseous environment, cooling the roasted nuts, and recovering the coated nut product.

3,671,267

PEANUT BUTTER

Chester Martin Gooding, Westfield, Wilbur Parker, Somerville, and Daniel Melnick, West Englewood, N.J., assignors to CPC International Inc.

No Drawing. Filed June 30, 1969, Ser. No. 837,862
Int. Cl. A23l 1/38
U.S. Cl. 99—128 **17 Claims**

A peanut butter of improved mouth feel and low temperature spreadability, stabilized against oil separation at temperatures up to about 100° F. with from about 0.5% to about 2.3% of a symmetrical monounsaturated disaturated glyceride, from about 0.35% to about 1.3% of a trisaturated glyceride, and no more than about 2% total of a diunsaturated monosaturated glyceride and/or unsymmetrical monounsaturated disaturated glyceride, the percentage figures being percent by weight.

3,671,268
ICE-CREAM PRODUCTS

Anthony Blake, Ravensden, Bedford, and Denis Malcolm Halliday, Lavendon, and Michael Faulkner Woods, Stevington, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 30, 1969, Ser. No. 872,612
Claims priority, application Great Britain, Nov. 1, 1968, 51,957/68; Mar. 26, 1969, 15,881/69
Int. Cl. A23g 5/00; A23l 1/06
U.S. Cl. 99—136 7 Claims

A variegated ice-cream product is produced by incorporating discrete pieces of a gelled fruit puree into ice-cream, water ice, mousse or sorbet. The gelled fruit puree may be set by cooling in a tube and extruded directly into the ice-cream mix, or may be set in bulk and pumped into the ice-cream mix by a pump which shreds the gel.

3,671,269
PROCESS OF PREPARING PUDDINGS CONTAINING STARCH HAVING A LOW BOUND-FAT CONTENT

Felix J. Germino, Palos Park, and Joseph R. Caracci, Jr., Chicago, Ill., assignors to CPC International Inc.

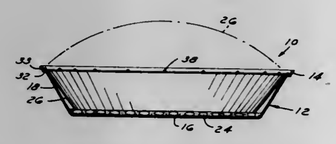
No Drawing. Original application June 12, 1967, Ser. No. 645,527, now Patent No. 3,586,536. Divided and this application May 6, 1970, Ser. No. 47,931
Int. Cl. A23l 1/14
U.S. Cl. 99—139 4 Claims

Preparation of puddings by cooking together a mixture of milk, a sweetener, flavoring agent and starch, said starch being prepared by reducing the bound fat content of granular starch to not more than 0.15% by weight by heating a mixture of the starch, a suitable solvent, and not more than 15% water, in a confined zone, at from about 225° F. to about 300° F. for not more than 30 minutes, the conditions being selected so as to avoid incipient gelatinization of the starch. Starch treated in accordance with the process which is further characterized by a fluidity of from about 30 to about 80.

3,671,270
POPCORN PACKAGE

David H. Jehn, Warren, Mich., assignor to Dun-Hot, Incorporated, St. Clair Shores, Mich.

Filed Aug. 19, 1970, Ser. No. 65,012
Int. Cl. B65b 25/22
U.S. Cl. 99—171 H 5 Claims



The popcorn package includes an open-topped relatively shallow pan which has an annular flange. A transparent plastic cover extends across and into the pan. The cover has substantially the same relatively shallow outline as the pan. This permits nesting of a plurality of popcorn packages for storage purposes. A charge of popcorn kernels and cooking oil is confined between the pan and the cover. The cover is outwardly flexible upon heating of the charge to pop the corn. The flange includes a bent over edge portion which clampingly engages the marginal peripheral edge of the flexible cover. A plurality of spaced apart staked portions in the flange, which puncture both the flange and the marginal edge of the cover, positively hold the cover in place and provide a restricted fluid passage for pressure release during heating of the charge to pop the popcorn kernels.

3,671,271
PACKAGE FOR SLICED BACON

Harmon B. Miller, Atlanta, Ga., assignor to Reclosable Package Corp., Atlanta, Ga.

Filed Feb. 26, 1969, Ser. No. 802,491
Int. Cl. B65b 25/06
U.S. Cl. 99—174 8 Claims



A package for bacon slices and slices of other kinds of luncheon meat comprising a corrugated plastic tray having across its surface alternating elongated ribs and grooves. The slices are placed against the corrugations with one edge adjacent the corrugations and the other edge extending outwardly so that the slices are inclined with respect to the tray. The outwardly extending edges of the respective slices are in overlapping contact with adjacent slices. The edges adjacent the tray are spaced from each other and are free to move into the grooves of the corrugations. This reduces the area of contact between adjacent slices and makes it easier to separate the slices.

3,671,272
FROZEN MEAT PACKAGE

George A. Mixon, Fort Lauderdale, Fla., assignor to Mol-Pak Corp., Fort Lauderdale, Fla.

Application Oct. 25, 1968, Ser. No. 770,530, now Patent No. 3,526,077, dated Sept. 1, 1970, which is a continuation-in-part of application Ser. No. 479,949, Aug. 16, 1965. Divided and this application May 1, 1970, Ser. No. 33,813
Int. Cl. A23b 1/06; B65b 25/06
U.S. Cl. 99—194 2 Claims



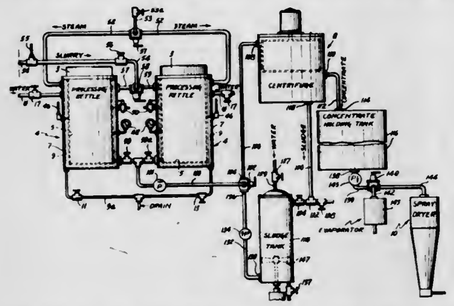
A tray or container for meat products made of a translucent material comprising at least one cavity section for a cut of meat, said cavity section including a base portion conforming generally to the periphery of the meat product, an upstanding peripheral sidewall at a height slightly less than the thickness of the meat product, means defining a plurality of annular ribs in the base defining continuous spaced apart channels for meat juices and an overwrap of a transparent heat shrinkable filmy material covering at least the open side of the tray.

3,671,273
APPARATUS FOR PREPARING A COCOA CONCENTRATE

Alec C. Gunter, Clear Brook, Va. 22624

Filed May 20, 1968, Ser. No. 730,359
Int. Cl. A23g 1/00, 1/04, 7/00
U.S. Cl. 99—236 CC 8 Claims

A cocoa concentrate for making sediment-free chocolate beverages is prepared with an apparatus comprising means for heating a slurry to a temperature higher than the boiling temperature of water; a processing kettle to receive the slurry from the heating means and constructed to subject the slurry to heating under pressure and agitation, and to cool the heated slurry; and centrifuge means to receive the cooled slurry from the processing kettle.



3,671,274
BATHS FOR ACTIVATING THE SURFACE OF PLASTICS TO BE CHEMICALLY METAL-PLATED

Hiroshi Maekawa, Osaka, and Choji Yamauchi, Fuse, Japan; said Maekawa assignor to Giichi Okuno, Higashi-ku, Osaka-shi, Japan

No Drawing. Continuation-in-part of application Ser. No. 570,702, Aug. 8, 1966. This application May 6, 1970, Ser. No. 35,260
Claims priority, application Japan, Aug. 6, 1965, 40/47,912
Int. Cl. C23c 3/00
U.S. Cl. 106—1 11 Claims

Plastic surface is activated for subsequent chemical metal plating by treatment with a solution containing, as essential ingredients, sulfuric acid, silver compound and metal halide, as optional ingredients, chrominum compound and phosphoric acid.

3,671,275
LOSSY DIELECTRIC STRUCTURE FOR DISSIPATING ELECTRICAL MICROWAVE ENERGY

Louis E. Gates, Jr., Inglewood, and William E. Lent, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Continuation-in-part of application Ser. No. 586,649, Oct. 14, 1966. This application Dec. 12, 1969, Ser. No. 884,715
Int. Cl. C04b 35/14
U.S. Cl. 106—44 5 Claims

A lossy dielectric attenuator for receiving and dissipating high power wave energy on the order of 100 watts and more comprised of the combination of silicon carbide in an alumina matrix.

3,671,276
OPTICAL FLUOROPHOSPHATE GLASS HAVING AN ANOMALOUS PARTIAL DISPERSION RATIO

Heinz Bromer, Hermannstein, and Norbert Meinert, Wetzlar, Germany, assignors to Ernst Leitz GmbH

No Drawing. Continuation-in-part of application Ser. No. 603,978, Dec. 22, 1966. This application June 26, 1969, Ser. No. 836,965
Claims priority, application Germany, June 27, 1968, P 17 71 692.6
The portion of the term of the patent subsequent to Jan. 27, 1987, has been disclaimed
Int. Cl. C03c 3/00
U.S. Cl. 106—47 Q 5 Claims

An optical glass having an anomalous partial dispersion ratio is disclosed which is melted from a mixture consisting essentially of about 58.6–73.8 mol percent of the fluorides of the alkaline-earth metals: magnesium, calcium, strontium and barium, further of about 5.9–21.8 mol percent of the metaphosphates of the alkaline-earth metals: magnesium, strontium, calcium, barium and of aluminum, about 6.3–7.6 mol percent of magnesium oxide and of at least one of the following compounds: $BaT:F_6$ and K_2TiF_6.

3,671,277
ULTRAVIOLET RAY CUTTING PINK GLASS FOR COLOR PHOTOGRAPHY

Masao Ohno, Kawasaki-shi, and Katsumi Kijima, Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 1, 1969, Ser. No. 862,770
Claims priority, application Japan, Oct. 8, 1968, 43/72,887
Int. Cl. C03c 3/04, 3/30; F21v 9/00
U.S. Cl. 106—47 Q 5 Claims

An ultraviolet ray cutting pink glass for color photography of this invention provides the absorption peak wavelength in the vicinity of 550 mμ while the ultraviolet ray cutting limit wavelength within the range from 380 mμ to 400 mμ. It does not bring about the solarization. Glass material contains at least cerium oxide and gold and the material is melted at a temperature ranging from 1350° to 1500° C., cooled with the temperature gradient from 10° C./h. to 25° C./h., and reheated for 5 to 50 hrs. at a temperature in the vicinity of the softening point of glass for coloring the same.

3,671,278
IRON-CONTAINING TITANIA-OPACIFIED PORCELAIN ENAMELS

Bernard J. Borowski, Cleveland, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

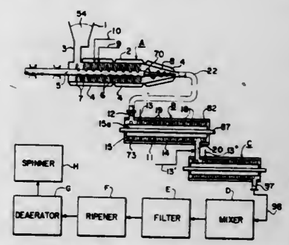
No Drawing. Filed June 5, 1970, Ser. No. 43,971
Int. Cl. C03c 5/02
U.S. Cl. 106—48 2 Claims

A porcelain enamel frit, containing a relatively high level of the oxide equivalent of iron, said frit adaptable to be incorporated into a vitreous porcelain enamel for application to an oven liner, said enamel characterized by the ability to oxidize oven soils when heated to a point above 350° F., but below 600° F., the method of utilizing same as a self-cleaning oven liner coating, and an oven liner coated therewith.

3,671,279
PROCESS FOR THE CONTINUOUS XANTHATION AND SOLUTION OF ALKALI CELLULOSE

Koichi Yasui, Kazuo Yamamoto, Kazuo Itami, and Kiyoshi Fujisawa, Miyazaki-ken, and Toshio Sasaki, Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 13, 1970, Ser. No. 36,825
Claims priority, application Japan, May 13, 1969, 44/36,337; July 17, 1969, 44/56,298
Int. Cl. C08b 21/20
U.S. Cl. 106—165 20 Claims



This invention relates to a continuous process for xanthate-formation from alkali cellulose, carbon disulfide

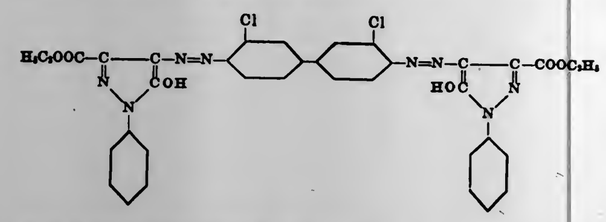
and aqueous alkali solution, as a preparatory step for the continuous manufacture of a ready-for-spinning viscose solution. This invention is characterized by that the alkali cellulose is precompressed, and added with aqueous alkali solution and carbon dioxide and the reaction mixture is kneaded in a series of two rotary type kneaders, in the first one of which only a presulfiding reaction is brought about and in the second kneader the remaining or main sulfiding reaction is carried out, the outlet from the second kneader being a dense paste having a soft cheese grade density comprising the xanthate as its main constituent.

3,671,280
PLASTER OF PARIS BANDAGES TO MAKE CASTS OF IMPROVED STRENGTH, WATER-RESISTANCE AND PHYSIOLOGICAL PROPERTIES
David F. Smith, 120 Grove St., Bay Head, N.J. 08742
No Drawing. Continuation-in-part of application Ser. No. 65,732, Aug. 20, 1970. This application Dec. 4, 1970, Ser. No. 95,365
Int. Cl. A61l 15/07; C04b 11/16
U.S. Cl. 106—116 7 Claims

Minor additions of polyvinyl pyrrolidone and melamine-formaldehyde resins to plaster of Paris bandages permit making "casts" of improved strength and water-resistance with good physiological properties.

3,671,281
PYRAZOLONE RED PIGMENT AND PROCESS THEREFOR
Nagib A. Doss, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Sept. 16, 1970, Ser. No. 72,844
Int. Cl. C08h 17/14
U.S. Cl. 106—288 Q 5 Claims

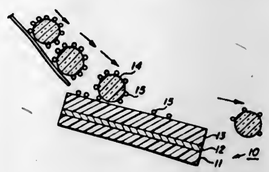
An improved red pigment is obtained by heating a commercially available pigment of the formula:



in an aromatic water-insoluble liquid boiling in a range of 80° to 250° C. for a period of about 0.75 to 12 hours and then stripping the liquid from the solid. The resultant pigment is bluer, brighter, stronger, and both more bleed resistant and thermally stable than the original pigment starting material. The improved pigment thus obtained is useful in rubber, plastics, printing inks, lacquers, paint emulsion and textile printing.

3,671,282
METHOD OF MAKING AN IMAGING MEMBER
William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Continuation-in-part of application Ser. No. 570,996, Aug. 8, 1966, which is a continuation-in-part of application Ser. No. 483,675, Aug. 30, 1965, which in turn is a continuation-in-part of application Ser. No. 403,002, Oct. 12, 1964. This application Aug. 28, 1969, Ser. No. 853,869
Int. Cl. B44d 1/094
U.S. Cl. 117—16 34 Claims

The method of making an imaging member comprising coating, preferably by cascading, a dispersed layer of particulate material over a softenable plastic substrate which is softened allowing the particulate material to embed below the surface of said softenable plastic substrate thereby forming a layer of particulate material dispersed in said softenable plastic.



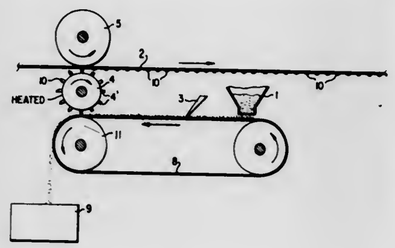
3,671,283
EMBOSSED PLASTIC SURFACE COVERING AND METHOD OF PREPARING SAME
Richard P. Crowley, 125 High St., Wellesley Hills, Mass. 02110
No Drawing. Filed June 3, 1970, Ser. No. 43,223
Int. Cl. B44d 1/14; B32b 3/30
U.S. Cl. 117—9 9 Claims

A chemically embossed vinyl chloride resin sheet material is prepared by treating the gelled surface of a vinyl chloride resin plastisol containing a blowing agent with an aqueous latex of a vinyl chloride resin, whereby on subsequent heating of the treated gelled vinyl chloride resin sheet material to decompose the blowing agent and drive off the water of the latex, full expansion of the sheet material is prevented by the increase in resin content in the treated areas, thereby producing a chemically embossed product.

3,671,284
PROCESS AND APPARATUS FOR APPLYING ADHESIVE POINTS TO A WEB OR SHEET IN A DESIRED PATTERN
Wilhelm Uhrig, Wuppertal-Elberfeld, Germany, assignor to Dr. Plate GmbH, Bonn, Germany
Filed Jan. 16, 1970, Ser. No. 3,300
Claims priority, application Germany, Jan. 18, 1969, P 19 02 506.0
Int. Cl. B44d 1/094
U.S. Cl. 117—21 1 Claim

A process is provided for applying a desired pattern of adhesive areas or points to a moving web by arranging a layer of powdered thermosetting plastic adhesive material on the moving web and thereafter contacting a pattern of heated projections with the adhesive to melt or sinter the same at the points of contact. The excess and unheated powdered adhesive is removed by suction. The result is a pattern, such as a screen-like arrangement, of adhesive points on the web so that it may be bonded to another web or sheet by compression. The pattern is formed by a rotating heated roller having projections on its periphery, the ends of the projections successively contacting the adhesive layer on the moving web. The adhesive in contact with the ends melts and the remaining unheated

powdered adhesive is removed by suction nozzle means to thereby provide the web with a screen-like pattern of adhesive points. To apply a similar pattern to the underside of the web, the adhesive layer is formed on an endless conveyor belt below the web. The rotating heated roller with the projections is located between the conveyor

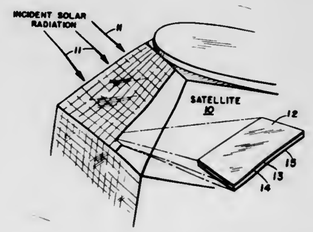


belt and the bottom of the moving web. As the roller rotates, the ends of the projections contact and melt the adhesive material and thereafter transfer the molten globules of adhesive to the bottom of the web to thereby form a screen-like pattern of adhesive points on the bottom or underside of the web.

3,671,285
COMPOSITES AND INTERMEDIATES THEREFOR
Roger Prescott, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.
No Drawing. Filed Feb. 27, 1970, Ser. No. 15,283
Int. Cl. C08j 1/02; C09c 1/46
U.S. Cl. 117—75 6 Claims

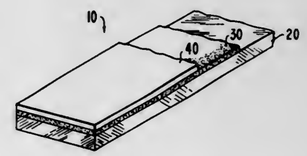
Composites, preimpregnated tapes, and sized-carbon fiber, prepared by coating carbon fibers with a high cross-section metal or metalloid and resin then curing the resin while irradiating the fiber with a source of thermal neutrons, improves bonding between resin and fiber.

3,671,286
SURFACE WITH LOW ABSORPTIVITY TO EMISSIVITY RATIO
Robert E. Fischell, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Navy
Continuation-in-part of application Ser. No. 576,796, Aug. 31, 1966. This application Apr. 3, 1970, Ser. No. 25,482
Int. Cl. B64g 1/10
U.S. Cl. 117—333 5 Claims



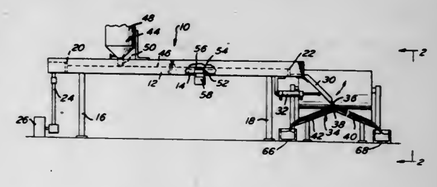
A thermal surface particularly adapted for use as the exterior coating of a space vehicle or the like, and exhibiting a very low absorptivity to emissivity ratio is formed by coating a layer of material, such as glass, having a high infrared emissivity with a dielectric low-pass optical filter material effective to reflect, with minimum absorption, a substantial portion of the incident solar radiation occurring at wavelengths shorter than a predetermined value and with a second material which complements the low-pass optical filter; i.e., it has low absorptivity for and is highly reflective to the remaining portion of the incident radiation occurring at wavelengths longer than the predetermined value.

3,671,287
INK TRANSFER MEMBER
Prakash N. Manlar, Rochester, N.Y., assignor to Burroughs Corporation, Detroit, Mich.
Filed Apr. 20, 1970, Ser. No. 30,173
Int. Cl. B41m 5/10
U.S. Cl. 117—36.4 5 Claims



A reusable ink releasing member is disclosed having a polyester film substrate, a binder coat of a polyester material over the substrate, and a plastic ink releasing layer covering the binder. The plastic layer contains a combination of dye and pigment along with oil which functions as a solvent for the dye and a dispersant for the pigment as well as a vehicle for the ink which is released from the plastic layer when the reusable ink releasing member is subjected to pressure.

3,671,288
METHOD AND APPARATUS FOR APPLYING DECORATIVE COATING TO A SUBSTRATE
Karl Moses Rosenberg, Philadelphia, Pa., assignor to Flo-Tech Corp., Wilmington, Del.
Filed Jan. 9, 1970, Ser. No. 1,658
Int. Cl. B44f 9/00; B05c 11/10
U.S. Cl. 117—39 9 Claims

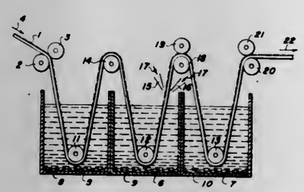


A method and apparatus are disclosed wherein a quantity of pigmented coating material is placed on the surface of a pool of supporting liquid, and a portion of the pool, with the coating material entrained, is drawn off and permitted to flow over a substrate. Excess liquid of the drawn off portion runs off, and the coating material remains on the substrate. The method can be performed on a continuous basis, the pool being a moving, continuously replenished body of liquid, and the strip to be coated being moved continuously past a position wherein the drawn off portion of the supporting liquid and the entrained coating material are applied thereto.

3,671,289
PRE-ETCH TREATMENT OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS FOR ELECTROLESS PLATING
Eileen Maguire, San Gabriel, and Leon A. Kadison, Pasadena, Calif., assignors to Crown City Plating Co., El Monte, Calif.
No Drawing. Filed Sept. 23, 1969, Ser. No. 860,431
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 A 21 Claims

Solutions containing certain hydroxylated and etherified monoacetates are used to pre-etch ABS resins to improve the adhesion of metals in electroless plating processes.

3,671,290
IMAGING SYSTEM
Seiji Matsumoto, Yasuo Tamai, and Masamichi Sato, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 21, 1970, Ser. No. 65,912
Claims priority, application Japan, June 25, 1969, 44/50,115
Int. Cl. G03g *13/10*
U.S. Cl. 117—37 LE 3 Claims



An electrostatic latent image bearing surface is developed with a liquid developer, rinsed with a first rinsing liquid having a boiling point between about 150° C. to about 350° C. at about atmospheric pressure, subjected to a stream of gas to remove most of the first rinsing liquid and thereafter rinsed with a second organic non-polar rinsing liquid which is soluble in and more volatile than the first rinsing liquid so as to remove developer-contaminated first rinsing liquid and any remaining background toner particles from said image bearing surface.

3,671,291
ELECTROLESS PROCESS FOR FORMING THIN METAL FILMS
Richard G. Miller, Pittsburgh, and Roy L. Cavitt, New Kensington, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed June 2, 1969, Ser. No. 829,705
Int. Cl. B44d *1/20, 1/092*; C23c *3/02*
U.S. Cl. 117—54 8 Claims

The invention described herein relates to an electroless process for forming thin metal films, particularly transparent films, on a reactive substrate. It particularly relates to a method of spraying two solutions, one, an acidic solution containing a metal salt and the other, an alkaline solution containing a boron reducing agent, onto a reactive substrate to form a metal film by reduction of the metal salt. More particularly, the invention relates to an electroless process for forming metal films of metals contained in Group *Ib* and Group VIII of the Periodic Table, especially iron, cobalt, and nickel, by forming a solution of soluble salts of said metals in an acidic, aqueous media, preferably including boric acid and spraying said solution on a reactive substrate at substantially the same time that an alkaline solution of a boron-containing reducing agent, especially alkali metal borohydrides, is sprayed on the substrate. The invention has been found to be particularly useful for forming transparent films of cobalt, nickel, iron, and the like on sensitized transparent substrates such as glass and plastic.

3,671,292
ZIRCONIUM ANTI-SOIL TREATMENT OF SYNTHETIC FIBERS AND RESULTANT ARTICLE
Julian J. Hirshfeld and Bertie J. Reuben, Decatur, Ala., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 564,003, July 11, 1966, which is a continuation-in-part of applications Ser. No. 419,549, Dec. 18, 1964, and Ser. No. 419,601, Dec. 18, 1964. This application July 15, 1969, Ser. No. 841,977
Int. Cl. D06m *11/04, 13/00*
U.S. Cl. 117—62 17 Claims

Durable anti-soiling characteristics are imparted to textile articles comprised of synthetic fibers by treating them with an acidic aqueous solution containing a zirconium salt and a derivative of ammonia, then drying the textile article thereby to bond the evaporation residue of the solution, a zirconium reaction product, to the synthetic fibers. The process may be varied by first treating the fibers with the zirconium salt followed by treatment with the derivative of ammonia.

3,671,293
THERMOSETTING ACRYLIC ENAMEL CONTAINING MINOR AMOUNTS OF CELLULOSE ACETATE BUTYRATE
Leonard A. Walle, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of abandoned application Ser. No. 780,191, Nov. 29, 1968. This application Jan. 8, 1971, Ser. No. 105,062
Int. Cl. B44d *1/38*; C08b *21/14*; C08g *37/32*
U.S. Cl. 117—74 10 Claims

A thermosetting enamel coating composition in which the film-forming material is a blend of the following polymers:

(1) an acrylic polymer of 0–6% by weight of an α,β-ethylenically unsaturated monocarboxylic acid, an acrylic ester of an alkyl methacrylate or an alkyl acrylate, or a combination thereof, 0–50% by weight of styrene and a hydroxyalkyl methacrylate or a hydroxyalkyl acrylate;
(2) a minor amount of cellulose acetate butyrate; and
(3) a thermosetting nitrogen containing resin.

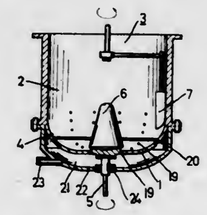
3,671,294
MOISTURE RESISTANT PACKAGING MATERIAL
Richard Konrad Hopermann, Oakland, N.J., assignor to The Borden Company, New York, N.Y.
No Drawing. Filed Dec. 20, 1967, Ser. No. 691,942
Int. Cl. B44d *1/16*; B32b *27/10*
U.S. Cl. 117—76 7 Claims

This invention relates to a printing ink system which functions as a moisture vapor barrier system. More particularly, this invention relates to a moisture vapor barrier system for materials used for packaging whereby a primer coat comprising either a vinyl halide or a vinylidene chloride copolymer is applied to a packaging material and dried. Thereafter, a top lacquer composition which includes at least about 70% of a cyclized natural rubber, by weight based on the weight of the dry top lacquer components, is applied to the packaging material. The resultant moisture barrier system has a moisture transmission rate of 2 grams or less of water vapor per 100 square inches over a period of 24 hours at 100° F. and 90% relative humidity.

3,671,295
PROCESS FOR PREPARING CARBOXYL ACID CONTAINING OLEFIN POLYMER SURFACE COATINGS USING HIGH ENERGY IONIZING RADIATION
Abraham Ravve, Chicago, and Joseph T. Khamis, Brookfield, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 777,870, Nov. 21, 1968. This application Aug. 7, 1970, Ser. No. 62,172
Int. Cl. B44d *1/50, 1/44, 1/02*
U.S. Cl. 117—93.31 13 Claims

A process for coating articles wherein a film of an aqueous colloidal dispersion of a water dispersible carboxyl acid containing olefin polymer and a salt of a polyvalent metal is applied to the surface of the article to be coated, the aqueous dispersant is removed and the polymer cross-linked to form a hardened coating using high energy ionizing radiation.

3,671,296
PROCESS FOR COATING GRANULAR MATERIALS
Yoshiro Funakoshi, Kyoto-shi, Takehiko Kajiura, Toyonaka-shi, Kiyoshi Fujii, Osaka-fu, Toshihiko Kanamaru, Kyoto-fu, Masaki Nishitani, Osaka-fu, and Hiromu Komeda, Gose-shi, Japan, assignors to Takeda Chemical Industries, Ltd.
Filed July 28, 1969, Ser. No. 845,296
Int. Cl. B05c *3/04, 3/08*
U.S. Cl. 117—100 B 3 Claims

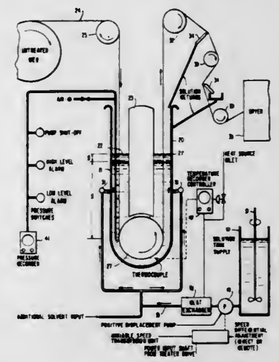


This invention relates to a process for coating granular materials, including tablets and pills, and an apparatus for treating the surfaces of granules with coating materials, including liquid and powder, and/or dry air. The apparatus of the invention comprises a dish mounted rotatably at its center and a stationary barrel having a smoothly curved inner-surface which continues upwards from the periphery of the dish. The granules to be coated are continuously circulated in a receptacle integral with the dish and the barrel by rotating the dish. Such circulation of the granules provides excellent fluidity and abrasion between granules that coating materials and/or dry air spread uniformly over and contact all granule surfaces in a short time.

3,671,297
METHOD OF CHROMIZING IN A FUSED SALT BATH
Noboru Komatsu, Tohur Arai, and Masayoshi Mizutani, Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho
Filed Mar. 2, 1971, Ser. No. 120,155
Claims priority, application Japan, Mar. 16, 1970, 45/19,437
Int. Cl. C23c *9/10*
U.S. Cl. 117—113 18 Claims

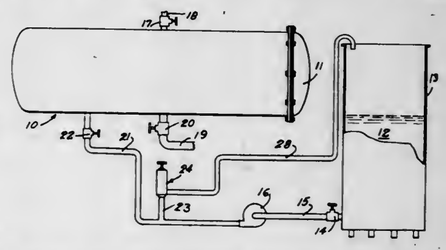
A method of treating metals and alloys in which a fused salt bath consisting of at least one boron-containing salt such as boron oxide (B_2O_3) or borax ($Na_2B_4O_7$), and a chromium-containing material is prepared and a material to be treated is immersed in the fused salt bath as a result of which a chromium-impregnated layer with fine structure and with excellent resistance to corrosion, oxidation and wear is formed at the surface of the metal.

3,671,298
HYDRAULIC SYSTEM FOR CONTROLLING RESIN PICKUP
Maurice J. Maynard, Ridgefield, Conn., assignor to Westvaco Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,318
Int. Cl. B44d *1/06*
U.S. Cl. 117—115 3 Claims



This invention discloses a hydraulic system for resin pickup that will yield precise control of liquid addition without the need for sampling, testing and operator control. The system is based on precise introduction of a volume of liquid into the system at a volume rate of flow predetermined to yield a desired solids content at the sheet through-put rate involved. The system is self-controlling, as a temporary decrease in liquid absorption causes an increase in liquid level thereby increasing sheet-liquid contact time and pressure. Conversely, an increase in adsorption causes the level to fall, reducing contact time and pressure and thereby the volume of liquid absorbed. An equilibrium liquid level is reached at the point where the absorption is equal to the rate of liquid in-put to the system.

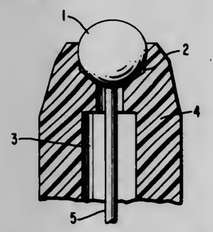
3,671,299
METHOD FOR IMPREGNATING WOOD
Jackson Herman Barnett, Jr., 84 N. Crest Road, Chattanooga, Tenn. 37404
Filed Feb. 26, 1970, Ser. No. 14,349
Int. Cl. B44d *1/26*; B05c *3/02*
U.S. Cl. 117—116 5 Claims



Method for impregnating wood with liquid treating solutions such as preservatives, fire retardants, or the like wherein the wood is immersed in a confined pressure vessel, and treating liquid is pumped into the vessel in direct

pressure contact with the wood at a rate of flow sufficient within no more than ten minutes to build up a pressure therein in excess of a predetermined pressure within the range from 20 to 700 p.s.i. gauge. The pumping is effected without causing pulsations in excess of 5.0 p.s.i. gauge peak to peak within the pressure vessel. Excess treating liquid is bypassed and recirculated at a predetermined pressure.

3,671,300
NYLON MOLDING ARTICLES AND PROCESS FOR PRODUCING THE SAME
Takao Kawakita and Hiroaka Ikeda, Osaka, Shigeru Matsumura, Hyogo, and Kunihiko Taniguchi, Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan
Filed Nov. 14, 1968, Ser. No. 775,595
Claims priority, application Japan, Nov. 14, 1967, 42/73,476
Int. Cl. B44d *1/09, 1/02*
U.S. Cl. 117—118 **6 Claims**



Nylon molding article having an addition or cross-linking reaction product layer on at least the surface thereof produced by treating the molded nylon article with an epoxy compound, an isocyanate compound, a ketene or a carbodiimide. Inorganic bulking agents may be included.

Process for forming the nylon molding article comprises treating the article by heating the article in a fluid comprising one of the above-recited compounds.

3,671,301
HIGH TEMPERATURE PRESSURE-SENSITIVE ADHESIVES MADE BY REINFORCEMENT WITH POLYURETHANE POLYMERS
Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.
No Drawing. Continuation-in-part of application Ser. No. 762,995, Sept. 26, 1968. This application May 6, 1969, Ser. No. 822,314
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **11 Claims**

Ordinary pressure-sensitive adhesives based on natural or synthetic rubber are made high temperature resistant by curing with reaction-products of polyisocyanates and hydroxylated elastomers.

3,671,302
IMPREGNATING POROUS CERAMICS WITH NONCOLLOIDAL SOLIDS
David J. Nell, West Mifflin, and Thomas W. Lewis II, Bethel Park, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.
No Drawing. Filed Oct. 30, 1967, Ser. No. 679,191
Int. Cl. C04b *21/00*
U.S. Cl. 117—123 A **4 Claims**

Impregnating porous ceramic articles with noncolloidal ceramic particles comprising, preparing a suspension in a carrier fluid of noncolloidal ceramic particles, immersing the ceramic articles in the slurry, maintaining said particles dispersed, and agitating the slurry for sufficient period of time to impregnate at least a portion of the ceramic articles.

3,671,303
STRONG FIRE RETARDANT WEBS
Gary H. Meitner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
No Drawing. Filed June 26, 1970, Ser. No. 50,310
Int. Cl. D04h *1/64*
U.S. Cl. 117—137 **4 Claims**

Nonwoven webs such as cellulosic webs are treated with a binder polymer having a low glass transition temperature and containing halogen substitutes and a fire retarding agent. The resulting products are strong, drapable, and fire retardant.

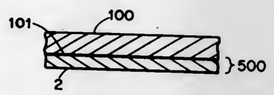
3,671,304
PROCESS FOR FLAMEPROOFING AND RESULTANT PRODUCT
Vladimir Mischutin, Hackensack, N.J., assignor to Arkansas Company, Inc., Newark, N.J.
No Drawing. Filed Apr. 23, 1970, Ser. No. 31,398
Int. Cl. C09d *5/18;* **C09k** *3/28*
U.S. Cl. 117—136 **16 Claims**

There is provided a novel type of fireproofing composition for cellulosic and synthetic materials suitable for textile use and methods of preparing and utilizing said compositions. The novel compositions are prepared by mixing either a polyalkylenimine or the reaction product of a polyalkylenimine with an amide, with a halo alkyl phosphate ester under aqueous conditions. The materials are proofed by immersion into an aqueous solution, suspension or emulsion of the proofing composition and dried at an elevated temperature.

3,671,305
METHOD OF TREATING SHAPED ARTICLES WITH BETAINE-TYPE POLYMERS AND THE ARTICLES THEREBY OBTAINED
Albert B. Brown, Warrington, and Frank J. Parkhill, Elkins Park, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Filed Jan. 30, 1970, Ser. No. 7,268
Int. Cl. D06m *15/52, 15/54*
U.S. Cl. 117—138.8 F **10 Claims**

Shaped articles, more particularly fabrics of various fibers, especially cotton and/or hydrophobic synthetic fibers, e.g., of linear polyesters (such as of polyethyleneglycol terephthalate) are treated with polymers of betaines or sulfobetaines or copolymers thereof with or without acrylic acid and/or an acrylic ester, such as methyl acrylate—preferably the treating composition also contains an aminoplast condensate capable of imparting creaseproofing, wrinkleproofing, and durable press characteristics on curing with an acidic catalyst. The process and treated fabrics are claimed.

3,671,306
BORON CARBIDE FILM PRODUCT
Lloyd R. Allen, Belmont, Mass., assignor to National Research Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 611,191, Nov. 25, 1966, which is a continuation-in-part of application Ser. No. 524,615, Feb. 1, 1966. This application Nov. 28, 1969, Ser. No. 880,660
Int. Cl. C23c *11/02;* **B44d** *1/22*
U.S. Cl. 117—138.8 N **7 Claims**



Boron carbide films produced by vacuum deposition. The films are black and shiny, amorphous and have bend tensile strength on the order of 300,000 p.s.i. and elastic modulus of 40 million p.s.i.

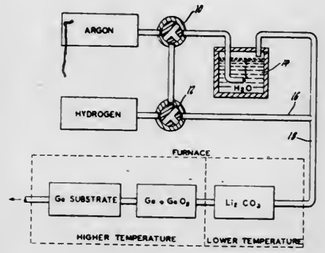
3,671,307
CREASE-PROOFING COMPOSITIONS CONTAINING GLYOXAL MODIFIED URON RESINS AND PROCESSES FOR MAKING SAME
Myrtle Joanne Spangler, Danville, Va., assignor to Dan River Inc., Danville, Va.
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,346
Int. Cl. C08g *9/10, 9/32;* **D06m** *15/58*
U.S. Cl. 117—139.4 **9 Claims**

Crease-proofing compositions containing methylol urons and/or alkyl ethers of same and methylol-4,5-dihydroxy-2-imidazolidinone and/or alkyl ethers of same substantially free of methylol ureas and alkyl ethers thereof. These compositions are made by contacting uron preparations, made by reacting urea and formaldehyde, with or without an alkanol, with glyoxal to convert methylol ureas and alkyl ethers thereof ordinarily contained in such uron preparations into methylol-4,5-dihydroxy-2-imidazolidinone and/or alkyl ethers thereof. Cellulosic textiles treated with the resulting compositions are characterized by unexpectedly low retained chlorine damage.

3,671,308
TEXTILE SOFTENING AGENTS
Helmut Diery, Kelkheim, Taunus, Germany, Bernhard Kiefer, Sao Paulo, Brazil, and Siegbert Rittner and Manfred Seidel, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed July 28, 1969, Ser. No. 845,505
Claims priority, application Australia, July 29, 1968, 7,347/68
Int. Cl. D06m *15/54*
U.S. Cl. 117—139.5 A **4 Claims**

Process for the softening of textile materials consisting of or containing cellulose fibers, wherein these materials are treated with solutions or dispersions of reaction products of at least 3 mols of formaldehyde and 1 mol of a N-alkyl-urea or a N-alkyl-biuret containing 14 to 22 carbon atoms in the alkyl radical.

3,671,309
PROCESS FOR MAKING TETRAGONAL GERMANIUM DIOXIDE
Walter A. Albers, Jr., Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 15, 1970, Ser. No. 28,773
Int Cl. C23f *7/02*
U.S. Cl. 117—201 **8 Claims**

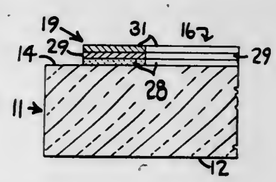


A process and apparatus for directly oxidizing germanium into its insoluble oxide, the tetragonal form of germanium dioxide. A germanium surface portion is cleaned of all oxides and a new oxide is grown directly on that cleaned surface at normal pressure in a mildly oxidizing atmosphere containing a germanium monoxide vapor and an octahedral coordination catalyst. The apparatus provides particular means for growing a film of the tetragonal dioxide directly on the surface of a germanium wafer in a single furnace treatment.

3,671,310
PAPER SURFACE SIZING PROCESS AND PRODUCT UTILIZING CATIONIC AMYLOSE DERIVATIVES
Gerald H. Brown, Lebanon, and Emil D. Mazzarella, Mountainside, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Filed May 7, 1968, Ser. No. 727,361
Int. Cl. D21h *1/34*
U.S. Cl. 117—156 **10 Claims**

Sizing of paper and paperboard products which comprises applying an aqueous dispersion of a cationic amylose derivative to at least one surface of a previously prepared cellulosic web.

3,671,311
APPLYING ELECTROCONDUCTIVE HEATING CIRCUITS TO GLASS
Milton S. Tarnopol, Brackenridge, and Thomas P. Snyder, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 737,907, June 18, 1968, and Ser. No. 826,433, May 21, 1969. This application July 1, 1969, Ser. No. 838,163
Int. Cl. B44d *1/18;* **C03c** *17/08, 17/10*
U.S. Cl. 117—211 **9 Claims**

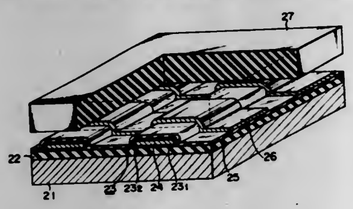


Applying a decorative coating or design of electroconductive material to a glass base. When the base is transparent, the resulting article is useful as a readily heated window from which fog and ice can be readily removed on heating. A frit composition having an appropriate coefficient of expansion, an appropriate maturing temperature, and which matures into a rough, porous coating, is applied to a glass sheet surface in the circuit pattern desired, the sheet is heated and then cooled rapidly to produce a tempered glass sheet having a rough, porous frit coating conforming to the pattern desired for the electroconductive heating circuit, and a conductive metal coating is selectively deposited on the rough, porous frit by electroless plating. The frit may be sensitized by incorporating a minor amount of a sensitizing metal therein or by applying a sensitizing composition.

3,671,312
METHOD FOR MANUFACTURING MAGNETIC THIN FILM ELEMENT
Yoshio Murakami, Yokohama, Iwao Higashinakagawa, Kawasaki, Nobuaki Yasuda, Zushi, and Syozo Takeno, Yokohama, Japan, assignors to Tokyo-Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed July 29, 1970, Ser. No. 59,291
Int. Cl. H01f *10/06*
U.S. Cl. 117—212 **4 Claims**

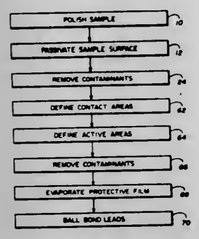
A method for vapor depositing a magnetic thin film element mainly comprising nickel Ni and iron Fe on the sur-

face of a substrate within a magnetic field in an atmosphere of inert gas at a pressure of 1×10^{-3} to 5×10^{-2}



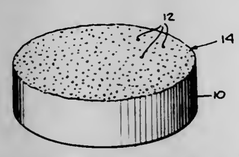
mm. Hg, to form a uniform magnetic thin film with reduced variations in the direction of the easy axis.

3,671,313
SURFACE CONTAMINANT REMOVAL
Richard A. Reynolds, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 13, 1969, Ser. No. 876,346
Int. Cl. H01l *7/00*
U.S. Cl. 117—212 **10 Claims**
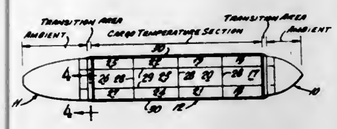


In the fabrication of a semiconductor device having active areas defined therein, surface contaminants are removed by bombarding the defined areas with hydrogen ions. The hydrogen ion bombardment is completed in an evacuated chamber backfilled with hydrogen to a pressure on the order of 100 microns of Hg. A glow discharge is established in the backfilled evacuated chamber to produce atomic hydrogen that reacts with the contaminants which then desorb the semiconductor surface. A protective film is evaporated over the cleaned surface to prevent further contamination thereof.

3,671,314
TUNGSTEN ELECTRICAL SWITCHING CONTACTS
Henry Clinton Gackstetter, North Branford, Harold Francis Anderson, Guilford, and Gordon William Shove, Mount Carmel, Conn., and Louis George Morin, Tarrytown, N.Y., assignors to The Echlin Manufacturing Corporation, Branford, Conn.
Filed Jan. 29, 1970, Ser. No. 6,784
Int. Cl. B44d *1/34*; B22f *7/00*
U.S. Cl. 117—213 **13 Claims**



A tungsten contact disc is treated by burnishing so as to smooth and compact the contact surface and remove the surface-crazed metals and oxides, while simultaneously filling the surface pores with a contaminant such as iron. The contaminants present in the pores are subsequently removed by immersing the contact disc in a dissolving agent, and the remaining natural oxides of the tungsten are removed from the walls of the pores by cathodic reduction, so as to create large pore sites which are free of oxides and contaminants. Next, there is applied a coating of a diffusion-absorbing metal, such as nickel, to the contact disc to provide a diffusion-absorbing layer for an outer film of gold. The gold lining the pore sites is applied with a thickness sufficient to maintain an amount of non-alloyed gold on the contact surface after some of the gold has been diffusion absorbed by the underlying nickel layer. During electrical switching operations, the gold alloys with the nickel, and the gold and gold alloy lining the pore surfaces are effective to prevent oxide formation on the pore surfaces and to substantially reduce surface destruction by the arc heat, thereby affording a longer contact operating life.

3,671,315
THERMAL TRANSITION DESIGN FOR VESSELS CARRYING LIQUID CARGOES AT NONAMBIENT TEMPERATURES
Frank J. Iarossi, Middletown, N.J., assignor to Esso Research and Engineering Company
Filed Apr. 28, 1970, Ser. No. 32,691
Int. Cl. B63b *25/16*
U.S. Cl. 114—74 A **2 Claims**



An externally insulated integral tanker vessel intended especially for the transport of liquid cargoes at temperatures differing from ambient temperature, including bow and stern sections, joined to the cargo midbody, which is at the temperature of the cargo, in such a manner as to maintain substantially ambient temperatures throughout the end portions of the tanker hull. Toward this end there is provided a temperature transition area or compartment at each end of the cargo midbody section to minimize the thermal stresses that normally would occur between the cold hull of the midbody and the relatively warm hull at either end of the tanker. The entire hull is constructed as a continuous shell similar to that of a conventional vessel. The shell plating in the transition area is insulated internally and externally in such a manner as to reduce the temperature gradient between the cold hull steel of the midbody and the warm steel at the end. The insulation gradually is tapered along the shell so as to control the heat input to the plating as a function of the distance away from the cold midbody steel. This acts to extend the length of the thermal transition, thereby reducing the thermal gradient and resulting thermal stresses in the vessel's hull.

3,671,316
METHOD FOR SEPARATING FRUCTOSE AND GLUCOSE FROM SUGAR SOLUTION CONTAINING FRUCTOSE AND GLUCOSE THEREIN
Ryoki Tatuki, 16 Azo Teramachi, Goshogawara, Japan
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,622
Claims priority, application Japan, Feb. 6, 1970, 45/10,012
Int. Cl. C13k *3/00*
U.S. Cl. 127—46 R **5 Claims**

Method for the separation of glucose from fructose in a solution thereof which involves complexing the glucose

with sodium chloride. The complex containing the glucose is crystallized out of solution and separated as by filtration.

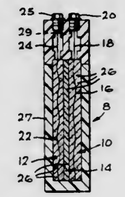
3,671,317
METHOD OF MAKING FUEL CELL ELECTRODES
Ernest Rifkin, De Witt, N.Y., assignor to United Aircraft Corporation, East Hartford, Conn.
No Drawing. Filed Feb. 10, 1970, Ser. No. 10,165
Int. Cl. H01m *27/00*; B01k *3/04*
U.S. Cl. 117—216 **3 Claims**

In expensive screen substrates for fuel cell electrodes are provided with a nonporous vinylidene fluoride corrosion resistant coating. Thereafter, a second, metal particle and porous polymer, coating is provided. Cure of the second coating must be compatible with the first coating and monitored to prevent the flow of the polymer in the second coating so that a porous structure with the desired hydrophilic properties and conductive properties preferred in electrode structure can be obtained.

ERRATUM

For Class 127—46 see:
Patent No. 3,671,316

3,671,318
METHOD FOR PRODUCING A WATER ACTIVATABLE BATTERY
George Moe, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed June 12, 1969, Ser. No. 832,618
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 **8 Claims**



A water activatable battery comprising as components a pair of electrodes, e.g. Ag-Zn, in the fully charged state and a separator, e.g. composed of olivine, between them, the components being substantially dry and having the evaporation residue of an aqueous alkali electrolyte solution, e.g. KOH, substantially uniformly distributed throughout. Method for producing the above battery comprising adding an aqueous alkali electrolyte solution to a battery having as components a pair of electrodes of opposite polarity and a separator between them, fully charging the electrodes, drying the battery at elevated temperatures until substantially all of the water from the electrolyte solution is removed.

3,671,319
BATTERY ELECTRODE AND BATTERY EMBODYING SAME
Frank C. Arrance, Costa Mesa, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Aug. 4, 1969, Ser. No. 847,332
Int. Cl. H01m *35/00, 43/02*
U.S. Cl. 136—6 **15 Claims**

Production of zinc electrode of improved strength and reduced solubility in alkali solution and having improved capacity retention during deep discharge cycling when employed in a high energy density battery, such as a silver-zinc battery, by sintering a mixture of zinc oxide and certain additive oxides such as zirconium oxide, and forming a solid solution of a portion of the zinc oxide and said additive oxide, said sintered solid solution forming a substantially inert matrix and the remainder of said zinc oxide being free active zinc oxide.

3,671,320
BATTERY PLATE TREATMENT PROCESS
Bernard B. Herman and Vincent P. Farley, Jr., Edison, N.J., assignors to Gulton Industries, Inc., Metuchen, N.J.
Filed Dec. 23, 1969, Ser. No. 887,549
Int. Cl. H01m *35/18, 35/30*
U.S. Cl. 136—75 **11 Claims**

A process and apparatus for treating battery plates formed by impregnating a porous substrate with a metallic nitrate and subjecting the impregnated substrate to an alkaline earth hydroxide for formation of active material in the form of a metallic hydroxide, with formation of soluble nitrates as a by-product, in which the soluble nitrates are prevented from creating contamination of the plates, by cathodizing them into ammonia and carbon dioxide gas in a tank having a pair of electrodes and one or more insulated electrically floating metallic baffle plates between the electrodes.

3,671,321
PROCESS FOR PRODUCTION AND TREATMENT OF BATTERY PLATES
Bernard B. Herman and Vincent P. Farley, Edison, N.J., assignors to Gulton Industries, Inc., Metuchen, N.J.
Filed Dec. 23, 1969, Ser. No. 887,552
Int. Cl. H01m *35/18, 35/30*
U.S. Cl. 136—75 **23 Claims**

A process and apparatus for treatment of battery plates, in which the active material of the plate is electrically formed and decontaminated by electrolyzing without direct connections to a power source, by interposing the active material insulatedly in a bath between two energized electrodes. This is particularly useful in the case of battery plates formed by impregnating a porous substrate with a metallic nitrate and subjecting the impregnated substrate to an alkaline earth hydroxide for formation of active material in the form of a metallic hydroxide.

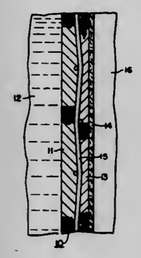
3,671,322
ELECTROCHEMICAL CELL WITH ALUMINUM ELECTRODES AND DIFFERENT ELECTROLYTE CONCENTRATION IN TWO COMPARTMENTS
Lowell A. King and David W. Seegmiller, both of Air Force Academy, Colo. 80840
Filed Aug. 12, 1970, Ser. No. 63,224
Int. Cl. H01m *11/00*
U.S. Cl. 136—83 R **3 Claims**

An electrochemical cell of the thermal type. The cell comprises two interconnected compartments with separate aluminum electrodes positioned in each compartment. The electrodes in turn are immersed in a solid electrolytic material comprising a mixture of aluminum chloride and sodium chloride.

3,671,323
HYDROPHOBIC LAYERS FOR GAS DIFFUSION ELECTRODES
Yehuda L. Sandler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 12, 1970, Ser. No. 2,042
Int. Cl. H01m *27/04, 13/02*
U.S. Cl. 136—86 D **10 Claims**

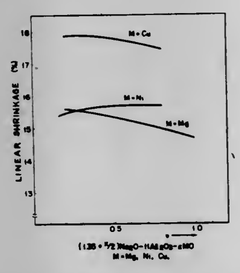
A gas diffusion electrode having a gas entrance side and an electrolyte contacting side for use with a liquid

electrolyte and a gas in an electrochemical cell, comprises a coherent porous body, containing an electrical conductor



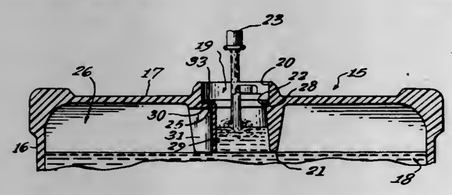
and a hydrophobic outer layer on the gas entrance side, the hydrophobic outer layer comprising cloth material impregnated with wet proofing polymer.

3,671,324
SOLID ELECTROLYTE
Atsuo Imai, Mitsuo Harata, Yoshitaka Ogawa, and Shoji Hasegawa, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 2, 1970, Ser. No. 42,792
Claims priority, application Japan, June 5, 1969, 44/43,635
Int. Cl. H01m *43/06*
U.S. Cl. 136—153 **2 Claims**



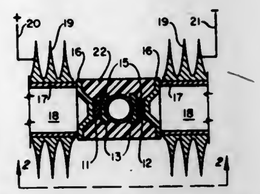
In the β-alumina solid electrolyte using the phenomenon of conduction of Na^+ ion, a solid electrolyte formed by adding and baking 0.9 to 20 mol percent of CuO calculated in terms of the amount of a mixture of Na_2O, Al_2O_3 and CuO.

3,671,325
SEALING ASSEMBLY FOR STORAGE BATTERIES
Verlin A. Mocas, Indianapolis, Ind., assignor to The Richardson Company, Melrose Park, Ill.
Filed Apr. 27, 1970, Ser. No. 32,044
Int. Cl. H01m *7/00*
U.S. Cl. 136—178 **3 Claims**



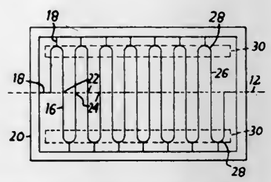
A sealing assembly for the cell compartment of an electric storage battery which precludes electrolyte overfilling and comprising a rotatable sealing means mounted on a filling well and cooperable with the cell compartment capping means so as to close the void space within the cell compartment to the atmosphere during filling and open the void space when the capping means close the filling well.

3,671,326
THERMOELECTRIC ASSEMBLIES
Thore M. Elfving, 433 Fairfax Ave., San Mateo, Calif. 94402
Continuation of application Ser. No. 781,672, Oct. 10, 1968, which is a continuation of application Ser. No. 460,209, June 1, 1965. This application Dec. 4, 1969, Ser. No. 876,161
Int. Cl. H01v *1/30, 1/32*
U.S. Cl. 136—205 **7 Claims**



A thermoelectric assembly having bimetallic junction bridge elements comprised of copper in contact with end plates permanently secured to the semiconductor material to conduct the electric current passing through the semiconductor material and aluminum fins for heat exchange to air.

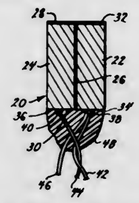
3,671,327
MULTIJUNCTION THERMOCOUPLES
Frank Munro Gay, Felixstowe, Suffolk, England, assignor to A. C. Cossor Limited, Harlow, Essex, England
Filed Mar. 12, 1969, Ser. No. 806,435
Claims priority, application Great Britain, Mar. 13, 1968, 12,260/68
Int. Cl. H01v *1/02*
U.S. Cl. 136—225 **3 Claims**



A multijunction thermocouple is made by etching a metal foil having differing metals to either side of a boundary line, so as to leave a pattern which zig-zags across the boundary line and forms a row of junctions along the boundary line.

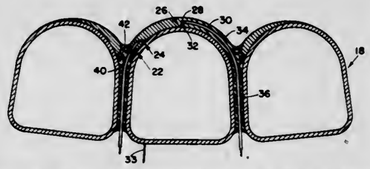
3,671,328
SEMICONDUCTOR TEMPERATURE SENSITIVE MEANS
William Paul Dixon, Florissant, Mo., and David N. Kendall, Alton, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed Aug. 28, 1967, Ser. No. 663,757
Int. Cl. H01v *1/04*
U.S. Cl. 136—230 **11 Claims**

A temperature measuring thermocouple device constructed of at least two semiconductor materials having differing thermoelectric properties, said materials having adjacent surfaces arranged and constructed to form a thermoelectric junction therebetween for exposing to a temperature condition to be sensed and measured, said device also having electrical connection means attached



to each of the semiconductor materials at plates thereon remote from the junction for connection to suitable meter means.

3,671,329
APPARATUS FOR SENSING TEMPERATURE
Ronald G. Huff, North Olmsted, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Nov. 18, 1969, Ser. No. 877,717
Int. Cl. G01k *7/02, 13/02;* H01v *1/04*
U.S. Cl. 136—233 **12 Claims**



Measuring the surface temperature of a wall heated by a flowing fluid without disturbing the foundry layer. A thin electrical conductor forming a thermocouple junction is covered by a layer of protective material to guide the flow of fluid over the junction.

3,671,330
REMOVAL OF ACCEPTOR IMPURITIES FROM HIGH PURITY GERMANIUM
Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Oct. 21, 1970, Ser. No. 82,788
Int. Cl. C22b *41/00*
U.S. Cl. 148—1.6 **8 Claims**

Ultra-pure germanium is prepared free of acceptor impurities by melting zone refined, or comparable purity, germanium in a quartz crucible and growing single crystals from the melt by seed crystal withdrawal ingot growth. The process is repeated until the desired purity is obtained. Prior to re-use of previously used crucibles, crucibles are etched to remove acceptor-quartz reaction product from the surface thereof.

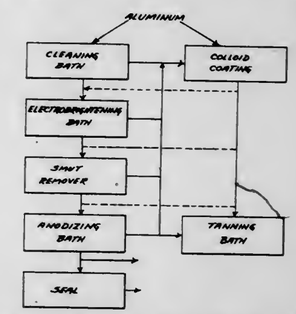
3,671,331
COATED METAL AND METHOD
Irving Malkin, University Heights, Bert E. Palm, Mentor, Jon A. de Ridder, Ashtabula, and Victor V. Germano, Mentor-on-the-Lake, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Continuation-in-part of application Ser. No. 729,918, May 17, 1968. This application Mar. 16, 1970, Ser. No. 20,085
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.2 **25 Claims**

A weldable, adherent coating provides enhanced corrosion protection for metal substrates as well as augmenting paint adhesion to such substrates. The coating is substantially resin-free and comprises a pulverulent metal in intimate mixture with the residue from a hexavalent-chromium-containing coating composition for metal substrates. The residue is water insoluble and is obtained by heating the substrate containing applied coating composition and also containing the pulverulent metal.

3,671,332
METAL TREATING PROCESS
Werner Rausch, Stierstadt, Taunus, and Hans Young Oel and Siegfried Moller, Frankfurt am Main, Germany, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed July 15, 1969, Ser. No. 841,993
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.17 **3 Claims**

An immersion phosphating process for iron and steel wherein the steel is contacted at room temperature to 50° C. with a zinc phosphate solution containing nitrite and at least one soluble reducing sulfur-oxygen compound in which the sulfur has a positive valence of from 2 to 5. Suitable compounds include Na_2SO_3, $Na_2S_2O_3$, $Na_2S_2O_4$ and $Na_2S_2O_5$.

3,671,333
COATED REFLECTIVE SURFACE AND METHOD OF MAKING SAME
Benjamin Mosier, Houston, Tex., assignor to Esquire, Inc.
Filed June 9, 1969, Ser. No. 831,617
Int. Cl. C23f *7/06*
U.S. Cl. 148—6.27 **25 Claims**



Reflective aluminum surface for high powered fixtures are improved by applying a natural or synthetic hydrophilic colloid to the surface. Usually the colloid is applied during anodizing of the aluminum surface. In one form the colloid is tanned or cross-linked to provide a more durable coating. In an especially preferred embodiment, the colloid and tanning agent are both present in the anodizing bath so that the colloid forms a collidate and is tanned during anodizing. In any event, the colloid is chemically absorbed (chemisorbed) and/or electrolitically deposited on the surface. The coatings are much thinner, e.g. 1/10 to 1/5 the thickness of normal anodized coatings.

3,671,334
HIGH-STRENGTH STEEL HAVING AGING PROPERTIES
John H. Bucher, Bethel Park, and John F. Held, Verona, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed Aug. 7, 1970, Ser. No. 62,073
Int. Cl. C21d *7/14;* C22c *39/54*
U.S. Cl. 148—12.3 **14 Claims**

Steels having the following composition: .08 to .18% carbon; .3 to 1.0% manganese; .01 to .05% columbium; .008 to .014% nitrogen; .10% maximum silicon; less than

a total of approximately .02% of the nitride-forming elements aluminum, zirconium, vanadium and titanium; and the balance essentially iron, after appropriate processing, have yield strengths of 50,000 to 70,000 p.s.i. in hot-rolled and cold-rolled conditions and yield strengths of 70,000 to 90,000 p.s.i. after straining and aging.

3,671,335
NON-REACTIVE REFRACTORY SEPARATING COATINGS FOR ELECTRICAL STEELS
Norman M. Pavlik, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Original application Nov. 6, 1967, Ser. No. 681,026, now Patent No. 3,523,837. Divided and this application Mar. 25, 1970, Ser. No. 22,682
Int. Cl. H01f 1/18
U.S. Cl. 148—28 3 Claims

An aqueous slurry comprising about 60% by weight of Al_2O_3, based on the weight of the water, and small amounts of polyvinyl alcohol and an organic suspending agent (more particularly, a cellulosic suspending agent), is applied to electrical sheet steel and dried thereon to provide a relatively thin and uniform separating coating. A plurality of such coated sheets may be stacked or a single such sheet may be coiled for final annealing at elevated temperature.

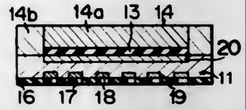
3,671,336
HIGH-STRENGTH PLAIN CARBON STEELS HAVING IMPROVED FORMABILITY
Michael Korchynsky, John David Grozier, and John L. Mihelich, Bethel Park, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
No Drawing. Filed July 16, 1969, Ser. No. 842,338
Int. Cl. C22c 39/54
U.S. Cl. 148—36 6 Claims

Fully killed high-strength plain carbon steels consisting essentially of .06% to .20% carbon, .4% to 1.2% manganese, .005% to .3% silicon, .04% maximum sulfur, .04% maximum phosphorus, an inclusion shape control agent comprising .05% to .20% zirconium, or .01% to .10% of rare earths or .01% to .10% mischmetal, balance iron are characterized in a hot-rolled finished condition by a yield strength in excess of 35,000 p.s.i., an ultimate tensile strength in excess of 55,000 p.s.i., ductility as measured by percent elongation (2 inches) in excess of 30%, good toughness and superior formability. The steels are hot-rolled finished in the temperature range 1550° F. to 1650° F., cooled at a rate within the temperature range 20° F. to 135° F. per second and collected by coiling or piling within a temperature range of 900° F. to 1200° F., preferably between 1025° F. to 1175° F.

3,671,337
PROCESS FOR PRODUCING GRAIN ORIENTED ELECTROMAGNETIC STEEL SHEETS HAVING EXCELLENT MAGNETIC CHARACTERISTICS
Ko Kunai, Minoru Motoyoshi, Kiyoshi Tanaka, and Yasuhira Hakiwara, Himeji, Japan, assignors to Nippon Steel Corporation, Chiyoda-ku, Tokyo, Japan
Filed Feb. 5, 1970, Ser. No. 8,926
Claims priority, application Japan, Feb. 21, 1969, 44/13,074
Int. Cl. H01f 1/16
U.S. Cl. 148—111 8 Claims

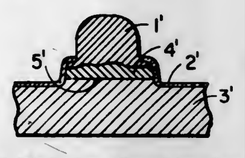
A process for producing grain oriented electromagnetic steel sheets having excellent magnetic characteristics. The steel contains MnS within a critical range and the Si content of said steel is controlled by the inclusion therein of Al as a deoxidant. The process comprises slab-heating a slab of the above-described steel at about 1150° C. to about 1280° C. and then hot rolling the steel followed by a two-step cold-rolling operation with an intermediate annealing step.

3,671,338
METHOD OF MANUFACTURING A SEMICONDUCTOR PHOTO-SENSITIVE DEVICE
Akihiro Fujii, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 5, 1969, Ser. No. 882,679
Claims priority, application Japan, Dec. 9, 1968, 43/89,594
Int. Cl. H01l 7/36, 5/00; C23c 13/00
U.S. Cl. 148—175 12 Claims



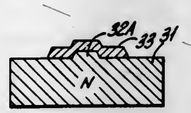
A method of manufacturing a semiconductor photo-sensitive device includes the steps of forming a poly crystal formation layer on the flat surface of an N-type semiconductor substrate excluding the peripheral edge thereof, depositing a crystal layer on the surface including a poly crystal region overlaying the poly crystal formation layer, forming a plurality of PN junctions in the opposite surface of the substrate, and removing the poly crystal region, thereby forming a recess structure substrate.

3,671,339
METHOD OF FABRICATING SEMICONDUCTOR DEVICES HAVING ALLOYED JUNCTIONS
Hideo Tateno and Kunikaru Nemoto, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Sept. 25, 1969, Ser. No. 861,080
Claims priority, application Japan, Sept. 30, 1968, 43/71,619
Int. Cl. H01l 7/46
U.S. Cl. 148—179 2 Claims



A method of fabricating alloyed junction semiconductor devices is disclosed in which the junction is prepared in the form of a mesa having a predetermined position and configuration. The alloy junction is formed within that protrusion, thereby to control the spread of the alloying material.

3,671,340
TRANSISTOR DEVICE WITH PLATEAU EMITTER AND METHOD FOR MAKING THE SAME
Toshiaki Irie, Katsuo Sato, and Yoshiyuki Nanko, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Application May 14, 1969, Ser. No. 827,101, now Patent No. 3,530,343, dated Sept. 22, 1970, which is a continuation of application Ser. No. 571,204, Aug. 9, 1966. Divided and this application Feb. 6, 1970, Ser. No. 9,340
Int. Cl. H01l 7/44
U.S. Cl. 148—187 2 Claims



A semiconductor device and a method for making the same, in which diffusion of impurities forming the collector and emitter areas of the device are confined to raised portions of the substrate. Undesired lateral diffusion of the impurities is thus eliminated.

3,671,341
DENSE PROPELLANT COMPOSITION
Arthur Jack Dierolf, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed June 24, 1965, Ser. No. 467,826
Int. Cl. C06d 5/06
U.S. Cl. 149—19 3 Claims

A propellant which has a flame temperature of 4700° F. or lower. It consists of a mixture of Teflon, Viton, a dense metal oxidizer such as mercuric oxide, and a heavy metal such as uranium.

3,671,342
DYNAMITE COMPOSITION CONTAINING EXPANDED THERMOPLASTIC BEADS
Frank E. Slawinski, Tamaqua, Pa., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Filed Jan. 2, 1970, Ser. No. 424
Int. Cl. C06b 1/00, 1/04, 19/04
U.S. Cl. 149—21 12 Claims

A dynamite composition comprising an inorganic oxidizer salt, a liquid sensitizer, a gelatinizing agent, and expanded thermoplastic beads and a method of making it. Thermoplastic beads, preferably of polystyrene, containing a blowing agent such as entrapped gas are expanded with heat and are mixed with the inorganic oxidizer salt, the liquid sensitizer, and the gelatinizing agent.

3,671,343
COMPOSITION FOR EXPLOSIVES COMPRISING AN ALLOY OF MAGNESIUM AND CERIUM
Heinz Gawlick, Furth, Bavaria, Gunther Marondel, Erlangen, and Werner Siegelin, Stein bei Nurnberg, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
No Drawing. Filed Oct. 31, 1969, Ser. No. 873,108
Claims priority, application Germany, Nov. 2, 1968, P 18 06 548.0
Int. Cl. C06b 15/00
U.S. Cl. 149—37 13 Claims

Composition of matter suitable for use as an explosive primer or noisemaker comprising:

(a) 20–70 wt. percent of an alloy of cerium and magnesium in the proportion of cerium to magnesium of 4:6 to 8.5:1.5.

(b) 80–30 wt. percent of an inorganic oxidizer for explosives.

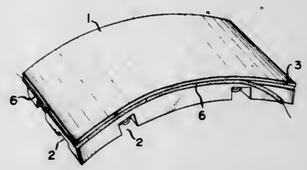
3,671,344
PROCESS OF ETCHING METAL WITH AMMONIUM PERSULFATE WITH RECOVERY AND RECYCLING
John S. C. Chiang, Cranbury, and Bernard J. Hogya, Sayreville, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed Dec. 4, 1970, Ser. No. 95,398
Int. Cl. C23f 1/00; H05k 3/00
U.S. Cl. 156—19 7 Claims

Process for etching copper with an aqueous persulfate solution, in which the etching solution is repeatedly reactivated over an extended period of time by repeated removal of metal sulfate values and ammonium sulfate and in which substantial hydrolysis of the persulfate occurs during said extended period. A compound yielding an orthophosphate ion is added to the composition of the etching solution during this period to maintain the total phosphate ion concentration at 0.1 to 0.35 M/l. and at a pH of 1.2 to 1.8.

3,671,345
POROMERIC MATERIAL HAVING A PATENT LEATHER-TYPE FINISH AND PROCESS FOR MAKING
Jon F. Barnes and James L. Johnson, Akron, Ohio, assignors to The General Tire & Rubber Company
No Drawing. Filed Dec. 11, 1969, Ser. No. 884,328
Int. Cl. B32b 5/18
U.S. Cl. 156—77 16 Claims

A process of making a poromeric material with a patent leather-type finish comprising the steps of casting a layer of phase-invertable polymer solution, comprising an extended urethane polymer, a polyvinyl chloride resin, and a water miscible solvent, onto a releasable substrate, placing the layer in a steam atmosphere to phase-invert the solution and to produce a poromeric material with a patent leather-type finish on the side of the material adjacent the releasable substrate, drying and removing the poromeric material from the releasable substrate. This invention also includes the products made by this process.

3,671,346
METHOD OF WATER SEALING SEGMENTS
Yoshiro Tsuzuki, 808 Seijo-cho Setagaya-ku, Tokyo, Japan
Filed Jan. 16, 1969, Ser. No. 792,236
Claims priority, application Japan, Nov. 11, 1968, 43/79,941; Dec. 10, 1968, 43/90,062
Int. Cl. F16l 13/12; H05b 3/10
U.S. Cl. 156—145 1 Claim

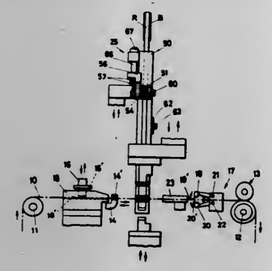


A system for sealing joints between segments arranged beside each other to line a cavity such as a tunnel. Each segment has a grooved side edge abutting an adjoining segment to form a joint therewith. A bituminous material is situated within the groove at the joint and an electrical conductor is also situated in the groove, current being supplied to the conductor for heating the bituminous material so that it will spread and fill the joint. The supply of electrical current to the conductor is then terminated so that the bituminous material will harden in the joint, providing an effective water seal.

3,671,347
METHOD AND APPARATUS FOR ATTACHING A REINFORCING MATERIAL TO A SLIDE FASTENER CHAIN
Kelichi Yoshieda, Kurobe-shi, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 3, 1970, Ser. No. 86,416
Int. Cl. B32b 31/10; B65c 9/36
U.S. Cl. 156—160 8 Claims

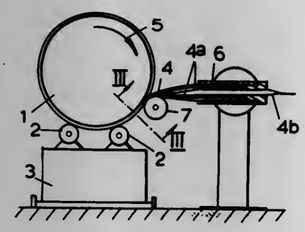
Method and apparatus for attaching a reinforcing material to a slide fastener chain wherein the reinforcing material is secured in position on the slide fastener chain in a series of steps in a mechanical cycle comprising advancing a fastener chain in a horizontal path of travel to a predetermined point at which the mechanical cycle commences, holding a predetermined length of the chain taut in position, positioning a reinforcement strip substantially at right angles to the plane of the chain and moving the said strip transversely across the path of

travel of the chain until it is folded in half on itself around one edge of the space section of the chain, and pressing the reinforcement strip adhesively into position



on the said space section, the said mechanical cycle being coordinated with intermittent advancement of the fastener chain.

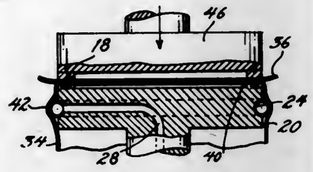
3,671,348
PRODUCTION OF TUBULAR ARTICLES
Kenneth Kemsey-Bourne, Harpenden, England, assignor to English Calico Limited, Manchester, England
Filed Mar. 23, 1970, Ser. No. 21,937
Claims priority, application Great Britain, Mar. 29, 1969, 16,592/69
Int. Cl. B65h *81/00*
U.S. Cl. 156—187 **8 Claims**



The present invention invention relates to improvements in the production of tubular articles produced by forming a strip of a plastics material having an insert embedded therein, helically winding the strip onto a mandrel so that adjacent edge portions overlap, bonding or welding the overlapping edge portions, the improvement being that reinforcing ribs, integral with and angled away from the continuous container wall are formed by using as the insert, a length of profiling strip and forcing a portion of the plastics material of the strip into conformity with a portion of the embedded profiling insert.

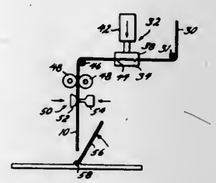
3,671,349
APPARATUS AND METHOD OF MAKING ROUND BOTTOM PLASTIC LINERS FOR SHIPPING CONTAINERS
Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa. 19203
Filed Aug. 22, 1969, Ser. No. 852,418
Int. Cl. B29c *17/06*
U.S. Cl. 156—229 **5 Claims**

A method of making a removable plastic liner for containers wherein a flexible plastic tubular section is loosely draped over a relatively narrow disc-like mandrel until a relatively short end portion thereof projects beyond the mandrel and mechanically or pneumatically expanding a relatively narrow area of the tubular section at the mandrel to cause the projecting portion to turn inwardly and form a flange to which a bottom sheet can be readily



bonded, the invention making it possible to drape the tubular section over and remove it from the mandrel with relative ease.

3,671,350
METHOD OF PRODUCING A PLASTIC SHOPPING BAG
Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa. 19203
Filed Dec. 24, 1969, Ser. No. 887,807
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—250 **5 Claims**



Method for making an over-the-arm plastic bag of polyethylene and similar thermoplastic resins which comprises feeding tubular side-gusseted plastic stock through a perforator or cutter station and then through a heat sealing station where a generally rectangular perforated or cut area is produced every two bag lengths in the front and back panels and gussets of the stock and the heat sealing and severing is effected simultaneously transversely of the stock centrally between the perforated or cut areas to form the bottoms of the bags and transversely across and bisecting the perforated or cut area to produce the tops of the bags without opening the welds themselves.

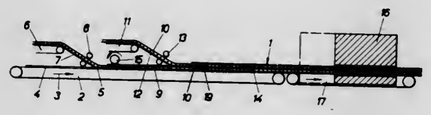
3,671,351
METHOD OF MAKING A MAGNETIC RECORDING MEMBER
Sidney Ties, Stevenage, England, assignor to International Computers Limited, London, England
Filed June 23, 1969, Ser. No. 835,575
Claims priority, application Great Britain, July 9, 1968, 32,713/68
Int. Cl. B44c *1/06*
U.S. Cl. 156—233 **4 Claims**

A method for producing a magnetic recording member having a film of magnetic material with a highly finished surface on a backing layer is disclosed. The method includes the steps of preparing a glass disc such that the disc surface is of near optical flatness, depositing a film of magnetic material on the disc, bonding a backing layer to the film and stripping the glass disc from the film to reveal a highly finished surface on the film of magnetic material, the film being bonded to the backing layer. A two-sided magnetic recording member may be produced by placing two three-layer structures back to back and stripping both glass discs to reveal two highly finished magnetic films.

3,671,352
METHOD FOR MAKING PANTY HOSES
Erik Andersen, Holte, Denmark, assignor to Hans Christian Andersen, Kastanienbaum, Switzerland
Filed June 19, 1969, Ser. No. 834,780
Claims priority, application Denmark, June 20, 1968, 2,941/68
Int. Cl. B32b *31/00*
U.S. Cl. 156—267 **4 Claims**

A panty hose is made by first seaming the upper portions of two prolonged stockings together and then making a slit through the joined zones of the stockings. According to an embodiment the stockings are placed on elongated forms with pressure feet facing one another, and then the forms or only the pressure feet are pressed together twice, a plate provided with glue being introduced between the stockings the first time.

3,671,353
PROCESS FOR THE CONTINUOUS PRODUCTION OF LAMINATED WOOD OF THE PARQUET TYPE
Leif T. Olsen, Boen, Norway, assignor to Boen Bruk, Kristiansand S., Norway
Filed Mar. 26, 1969, Ser. No. 810,589
Claims priority, application Norway, Apr. 1, 1968, 1,252; June 27, 1968, 2,554; Feb. 11, 1969, 526
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—302 **4 Claims**

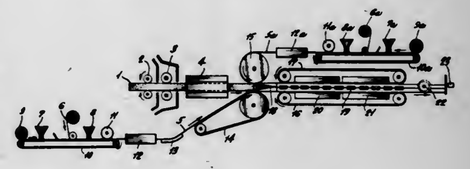


The invention relates to a process for the step by step pressing of material which is fed continuously, particularly wood laminate such as laminated parquet, and the like, in which the pressing is carried out by means of a press which can move to and fro in the feed direction of the material and supported by rollers or wheels. The press carries out the pressing and the heating of the laminate in order to harden the glue while moving in the feed direction of the material and which is open during the return movement, and the press is pushed forward by the material sheet itself and one thereby achieves a desired mutual compression of the lamellae in the horizontal direction.

3,671,354
METHOD OF MAKING RESIN-IMPREGNATED SHEET LAMINATED TO A SUBSTRATE
Toshio Takikawa, Toyonaka-shi, Osaka-fu, Kouji Satomo, Amagasaki-shi, and Takashi Kodama, Nishinomiya-shi, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan
No Drawing. Filed Nov. 6, 1968, Ser. No. 773,970
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **6 Claims**

Method of manufacturing remarkably improved decorative laminate boards by utilizing resin comprising diallyl phthalate prepolymer substantially free from diallyl phthalate monomer, and a polyester composed of specific components in specific amounts; and resin-impregnated sheets in use for the manufacturing of said laminate boards.

3,671,355
CONTINUOUS PRODUCTION OF COMPOSITE PANELS, PARTICULARLY FOR BUILDINGS
Jean Paymal, Clermont, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France
Filed Aug. 12, 1968, Ser. No. 752,043
Claims priority, application France, Aug. 18, 1967, 118,250
Int. Cl. C09j *5/00*
U.S. Cl. 156—324 **16 Claims**



The continuous production of composite structural panels embodying a continuous core of cellular organic or mineral material, covered on one or more faces and edges thereof with a sheet of heat-hardenable resinous material, preferably reenforced with mineral fibrous material, which is pregelified before its application to the core, and which is subsequently joined to the latter by pressing them together while the resinous material undergoes final polymerization and hardening, preparatory to the controlled cooling thereof and cutting into panels of desired length. The facing layer for all surfaces of the panel may be a unitary one having an original width which is at least as great as the perimeter of the section of the finished panel. Composite structural panels particularly suitable for walls, flooring and partitions may be formed with a facing of ceramic material on one surface of the core, and a sheathing layer of resin and reenforcement therefor encompassing the other three surfaces thereof and adhering to the borders at the underside of the ceramic facing layer. Many improvements in the composite panel and in the mode of manufacture thereof are attained by interposing an intermediate layer of flexible material, such as a foam resin, between the core and the facing layers of the panel.

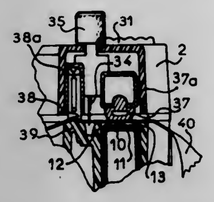
3,671,356
METHOD OF FORMING A PEELABLE SEAL BETWEEN PROPYLENE POLYMER AND A CARBOXYLATED POLYPROPYLENE COATED SURFACE
Henry J. Keinanen, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 8, 1970, Ser. No. 44,505
Int. Cl. C09j *5/00, 7/00*
U.S. Cl. 156—309 **11 Claims**

A cleanly separable seal between a propylene polymer layer heat sealed to a surface coated with a carboxyl modified polypropylene containing layer is obtained by treating at least one of the layers to be sealed with a normally solid thermoplastic vinyl aromatic polymer or a polar polymer before the two layers are heat sealed together.

3,671,357
APPARATUS FOR WELDING THIN-SHEET PLASTICS MATERIALS
Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France
Filed Mar. 4, 1971, Ser. No. 120,992
Claims priority, application France, Apr. 10, 1970, 7013108
Int. Cl. B30b *15/34*; B32b *31/00*
U.S. Cl. 156—359 **10 Claims**

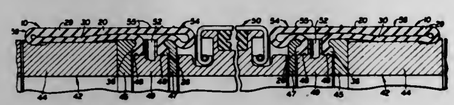
The invention essentially relates to an apparatus for welding thin-sheet plastics materials including support

means secured to a casing and one heating tape stretched upon said support means, said tape having one end connected to a movable element so as to cause the displacement of said movable element during the lengthening of the tape; thermostatic switch means carried by a member



pivotably mounted in said casing; means for actuating the said pivotable member; and a cover hingedly mounted on said casing and provided with means for pressing the said sheets and for cutting them outside the weld line thus formed.

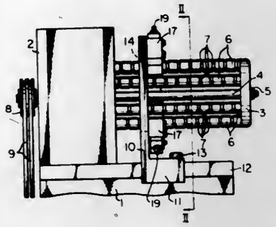
3,671,358
INFLATABLE PLY TURNUP BLADDER FOR A TIRE BUILDING MACHINE
Virgil E. Healey, Akron, and Walter W. Lauer, Canton, Ohio, assignors to The General Tire & Rubber Company
Filed Apr. 2, 1970, Ser. No. 25,182
Int. Cl. B29h *17/22*
U.S. Cl. 156—401 **7 Claims**



A ply turnup bladder for a tire building machine consists of a folded, specially dimensioned, all rubber sleeve which has been molded about a longitudinal axis of symmetry. The sleeve as molded has a uniform cross-section along any one plane normal to its axis and comprises an axially extending outer bladder wall portion of major outside diameter and an axially extending inner wall portion of minor outside diameter, which portions are integrally joined by an annular or circular "fold point." The terminal portions of the sleeve are substantially thickened rings or flanges used to mount the sleeve on a rigid, annular bladder support. The cross-section of the outer bladder wall portion of the sleeve preferably varies in thickness in the axial direction attaining maximum thickness near the fold point of the sleeve. Turnup bladders of this type are structurally simpler, less expensive, and longer lasting than many bladders presently in use.

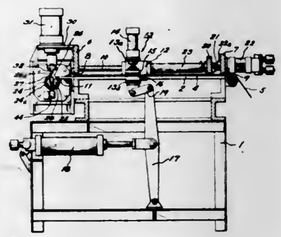
3,671,359
APPARATUS FOR CONTINUOUSLY MAKING A HOSE
Hiroyuki Sawada, 243 Sanjo-cho, Ashiya-shi, Japan; and Saburo Miyawaki, 21–11 Koshienguchikitamachi; and Hajime Ishikawa, 5–25, 2-chome Wakakusa-cho, both of Nishinomiya-shi, Japan
Filed Dec. 23, 1969, Ser. No. 887,673
Int. Cl. B65h *55/04*
U.S. Cl. 156—436 **6 Claims**

An apparatus for continuously making a hose which comprises a plurality of similar rolls each formed with helical grooves thereon and arranged so as to collectively form a cylindrical surface defined by the outer peripheries thereof, the grooves on each of these rolls being disposed so that they are successively axially offset from the grooves on the preceding roll by a dimension derived by dividing the distance between axially adjacent



grooves by the number of the rolls, so that a hard resilient wire supplied into the grooves on the rotating rolls is formed into a coil while a tacky strap of hose wall material is entrained onto the wire, so that the adjacent edges of the tacky hose wall material helically rotating are joined together to thereby form a hose.

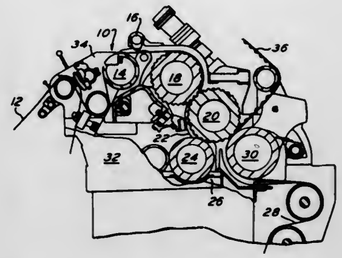
3,671,360
APPARATUS FOR FORMING HOLLOW TUBE
Takashi Ochi, Suwahara-Danchi, Japan, assignor to Yayo Plastic Yoki Co., Ltd., Tokyo, Japan
Filed May 5, 1970, Ser. No. 34,646
Int. Cl. B29d *23/10*
U.S. Cl. 156—466 **2 Claims**



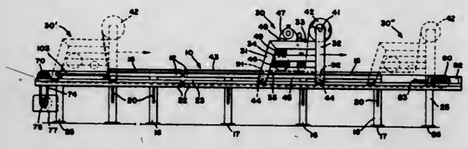
An apparatus for forming hollow tubes wherein a film sheet of resilient and thermo-soluble synthetic resin material is fed into a cylinder body through an elongated axial slot provided on a barrel portion of the cylinder body, and after the film sheet is curled along an inner wall of the cylinder body and its leading edge is overlapped with one side of the film sheet the leading edge is welded to the film sheet and finally the film sheet is sheared at the welded portion.

3,671,361
LOW SOUND LEVEL SINGLE FACER MACHINE
Walter C. Morrison, Marlton, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Nov. 9, 1970, Ser. No. 88,043
Int. Cl. B31b *1/20*
U.S. Cl. 156—472 **6 Claims**

A single facer machine is disclosed having bowed flutes on the corrugating rollers. The curvature of the bow of the flutes is chosen so that the middle portion of the flutes is disposed from a line interconnecting the ends of a flute by a distance corresponding to one pitch of the flutes. This results in the crest of the flutes always being in engagement with a smooth pressure roll, thereby substantially decreasing the high sound level of such machines.



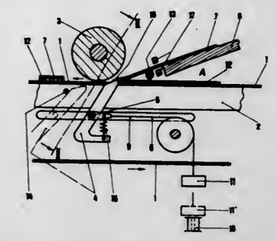
3,671,362
WALL COVERING APPLICATOR
Edwin A. Pierce, Richard W. Knob, and Samuel O. Roth, Piqua, and Emery L. McKinney, Troy, Ohio, assignors to Inland Systems, Inc., Piqua, Ohio
Filed Mar. 30, 1970, Ser. No. 23,812
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—552 **2 Claims**



Apparatus for applying a continuous sheet of a wall covering material to a wall panel includes a table for supporting the panel in a horizontally disposed position, and a carrier which carries a roll of the covering material, an adhesive spray system, and a machine driven rotatable brush. Rails extend along opposite sides of the table and are engaged by rollers on the carrier, which is moved along the rails by a cable and sheave arrangement. As the carrier moves along the rails, and hence, over the surface of the panel supported on the table, adhesive is sprayed on the panel upper surface, the sheet material is unrolled, and the rotating brush presses the sheet material against the adhesive covered panel surface.

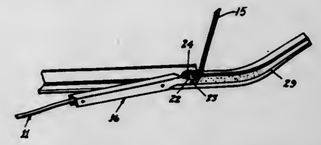
3,671,363
SHEET LAMINATING MACHINE FOR FEEDING LAMINATED SETS TO A PRESS ROLLER
Karl Bruder, Sonnmatt, Walchwil, Switzerland
Filed Mar. 9, 1970, Ser. No. 17,393
Claims priority, application Germany, Mar. 11, 1969, P 19 12 150.7
Int. Cl. B65h *9/14;* **B32b** *31/20*
U.S. Cl. 156—556 **11 Claims**

Means for insuring alignment between components of multiple sheets to be laminated. Aligning means consist of a stop engaging the leading edges of the sheets to be laminated as same are fed toward a pressure roller, said stop being moved by said sheets in response to the feeding movement of the sheets themselves toward said roller. Upon reaching said roller the stop is moved downwardly by the roller to a point below the plane of said sheets virtually simultaneously with the commencement of the pressure applying operation by the pressure roller onto said sheets. The stop is then returned to a point of beginning



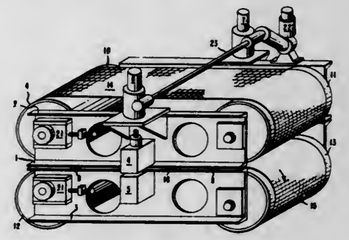
by any convenient means. As soon as it passes beyond the trailing edges of the sheets being laminated it returns to its normal position and is ready for engagement by and guiding of the next following set of sheets to be laminated.

3,671,364
FOAM TAPE APPLICATOR
Joseph C. Guinan, Troy, N.Y., assignor to Norton Company, Troy, N.Y.
Filed July 7, 1970, Ser. No. 52,936
Int. Cl. B32b *31/20, 31/10*
U.S. Cl. 156—574 **5 Claims**



Apparatus for application of foam tape is provided comprising an elongated, U-shaped body member through which the foam tape is transported and located at one end thereof is an applicator roll for applying the foam tape to a desired member.

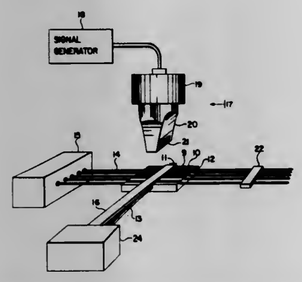
3,671,365
APPARATUS FOR COMPRESSING AND COOLING FIBER BATTS
Lloyd W. Cover, Jr., and Charles C. Webb, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 26, 1970, Ser. No. 5,542
Int. Cl. B30b *3/04;* **D21f** *1/40*
U.S. Cl. 156—580 **5 Claims**



An apparatus for compressing and cooling fibrous batts that includes spaced movable parallel belts supported by opposed roller support platens and driven by pairs of

spaced nip rolls. Each roller support platen comprises a plurality of rollers positioned in an overlapping staggered relationship with respect to each other with the opposed platens being positioned in a staggered relationship to each other to reduce belt deflection. An eccentric adjustment means attached to the entrance nip rolls is used to vary the gap between these rolls so that fibrous batts carried by the belts may be subject to an initial momentary high compression load.

3,671,366
ULTRASONIC WELDING OF THERMOPLASTICS
Hugh L. Miller, Downsview, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed June 19, 1970, Ser. No. 47,821
Int. Cl. B06b 3/00
U.S. Cl. 156—580 4 Claims



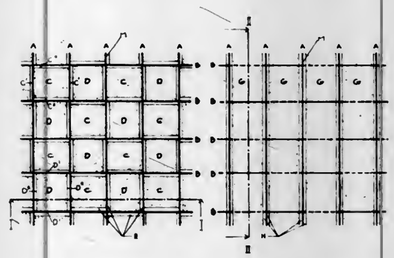
An ultrasonic vibrating device is used to weld together a pair of strips of thermoplastic material lying coplanar and disposed above and below a plurality of wires to form a ladder strapping insulating bond. The welding operation is performed within a molding cavity which restrains any melted plastic from leaking out from between the strips, thereby preventing the formation of flash along the welded edge.

3,671,367
ELONGATED DECORATIVE PLASTIC STRIP HAVING A GREENERY TOPPING SIMULATING FOLIAGE
Wesley S. C. Chin, 3934 S. Bronson Ave., Los Angeles, Calif. 90008, and Kou C. Yao, Culver City, Calif.; said Yao assignor to said Chin
Filed June 12, 1970, Ser. No. 45,793
Int. Cl. A41g 1/00
U.S. Cl. 161—27 6 Claims



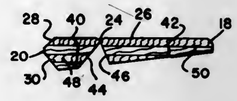
An integrally molded leaf-like decorative strip is provided for insertion in a U-shaped channel member. This strip is molded integrally in the form of a pair of half-base members joined together along a common edge by a living hinge about which said members may be folded. Further, integrally molded with at least one of said half-base members along an edge remote from the common hinged edge is a series of leaf-like protrusions extending away from the half-base member. When the two halves are folded about the living hinge and brought into abutment a decorative strip is formed which may be inserted in a supported upwardly facing U-shaped channel member, or otherwise utilized.

3,671,368
INSULATED REINFORCED BUILDING PANEL
Shelley W. Shelley, 53–B Pine Grove Condominium, Isla Verde, Puerto Rico 00914
Filed Dec. 24, 1970, Ser. No. 101,213
Int. Cl. B32b; E04b
U.S. Cl. 161—38 16 Claims



Insulating material is inserted within the openings of a typical wire mesh concrete reinforcing mat so that the insulation is firmly retained therein and occupies a substantial portion of, but not the entire opening. The insulated reinforcing mat is disposed within a closed mold of a configuration suitable for preparing a panel, and concrete or other suitable moldable building material is poured by gravity into the mold while the mold is inclined at an angle which preferably is about 30 to 90 degrees with respect to the horizontal.

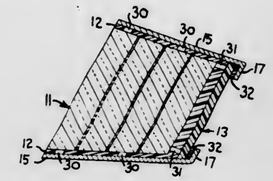
3,671,369
UNIVERSAL MOLDING STRIP FOR TRIMMING
Andrew M. Kvalheim, Petaluma, and Howard M. Wassem, Rohnert Park, Calif., assignors to Aim Products, Inc., Petaluma, Calif.
Filed May 6, 1970, Ser. No. 35,075
Int. Cl. B32b 3/10; E04c 2/40; E04f 19/02
U.S. Cl. 161—40 5 Claims



A multi-use molding strip for trimming comprising a pair of stock pieces, each of indeterminate length, and a flexible elastic decorative laminate joining the stock pieces together. Each stock piece includes inner walls facing each other diverging away from the elastic laminate so that the stock pieces may be rotated about a longitudinal axis defined by the junction of the laminate with the inner

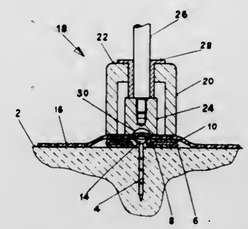
walls to accommodate a surface being trimmed. The strip may serve as a baseboard, ceiling corner trim, doorway molding, or as a wainscoting cap, to name a few uses.

3,671,370
INTEGRAL TRANSPARENT SAFETY GLASS ARMOR UNIT
Harry E. Littell, Jr., Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 46,336
Int. Cl. F41h 5/26; B32b 1/06
U.S. Cl. 161—43 7 Claims



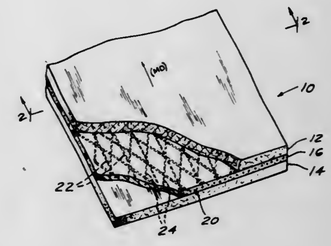
A transparent safety glass assembly comprising a laminated glass-plastic assembly comprising a plurality of alternate plies of glass and thermoplastic transparent interlayers of plasticized polyvinyl butyral arranged to provide an impact striking section, a transparent polyurethane plasticized in situ to provide a transition section and a transparent polycarbonate providing an impact absorption section is disclosed. The impact transition section also spaces the glass-plastic assembly from a casing in which the assembly is mounted.

3,671,371
DEVICE FOR ATTACHING A THERMOPLASTIC FOIL TO A SUPPORTING STRUCTURE
Emanuel Wolf, Horgen, Switzerland, assignor to Ironflex AG, Zurich, Switzerland
Original application Sept. 5, 1967, Ser. No. 665,393, now Patent No. 3,562,054, dated Feb. 9, 1971. Divided and this application Feb. 19, 1970, Ser. No. 12,689
Claims priority, application Switzerland, Sept. 7, 1966, 12,961/66; Sept. 26, 1966, 13,865/66
Int. Cl. B32b 7/08
U.S. Cl. 161—43 6 Claims



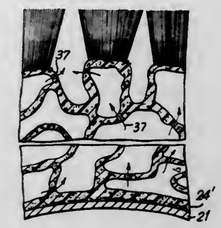
A device for attaching a thermoplastic foil at a supporting structure wherein the foil is heat sealed or welded to a holding plate formed by a metallic core and a thermoplastic cover layer. The holding plate is rigidly connected to the supporting structure and subsequently the foil is placed over the holding plate. Welding heat is generated by creating a high frequency field between the metallic core of the holding plate and an electrode placed on the side of the foil facing away from the holding plate. The metallic core of the holding plate forms a counter electrode.

3,671,372
LAMINATED PAPER WITH REINFORCING SCRIM
Paul Hoffman, 714 SW. 16th Ave., Gainesville, Fla. 32601
Filed Apr. 27, 1970, Ser. No. 32,275
Int. Cl. B29h 9/04; B32b 5/04
U.S. Cl. 161—58 16 Claims



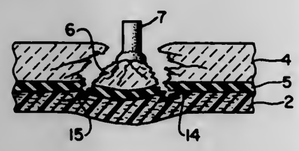
An extensible, reinforced laminated paper sheet having the characteristic of withstanding substantial impacts, formed by two superimposed sheets of extensible paper bonded together by a layer of hot-melt laminant having a scrim of polyester fibers embedded therein which transmits stretching forces through the sheets of paper to points remote from the zone of impact to substantially reduce the deformation of the extensible paper sheets in the area of impact.

3,671,373
PAINT APPLICATOR OR THE LIKE AND METHOD OF MAKING THE SAME
Josef Grewe, Hagerstown, Md., assignor to Electra Flock, Inc., New York, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,844
Int. Cl. B44d 3/00
U.S. Cl. 161—64 14 Claims



A paint applicator and method of making the same comprising an open-cell, yieldable synthetic foam backing material having flock adhesively secured directly to the foam surface, providing a free-flow path between the flock and the interior of the foam matrix. The invention relates further to a method of making an applicator or the like having the above described characteristics.

3,671,374
COMPOSITE ARMOR
Robert V. Kolarik, North Canton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio
Filed May 20, 1970, Ser. No. 39,951
Int. Cl. B32b 17/04, 17/10, 17/12
U.S. Cl. 161—93 2 Claims



Composite armor made from a glass-ceramic surface layer, and a resilient plastic-fiber glass substrata secured to the surface layer. The surface layer is about two-thirds of the weight of the armor and the plastic-fiber glass substrata preferably is about half as thick as the surface layer.

3,671,375
LEATHER-LIKE THREE LAYER LAMINATE
Edward C. Van Buskirk, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.
No Drawing. Original application Feb. 26, 1969, Ser. No. 802,636, now Patent No. 3,574,021, dated Apr. 6, 1971. Divided and this application Oct. 9, 1970, Ser. No. 79,632
Int. Cl. B32b 5/14, 5/18
U.S. Cl. 161—159 3 Claims

A novel, breathable, leather-like three layer laminate is produced having a fabric backing layer, an intermediate breathable sponge layer and an upper breathable surface layer by a method in which a substantially uniform mixture of a fluid organic plastic film forming material and a meltable material incompatible therewith is formed into a thin surface layer, there is formed on the thin layer a thicker body layer from a substantially uniform mixture of a fluid organic plastic film forming material containing a meltable material incompatible therewith, and a blowing agent, with said incompatible meltable material in each said layer being in a physical form having a bulk density less than its actual density, a fabric is applied to the body layer, the film forming material in the two layers is formed into a unitary film bonded to the fabric, the body layer is sponged by decomposing a blowing agent, and the incompatible material in the two layers is melted after a matrix has been formed of the two layers.

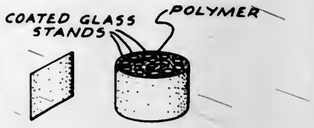
3,671,376
METHOD FOR PRODUCING FLAME-RETARDANT PLYWOODS
Takayoshi Okazaki, Kiroku Tashiro, and Koichiro Yanagida, Tokyo, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan
No Drawing. Filed Apr. 10, 1970, Ser. No. 27,428
Claims priority, application Japan, June 30, 1969, 44/51,030
Int. Cl. B32b 9/06, 21/14
U.S. Cl. 161—165 10 Claims

A method for rendering plywood flame-retardant using a difficulty-soluble phosphate whereby in a first embodiment, a paper sheet, plastic film or wooden sheet is bonded to the plywood with an adhesive containing said difficulty-soluble phosphate and in a second embodiment, a paper sheet is impregnated with said difficultly-soluble ammonium polyphosphate and is bonded to said plywood.

3,671,377
RIGID COMPOSITE PRODUCTS AND PROCESS FOR THE PREPARATION THEREOF
Alan A. Marra, 915 Sunset, Ann Arbor, Mich. 48103
Continuation-in-part of application Ser. No. 660,806, Aug. 15, 1967. This application July 29, 1970, Ser. No. 59,239
The portion of the term of the patent subsequent to Jan. 19, 1988, has been disclaimed
Int. Cl. B29j 5/00; B32b 21/02
U.S. Cl. 161—162 10 Claims

A process for the preparation of rigid composite products with similar physical characteristics in all dimensions or directions from a three dimensional skeletal structure formed of randomly oriented elongate sticks with multiple fibrous projections which maintain the elongate sticks in a loosely cohesive mass which is shaped or molded and made rigid with a binder is described. Various liquid binders both organic and inorganic are used which do not require compression of the cohesive mass and liquid binder in order to be hardened and develop bond strength for consolidating the product into formed or molded shapes.

3,671,378
GLASS FIBER REINFORCED COMPOSITE AND METHOD OF MAKING SAME
Massimo Baer, Longmeadow, and Joseph O. Campbell, Agawam, Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 4, 1969, Ser. No. 873,952
Int. Cl. B32b 5/16; D02g 3/36
U.S. Cl. 161—170 18 Claims



Disclosed herein is an improvement in the process for preparing composites from glass fibers and thermoplastic resins which comprises blending the thermoplastic resin matrix with glass concentrate capsules comprising 10 to 80% by weight of glass strands having a length in the range of from 1/32 to 3/4 inch, preferably from about 1/8 to about 1/4 inch, which strands are arranged in a collimated array and encapsulated within a thermoplastic resin matrix, wherein the individual fibers of the strands, the individual strands in the collimated array and the collimated array of glass strands are encapsulated in the thermoplastic resin matrix.

3,671,379
COMPOSITE POLYESTER TEXTILE FIBERS
Evan Franklin Evans, Kinston, and Norwin Caley Pierce, Greenville, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 747,420, July 10, 1968, which is a continuation-in-part of application Ser. No. 611,314, Jan. 24, 1967, which is a continuation-in-part of application Ser. No. 462,992, June 10, 1965, which in turn is a continuation-in-part of application Ser. No. 384,831, July 24, 1964. This application Mar. 9, 1971, Ser. No. 122,316
Int. Cl. D02g 3/02
U.S. Cl. 161—173 18 Claims

Helically crimpable and crimped bicomponent filaments comprising a laterally eccentric assembly of at least two synthetic polyesters. At least one of the components is a partly crystalline polyester in which the chemical repeat-units of its crystalline region are in a non-extended stable conformation that does not exceed ninety percent of the length of the conformation of its fully extended chemical repeat-units and is generally on the inside of the crimp helices formed when the assembly crimps, while at least one other polyester component is partly crystalline and the chemical repeat-units of the crystalline region more closely approach the length of the conformation of its fully extended chemical repeat-units. Yarns, fabrics, and the like produced from these filaments have a wide range of end uses.

3,671,380
UV TRANSMITTING BOROSILICATE GLASS COMPOSITION AND ARTICLE
Mir Akbar Ali, Evanston, and Alexis G. Pincus, Chicago, Ill., assignors to IIT Research Institute, Chicago, Ill.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,012
Int. Cl. C03c 13/00; D02g 3/00
U.S. Cl. 161—175 4 Claims

A glass suitable for the transmission of radiation in the near ultraviolet region and having a relatively low index of refraction rendering the glass suitable for cladding glass in the manufacture of ultraviolet transmitting composite fibers. The glass is composed of B_2O_3, SiO_2, Al_2O_3, and K_2O and is substantially free of ultraviolet absorbers.

3,671,381
ETCHED AND RIDGED POLYAMIDE MONOFILAMENT
John Edward Hansen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of application Ser. No. 834,213, June 9, 1969, which is a continuation-in-part of application Ser. No. 616,956, Feb. 17, 1967, and a continuation-in-part of application Ser. No. 673,287, Oct. 6, 1967. This application Sept. 2, 1970, Ser. No. 69,181
Int. Cl. D01f 7/06
U.S. Cl. 161—180 4 Claims

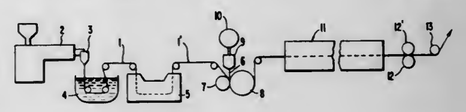


Polyamide monofilament with a surface which is irregularly ridged in a direction predominantly transverse to the length of the filament, as well as etched. A method for production thereof comprising passing filament through a tube under 100–150 p.s.i.g. of steam for 0.1–10 seconds. Such filaments are useful in brushes and textiles.

3,671,382
WATER AND HEAT RESISTANT ADHESIVE
Andrew Earl Pierce, Grand Island, N.Y., assignor to Borden Inc., New York, N.Y.
No Drawing. Filed June 17, 1970, Ser. No. 47,154
Int. Cl. B32b 15/08; C09j 3/24; C08f 45/24
U.S. Cl. 161—214 11 Claims

An aqueous adhesive dispersion containing: casein; a reactive copolymer of vinyl acetate with either methylol acrylamide, a (lower) unsaturated aliphatic acid or a mixture of said acrylamide and acid copolymers: a copolymer of vinyl acetate with a (lower) alpha-olefin; an acid generating salt having a volatile component; a phenylsulfonamide plasticizer for casein; and a sufficient quantity of a volatile alkalizing agent to impart a pH of about 6.5 to 7.5 to said dispersion. The dispersion can be used for laminating metal foil to cellulosic materials.

3,671,383
LAMINATED BIAXIALLY ORIENTED ISOTACTIC POLYPROPYLENE AND UNIAXIALLY ORIENTED ETHYLENE-PROPYLENE-FILMS
Rikita Sakata, Kohei Masuda, and Masanori Takashi, Yokkaichi-shi, Mie-ken, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Nov. 4, 1968, Ser. No. 772,957
Claims priority, application Japan, Nov. 4, 1967, 42/70,868
Int. Cl. B32b 27/08
U.S. Cl. 161—252 2 Claims



A heat-sealable laminated polypropylene film composed of a biaxially oriented isotactic polypropylene film and at least one uniaxially oriented ethylene-propylene copolymer film containing at least 75% by weight propylene. A process for the production of such a laminated polypropylene film.

3,671,384
GLASS CONCENTRATE CAPSULES
Massimo Baer, Longmeadow, and Joseph O. Campbell, Agawam, Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed Nov. 4, 1969, Ser. No. 873,799
Int. Cl. D02g 3/36
U.S. Cl. 161—170 21 Claims



Disclosed herein are glass concentrate capsules useful in forming reinforced thermoplastic resin composites, said

capsules comprising 10 to 80% by weight of glass strands having a length of from 1/32 to 3/4 inch which strands are arranged in a substantially collimated array within a thermoplastic resin matrix, wherein the individual strands in the collimated array and the collimated array of glass strands are encapsulated in the thermoplastic resin matrix.

3,671,385

FIBROUS CARBONACEOUS COMPOSITES AND METHOD FOR MANUFACTURING SAME

Paul E. Trent, Andersonville, and James E. Miner, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed July 17, 1970, Ser. No. 55,953

Int. Cl. D21h 5/18

U.S. Cl. 162—152 10 Claims

Carbonaceous composites are prepared by spraying an aqueous slurry containing discrete graphite fibers, a carbonizable resin in particulate form, and a water-soluble starch onto a porous mandrel coupled to a vacuum source for drawing off excess water from the formed structure. This structure is then heated to a temperature sufficient to carbonize the starch and the resin for providing binders which join together the fibers.

3,671,386

PRODUCING TUBULAR MEMBERS OF LIGNOCELLULOSE MATERIAL BY COMPRESSION WITHIN AN ANNULAR CHAMBER

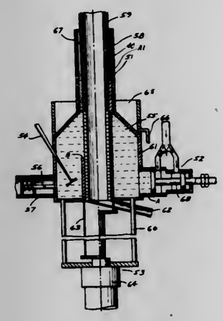
Kjell Moswoll Jakobsen, Ronninge, and Hans-Ivar Eriksson, Malmo, Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Dec. 3, 1969, Ser. No. 881,816

Claims priority, application Sweden, Dec. 4, 1968, 16,549/68

Int. Cl. D21j 3/04

U.S. Cl. 162—224 15 Claims



A method and apparatus for making tubular members wherein a slurry of a liquid and a lignocellulose material is reciprocatingly compressed in a vertically aligned dewatering chamber of annular cross-section. The compression takes place in a vertical direction and the drainage openings are angled such that the extracted liquid does not repass through the tubular member being formed. The tubular product is then placed in a mould where it undergoes radial compression at a pressure of from 10 to 100 atmospheres and is heated to a temperature of 50 to 250° C. to thermoset the lignocellulose material.

3,671,387

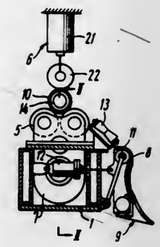
UNIT FOR CALENDERING PIPES AND EXTRACTING CORES THEREFROM IN A MACHINE FOR PRODUCING FIBROCEMENT PIPES

Isaak Pavlovich Abardovsky, 3 Pryadilnaya ulitsa 8, kv. 24, and Lev Alexandrovich Gertsman, 1 Dmitrovsky proezd 6, korpus 1, kv. 95, both of Moscow, U.S.S.R.

Filed Aug. 14, 1969, Ser. No. 850,106

Int. Cl. B31c 1/00, 3/00

U.S. Cl. 162—284 6 Claims



A machine for producing fibrocement pipes comprises an apparatus for calendering pipes and for extracting a core therefrom including a beam having a longitudinal axis and pivotable about the axis in opposite directions. Driven rollers of a calendering mechanism are mounted on the beam, and an undriven calendering roller is mounted adjacent the beam to calender a pipe supported on the driven rollers. After calendering of the pipe, the beam is pivoted to a position in which a pivotal chute on the beam can receive the calendered pipe, a lever system being coupled to the support chute to oscillate the same. An extractor head removes the core from the calendered pipe when the pipe is supported in the chute whereafter the beam undergoes reverse rotation and the calendered pipe is removed from the chute. The beam is then rotated to a position in which the core is returned to the beam and supported by biconical rollers on the beam whereafter the core is removed and the beam is further rotated to initial position.

3,671,388

PAPER MACHINE INCLUDING A HORIZONTAL SUCTION FORMING CYLINDER HAVING MULTIPLE DEWATERING AREAS THEREON

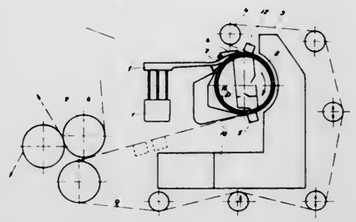
Erik A. Nykopp, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed July 18, 1969, Ser. No. 843,144

Int. Cl. D21f 1/60; D21h 1/06

U.S. Cl. 162—304 7 Claims

The paper machine comprises a horizontal cylinder, a slurry feed box opening onto the top side of the cylinder and the upper rim of the feed slice of which has been continued in order to form a roof-like upper lip between the feed slice and a feed roll placed on the cylinder at an appropriate distance from the feed box in the direction of slurry flow, an endless felt or wire running from the feed roll along the cylinder towards the lower part of the same, an appropriate number of guiding and tension rolls for conducting said felt or wire back to the feed roll, a suction box or suction roll placed on the side of the feed roll opposite to that facing the cylinder and at the point where the slurry web and felt or wire depart from the cylinder surface, and possibly a compressed air box or equivalent placed above the felt or wire and after the feed roll, as seen in the direction of travel of the wire, approximately coincident with the gap remaining between the roof-like upper lip of the feed box and the wire. The horizontal cylinder is a suction cylinder which has therein a suction zone extending substantially from and including the upper roof-like lip continuously to the suction box or suction roll. The upper roof-like lip and suction cylinder form a first drying area for the slurry to form a partially dewatered web while the belt thereafter contacts the web against the surface of the suction cylinder over a major portion of the descending surface of the suction cylinder to form a second drying area in which suction and centrifugal force act upon the web to remove additional water.



3,671,389

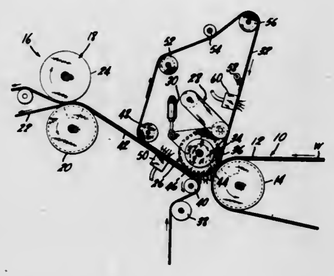
APPARATUS FOR TRANSFERRING A WEB FROM THE FORMING SECTION TO THE PRESS SECTION IN A PAPERMAKING MACHINE

P. Borje Wahlstrom, Rosemont, and J. Eric Adamson, Lionville, Pa., assignors to A. Johnson & Co., Inc., New York, N.Y.

Filed Jan. 22, 1970, Ser. No. 4,936

Int. Cl. D21f 2/00

U.S. Cl. 162—306 6 Claims



Apparatus for transferring a wet paper web from the downstream end of a Fourdrinier wire to a press section comprises a suction transfer roll that runs within an endless, open-mesh transfer fabric and picks the web off the Fourdrinier wire. The web is transferred from the transfer fabric onto a horizontal or inclined run of a carrier belt which is led in closely adjacent the wire section of the machine and into proximity with the transfer roll. The carrier rolls for the transfer fabric are arranged to guide the transfer fabric along a path conjoint with a portion of the run of the carrier belt from the transfer roll to the first press, the transfer fabric being led away from the run of the carrier belt at a location intermediate the transfer roll and the first press of the machine press section. At a location along the conjoint run of the carrier belt and the transfer fabric, a suction box creates a differential pressure across the web to transfer it from the transfer fabric onto the carrier belt so that it runs with the carrier belt to the press section.

3,671,390

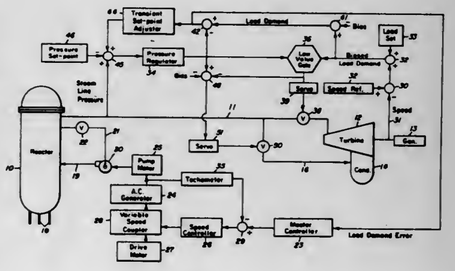
FAST INITIAL RESPONSE NUCLEAR REACTOR CONTROL SYSTEM

John J. Hogle, Los Gatos, Calif., assignor to General Electric Company

Filed Feb. 14, 1969, Ser. No. 799,275

Int. Cl. G21c 7/32

U.S. Cl. 176—24 6 Claims



A control system for boiling moderator-coolant nuclear reactors giving fast response to load changes is disclosed. In this system, the broad operating level of the reactor is set by adjusting the control rods. Then, the reactor operating level is adjusted to follow load requirements by changing the coolant recirculation flow rate. In order to provide fast initial response to rapid load changes an arrangement is provided cooperating with the recirculation flow control to lower the pressure regulator set point when steam demand increases so that reactor internal pressure is temporarily decreased causing increased steam generation due to flashing and sending more steam to the load. A cooperating bypass system is provided to accommodate large sudden decreases in the load steam requirements.

3,671,391

PERISCOPE STADIMETER SIMULATOR WITH CAMERA SWEEP DELAY

Carl R. Driskell, Winter Park, Fla., assignor to the United States of America as represented by the Secretary of the Navy

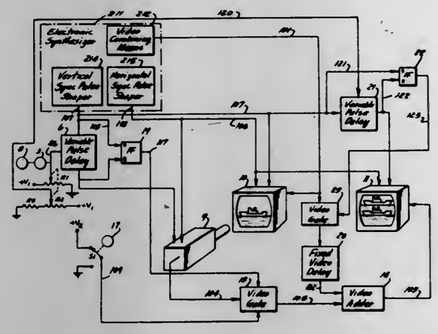
Filed Dec. 7, 1970, Se. No. 95,595

Int. Cl. H04n 7/18; G09b 9/06

U.S. Cl. 178—6.8 5 Claims

In a training device having a periscope view simulator wherein a view seen through a periscope is synthesized

and displayed on a monitor TV screen, means are provided for presenting a "ghost" image on the screen. The ghost image stimulates the image seen through a periscope when a stadimeter built into the periscope is used to determine the range of a ship or other possible torpedo target, with respect to the periscope.

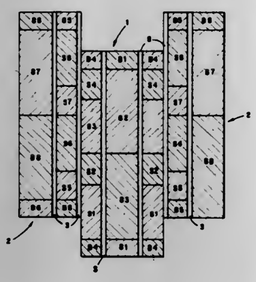


3,671,392

LIGHT-WATER BREEDER REACTOR

Benoit R. Beaudoin, Irwin, and Joseph D. Cohen, David H. Jones, Lester J. Marier, Jr., and Harry F. Raab, Jr., Pittsburgh, Pa., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 15, 1971, Ser. No. 124,138
Int. Cl. G21c 5/00
U.S. Cl. 176—18 5 Claims



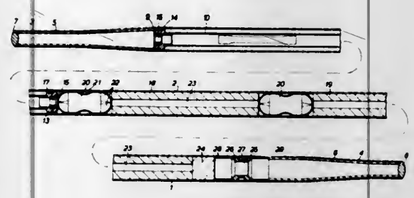
A light-water-moderated and -cooled nuclear breeder reactor of the seed-blanket type characterized by core modules comprising loosely packed blanket zones enriched with fissile fuel and axial zoning in the seed and blanket regions within each core module. Reactivity control over lifetime is achieved by axial displacement of movable seed zones without the use of poison rods in the embodiment illustrated. The seed is further characterized by a hydrogen-to-uranium-233 atom ratio in the range 10 to 200 and a uranium-233-to-thorium-232 atom ratio ranging from 0.012 to 0.200. The seed occupies from 10 to 35 percent of the core volume in the form of one or more individual islands or annuli.

3,671,393

NUCLEAR REACTOR FUEL ELEMENTS

Albert Etheridge Williams, Blackpool, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 11, 1969, Ser. No. 848,788
Claims priority, application Great Britain, Aug. 29, 1968, 41,344/68
Int. Cl. G21c 3/18
U.S. Cl. 176—73 4 Claims



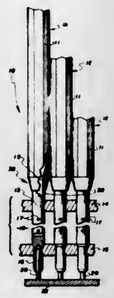
A nuclear reactor fuel element comprises nuclear fuel material enclosed in a protective sheath, a number of spacer members being provided in the sheath dividing the fuel material into longitudinal segments. The ends of the spacer members are longitudinally crushable enabling the fuel segments to expand in the longitudinal direction of the sheath to avoid swelling of the sheath by radial expansion of the fuel segments.

3,671,394

ARTICULATED FUEL ELEMENT HOUSING

Louis Bernath, Canoga Park, and Joseph V. Facha, Reseda, Calif., assignors to North American Rockwell Corporation

Filed Dec. 29, 1969, Ser. No. 888,244
Int. Cl. G21c 3/10
U.S. Cl. 176—79 5 Claims



An articulating ball joint integral with and near the base of a plurality of nuclear reactor fuel elements to compensate for bowing distortions and stresses caused by an adverse thermal environment within the core of a reactor which allows for a slight misalignment minimizing component stresses in the housing of each of the fuel elements.

3,671,395

METHOD FOR PRODUCING CITRIC ACID

Hideo Fukuda, Osaka; Takashi Suzuki, Takarazuka; Yasuhiro Sumino, Kobe, and Shunichi Akiyama, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 30, 1970, Ser. No. 7,232
Claims priority, application Japan, Jan. 30, 1969, 44/6956
Int. Cl. C12d 13/00
U.S. Cl. 195—28 R 11 Claims

Method for producing citric acid which involves inoculating a citric acid-accumulating and hydrocarbon-assimilating strain of bacterium belonging to the genus Corynebacterium in an aqueous culture medium containing at least one C_7–C_{20} — normal paraffin as the principal carbon source; incubating the culture at a pH of from about 5 to about 8 until citric acid is substantially accumulated in the culture broth; and recovering the the so-accumulated citric acid therefrom. The advantage of the above method resides in the fact that the n-paraffin hydrocarbon source is available in large quantities and at low cost; the fermentation period (2–3 days) is considerably shorter than conventional methods and the citric acid thus-obtained is produced in a high yield and in a pure form.

3,671,396

PREPARATION OF L-ISOLEUCINE BY FERMENTATION

Kiyoshi Nakayama, Sagamihara-shi, and Hiroshi Hagino, Hachioji-shi, both of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed March 5, 1969, Ser. No. 804,696
Claims priority, application Japan, March 13, 1968, 43/15903
Int. Cl. C12d 13/06
U.S. Cl. 195—28 R 13 Claims

L-isoleucine is prepared by culturing a hydrocarbon assimilable microorganism in a culture medium containing hydrocarbon as the main carbon source and α-aminobutyric acid, hydroxybutyric acid, threonine or mixtures thereof or non-toxic salts thereof. Microorganisms of the genera Corynebacterium, Brevibacterium, Arthrobacter, Micrococcus, Pseudomonas, Nocardia, Streptomyces, etc., are particularly suitable for use in the process.

3,671,397

METHOD OF PREPARING L-DOPA

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 826,003, May 19, 1969, abandoned. This application Sept. 29, 1969, Ser. No. 862,061
Int. Cl. C12d 13/06
U.S. Cl. 195—29 17 Claims

A process for preparing L-dopa from L-tyrosine and derivatives thereof which comprises suitably blocking the amino function of the tyrosine and subjecting the resulting compound to the fermentative action of an organism which elaborates an oxygenating enzyme.

3,671,398

PROCESS FOR PRODUCING POLYSACCHARIDES BY FERMENTATION

Pierre Colin, and Roger Merle, both of Melle(Deux-Sevres), France, assignors to Melle-Bezons, Melle(Deux-Sevres), France

Continuation-in-part of Ser. No. 717,439, March 24, 1968, abandoned. This application Sept. 14, 1970, Ser. No. 72,157
Claims priority, application France, April 3, 1967, 101218
Int. Cl. C12b 1/00
U.S. Cl. 195—31 P 7 Claims

A process for producing polysaccharides by fermentation of carbohydrates in a fermentation bath with microorganisms of the class Xanthomonas in which the broth is formulated to contain a source of nitrogen selected from the group consisting of lactoserum or lactoserum and cereal bran in amounts corresponding to 5 to 15 grams of lactoserum on a dry solids basis per liter of broth when used alone, or 3 to 7 grams of lactoserum and 4 to 8 grams per liter of cereal bran when both are present in the broth as a source of nitrogen.

3,671,399

POLYANIONIC COMPOUNDS IN CULTURE MEDIA

Thomas Cekoric, Jr., Belleville; George Evans, Hopatcong, and Ronald Searcy, Upper Montclair, all of N.J., assignors to Hoffman-La Roche & Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 691,585, Jan. 15, 1968, abandoned. This application Aug. 30, 1968, Ser. No. 756,427
Int. Cl. C12k 1/00
U.S. Cl. 195—100 22 Claims

Sulfated polysaccharide, polyethylene sulfonic acid, polyvinyl sulfuric acid, polystyreme sulfonic acid, a sulfate ester of a polyethylene ether of an aliphatic alcohol having from 12 to 18 carbon atoms, monothioglycerol or sulfated naphthalene are combined with a bacterial culture medium. These compositions inhibit the antibacterial components of contaminated body fluids, thereby allowing the contaminant bacteria to grow freely.

3,671,400

BACTERIAL CONTROLS AND PREPARATION THEREOF

Thomas Cekoric, Jr., and George Evans, both of Hopatcong, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 5, 1969, Ser. No. 882,691
Int. Cl. C12k 1/08
U.S. Cl. 195—100 14 Claims

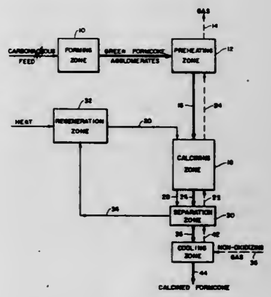
Bacteria are preserved by centrifuging a broth culture, mixing the bacterial sediment with gelatin, diethylaminoethyl dextran and monosodium glutamate, and drying at ambient temperature on a non-adhering support surface. The product is useful as a control for test procedures and reagents.

3,671,401

METHOD OF CALCINING AND DESULFURIZING CARBONACEOUS CONTIGUOUS BED OF AGGLOMERATES WITH PARTICULATE HEAT CARRIERS

Everett Gorin, Pittsburgh, Pa., assignor to Consolidated Coal Company, Pittsburgh, Pa.

Filed July 9, 1970, Ser. No. 53,370
Int. Cl. C10b 49/18, 53/08, 57/12
U.S. Cl. 201—12 7 Claims



An improved process for calcination of agglomerates to produce coke suitable for use in ore reduction furnaces, wherein calcination is effected simultaneously in at least two different heat transfer zones, in one of which gas is the prin-

cipal source of heat and in the other of which solids are the principal source of heat. A stream of hot finely divided solid heat carriers are showered downwardly through the interstices of said downwardly moving bed consisting essentially of a column of contiguous, preheated agglomerates in the calcining zone at a velocity which is greater than that of said downwardly moving bed, the temperature of said heat carrier being higher than that of said agglomerates.

3,671,402

FLUIDIZING BED COKING METHOD OF BROWN COAL

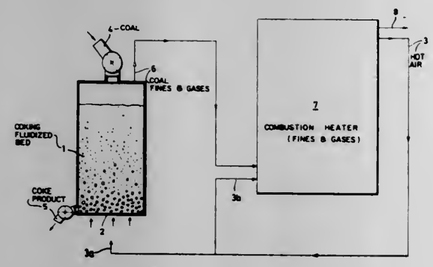
Werner Wenzel, Aachen, and Hans Penning, Cologne Lindenthal, both of Germany, assignors to Rheinische Braunkohlenwerke AG, Koln, Germany

Filed April 29, 1970, Ser. No. 32,891

Claims priority, application Germany, April 29, 1969, P 19 21 710.8

Int. Cl. C10b *49/10*

U.S. Cl. 201—15 **6 Claims**



For the coking of brown coal, lignite or the like there is provided a coking system which includes a coking apparatus and an associated heater from which hot air is introduced into the coking apparatus. One part of the fine grained portion of the charge mixed with gases derived from the coking process is introduced from the coking apparatus into the combustion chamber of said heater to serve as fuel therefor.

3,671,403

PROCESS FOR COKING PUMPABLE ANIMAL AND DAIRY WASTES

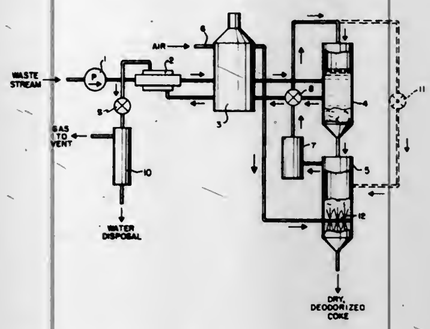
Howard V. Hess, Glenham, and Edward L. Cole, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,775

Int. Cl. C10b *53/02*

U.S. Cl. 201—25 **5 Claims**

Animal and dairy wastes are converted to deodorized coke suitable for use as fertilizer or soil conditioner, an aqueous odor-free effluent having low chemical oxygen demand and reduced phosphorus content and an odorless gas suitable for discharge to the atmosphere. The wastes are coked in the liquid phase under pressure to produce wet coke and a malodorous, gas-containing effluent high in chemical oxygen demand. The wet coke is treated with pressurized hot air to remove liquids therefrom and the air stream is mixed with the effluent and the mixture is oxidized, brought into heat



exchange relationship with incoming wastes and then discharged.

3,671,404

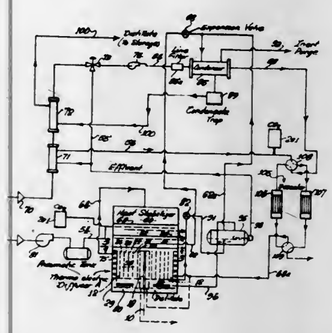
PELTIER EFFECT CONCENTRIC STILL WITH HIGH TEMPERATURE HEAT SUPPLYING MEANS

Milton Meckler, 16348 Tupper Street, Sepulveda, Calif.

Continuation-in-part of Ser. No. 381,588, July 9, 1964, Pat. No. 3,393,130. This application July 12, 1968, Ser. No. 744,485

Int. Cl. B01d *1/22*; B08b *9/00*

U.S. Cl. 202—176 **14 Claims**



A thermoelectric diffusion still including a concentric series of sections which sections are closely spaced to define annular diffusion spaces therebetween. A series of thermoelectric elements are positioned within such sections providing heated and cooled surfaces, respectively, on opposite sides of the section as well as facing each other across the spaces to evaporate and condense a feed fluid. Means are provided for collecting condensate from the opposite surface of each of the sections.

3,671,405

METHOD OF ELECTROFORMING ON SURFACES HAVING PROJECTIONS

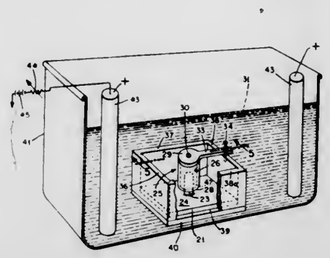
Michael Mattia, Upper Darby, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 7, 1970, Ser. No. 95,548

Int. Cl. C23b *7/00*, *5/00*

U.S. Cl. 204—4 **3 Claims**

A method of electroforming on surfaces having relatively high projections by providing a shield of electrically non-conductive material to encircle a portion of the length of the pro-



jection and thereafter periodically raising the shield at a rate corresponding to the rate of deposition on the projections.

3,671,406

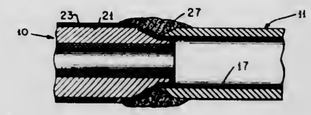
METHOD OF JOINING DISSIMILAR METALS BY PLATING

Michael Mattia, Upper Darby, and Herbert D. Van Sciver, II, Merion, both of Pa., assignors to The Budd Company, Philadelphia, Pa.

Filed June 22, 1970, Ser. No. 48,240

Int. Cl. C23b *7/00*, *5/46*

U.S. Cl. 204—16 **4 Claims**



Dissimilar metal parts such as aluminum and stainless steel are machined to prepare a connecting joint between the parts. Preliminary adherent coatings are individually applied to the dissimilar metal parts in the machined areas. The parts are then positioned together and subject to anodic and cathodic treatments. Metal is then electrodeposited to fill in machined portions of the joint, to provide a mechanical structure capable of transmitting stress from one part to the other.

3,671,407

METHOD FOR PREVENTING HIGH-TEMPERATURE BLISTERING OF COPPER COATINGS ELECTRODEPOSITED ON COPPER SUBSTRATES

Colin B. Hamilton, Monroeville, and Edward J. Oles, Jr., Pittsburgh, both of Pa., assignors to United States Steel Corporation

Filed Sept. 11, 1970, Ser. No. 71,559

Int. Cl. C23b *3/02*

U.S. Cl. 204—32 R **8 Claims**

A method for preparing the surface of copper substrates by anodically dissolving the surface, for a time and depth sufficient to substantially decrease higher local oxygen content of the surface and thereby improve the adhesion of electrodeposited copper coatings. More specifically, the surface pretreatment provides a base for an electrodeposited copper coating with enhanced resistance to blistering and peeling at temperatures in excess of 700° F.

3,671,408

RHODIUM-PLATINUM PLATING BATH AND PROCESS

Albert Michael Martini, Florham Park, N.J., assignor to Sel-Rex Corporation, Nutley, N.J.

Filed May 25, 1971, Ser. No. 146,808

Int. Cl. C23b *5/32*

U.S. Cl. 204—43 **13 Claims**

An electrolyte and process for electrodepositing a low stress and mirror bright rhodium-platinum alloy. The electrolyte comprises an aqueous solution of rhodium sulfate, platinum as P salt and sulfamic acid.

3,671,409

ELECTRODEPOSITION OF NICKEL

Ernest Charles Henry Barrett, Thornton Heath, England, assignor to London & Scandinavian Metallurgical Co., Limited, London, England

Filed May 4, 1970, Ser. No. 34,638

Claims priority, application Great Britain, May 7, 1969, 23,285/69

Int. Cl. C23b *5/08*

U.S. Cl. 204—49 **9 Claims**

Known nickel plating baths can have large amounts of chloride incorporated in them. An improved nickel plating bath is described which has water-soluble bromide in it, preferably many times the weight of nickel present. The bath can include other electrodepositable metals besides nickel, so that the electrodeposition of hard nickel alloys can also be accomplished. The main result of the high bromide formulations proposed is to give deposits of nickel or its alloys which are notably free from stress. Many examples of nickel plating baths are given.

3,671,410

METHOD FOR MAKING METAL OXIDE MEMBRANES

Henry M. Stahr, Ames, Iowa, assignor to Philip Morris Incorporated, New York, N.Y.

Filed Feb. 16, 1970, Ser. No. 11,785

Int. Cl. C23b *9/00*

U.S. Cl. 204—56 **9 Claims**

Metal oxide membranes are produced by anodization of selected metals capable of forming coherent but porous oxide films. The remaining unoxidized metal is removed by reaction with bromine or ammonium bromide leaving a flexible, mechanically strong metal oxide film of about 300 to 20,000 A. thickness.

3,671,411

TREATMENT OF CARBON OR GRAPHITE FIBERS AND YARNS FOR USE IN FIBER REINFORCED COMPOSITES

James D. Ray, Springfield; Samuel Steingiser, and Robert A. Cass, both of Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed March 3, 1970, Ser. No. 16,251

Int. Cl. B01k *1/00*

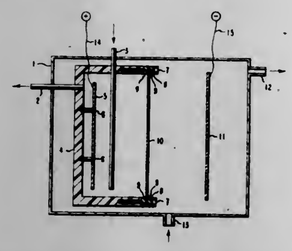
U.S. Cl. 204—130 **5 Claims**

Carbon fiber or yarn as used in fiber reinforced composites is electrolytically treated to improve the surface characteristics and thereby to improve its bonding or adhesion to the matrix material. By this improved bonding, shear strengths of resultant fiber resin or plastic composites have been more than doubled. The electrolytic treatment is conducted by using the fiber or yarn as the anode and using en electrolyte such as an aqueous caustic solution.

3,671,412
PROCESS FOR THE REMOVAL OF IONIC CONTAMINANTS FROM AN ELECTROCOATING BATH

James E. Lohr, Wallingford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 28, 1970, Ser. No. 32,663
Int. Cl. B01k 5/02; C23b 13/00; B01b 13/02
U.S. Cl. 204—181 5 Claims

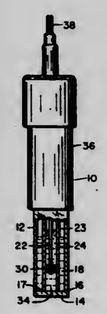


An electrolysis cell for the removal of ionic contaminants from an electrocoating bath and the utilization of this electrolysis cell in an electrocoating process are the subjects of this invention; the electrolysis cell comprises an anode assembly of a frame having attached thereto a metal anode and an anion permeable membrane that is held by the frame in close relationship with the anode and forms a compartment between the membrane and the anode; a cathode is positioned in a close relationship to the anode assembly; the electrocoating bath is brought into contact with the membrane and anionic impurities that are present in the bath migrate toward the anode and are removed from the compartment in the anode assembly; the membrane is impermeable to the film-forming polymeric materials and pigments utilized in the electrocoating bath and is selectively permeable to the water-soluble anionic impurities in the bath; the electrolysis cell can be positioned directly in the electrocoating bath utilized in the electrocoating process or may be positioned outside of the bath and have the bath passed through the electrolysis cell and recycles into the bath. It is also possible to remove cationic contaminants from the bath by using a cation permeable membrane positioned in a cathode assembly similar to the above anode assembly in the electrolysis cell.

3,671,413
NITRATE ION SENSITIVE ELECTRODE

Warren M. Wise, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,138
Int. Cl. G01n 27/46
U.S. Cl. 204—195 L 4 Claims



An electrode for measuring the concentration of nitrate ions in an aqueous solution wherein the sensing portion is an organic phase containing a high molecular weight quaternary ammonium salt dissolved in a high molecular weight nitrophenyl-type solvent.

3,671,414
HYDROGEN ION-SELECTIVE SENSOR

Willard T. Grubb, Schenectady, N.Y., assignor to General Electric Company

Filed March 10, 1971, Ser. No. 122,854
Int. Cl. G01n 27/46
U.S. Cl. 204—195 R 7 Claims



A hydrogen ion-selective sensor comprises an elongated, flexible tube having opposite open ends and being electrically insulating, a silver-silver halide reference electrode positioned at least partially within the tube, an electrical lead in electrical contact with the reference electrode, a gelled electrolyte solution containing at least one halide salt solution filling the tube and in contact with the silver halide coated portion of the reference electrode and with the opposite end of the tube, a metal tube with an exterior surface of palladium surrounding at least a portion of the first tube, an electrical lead in contact with the metal tube, palladium oxide adhering tightly to at least a portion of the exterior surface of palladium on the metal tube, and electrical insulation surrounding the remaining palladium surface on the metal tube and its associated electrical lead.

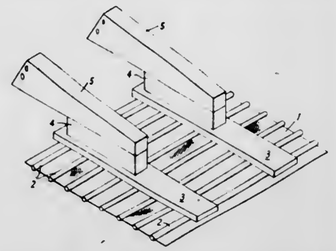
3,671,415
CONTINUOUS LEAD-IN CORE FOR AN ELECTRODE ASSEMBLY

John Howliston King, and Frank Smith, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 21, 1970, Ser. No. 66,034
Claims priority, application Great Britain, Sept. 2, 1969, 43,329/69
Int. Cl. B01k 3/04; C23b 5/68, 5/74
U.S. Cl. 204—284 7 Claims

An electrode assembly is provided for an electrolytic cell which comprises a substantially horizontally extending foraminate titanium structure carrying on at least a part of its surface a coating comprising an operative anode material, an array of parallel spaced rods approximately covering the area of said foraminate structure, each rod having a titanium casing which is rigidly and conductively connected along its length to the upper surface of said foraminate structure and is also attached to the titanium casing of at least one rectangular bar which passes transversely over said rods by welds which enclose in fluid-tight manner intercommunicating openings through the juxtaposed areas of the casings of said rod and said bar, the casing of each said rectangular bar having an

opening in its upper face, and attached in fluid-tight manner to said upper face to enclose said opening an upstanding wall of titanium sheet, the space within said upstanding wall and the titanium casings of said bar and said rods being substantially

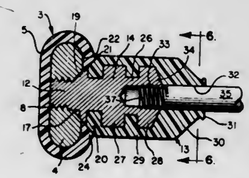


filled by a continuous core of aluminum or an aluminum alloy, said core being bonded to the surrounding titanium surfaces by an inter diffusion layer of an alloy formed between the core metal and the surrounding titanium metal.

3,671,416
BULGED SPHINCTERAL SEALS FOR ELECTROPLATING RACKS

Ralph E. Belke, Oak Park, Ill., assignor to Belke Manufacturing Company, Chicago, Ill.

Filed Feb. 8, 1971, Ser. No. 113,323
Int. Cl. C23g 5/70
U.S. Cl. 204—297 R 6 Claims



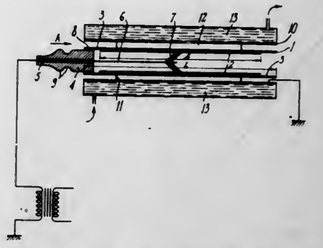
A sealed electrically conductive connection for a hanger to an insulated spine of an electroplating rack. The rack is coated with a plastisol material which prior to curing in an electroplating bath is flexible and which hardens in use. The connection comprises a plastic connector which has a conical end portion which extends into an annular aperture in the plastisol material and stretches it to obtain a sphincteral embrace thereby and bulge the material to obtain a thick section which resists hardening throughout, and thus maintains its elasticity and seal. A counter-sunk portion in the spine mates with a metalic connecting stud to obtain a good contact and the connector has a bore to tightly admit a hook shank.

3,671,417
DIELECTRICS FOR OZONE-GENERATING APPARATUSES

Robert Louboutin, La Celle St. Cloud, France, assignor to Degremont, Societe Generale D'Epuration et D'Assainissement, Rueil-Malmaison, France

Filed June 3, 1970, Ser. No. 42,915
Int. Cl. C01b 13/12
U.S. Cl. 204—320 6 Claims

An assembly for an ozone-generating apparatus consisting of a cylindrical tube of constant thickness which is provided with an internal metal coating and which is characterized in that said tube, which is made of glass or of any other suitable material able to be used in an ozone-generating apparatus, is essentially open at both ends but fitted at one end (or both ends in some cases) with a removable plug which is formed of ozone-resistant insulating material and provided with an axial passageway. A metal rod is adapted to pass through the passageway and serves to apply voltage to the metal coating which is formed on the internal face of the dielectric tube, the



length of said coating being slightly smaller than the length of said tube. The rod is of smaller diameter than the passageway in order to admit cooling air into the dielectric tube. The plug may either be inserted into the corresponding extremity of the tube of insulating material or placed over said extremity.

3,671,418
COAL LIQUEFACTION PROCESS USING ASH AS A CATALYST

John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

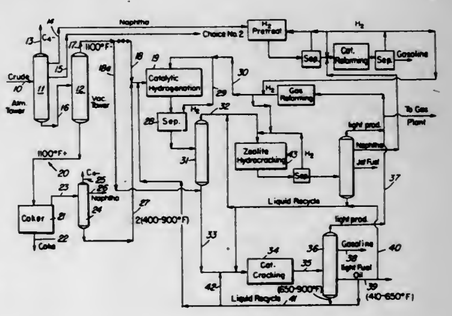
Filed Dec. 18, 1970, Ser. No. 99,676
Int. Cl. C10g 1/06, 1/08
U.S. Cl. 208—10 7 Claims

A method for the liquefaction of coal using a solvent extraction process in which finely-divided coal, a solvent, and a catalyst-acting ash derived from coal are admixed and subjected to solvent extraction conditions. The ash utilized in the solvent extraction process is a substantially carbon-free residue resulting from the decarbonization of coal.

3,671,419
UPGRADING OF CRUDE OIL BY COMBINATION PROCESSING

Henry R. Ireland, West Deptford Township, Gloucester County, and Paul W. Snyder, Jr., Pitman, both of N.J., assignors to Mobil Oil Corporation

Filed Feb. 27, 1970, Ser. No. 14,908
Int. Cl. C10g 37/00
U.S. Cl. 208—57 7 Claims



Efficient utilization of hydrogen and catalyst compositions is achieved in a petroleum refinery operation by a specific

combination of unit operations which tend to optimization of premium products. A significant feature of this combination is catalytic hydrogenation of a fraction boiling above the gasoline range up to 1,100° F. followed by cutting or separating the hydrogenated product to form a high boiling fraction boiling above about 700° F. as charge to a crystalline aluminosilicate catalytic cracking operation with the low boiling fraction thereof boiling below about 700° F. being charge to catalytic hydrocracking.

3,671,420

CONVERSION OF HEAVY PETROLEUM OILS

Raymond F. Wilson; Reese A. Peck, and Frank E. Guptill, Jr., all of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 811,604, March 28, 1969, Pat. No. 3,607,723. This application Dec. 24, 1970, Ser. No. 101,444

Int. Cl. C10g *13/00, 37/02*

U.S. Cl. 208—61 **9 Claims**

Residue-containing petroleum oils are converted into lighter products by a combination of catalytic hydrocracking and catalytic cracking.

3,671,421

PROCESS FOR INCREASING THE YIELD OF LOWER BOILING HYDROCARBONS

Reese A. Peck, and Raymond F. Wilson, both of Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 787,560, Dec. 27, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,518

Int. Cl. C10g *13/12*

U.S. Cl. 208—68 **12 Claims**

A process for increasing the yield of lower boiling hydrocarbons from heavy hydrocarbon fractions by oxidizing a heavy hydrocarbon fraction using for example air followed by subjecting the oxidized heavy hydrocarbon fraction to both a pyrolysis step and hydrocracking step.

3,671,422

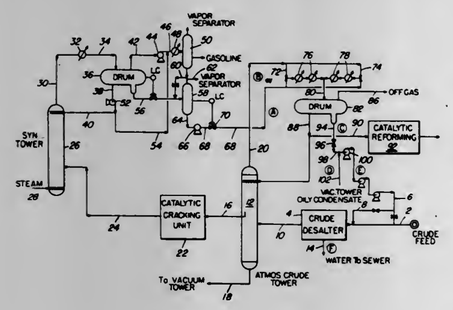
WATER POLLUTION ABATEMENT IN A PETROLEUM REFINERY

Terry R. Morrow, Tonawanda, N.Y., assignor to Mobil Oil Corporation

Filed Nov. 13, 1970, Ser. No. 89,207

Int. Cl. C07c *37/22*; C01g *37/10*

U.S. Cl. 208—79 **4 Claims**



The processing of refinery waters to recover phenolic constituents of catalytic cracking by adsorption with light process naphthas passed to catalytic reforming is discussed.

3,671,423

STABILIZING HYDROCRACKED LUBRICATING OILS

John M. MacDonald, and Ian D. Campbell, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

Filed March 16, 1970, Ser. No. 20,134

Int. Cl. C10g *37/00*

U.S. Cl. 208—97 **16 Claims**

The instability of lubricating oils to light and air formed by hydrocracking high boiling fractions is removed by percolating the oil through silica-alumina gels containing a Y-type molecular sieve.

3,671,424

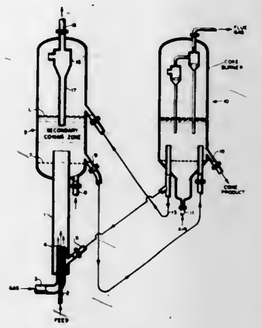
TWO-STAGE FLUID COKING

Arthur L. Saxton, Warren, N.J., assignor to Esso Research and Engineering Company

Filed Oct. 20, 1969, Ser. No. 867,491

Int. Cl. C10b *47/24, 55/10*; C10g *9/32*

U.S. Cl. 208—127 **14 Claims**



A two-stage fluid coking process in which the first stage is a transfer line for short contact time and the second is either a transfer line or a fluidized bed.

3,671,425

HYDROTREATING PROCESS USING A CATALYST COMPRISING A FLUORINE-CONTAINING LAYERED CRYSTALLINE ALUMINOSILICATE

Joseph Jaffe, Berkeley, and James R. Kittrell, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 754,491, Aug. 21, 1968. This application Dec. 18, 1969, Ser. No. 886,381

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 **1 Claim**

A hydrodesulfurization process is carried out with a catalyst containing particles of (1) a fluorine-containing layered crystalline clay-type aluminosilicate and (2) a tetravalent metal phosphate in an alumina matrix, which also contains a hydrogenating component of group VI metals, or compounds thereof, and a hydrogenating component of group VIII metals, or compounds thereof.

3,671,426

CONTINUOUS FILTERING PROCESS

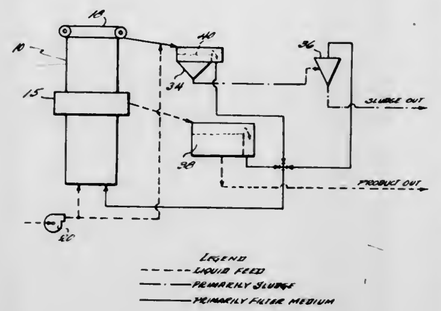
John C. Orcutt, and Forest O. Mixon, both of Chapel Hill, N.C., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Filed Sept. 1, 1970, Ser. No. 68,611

Int. Cl. B01d *33/16*

U.S. Cl. 210—20 **9 Claims**

A continuous process for removing particulate and dissolved impurities from a liquid comprising the steps of injecting a particulate filter medium into a liquid stream to form a slurry, conveying the slurry into the bottom portion of a separation vessel, accumulating the particulate filter material in the form of a porous plug, moving said plug into the upper portion of said separation vessel, pumping the liquid through



the lower portions of said plug, removing the liquid from the upper portion of the separation vessel, removing the particulate filter material from the upper end of the separation vessel above the point at which the liquid is discharged and subjecting the removed filter material to a cleansing or regeneration treatment for reuse in the process.

3,671,427

LIGNITE PRODUCTS AND COMPOSITIONS THEREOF

Robert S. Andrews, Jr., Houston, Tex., and William C. McDaniels, Hobbs, N. Mex., assignors to N L Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 539,312, April 1, 1966, Pat. No. 3,494,865. This application Jan. 15, 1970, Ser. No. 3,216. The portion of the term of this patent subsequent to Feb. 10, 1987, has been disclaimed.

Int. Cl. C10m *1/36*

U.S. Cl. 252—8.5 M **8 Claims**

Reaction products of humic acid with long-chain fatty acyl partial amides of a polyalkylene polyamine, such as the reaction product obtained using tall oil fatty acids and tetraethylene pentamine, the salt linkage being optionally, partially or largely converted to amide linkage by heat treatment. The humic acid optionally may be in part reacted with a long-chain alkyl ammonium cation. The novel products are useful in compounding oil base well-working fluids; as corrosion inhibitors; and for other uses.

3,671,428

LIGNIN DERIVATIVE

Chung Sur Youn Kim, Sacramento, Calif., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 629,894, April 11, 1967, Pat. No. 3,538,071. This application Feb. 20, 1970, Ser. No. 13,186. The portion of the term of this patent subsequent to Jan. 27, 1987, has been disclaimed.

Int. Cl. C10m *1/40, 1/32*

U.S. Cl. 252—8.5 M **14 Claims**

Lignin derivatives, particularly for use in oil base drilling muds, are obtained by reacting an oxidized lignin with an amine to form a salt and heating the resulting salt to elevated temperatures until a substantial portion of the product is converted to a nitrogen containing product wherein the nitrogen is stable in an aqueous alkaline medium at room temperature.

3,671,429

GREASE-LIKE SILICONE COMPOUND

John H. Wright, Elnora, N.Y., assignor to General Electric Company

Filed Sept. 25, 1969, Ser. No. 861,180

Int. Cl. C10m *7/50, 7/28*

U.S. Cl. 252—25 **5 Claims**

Grease-like compositions consisting of (1) 100 parts of a liquid organopolysiloxane having a viscosity of from 50 to 200,000 centistokes at 25° C., (2) from 17 to 300 parts of finely divided zinc oxide, and (3) from about 17 to 300 parts of finely divided polytetrafluoroethylene. The material is useful, particularly, in electrical switch gear.

3,671,430

HIGH ALKALINITY ADDITIVES FOR LUBRICATING OIL COMPOSITIONS

Jean Corringer, Mont-Saint-Aignan, France, assignor to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 44,632, June 8, 1970, abandoned, which is a continuation of Ser. No. 625,307, March 23, 1967, abandoned. This application Jan. 19, 1971, Ser. No. 107,846

Claims priority, application France, Jan. 21, 1970, 7002168

Int. Cl. C10m *1/40, 1/48*

U.S. Cl. 252—32.7 E **18 Claims**

An alkaline earth metal sulfonate of high alkalinity is prepared by reacting an alkaline earth metal base, e.g. calcium hydroxide, with carbon dioxide in the presence of the metal sulfonate and an alkaline earth metal phenate, there also being present a polar solvent such as benzyl alcohol or tetrahydrofurfuryl alcohol, as well as free phenol in an amount over and above the stoichiometric quantity necessary to form metal phenate by reaction with the metal base. At the end of the reaction the solvent and free phenol are removed from the product by distillation. Preformed metal phenate can be used at the beginning of the reaction or the metal phenate can be formed in situ, starting with free phenol. Also, in place of metal sulfonate, free sulfonic acid can be used initially, with sufficient metal base to convert it to metal sulfonate. The attainment of total base numbers of 400 or more is possible by use of a second dispersant along with the metal sulfonate. This second dispersant, which is used with the sulfonate in the proportion of 0.1 to 1 part per part of sulfonate, can be a thioacid of phosphorus, or metal salt thereof, obtained by reaction of a sulfide of phosphorus on a hydrocarbon; an alkyl phenol or alkyl phenol sulfide, or metal salt thereof; or a monocarboxylic or polycarboxylic acid or anhydride, or metal salt thereof, characterized by a long chain hydrocarbon group of from about 20 to 200 carbon atoms, as for example, a polyisobutenyl succinic acid.

3,671,431

NEW LUBRICATING GREASE COMPOSITIONS

Leon Stallings, Sicklerville, N.J.; Martin J. Devine, Havertown, Pa.; Gerhard Maerker, Oreland, Pa., and Abner Eisner, Glenside, Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 22, 1970, Ser. No. 74,488

Int. Cl. C10m *5/20, 7/30*

U.S. Cl. 252—33.6 **5 Claims**

Subject disclosure relates to novel and improved high temperature lubricating grease compositions in which a single component ingredient provides the composition with outstanding rust inhibiting characteristics as well as grease thickening properties. The improved grease compositions of the invention consist of specified diester, hydrocarbon and silicone fluids thickened and rust inhibited by specific quantities of the additive lithium cis-9-10-epimino octadecanoate.

3,671,432
PREPARATION OF SUPPORTED TRANSITION METAL OXIDE POLYMERIZATION CATALYSTS
Edwin F. Peters, Lansing, and Omar O. Juveland, South Holland, both of Ill., assignors to Standard Oil Company, Chicago, Ill.
Continuation of Ser. No. 637,075, May 9, 1969, abandoned. This application Oct. 23, 1969, Ser. No. 868,941
Int. Cl. B01j 11/32
U.S. Cl. 252—467 4 Claims
Polymerization catalysts are prepared by adsorbing water upon an inert support and extending a water-dispersible or soluble transition metal compound upon the support by mixing. The water is then removed and the transition metal compound converted to a highly oxidized state by calcination.

3,671,433
LUBRICANT COMPOSITIONS
Bruce C. Brenner, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
Filed Dec. 17, 1970, Ser. No. 99,255
Int. Cl. C10m 1/50
U.S. Cl. 252—49.6 7 Claims
The lubrication characteristics of alkylmethylpolysiloxanes in which the alkyl radical contains from six–18 carbon atoms are improved by the addition of from about 0.1 to 3 weight percent dodecenyl succinic acid anhydride.

3,671,434
QUINONE PHOSPHATES AS LUBRICANT ADDITIVES
Stephen J. Metro, Scotch Plains, and Harold Shaub, New Providence, both of N.J., assignors to Esso Research and Engineering Company
Filed Aug. 21, 1970, Ser. No. 66,077
Int. Cl. C10m 1/46
U.S. Cl. 252—49.8 11 Claims
Quinone phosphates, including pentoxyphosphoranes, have been found to be effective oxidation and corrosion inhibitors in lubricating oils, especially synthetic ester oils.

ERRATUM

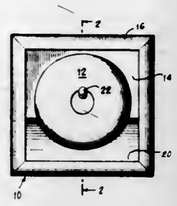
For Class 252—62 see:
Patent No. 3,671,646

3,671,435
COBALT DOPED GAMMA FERRIC OXIDE
Paul Y. Hwang, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Continuation-in-part of Ser. No. 822,709, May 5, 1969, abandoned. This application July 16, 1971, Ser. No. 163,424
Int. Cl. C01g 49/06; H01f 1/00
U.S. Cl. 252—62.56 4 Claims
Acicular, cobalt doped gamma ferric oxide particles suitable for magnetic recording are produced by making an aqueous paste or slurry of a cobalt salt which will decompose below 600° C. and acicular alpha FeOOH or alpha Fe_2O_3. The cobalt salt is decomposed to the metal or oxide form by heating the mixture. Various cobalt and iron compounds can be used as the starting materials.

3,671,436
METHOD OF MANUFACTURING A SINTERED OXIDIC FERROMAGNETIC BODY
Hans Peter Peloschek, and David Jacob Perduijn, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed March 11, 1970, Ser. No. 18,676
Claims priority, application Netherlands, March 20, 1969, 6904352
Int. Cl. C04b 35/30
U.S. Cl. 252—62.58 3 Claims
Stringent requirements as regards the resistance to detrition are imposed upon the sintered oxidic ferromagnetic material of which particularly pole shoes of magnetic heads are manufactured, when said heads are used at very high tape speeds. No crumbling away of crystals or groups of crystals must take place. Sintered oxidic ferromagnetic material which consists of large interlocking crystals (diameter more than 50 microns) has a high resistance to detrition. A method of obtaining such a crystal structure comprises the addition of from 0.01 to 0.1 percent by weight of an alkaline earth metaborate to the starting mixture of the metal oxides to be sintered, e.g. NiO, ZnO and Fe_2O_3.

3,671,437
ETCHANT FOR SELECTIVELY ETCHING PATTERNS IN THIN SILICON DIOXIDE LAYERS AND METHOD OF PREPARING SUCH AN ETCHANT
Uwe Pless, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,523
Claims priority, application Germany, Oct. 15, 1969, P 19 51 968.7
Int. Cl. C23d 1/00
U.S. Cl. 252—79.3 2 Claims
This disclosure is directed to an aqueous etching composition for silicon dioxide based on ammonium fluoride and hydrofluoric acid to which an arsenic or thallium salt has been added and to a method of etching layers of silicon dioxide by means of said etching composition.

3,671,438
SOAP AND CONTAINER THEREFOR
Paolo Cilia, 638 Ovington Ave., Brooklyn, N.Y.
Filed Feb. 18, 1970, Ser. No. 12,198
Int. Cl. C11d 17/00
U.S. Cl. 252—90 3 Claims



A container for holding a bar of soap includes a vertical wall portion, a horizontal flange portion extending from the wall portion to form an enclosure about the bar of soap and a peg secured to the central region of the wall portion. The bar of soap contains a central aperture extending therethrough to engage the peg for supporting the bar of soap thereon. A relatively non-soluble insert is provided within the bar about the aperture to better maintain the aperture at substantially its initial diameter despite the gradual diminishing of the size of the bar of soap during use.

3,671,439
OXYGEN BLEACH-ACTIVATOR SYSTEMS STABILIZED WITH PUFFED BORAX
Garland G. Corey, Milltown, and Bernard Weinstein, Plainfield, both of N.J., assignors to American Home Products Corporation, New York, N.Y.
Filed July 22, 1969, Ser. No. 843,829. The portion of the term of this patent subsequent to May 9, 1989, has been disclaimed.
Int. Cl. C11d 7/54, 7/18
U.S. Cl. 252—99 9 Claims
Oxygen releasing bleaches such as perborates are combined with activators and puffed borax to provide compositions unusually stable upon storage under adverse conditions of high temperature and humidity to which they are normally subjected.

3,671,440
PROCESS OF CLEANING
Philip M. Sabatelli; Edwin R. Loder, both of Cincinnati, Ohio; Charles A. Brungs, and Carmen R. Sarge, both of Ft. Thomas, Ky., assignors to Chemed Corporation, Cincinnati, Ohio
Filed Jan. 16, 1970, Ser. No. 3,520
Int. Cl. C11d 7/54
U.S. Cl. 252—103 6 Claims
Concentrates of liquid chlorine containing machine dishwashing compositions are disclosed which include alkali metal hydroxide, a tetra-alkali metal pyrophosphate, a water-soluble polymer, an alkali metal hypochlorite and an aqueous carrier liquid or vehicle. These concentrates have improved long lasting hard water tolerance. Cooking and eating utensils may be cleaned by dilute solutions of the present machine dishwashing compositions in water having hardness as high as 20 grains per gallon or more with less spotting and greater clarity.

3,671,441
DRY CLEANING DETERGENT
Lawrence Dasch, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio
Filed Nov. 4, 1968, Ser. No. 773,354
Int. Cl. C11d 1/18; C09d 9/00
U.S. Cl. 252—153 1 Claim
Dry-cleaning compositions containing a combination of an amine oxide and a phosphate ester of a nonionic surfactant are shown to give optimum results with respect to the removal of all types of soils and particularly the removal of water-soluble soils from the articles being dry-cleaned. Other components may optionally be added to obtain certain specific results.

3,671,442
AZEOTROPIC COMPOSITION
J. Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation
Division of Ser. No. 677,715, Oct. 24, 1967, Pat. No. 3,554,918. This application June 2, 1970, Ser. No. 54,081
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 3 Claims
It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.
The disclosure relates to binary azeotropic mixtures of tetrachlorodifluoroethane and methanol. It has also been discovered that n-butanol or isobutanol or sec-butanol will form azeotropes with these halogenated solvents.
The disclosure also relates to ternary azeotropes of tetrachlorodifluoroethane and trichloroethylene with methanol. It has also been discovered that ethanol or isopropanol will also form ternary azeotropes with these two halogenated solvents.
In a further embodiment ternary azeotropes are disclosed comprising tetrachlorodifluoroethane, trichloroethane and methanol. It has also been discovered that ethanol and isopropanol will also form ternary azeotropes with these two halogenated solvents.

3,671,443
AZEOTROPIC COMPOSITION
J. Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation
Division of Ser. No. 677,715, Oct. 24, 1967, Pat. No. 3,554,918. This application June 2, 1970, Ser. No. 54,082
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 3 Claims
It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.
The disclosure relates to binary azeotropic mixtures of tetrachlorodifluoroethane and methanol. It has also been discovered that n-butanol or isobutanol or sec-butanol will form azeotropes with these halogenated solvents.
The disclosure also relates to ternary azeotropes of tetrachlorodifluoroethane and trichloroethylene with methanol. It has also been discovered that ethanol or isopropanol will also form ternary azeotropes with these two halogenated solvents.
In a further embodiment ternary azeotropes are disclosed comprising tetrachlorodifluoroethane, trichloroethane and methanol. It has also been discovered that ethanol and isopropanol will also form ternary azeotropes with these two halogenated solvents.

3,671,444
AZEOTROPIC COMPOSITION
J. Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation
Division of Ser. No. 677,715, Oct. 24, 1967, Pat. No. 3,554,918. This application June 2, 1970, Ser. No. 54,084
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 3 Claims
It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.
The disclosure relates to binary azeotropic mixtures of tetrachlorodifluoroethane and methanol. It has also been discovered that n-butanol or isobutanol or sec-butanol will form azeotropes with these halogenated solvents.
The disclosure also relates to ternary azeotropes of tetrachlorodifluoroethane and trichloroethylene with methanol. It has also been discovered that ethanol or isopropanol will also form ternary azeotropes with these two halogenated solvents.
In a further embodiment ternary azeotropes are disclosed comprising tetrachlorodifluoroethane, trichloroethane and methanol. It has also been discovered that ethanol and isopropanol will also form ternary azeotropes with these two halogenated solvents.

3,671,445
AZEOTROPIC COMPOSITION
J. Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation
Division of Ser. No. 677,715, Oct. 24, 1967, Pat. No. 3,554,918. This application June 2, 1970, Ser. No. 54,086
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 3 Claims
It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.
The disclosure relates to binary azeotropic mixtures of tetrachlorodifluoroethane and methanol. It has also been discovered that n-butanol or isobutanol or sec-butanol will form azeotropes with these halogenated solvents.
The disclosure also relates to ternary azeotropes of tetrachlorodifluoroethane and trichloroethylene with methanol. It has also been discovered that ethanol or isopropanol will also form ternary azeotropes with these two halogenated solvents.
In a further embodiment ternary azeotropes are disclosed comprising tetrachlorodifluoroethane, trichloroethane and methanol. It has also been discovered that ethanol and isopropanol will also form ternary azeotropes with these two halogenated solvents.

3,671,446
AZEOTROPIC COMPOSITION
J. Allan Schofield, Irvington, and Roger A. Delano, Dobbs Ferry, both of N.Y., assignors to Union Carbide Corporation
Division of Ser. No. 677,715, Oct. 24, 1967, Pat. No. 3,554,918. This application June 2, 1970, Ser. No. 54,085
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 3 Claims
It is not intended that the following abstract of the disclosure be construed as limiting the invention in any manner.
The disclosure relates to binary azeotropic mixtures of

tetrachlorodifluoroethane and methanol. It has also been discovered that n-butanol or isobutanol or sec-butanol will form azeotropes with these halogenated solvents.

The disclosure also relates to ternary azeotropes of tetrachlorodifluoroethane and trichloroethylene with methanol. It has also been discovered that ethanol or isopropanol will also form ternary azeotropes with these two halogenated solvents.

In a further embodiment ternary azeotropes are disclosed comprising tetrachlorodifluoroethane, trichloroethane and methanol. It has also been discovered that ethanol and isopropanol will also form ternary azeotropes with these two halogenated solvents.

3,671,447
METHODS OF SCALE INHIBITION USING SUBSTOICHIOMETRIC AMOUNTS OF AMINO ALCHOLS

Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 27, 1970, Ser. No. 58,705
Int. Cl. C02b 5/06
U.S. Cl. 252—180 10 Claims

The precipitation of scale-forming materials in an aqueous system is inhibited by adding substoichiometric amounts of an amino alcohol such as triethanolamine to said system.

3,671,448
METHODS OF SCALE INHIBITION USING SUBSTOICHIOMETRIC AMOUNTS OF AMINO ALCOHOL AND PHOSPHONIC ACIDS

Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 10, 1970, Ser. No. 71,245
Int. Cl. C02b 5/06
U.S. Cl. 252—18 D 10 Claims

The precipitation of scale-forming materials in an aqueous system is inhibited by adding substoichiometric amounts of a precipitation inhibitor which consists of a mixture of an amino alcohol such as triethanolamine and certain phosphonic acids, such as amino tri(methylene phosphonic acid), to said system.

3,671,449
CEPHALOSPORIN COMPOSITIONS

Billy G. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 754,992, Aug. 23, 1968, abandoned. This application Aug. 19, 1970, Ser. No. 65,237
Int. Cl. C07d 99/24
U.S. Cl. 252—182 5 Claims

Silylated cephalosporin compositions containing (a) silyated cephalosporin nucleus compound, (b) a silylamide, and (c) an anhydrous solvent for components (a) and (b), which solvent does not contain Zerwitinoff hydrogen.

3,671,450
CHEMILUMINESCENT COMPOSITIONS

Michael McKay Rauhut, Norwalk, Conn., and Andrew Milo Semsel, Ridgefield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 577,795, Sept. 7, 1966, abandoned. This application Sept. 22, 1969, Ser. No. 860,092
Int. Cl. C09k 3/00
U.S. Cl. 252—186 13 Claims

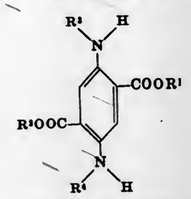
A novel composition and the process of producing the composition, whereby the composition is in the form of a gel having chemiluminescent properties. More particularly, the invention relates to the direct production of light from chemical energy employing any chemiluminescent compositions in the presence of a gelling agent. By "light" as referred to herein is meant electromagnetic radiation at wavelengths falling between about 350 mμ and 1,000 mμ.

3,671,451
FLUORESCENT COMPOSITIONS

Boydston Lewis Butterfield, East Amwell Township, Hunterdon County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed March 27, 1968, Ser. No. 716,318
Int. Cl. C09k 1/00; F21k 2/00
U.S. Cl. 252—301.2 9 Claims

Compositions useful for imparting fluorescent properties to surfaces comprising at least one compound of the formula:



wherein R^1 and R^2 represent individually alkyl of 1–18 carbons; R^3 and R^4 each represent a monocyclic or bicyclic aryl radical.

3,671,452
GERMANIUM AND SILICON SUBSTITUTED MANGANESE ACTIVATED MAGNESIUM GALLATE PHOSPHOR

Taiichi Inoue, and Toshimasa Ueda, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 4, 1970, Ser. No. 34,322
Claims priority, application Japan, May 8, 1969, 44/35067; May 10, 1969, 44/35643
Int. Cl. C09k 1/04, 1/54
U.S. Cl. 252—301.4 F 3 Claims

A method for manufacturing a phosphor material represented by the following general formula:

$$yMgO_2 \cdot (1-x)Ga_2O_3 \cdot xMO_2 \cdot pMnO$$

where:
MO_2 = an oxide selected from the group consisting of GeO_2 and SiO_2
$0 < X \leq 0.3$
$0.70 \leq y \leq 1.05$
$0.001 \leq p \leq 0.05$

which comprises subjecting a mixture of oxides having a composition expressed by the general formula to a primary firing at a temperature of from 1,100° to 1,475° C. in an oxidizing atmosphere, grinding and mixing the fired mass, and subjecting the resultant mixture to a secondary firing at a temperature of from 1,000° to 1,250° C. in a reducing atmosphere.

3,671,453
PROCESS FOR PREPARING MULTI-COMPONENT NUCLEAR FUELS

Leonard V. Triggiani, Rockville, and Moises G. Sanchez, Severna Park, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 670,394, Sept. 25, 1967, Pat. No. 3,514,412. This application Sept. 24, 1969, Ser. No. 860,814
Int. Cl. C09k 3/00
U.S. Cl. 252—301.1 S 10 Claims

A process for preparing particles, powders, spheres, and other shapes of uranium carbide or uranium nitride and/or thorium carbide or thorium nitride containing significant amounts of a second fissionable component. The particles are prepared by impregnating a matrix with a sol or other suitable dispersion of the fissionable component.

3,671,454
SILICON AND/OR GERMANIUM DIOXIDE SUBSTITUTED MANGANESE ACTIVATED MAGNESIUM ALUMINATE GALLATE PHOSPHOR

Taiichi Inoue, and Toshimasa Ueda, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 5, 1970, Ser. No. 34,774
Claims priority, application Japan, May 9, 1969, 44/35220; May 16, 1969, 44/37346
Int. Cl. C09k 1/04, 1/54, 1/18
U.S. Cl. 252—301.4 F 7 Claims

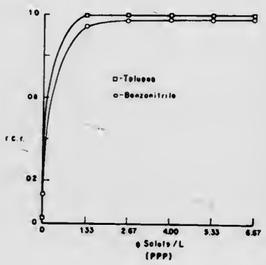
A phosphor material emitting a blue-green light which consists of a composition represented by the following general formula: $xMgO \cdot (1-y-z)Ga_2O_3 \cdot yAl_2O_3 \cdot zMO_2 \cdot pMnO$
where: MO_2 = one kind of oxides selected from the group consisting of GeO_2 and SiO_2

$$0.70 \leqq x \leqq 1.05$$
$$0.025 \leqq y \leqq 0.4$$
$$0 < z \leqq 0.3$$
$$0.001 \leqq p \leqq 0.05.$$

3,671,455
NITRILES AS SCINTILLATION SOLVENTS AND SOLUTES

Jose P. A. Castrillon, Rio Piedras, P.R., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed May 6, 1971, Ser. No. 140,926
Int. Cl. C09h 1/02
U.S. Cl. 252—301.2 SC 9 Claims



Benzonitrile is shown to be an efficient scintillation solvent. Although somewhat inferior to toluene, it can surpass the performance of this standard solvent if quenchers are present. Furthermore, its high dielectric constant, dipole moment and complexing ability make it suitable for the counting of polar and metallic compounds. It has the interesting property of showing an appreciable light yield in the pure state, thus allowing the counting of α-emitters with no fluors added. Acetonitrile, on the other hand, is a very poor scintillation solvent, although it improves considerably on addition of naphthalene. Also, in a 40 percent mixture with benzonitrile, the efficiency is good enough for most purposes. It has been determined that other aromatic nitriles are also efficient scintillation solvents: p-tolunitrile, 2,3- and 2,4-dimethylbenzonitrile and phenylacetonitrile, for example. Certain aromatic nitriles are shown to be fairly satisfactory scintillation solutes.

3,671,456
SMOKE OR GAS PRODUCING COMPOSITION

Rolf Andersson, Tamnarvagen 26, Johanneshov, Sweden

Filed March 31, 1970, Ser. No. 24,204
Int. Cl. C09k 3/30
U.S. Cl. 252—305 7 Claims

A smoke or gas-producing compound usable even in spin stabilized grenades, consisting of a gas producing liquid ($TiCl_4$) absorbed in a powder with great inner porosity. The grain division lies between 0.125 – 6 mm and the powder is under graded.

3,671,457
METHOD OF MAKING STABLE, LOW VISCOSITY WAX-IN-WATER EMULSIONS

Warren K. Porter, Jr., Richland Township, Allegheny County, Pa., assignor to Gulf Research of Development Company, Pittsburgh, Pa.

Filed May 28, 1970, Ser. No. 41,590
Int. Cl. B01j 13/00
U.S. Cl. 252—311.5 10 Claims

There is described a novel method for producing low viscosity water emulsions of high solids content from waxes using an alkylphenol ethoxylate emulsifying agent having at least 30 carbon atoms in the alkyl group. The emulsion is prepared by mixing the constituents at an elevated temperature, then cooling the emulsion below the melting point of the wax and finally reheating the emulsion to the melting point of the wax or higher to substantially lower the room temperature viscosity of the emulsion.

3,671,458
MIXTURES OF FATTY ETHERS OF POLYHYDRIC ALCOHOLS AND THEIR ANHYDRIDES AND PROCESS FOR PRODUCING SAID MIXTURES

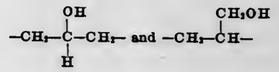
Albert H. Sherman, New Castle, and John D. Zech, Wilmington, both of Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Sept. 17, 1969, Ser. No. 858,881
Int. Cl. B01f 17/32, 17/42
U.S. Cl. 252—351 10 Claims

Ether compositions of fatty epoxides and polyhydric alcohols and a process for preparing said ethers are disclosed. These ether compositions are represented by the general formula:

$$[R - X - R_2 - O]_y - R_3 \quad (1)$$

where R is an alkyl, alkenyl, alkaryl or alkenaryl radical; X is either S, O or a methylene radical, R_2 is selected from the group consisting of radicals of the following formulas:



y is a number from 1 to 4, and R_3 is a radical remaining after y hydroxyl groups are removed from an anhydrized polyhydric alochol; and mixtures of compounds within formula (1) with compounds represented by the general formula

$$[R-X-R_2-O]_y-R_1 \quad (2)$$

wherein R, X, R_2 and y are as defined above and R_1 is a radical formed when y hydroxyl groups are removed from a polyhydric alcohol. The ether compositions are excellent surfactant compositions, being useful as antifoaming agents, emulsifiers and dispersants, and they are more resistant to acid and alkali solutions than organic ester type surfactants heretofore used.

3,671,459
HYDRATED EMULSIFIER

Max E. Norris, Parma, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed July 27, 1970, Ser. No. 58,658
Int. Cl. B01f 17/34
U.S. Cl. 252—356 4 Claims

An improved hydrated emulsifier having from 30–65 percent lipoidal emulsifier component emulsified with from 70–35 percent water, the improvement comprising including at least about 30 percent by weight of the lipoidal emulsifier component of an edible alkoxylated partial fatty acid ester of glycerol.

3,671,460
DEFOAMING COMPOSITIONS AND METHODS OF PRODUCING SAME

Edwin M. Hofgesang, Montclair, N.J., assignor to Continental Oil Company, Ponca City, Okla.

Filed April 29, 1970, Ser. No. 33,056
Int. Cl. B01d 17/00
U.S. Cl. 252—358 10 Claims

A defoaming composition is produced by reacting a liquid hydrophobic polysiloxane oil with a hydrophilic alpha alumina monohydrate so as to produce a hydrophobic alumina reaction product. The reaction product is then dispersed in a hydrocarbon medium to produce the defoaming composition. The defoaming composition contains from about 1 to 40 percent by weight of the reaction produce and from about 60 to 99 percent by weight hydrocarbon medium.

3,671,461
PROCESS FOR CONTROLLING FOAMS IN AQUEOUS SYSTEMS AND COMPOSITION THEREFOR

Edward Helmut Sheers, Flushing, and Frederick Ludwig Encke, Bronx, both of N.Y., assignors to Arizona Chemical Company, New York, N.Y.

Continuation-in-part of Ser. No. 637,228, May 9, 1967, abandoned. This application Dec. 18, 1969, Ser. No. 886,173
Int. Cl. B01d 17/00
U.S. Cl. 252—358 5 Claims

Foam in aqueous media is controlled by compositions consisting essentially of (1) ethylene oxide adducts of rosin, and (2) fatty acids.

3,671,462
DISPROPORTIONATION CATALYST

Joan Irenee O'Hara, Stockton-on-Tees, and Christopher Patrick Cadman Bradshaw, Hampton, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Oct. 15, 1969, Ser. No. 866,755
Claims priority, application Great Britain, Nov. 6, 1968, 52,545/68
Int. Cl. C07c 3/62
U.S. Cl. 252—429 A 5 Claims

A heterogeneous disproportionation catalyst is provided which consists essentially of (a) a salt of molybdenum or tungsten (b) tetrabutyl tin and (c) a solid support selected from the group consisting of alumina, silica, magnesia, sepiolite, boria, thoria, charcoal, pumice and molecular sieve and wherein the molar ratio of the tungsten or molybdenum salt to tetrabutyl tin is in the range of from about 5:1 to 0.01:1 and the support is present in an amount of from about 10 to 99.9 percent by weight expressed as a percentage by weight of the total weight of the salt, tetrabutyl tin and support.

3,671,463
PROCESS FOR EXTRUDED CATALYST AND CATALYST SUPPORTS

Joseph Dennis Colgan, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 27, 1970, Ser. No. 93,403
Int. Cl. B01j 11/44, 11/36
U.S. Cl. 252—448 10 Claims

A process for catalyst materials in extrudate form and at increased density by use of a mix mulling technique is disclosed wherein a high molecular weight, organic, water-soluble polymer is incorporated into the mix and results in increased density in the final formed catalyst at mulling times of 0–150 minutes.

3,671,464
SURFACER TREATING PROCESS FOR BLEMISHED ELECTROCOAT SUBSTRATES AND SURFACER COMPOSITION THEREFOR

Allan E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 674,639, Oct. 11, 1967, Pat. No. 3,578,277. This application March 5, 1970, Ser. No. 26,454
Int. Cl. H01b 1/06; B44d 1/34
U.S. Cl. 252—511 4 Claims

This patent application sets forth a process for surface treating an electrode substrate used in electrocoating, specifically, one which has surface imperfections or blemishes, and a surfacer composition therefor. The surfacer composition is a curable mixture comprising binder resin and sufficient electrically conductive filler mixed therewith for at most insignificantly changing, in cured thin final section on a blemished surface region of said substrate, the electrical resistance of said region relative to that of the untreated adjacent substrate to be coated. In accordance with the process surfacer composition is applied in thin layer to the blemished region of the substrate, cured (and when appropriate further and finally finished as by wet sanding), then the thus-treated substrate is electrocoated with paint.

3,671,465
COMPOSITION AND PROCESS FOR STRIPPING PAINT

Donald P. Murphy, Roseville, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 1, 1968, Ser. No. 764,292
Int. Cl. C11d 7/06
U.S. Cl. 252—548 7 Claims

An aqueous alkaline stripping solution which contains an accelerator composition comprised of tripropylene glycol and an organic nitrogen compound of the formula:

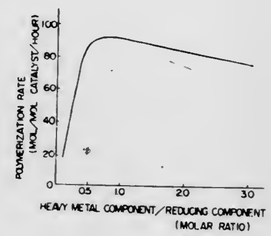


wherein R_1, R_2 and R_3 are independently selected from the group consisting of hydrogen, alkanol and hydroxy ether groups, which latter groups contain from about two to 10 carbon atoms, at least one of R_1, R_2 and R_3 being other than hydrogen, the compound having a boiling point of at least about 100° C and a molecular weight which is not substantially in excess of about 500. The preferred alkaline stripping solution is an aqueous sodium hydroxide solution and the preferred components of the activator composition are tripropylene glycol and triethanolamine.

3,671,466
PROCESS FOR POLYMERIZING THREE-MEMBERED HETEROCYCLIC COMPOUNDS

Kazuo Shikata, Tokuyama; Suekiti Nakao, Tsuno-gun, and Katsutoshi Knomi, Tokuyama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Tokuyama-shi, Japan

Filed July 7, 1970, Ser. No. 52,887
Claims priority, application Japan, July 7, 1969, 44/53100
Int. Cl. C08g 23/14
U.S. Cl. 260—2 A 8 Claims



Process for polymerizing three-membered heterocyclic compounds such as propylene oxide, using a new binary catalyst, i.e., a combination catalyst of two metallic components: a heavy metal organic compound of either nickel or cobalt and an organic compound of zinc.

3,671,467
SELENIUM CONTAINING POLYMERS

Wolfgang H. H. Gunther, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

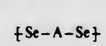
Filed July 30, 1970, Ser. No. 59,495
Int. Cl. C08g 33/20; C07d 81/00; G03g 5/06
U.S. Cl. 260—2 M 16 Claims

This invention relates to organic diselenides and polyselenides among which are cyclic compounds represented by the formula:



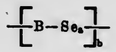
I

wherein R is selected from divalent hydrocarbylene radicals of five to 20 carbon atoms, divalent heterocyclic, alicyclic and aromatic radicals having from three to 50 carbon atoms, *n* is a positive integer and X is the radical — Se — R — Se — ; linear polymers having a repeating unit represented by the formula:



II

wherein A is selected from divalent alkylene radicals having from nine to 20 carbon atoms, divalent aromatic radicals from six to 50 carbon atoms and divalent heterocyclic radicals and polymers having a repeating unit represented by the formula:



III

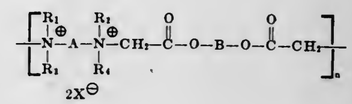
wherein B is selected from the group consisting of divalent hydrocarbylene radicals and divalent heterocyclic radicals, *a* is a positive integer of at least 3 and *b* is a positive integer greater than 1. This invention also relates to the use of these compounds in the production of electrophotographic plates.

3,671,468
POLYMERS AND PROCESS FOR PREPARING THE SAME

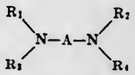
Minoru Tsuda, Kita-adachi-gun; Akio Yosida, and Takamitsu Yuki, both of Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 3, 1970, Ser. No. 69,231
Claims priority, application Japan, Sept. 4, 1969, 44/69709
Int. Cl. C08g 33/02
U.S. Cl. 260—2 R 19 Claims

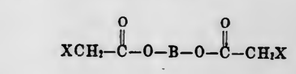
Novel polymers represented by the formula



where A and B are each selected from the group consisting of a straight and branched alkylene, a straight and branched alkylene containing, as a part thereof, a double bond, a triple bond or a radical $-(CH_2CH_2O)_y-CH_2-CH_2-$ wherein *y* is an integer of from 1 to 20, xylylene and cyclohexylene; R_1, R_2, R_3 and R_4 represent a lower alkyl group, or R_1 and R_2, and/or R_3 and R_4, when taken together with the nitrogen atoms to which they are attached, may form heterocyclic rings; and X represents a halogen atom, which are useful for pharmaceutical preparations and useful as a coagulating or flocculating agent for clarifying crude water in the reservoir for water supply, industrial water and sewage or drainage water are disclosed. The polymers are prepared by reacting a compound represented by the formula



wherein R_1, R_2, R_3, R_4 and A are as defined above, with a compound represented by the formula



wherein B and X are as defined above.

3,671,469
METHOD OF PREPARING HALOGEN-CONTAINING POLYMERS

Harold E. Doorenbos, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 20, 1969, Ser. No. 867,921
Int. Cl. C08f 3/20, 13/00
U.S. Cl. 260—2 H 9 Claims

Fluorine-, chlorine- and/or bromine-containing polymers are prepared by reacting

a. a monomer or mixture of monomers having the structural formula $R-CX_3)_n$, wherein *n* is an integer from 2 to 4, X is fluoro, chloro or bromo, and R is an *n*-valent hydrocarbon or halo-substituted hydrocarbon group, each $-CX_3$ group being an allylic or benzylic trihalomethyl group; with

b. CuX and/or CuX_2, wherein X has the above meaning, and

c. phosphorous acid, alkyl hydrogen phosphonate and/or a dialkyl hydrogen phosphonate.

The polymers are thermally stable at elevated temperatures and are useful as heat-resistant, fire-resistant films, coatings, ablatives and the like.

3,671,470
RIGID POLYURETHANE COMPOSITIONS WITH IMPROVED PROPERTIES

Leslie C. Case, 14 Lockeland Road, Winchester, Mass.

Filed April 27, 1970, Ser. No. 32,398
Int. Cl. C08g 22/06, 22/08, 22/44
U.S. Cl. 260—2.5 AP 35 Claims

Polyurethane formulations based on a polyol component which incorporates a hydroxyalkyl-substituted Mannich condensation product and a substantial quantity of cyclic hydrocarbon radicals are described. Such formulations yield rigid polyurethane foams which exhibit unusual inherent flame retardancy and exceptionally good dimensional stability under adverse conditions of temperature and humidity.

3,671,471
DIACID-DIOL BASED FOAMS AND PROCESS OF MAKING SAME

Saunders E. Jamison, Summit, N.J., assignor to Celanese Corporation

Filed May 4, 1970, Ser. No. 34,908
Int. Cl. C08f 47/08
U.S. Cl. 260—2.5 R 12 Claims

A rigid foam useful in insulating, molding and packaging, is prepared by (a) reacting a four to 10 carbon alpha-beta ethylenically unsaturated, dicarboxylic acid with a six to 50 carbon diol and (b) heating the resulting product to a temperature sufficient to effect decarboxylation of the resulting unsaturated diacid-diol adduct.

3,671,472
MINERAL-COATING COMPOSITIONS COMPRISING AN AMINE POLYMER AND AN AMYLACEOUS SUBSTANCE AND PAPERS COATED THEREWITH

Raymond W. McNamee, Horsham; Lubomir Mlynar, Hatboro, and Norman Schachat, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 7, 1968, Ser. No. 765,619
Int. Cl. C08f 45/06, 45/18
U.S. Cl. 260—17.4 ST 15 Claims

Mineral coating compositions for coating papers in which the binder comprises an amine-containing copolymer and an amylaceous substance. Improvement in wet rub resistance is obtained.

3,671,473
POLYMERS FORMED FROM THE REACTION OF A MIXTURE OF A POLYEPOXIDE AND A POLYESTER AND AN UNSYMMETRICAL DISUBSTITUTED HYDRAZINE

Edward A. Sedor, Bloomington, and Robert C. Siegel, Savage, both of Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 714,322, March 19, 1968, Pat. No. 3,565,868. This application Nov. 12, 1970, Ser. No. 89,147
Int. Cl. C08g 45/00
U.S. Cl. 260—18 PF 11 Claims

Polymers comprising the reaction product of:
A. unsymmetrical disubstituted hydrazine and
B. a material selected from the group consisting of:
1. epoxy-esters having at least one reactive epoxide group and at least one reactive carboxylic acid ester group, and
2. mixtures of polyepoxides having a plurality of reactive epoxide groups and polyesters having a plurality of reactive ester groups.
These polymers find utility as decorative and/or protective coatings when applied to substrates.

3,671,474
WATER-THINNABLE CONDENSATION PRODUCTS AND THEIR USE AS PAINT BINDERS

William J. Van Westrenen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed June 18, 1969, Ser. No. 834,531
Claims priority, application Great Britain, Jan. 13, 1969, 1,831/69
Int. Cl. C09d 3/56, 3/66, 5/24
U.S. Cl. 260—20 12 Claims

The disclosure describes novel condensation products having superior throwing power suitable as electrodeposition paint binders which are the partially neutralized reaction products of a polyepoxide and monocarboxylic acids containing at least 50 percent by weight of ethylenically unsaturated fatty acids, said reaction product having been further esterified with at least 4 percent by weight of an ethylenically unsaturated polycarboxylic acid or anhydride thereof and subsequently reacted with an oil-soluble, heat-non-reactive phenolic resin. The disclosure also describes the process for producing the above-described novel composition.

3,671,475
CROSS-LINKABLE UNSATURATED POLYMER COMPOSITIONS

Karl Brack, Hyde Park, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 658,060, Aug. 3, 1967, Pat. No. 3,592,784. This application Sept. 4, 1970, Ser. No. 69,946 The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.
Int. Cl. C08f 27/08, 47/00
U.S. Cl. 260—22 R 8 Claims

A cross-linkable polymer composition is obtained by admixing an unsaturated polymer, a polyfunctional hydrazide halide of a specified formula, and material that provides upon contact with atmospheric moisture at least one alkaline reactant that reacts with the hydrazide halide to form the corresponding polyfunctional nitrile imine which in turn cross-links the unsaturated polymer.

3,671,476
ELECTRODEPOSITION COLOR COATING COMPOSITION AND METHOD FOR ELECTRODEPOSITION COLOR COATING OF METAL THEREWITH

Shiro Terai, Nagoya; Toshio Suzuki, Kasugai; Yoshihumi Hasegawa, Nagoya; Shojiro Horiguchi, Tokyo; Michiei Nakamura, Soka; Shizuo Kimata, and Tadanobu Suzuki, both of Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd.; Dainichiseika Color & Chemicals Mfg. Co., Ltd. and Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1970, Ser. No. 13,763
Claims priority, application Japan, March 1, 1969, 44/15038; Aug. 8, 1969, 44/62303
Int. Cl. C09d 3/74, 5/24; C23b 13/00
U.S. Cl. 260—23 AR 48 Claims

An electrodeposition-color-coating composition which comprises (A) a water-soluble vinyl copolymer containing as the essential constitutional elements of the copolymer 95 to 70 percent by weight of at least one α,β-ethylenically unsaturated monomer and an ammonium or amine salt of 5 to 30 percent by weight of at least one α,β-ethylenically unsaturated carboxylic acid, or a mixture of a major amount of said vinyl copolymer and a minor amount of a methylol melamine derivative compatible therewith, and (B) at least one member selected from the group consisting of (1) an ammonium or amine salt of a chromogen-bonded polymer obtained by reacting (a) a chromogen having diazonium group or α,β-ethylenically unsaturated group with (b) and α,β-ethylenically unsaturated carboxylic acid or a mixture of an α,β-ethylenically unsaturated carboxylic acid and other α,β-ethylenically unsaturated monomer, (2) an ammonium or amine salt of a chromogen-bonded polymer prepared by reacting (a') a chromogen intermediate having a diazonium group or α,β-ethylenically unsaturated group, with the above-mentioned component (b) and subsequently subjecting the reaction product to development and (3) an aqueous dispersion of a pigment prepared by previously dispersing the pigment in water with a nonionic or an anionic surface active agent. Said composition can electrophoretically be coated on conductive metals, such as aluminum and an aluminum alloy in a known manner at a potential of 30 to 150 volts, followed by baking the coated metals at 120° to 230° C., whereby a light-fast, corrosion-resistant, colored and transparent coating having protective performances and beautiful appearance can be obtained.

3,671,477
COMPOSITION COMPRISING UNSATURATED ELASTOMER, EPOXY RESIN POLYCARBOXYLIC ACID OR ANHYDRIDE, CROSS-LINKING CATALYST AND FILLER AND GOLF BALL MADE THEREFROM

Robert Dennis Nesbitt, Don Mills, Ontario, Canada, assignor to Campbell Manufacturing Company Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 833,794, June 16, 1969, abandoned. This application Dec. 16, 1970, Ser. No. 98,930
Claims priority, application Canada, March 10, 1969, 045,249
Int. Cl. A63b 37/00; C08d 9/08, 9/10
U.S. Cl. 260—23.5 A 14 Claims

A composition of matter particularly suitable for the manufacture of unitary molded golf balls consists of a blend of an unsaturated elastomer capable of being crosslinked by peroxide-initiated polymerization, an epoxy resin, a curing agent comprising unsaturated polycarboxylic acid or unsaturated polycarboxylic acid anhydride, a crosslinking catalyst for the elastomer and a filler material.

3,671,478
RUBBER COMPOSITIONS

George Mitchel Doyle, Sutton Coldfield; Robert Eric Humphreys, Birmingham, and Peter Lothar Ernst Moring, Sutton Coldfield, all of England, assignors to Dunlop Holding Limited, Birmingham, England

Continuation-in-part of Ser. No. 858,175, Sept. 15, 1969, abandoned. This application Nov. 9, 1970, Ser. No. 88,086
Claims priority, application Great Britain, Sept. 19, 1968, 44,463/68; Nov. 19, 1969, 56,675/69
Int. Cl. C08c 11/06; C08d 9/00
U.S. Cl. 260—23.7 M 18 Claims

A vulcanizable composition which comprises natural rubber and/or synthetic rubber and a minor proportion of boric oxide. Preferably the amount of boric oxide is not greater than 20 parts by weight per 100 parts by weight of rubber.

3,671,479
BARRIER COATINGS

August F. Ottinger, St. Louis, and Paul R. Graham, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 718,367, April 3, 1968, Pat. No. 3,567,502. This application Feb. 26, 1971, Ser. No. 119,371
Int. Cl. C08f 29/22, 37/18
U.S. Cl. 260—29.6 RW 9 Claims

Composition comprising a polyblend of ethylene/vinyl chloride/acrylamide interpolymer and polyvinylidene-chloride useful as a flexible barrier coating for fibrous substrates.

3,671,480
HEAT-CURABLE ELASTOMERIC SILICONE COMPOSITIONS

Tadashi Wada, and Kunio Itoh, both of Annaka-shi, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

Filed Dec. 18, 1969, Ser. No. 886,372
Claims priority, application Japan, Dec. 23, 1968, 43/94385
Int. Cl. C08g 51/04
U.S. Cl. 260—29.1 SB 8 Claims

A heat curable elastomeric silicone composition comprising a mixture of two polydiorganosiloxanes, each of which contains vinyl unsaturation; a silica filler; a polyorganohydrogensiloxane and a platinum compound; and a method for the preparation of vulcanizates thereof. The composition is cured for a period up to about one hour and is then post-cured for up to about 24 hours to yield a vulcanized elastomer having high tear strength, flame retardance, heat resistance and superior compression set.

3,671,481
TRIMELLAMIDE-IMIDES SOLUTIONS

Jean Gattus, La Mulatiere, and Maurice Mallet, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed July 2, 1970, Ser. No. 52,072
Claims priority, application France, July 4, 1969, 6922817
Int. Cl. C08g 51/44
U.S. Cl. 260—30.2 R 7 Claims

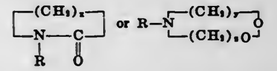
Solutions of trimellamide-imides in non-hydroxylic polar solvents containing an aromatic anhydride and an aromatic diamine are useful for making films which can be easily detached from metallic supports.

3,671,482
POLYMER SOLUTIONS OF POLYAMINO ACIDS AND THE PROCESS FOR THEIR PREPARATION

Yasuo Fujimoto, Machida-shi; Koichi Nagaoka, Tokyo; Keizo Tatsukawa, Machida-shi, and Yoichi Koiwa, Tokyo, all of Japan, assignors to Kyava Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed April 3, 1969, Ser. No. 813,308
Claims priority, application Japan, April 4, 1968, 43/21788
Int. Cl. C08g 20/08, 51/44
U.S. Cl. 260—30.4 N 14 Claims

The present disclosure is directed to a polymer solution and a process for preparing the same which comprises a polyamino acid or polyamino acid ester and a solvent for said polymer, said solvent including at least one N-containing heterocyclic compound selected from the group consisting of:



wherein x is an integer of 2 to 4, y and z are integers, including zero, which satisfy the formula $y+z<6$, and R is hydrogen, an alkyl group having about one to eight carbon atoms, a phenyl group or a tolyl group, including those having one to three substituents selected from the group consisting of halogen and nitro.

3,671,483
PRIMER COMPOSITION FOR ADHERING SILICONE ELASTOMER TO SUBSTRATES

Donald G. Young, Glendale, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 30,346, April 20, 1970, abandoned. This application Dec. 30, 1970, Ser. No. 103,004
Int. Cl. C08g 51/34, 51/28, 51/30
U.S. Cl. 260—32.8 SB 10 Claims

A mixture of tetraalkoxysilane or partial hydrolyzate thereof, a tetraalkyltitanate, a compound of the formula

$CF_3CH_2CHSi[OSi(CH_3)_2X]_3$ where X is a hydrogen atom or $—CH_2CH_2Si(OOCCH_3)_3$ and at least one X is a $—CH_2CH_2Si(OOCCH_3)_3$ and an organic solvent is useful as a primer in adhering silicone elastomer to substrates such as epoxy resins and polyurethane. An example of the primer is one part each of ethylpolysilicate, tetrabutyltitanate and $CF_3CH_2CH_2Si[OSi(CH_{22}CH_2CH_2Si(OOCCH_3)_3]_3$ and 10 parts of acetone.

3,671,484

SILICONE RELEASE COATINGS

Kenneth G. Cooper, Herbert T. Cooper, and Colin M. Rowland, all c/o Midland Silicones Limited, Reading England

Filed July 20, 1970, Ser. No. 56,686

Claims priority, application Great Britain, July 23, 1969, 37,055/69

Int. Cl. C08g *51/28*

U.S. Cl. 260—33.6 SB 7 Claims

Abrasion resistant coatings for paper and other substrates are prepared by admixing in an organic solvent, (a) 100 parts by weight of a substantially linear diorganopolysiloxane having methyl radicals as at least 80 percent of the organic substitutes on silicon, the remaining organic substituents being hydrocarbyl radicals of up to 18 carbon atoms, the terminal groups on the siloxane being hydrocarbyl, hydroxyl or alkoxyl radicals, (b) 1.5 to 15 parts by weight of alkylhydrogenpolysiloxane having a molecular weight not exceeding about 5,000, (c) 3 to 34 parts by weight of tin acylate, (d) 2 to 8 parts by weight of an aminated organopolysiloxane of the general formula $R_3SiO(CH_3R'SiO)_x(CH_3XSiO)_y(R''_2SiO)_zSiR_3$ where R and R'' are hydrocarbyl radicals, R' is an alkoxy or alkoxyalkoxy radical of less than six carbon atoms, X is $—R'''NQH$ where R''' is an alkylene radical of three to 10 carbon atoms, Q is a hydrogen atom, trihydrocarbylisilyl radical or a hydrocarbyl radical of less than seven carbon atoms, X is 15 to 95, y is 2 to 25, z is up to 10 percent of the sum of $x+y$ and the sum of $x+y+z$ is 20 to 100.

3,671,485

ABHESIVE COATINGS COMPRISING POLYSIBOXANES

Heinrich Marwitz, and Siegfried Nitzsche, both of Burghausen, upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed July 9, 1970, Ser. No. 53,630

Int. Cl. C08g *51/34, 51/28*

U.S. Cl. 260—33.4 SB 9 Claims

An abhesive or release coating for a variety of substrates, particularly paper, is prepared by admixing (1) a hydroxyl endblocked diorganopolysiloxane, (2) a crosslinking alkoxysilane free of amino groups, (3) a crosslinking silane containing amino groups, (4) a tin compound as curing catalyst in (5) an organic solvent. The coating is applied to the substrate and can be cured in the absence of moisture.

3,671,486

FILLED FUSIBLE AROMATIC PREPOLYMER COMPOSITION

David Rodney Dixon, Dunstable; John Brewster Rose, Letchworth, both of England, and Cecil Nigel Turton, Stamford, Conn., assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 751,768, Aug. 12, 1968, abandoned. This application Jan. 27, 1970, Ser. No. 6,274

Claims priority, application Great Britain, Aug. 18, 1967, 38,220/67; Feb. 17, 1969, 8,571/69

Int. Cl. C08g *51/04, 51/08*

U.S. Cl. 260—37 N 6 Claims

Mixtures of aromatic tetracarboxylic dianhydrides and/or aromatic tricarboxylic anhydrides and urethane or urea derivatives of aromatic diamines, and soluble and fusible prepolymers obtained therefrom, are useful intermediates for fabricating polyimide articles.

3,671,487

GLASS REINFORCED POLYESTER RESINS CONTAINING POLYTETRAFLUOROETHYLENE AND FLAME RETARDANT ADDITIVES

Visvaldis Abolins, Delmar, N.Y., assignor to General Electric Company

Filed May 5, 1971, Ser. No. 140,596

Int. Cl. C08k *1/78*

U.S. Cl. 260—40 R 20 Claims

Flame retardant thermoplastic molding compositions are provided comprising a normally flammable linear polyester, filamentous glass, a flame retardant agent and a polytetrafluoroethylene resin. The use of the polytetrafluoroethylene resin controls dripping and permits the flame retardant agent to be used in amounts sufficient to render the compositions non-burning or self-extinguishing without detracting from their physical properties.

3,671,488

THERMAL STABILIZATION OF ADDITION POLYMERS

Dagobert E. Stuetz, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 19, 1966, Ser. No. 551,222

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.7 R 1 Claim

A composition comprising an addition polymer and a stabilizing amount of a compound selected from the group consisting of 9,10-dihydroanthracene, (1-8)-octahydroanthracene, phenanthrene, (1-8)-octahydrphenanthrene, acenaphthylene and (1-4)-tetrahydroacenaphthene.

3,671,489

POLYSILOXANE COPOLYMERS DERIVED FROM THE CARBORANE-SILICON PHTHALOCYANINE MONOMER

Robert L. Barnes, Clifton, N.J.; William M. Block, Staten Island, N.Y., and Daniel Grafstein, Morristown, N.J., assignors to The Singer Company, New York, N.Y.

Continuation-in-part of Ser. No. 619,199, Feb. 28, 1967, abandoned. This application Dec. 15, 1969, Ser. No. 885,335

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E 1 Claim

Polysiloxane copolymers derived from the carborane - silicon phthalocyanine monomer. Said copolymers are useful as high temperature stable coatings, adhesives, molding compounds, for electronic components and laminating resins.

3,671,490

CROSS-LINKED POLYIMIDES

Michel Bargain, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Continuation-in-part of Ser. No. 743,010, July 8, 1968, Pat. No. 3,575,924. This application Jan. 22, 1971, Ser. No. 108,973

Claims priority, application France, July 12, 1967, 67114135

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP 4 Claims

The invention provides novel cross-linked polyimides made by reacting a dianhydride with a molar excess of diamine, reacting the product with an unsaturated anhydride to produce an unsaturated polyamide, and heating the latter to produce the cross-linked polyimide.

3,671,491

RANDOM BENZIMIDAZOLE-BENZOXAZOLE COPOLYMERS AND METHODS OF PREPARATION

John T. Loft, Springfield; Anthony B. Conciatori, Chatham, and Edward C. Chenevey, North Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed March 26, 1969, Ser. No. 810,813

Int. Cl. C08g *33/02*

U.S. Cl. 260—47 CP 12 Claims

Random copolymers which consist essentially of from about 90 to about 10 percent of recurring benzimidazole structural units and correspondingly from about 10 to about 90 percent of recurring benzoxazole structural units are provided. Several polymerization methods including, for example, a two stage melt-solid state procedure, are described.

3,671,492

1:1 ALTERNATING COPOLYMERS OF CARBONYL OR THIOCARBONYL-CONTAINING NON-CONJUGATED COMPOUNDS AND CONJUGATED COMPOUNDS AND METHOD OF PREPARATION

Kohei Nakaguchi, Osaka; Shohachi Kawasumi, Kobe; Masaaki Hirooka, Ibaraki; Hiroshi Yabuuchi, Takatsuki, and Hiroyoshi Takao, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Continuation of Ser. No. 567,392, June 25, 1966, abandoned. This application March 16, 1970, Ser. No. 20,087

Claims priority, application Japan, July 26, 1965, 40/45480; July 30, 1965, 40/46495; June 2, 1966, 41/35763

Int. Cl. C08f *3/40, 3/42, 3/74*

U.S. Cl. 260—85.5 ES 10 Claims

A novel alternating copolymer is prepared by copolymerizing a compound having a polar group, such as a carbonyl or thiocarbonyl group, at a non-conjugated position and a conjugated vinyl compound in the presence of an organoaluminum halide. Alternating copolymers thus-produced are superior in thermal stability to conventional random copolymers and is resistant to coloration. Alternating copolymers obtained by copolymerizing vinyl acetate and methyl acrylate or acrylonitrile are preferred examples of these products.

3,671,493

FLUOROCARBON-CONTAINING COMPOUNDS AND METHOD OF IMPARTING OIL- AND WATER-REPELLENCY TO TEXTILES, PAPER, LEATHER AND THE LIKE

Sergio Lo Monaco, Piazzale Roma 13, Vicenza; Alfredo Guerrato, Via Paniacco 2; Dario Fabbro, Via Verdis 3, both of Trissino, and Graziello Donadello, Via S. Christoforo 9 B, Valdagno, all of Italy

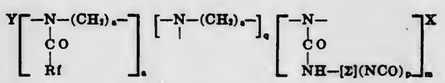
Filed April 7, 1970, Ser. No. 26,263

Claims priority, application Italy, April 16, 1969, 51444 A/69

Int. Cl. C08g *22/04, 53/16*; D06m *15/52*

U.S. Cl. 260—75 NH 6 Claims

Compounds represented by a formula:



comprising a perfluorinated hydrocarbon chain Rf and a polyester— or polyether urethane chain [Σ] carrying free —NCO groups; and precursors of said compounds, wherein the —NCO groups are temporarily blocked by phenol or another suitable blocking agent.

3,671,494

THERMALLY STABLE POLYESTERS FIBERS HAVING INHERENT DISPERSE DYE UPTAKE AND OIL STAIN RELEASE PROPERTIES

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 789,528, Jan. 7, 1969, abandoned, and a continuation-in-part of Ser. No. 824,092, May 13, 1969, and a continuation-in-part of Ser. No. 874,638, Nov. 6, 1969. This application May 5, 1970, Ser. No. 34,742. The portion of the term of this patent subsequent to June 6, 1989, has been disclaimed.

Int. Cl. C08g *17/08*

U.S. Cl. 260—77 14 Claims

Thermally stable fiber-forming polyesters having superior inherent oil-stain release properties are obtained by heat-setting at temperatures of from about 300°F. to about 350°F., filaments or fabrics produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: $R—O[G—O]_x—H$, where R is an alkyl group containing an average of at least 8 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value of at least equal to or greater than 9, and no greater than about 20.

3,671,495

THERMALLY STABLE POLYESTER FIBERS HAVING INHERENT DISPERSE DYE UPTAKE AND SUPERIOR OIL STAIN RELEASE PROPERTIES

Henry L. King; Eugene L. Ringwald, both of Cary, N.C., and James C. Randall, Jr., Bartlesville, Okla., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 789,528, Jan. 7, 1969, abandoned, and a continuation-in-part of Ser. No. 824,092, May 13, 1969, and a continuation-in-part of Ser. No. 874,638, Nov. 6, 1969, and a continuation-in-part of Ser. No. 34,742, May 5, 1970, and a continuation-in-part of Ser. No. 32,675, April 28, 1970. This application May 22, 1970, Ser. No. 41,243

Int. Cl. C08g *17/08*

U.S. Cl. 260—77 14 Claims

Thermally stable fiber-forming polyesters having superior inherent oil-stain release properties are obtained by heat-setting at temperatures of from about 175° F. to about 375° F., filaments or fabrics produced from dicarboxylic acids, or reactive derivatives thereof, glycols and small amounts of mixtures of compounds having a typical general formula: $R—O[G—O]_x—H$, where R is an alkyl group containing an average of about eight to 20 carbon atoms; G is a hydrocarbon radical selected from the group consisting of ethylene, propylene and isomers thereof, and mixtures of the above; and x has an average value of at least equal to or greater than 9, no greater than about 20, and about equal to or greater than R.

3,671,496

PROCESS FOR PREPARING RESINOUS COMPOSITIONS

Hiromasa Masuda, Osaka; Eiiti Nishigaki, Nishinomiya, and Tomosuke Maeda, Osaka, all of Japan, assignors to Nippon Yushi Kabushiki Kaisha, Cheyoda-ku, Tokyo, Japan

Division of Ser. No. 717,440, March 29, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,482

Claims priority, application Japan, April 3, 1967, 42/20762

Int. Cl. C08q *22/08*

U.S. Cl. 260—77.5 CR 4 Claims

A polyurethane composition comprising the reaction product of an acrylic polymer comprising:

Component A

A monomer having



bond and further having —OH,



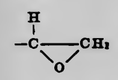
—$CONH_2$,—$CONHCH_2OH$ or —$CON(CH_2OH)_2$ groups,
Component B
A monobasic or polybasic acid having a



bond,
Component C
An alkyl ester of an α,β-unsaturated carboxylic acid, or a compound having a



group but which is free of —OH, —COOH and ester groups, or



compound free of $H_2C = C$ such as the glycidyl ester of versatic acid; and a diisocyanate such as xylene diisocyanate or a prepolymer thereof.

3,671,497
POLYURETHANE RESINS FROM HYDROXY TERMINATED PERFLUORO ETHERS
George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Eugene C. Stump, Jr., Gainesville, Fla., and Stephen Eugene Rochow, Ann Arbor, Mich.
Division of Ser. No. 770,398, Oct. 24, 1968, Pat. No. 3,574,770. This application Dec. 18, 1970, Ser. No. 99,524
Int. Cl. C08g 22/14, 22/16
U.S. Cl. 260—77.5 AP 4 Claims
Hydroxy terminated perfluoro ethers and polyurethane resins incorporating the structure

$$-CH_2C+(CF_3)[OCF_2CF(CF_3)](CF_2)_pO[CF(CF_3)CF_2O]_nCF(CF_3)CH_2-$$

where p is an integer of 2 to 12 and
m and n are integers whose sum is from 0 to 20.

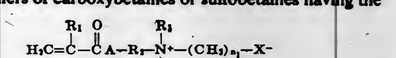
3,671,498
COPOLYAMIDES FROM BIS(AMINOPHENYL)SULFONE
Michael Horace Knight, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
Filed April 17, 1970, Ser. No. 29,699
Claims priority, application Great Britain, May 2, 1969, 22,508/69
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 8 Claims
The color of polyamides of bis(aminophenyl)sulphones and α,ω-polymethylene dicarboxylic acids having from six to 16 carbon atoms in all, or mixtures of these acids with up to 25 mole percent of one or more other dicarboxylic acids, may be improved by replacing from 4 to 20 mole percent of the bis(aminophenyl)sulphone with a linear or branched alkylene diamine having the structure $NH_2CH_2(CR_1R_2)_mCH_2NH_2$ where each R_1 and R_2 is hydrogen or an alkyl group having up to four carbon atoms and m is from 0 to 10 inclusive.

3,671,499
LACTAM POLYMERIZATION WITH ALLOPHANOYL HALIDE INITIATORS
Charles E. Moyer, Jr., Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,683
Int. Cl. C08g 20/12, 20/18
U.S. Cl. 260—78 L 11 Claims
An allophanoyl halide compound is used as an initiator or activator with alkaline catalyst in the anionic polymerization of lactam monomer so as to provide for a rapid polymerization process.

3,671,500
LACTAM POLYMERIZATION WITH N,N'-DIALKYL-AZETIDINEDIONE INITIATORS
Herbert E. Johnson, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,684
Int. Cl. C08g 20/12, 20/18
U.S. Cl. 260—78 L 15 Claims
An N,N'-dialkyl-azetidinedione compound is used as an initiator or activator with alkaline catalyst in the anionic polymerization of lactam monomer so as to provide for a rapid polymerization process.

3,671,501
LACTAM POLYMERIZATION WITH SUBSTITUTED BIURET INITIATORS
Herbert E. Johnson, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,667
Int. Cl. C08g 20/12, 20/18
U.S. Cl. 260—78 L 6 Claims
A substituted biuret compound is used as an initiator or activator with alkaline catalyst in the anionic polymerization of lactam monomer so as to provide for a rapid polymerization process.

3,671,502
BETAINE COPOLYMERS WITH HYDROXYALKYLACRYLATES AND HYDROXYALKYLMETHACRYLATES
Carlos M. Samour, Wellesley, and Martin L. Fabxa, Cambridge, both of Mass., assignors to The Kendall Company, Wolpole, Mass.
Filed Nov. 12, 1970, Ser. No. 89,108
Int. Cl. C08f 15/00, 15/16
U.S. Cl. 260—79.3 MU 6 Claims
Copolymers of carboxybetaines or sulfobetaines having the formula

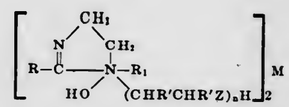


(I)

wherein R_1 is hydrogen or methyl; A is oxygen or —NH—; R_2 is ethylene, propylene, 2-hydroxypropylene or 2-acetoxypropylene; R_3 and R_4 are alkyl; n_1 is 1 to 4 and X^- is SO_3^- or CO_2^-; and about 10 to about 95.0 per cent by weight of hydroxyethylacrylate, hydroxyethylmethacrylate, hydroxypropylacrylate, hydroxypropylmethacrylate, polyethylene glycol acrylate, polyethylene glycol methacrylate, polypropylene glycol acrylate, polypropylene glycol methacrylate, polyglycerolacrylate or polyglycerolmethacrylate are disclosed. These neutral, hydrophilic copolymers are useful as binders.

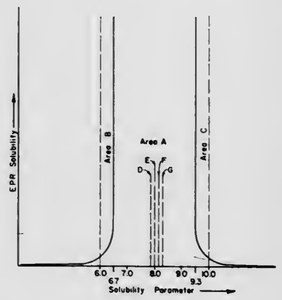
3,671,503
VULCANIZATION RETARDERS
Rudiger Schubart; Ernst Roos, both of Cologne, and Manfred Abele, Porz, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 18, 1970, Ser. No. 90,859
Claims priority, application Germany, Dec. 13, 1969, P 19 62 604.1
Int. Cl. C08f 27/06; C08c 11/60, 11/54
U.S. Cl. 260—79.5 B 4 Claims
N,N'-thio-bis-carbamic acid amides, their preparation by reacing at least 2 mols of a carboxylic acid amide with 1 mol of sulphur dichloride in the presence of an acid binding agent and their utility as rubber vulcanization retarders.

3,671,504
METHOD FOR ELECTROSTATICALLY COATING SYNTHETIC RESIN MOLDINGS
Hideo Marumo; Morio Ninomiya, both of Tokyo, and Shinro Watanabe, Ichikawa, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 687,993, Dec. 5, 1967, abandoned. This application Dec. 21, 1970, Ser. No. 100,346
Claims priority, application Japan, Dec. 8, 1966, 41/80070
Int. Cl. C08f 1/88
U.S. Cl. 260—80.7 6 Claims
Electrostatic coating of synthetic resin moldings is simplified by mixing in the synthetic resin from 0.1–5 wt. % of an amphoteric surface active agent of the formula



wherein:
R is a hydrocarbon radical having seven to 21 carbon atoms,
R' is selected from the group consisting of H and —CH_3,
Z is selected from the group consisting of —O— and —N-H—,
M is a metal ion selected from the group consisting of Mg, Ca, Zn, Ba and Fe,
R_1 is selected from the group consisting of —R_4COO—, —R_5SO_{3Q}— and —R_4OSO_3— (where R_5 is selected from the group consisting of —CH_2—, —C_2H_4— or —C_3H_6—),
n is a number from 0 to 3.

3,671,505
SUSPENSION POLYMERIZATION METHOD FOR PREPARING ELASTOMERIC HYDROCARBON INTERPOLYMERS
Albert Schrage, East Orange, and Jules Ernest Schoenberg, Bergenfield, both of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed June 27, 1968, Ser. No. 740,692. The portion of the term of this patent subsequent to July 21, 1987, has been disclaimed.
Int. Cl. C08f 15/04, 15/40
U.S. Cl. 260—80.78 10 Claims



A process is provided for preparing ethylene-propylene-diene terpolymers in suspension employing a normally liquid hydrocarbon such as cyclohexane and liquid propylene, the amount of liquid hydrocarbon ranging from 10 to 50 percent by volume and liquid propylene ranging from 50 to 90 percent by volume, this polymerization system resulting in no reactor fouling.

3,671,506
SULFUR CURABLE COPOLYMERS OF OLEFINS
Teruo Oshima, Nishinomiya-shi; Takeshi Wada, Takatsuki-shi; Tsuneyuki Nagase, Takatsuki-shi; Fujio Masuko, Takatsuki-shi; Masaaki Hirooka, Ibaragi-shi, and Isoji Taniguchi, Toyonaka-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan
Filed Feb. 4, 1969, Ser. No. 796,610
Claims priority, application Japan, Feb. 8, 1968, 43/8057
Int. Cl. C08f 19/00
U.S. Cl. 260—80.78 12 Claims
A linear copolymer having a high sulfur curing rates is prepared by contacting substantially exo-type 5-alkenyl-2-norbornene compound and ethylene and/or α-olefin having three to 20 carbon atoms with a catalyst consisting essentially of an organoaluminum compound and vanadium compound and/or titanium compound, both said vanadium compound and titanium compound having at least trivalencies, in the presence or absence of an inactive reaction medium. Particularly, terpolymers comprising ethylene, propylene and substantially exo-type 5-alkenyl-2-norbornene have excellent characteristics as elastomers.

3,671,507
METHOD FOR POLYMERIZATION OF N-VINYLCARBAZOLE
Tetsuo Tanaka, Kasukabe; Masao Masumura, Tokyo; Akihiro Toguchi, Tokyo, and Narlo Yamaguchi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation-in-part of Ser. No. 813,339, April 3, 1969, abandoned. This application July 12, 1971, Ser. No. 161,884
Int. Cl. C08f 7/16
U.S. Cl. 260—88.3 R 6 Claims
N-vinylcarbazole is bead polymerized in a polymerization reaction mixture made by mixing (1) molten monomer of N-vinylcarbazole suspended in water with a dispersant and (2) a solution of a free radical catalyst in sufficient water insoluble organic solvent to maintain the catalyst and a substantial amount of monomer in suspended droplet form, said solvent having a specific gravity of 1.0 or more; and then agitating vigorously the mixture of (1) and (2) at a temperature above the melting point of N-vinylcarbazole in an inert atmosphere.

3,671,508
METHOD FOR PREPARING POLYVINYL CHLORIDE
Shunichi Koyanagi, Naoestu; Hajime Kitamura, Saigata, and Shigenobu Tajima, Naoetsu, all of Japan, assignors to Shinetsu Chemical Company
Filed March 1, 1971, Ser. No. 120,041
Claims priority, application Japan, Sept. 30, 1970, 45/85120
Int. Cl. C08f 1/11, 3/30, 15/02
U.S. Cl. 260—87.1 6 Claims
Vinyl chloride is suspension polymerized in the presence of a catalyst selected from the group consisting of dialkyl peroxy dicarbonate, azo-bis-2,4-dimethyl valeronitrile, azo-bis-2,4,4-trimethyl valero nitrile, azo-bis-4-methoxy-2,4-dimethyl valeronitrile, and acetyl cyclohexyl sulfonyl peroxide, a suspending agent, a fatty alcohol having from eight to 18 carbon atoms and sorbitan oleate. When the rate of conversion reaches at least 50 percent, an organic reducing agent is added to the polymerization system. A polyvinyl chloride having superior particle size distribution, plasticizer absorption, fish eye, initial color and thermal stability is produced.

3,671,509
COPOLYMERS OF FLUOROKETONE IMINES WITH POLYMERIZABLE UNSATURATED COMPOUNDS

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 748,660, July 30, 1968, abandoned. This application March 22, 1971, Ser. No. 126,923

Int. Cl. C08f 3/04, 3/76, 7/04

U.S. Cl. 260—87.5 25 Claims

Copolymers of fluoroketone imines with one or more polymerizable olefinic compounds, e.g., a binary copolymer of hexafluoroacetone imine and ethylene or a terpolymer of N-methylhexafluoroacetone imine, ethylene and tetrafluoroethylene, useful as supported and unsupported films and as encapsulating agents, are prepared by reacting a fluoroketone imine with one or more polymerizable olefinic compounds.

3,671,510
METHOD FOR POLYMERIZATION OF FLUORINE-CONTAINING HALOOLEFINS

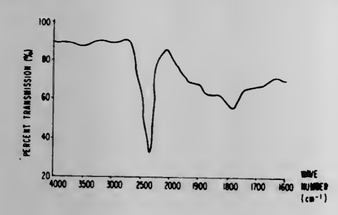
Yutaka Kometani, Nishinomiya; Masayoshi Tatemoto, and Masanori Nakamura, both of Osaka-fu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed April 21, 1970, Ser. No. 30,572

Claims priority, application Japan, April 21, 1969, 44/31128

Int. Cl. C08f 1/60, 1/11, 3/20

U.S. Cl. 260—87.5 A 6 Claims



A method for polymerization of fluorine-containing haloolefins which comprises subjecting one or more kinds of polymerizable fluorine-containing haloolefins to suspension polymerization in an aqueous medium in the presence of di(perchlorofluoroacyl) peroxide of the formula:

$$Cl(CF_2CFCl)_nCF_2C(=O)-O-O-C(=O)CF_2(CF_2CFCl)_nCl$$

wherein n is an integer of 1 to 10. Compared with known organic peroxides, the polymerization initiator of the present invention is advantageous in affording polymers of high molecular weight in excellent yields.

3,671,511
PROCESS FOR PREPARING POLYOLEFIN-SUBSTITUTED AMINES

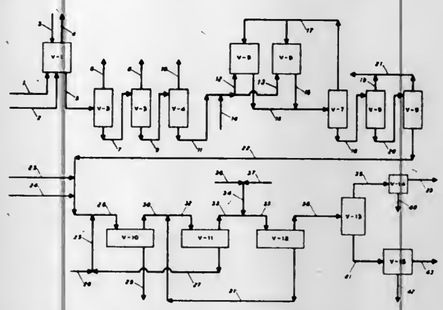
Lewis R. Honnen, 100 Sadler Lane, Petaluma, Calif.; Harry W. Andrewsen, 795 Los Colindas Rd., San Rafael, Calif., and Eddie G. Lindstrom, deceased, late of Martinez, Calif. (by Jean H. Lindstrom, special administratrix)

Filed April 23, 1970, Ser. No. 31,298

Int. Cl. C08f 27/08, 314, 27/02

U.S. Cl. 260—93.7 6 Claims

Polyolefin-substituted amines are prepared by chlorinating the polyolefin in an inert medium, removing the inert medium from the chlorinated polyolefin, reacting the chlorinated polyolefin with an excess of amine, removing excess amine for recycle by distillation under vacuum, and finishing the product by charging a diluent and an alkanol and washing, followed by removal of the alkanol and a portion of the diluent which are recycled.



3,671,512
6-AMINO-3-PYRIDINESULFONAMIDES

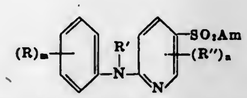
Renat Herbert Mizzoni, Long Valley R.D., and Herbert Morton Blatter, Summit, both of N.J., assignors to Abe-Geigy Corporation, Summit, N.J.

Filed April 1, 1970, Ser. No. 24,869

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 F 4 Claims

New 6-anilino-3-pyridinesulfonamides, e.g. those of the formula



R = H, alkyl, free, esterified or etherified OH, CF_3, NO_2, amino, free or functionally converted carboxy or sulfo
R′ = H, alkyl or acyl
R″ = H or alkyl
Am = an amino or hydrazino group
m = 1–3 N = 1 or 2

the N-oxide and salts thereof, are antiinflammatory agents.

3,671,513
CROSS-LINKED POLYOLEFIN COMPOSITION

George H. Hunt, West Newton, Mass., assignor to Simplex Wire and Cable Company, North Berwick, Maine

Continuation-in-part of Ser. No. 764,651, Oct. 2, 1968, which is a continuation-in-part of Ser. No. 649,355, June 27, 1967, Pat. No. 3,445,394, which is a continuation of Ser. No. 367,718, May 15, 1964, abandoned. This application April 30, 1970, Ser. No. 33,515

Int. Cl. C08f 29/02, 29/04, 45/54

U.S. Cl. 260—93.7 4 Claims

A composition of polyolefin material suitable for production of cross-linked polyolefin dielectric products having high voltage stability is disclosed. High voltage stability is imparted to the polyolefin composition by the inclusion of any of a number of known substituted aromatic compounds and resistance to sag during cross-linking operation is provided by the inclusion of a polychlorinated biphenyl in an amount up to about 10 parts by weight per 100 parts of polyolefin.

3,671,514
PHENYL-AZO-NAPHTHOL COMPOUNDS OF LOW SOLUBILITY

Willy Forter, Allschwil/Basel, Switzerland; Armand Henrard, Gand, Belgium; Fritz Kehrer, Basel, Switzerland; Urs Martin Keller, Binningen/Basel, Switzerland, and Hans Wasem, Basel, Switzerland, assignors to Sandoz Ltd., (a/k/a Sandoz A.G.), Basel, Switzerland

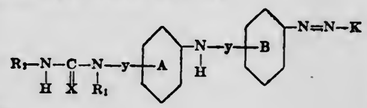
Filed Feb. 6, 1969, Ser. No. 797,235

Claims priority, application Switzerland, Feb. 20, 1968, 2458/68

Int. Cl. C07c 107/04, 107/06

U.S. Cl. 260—203 9 Claims

Monoazo pigments of the formula



(II)

wherein
X is = O, = S or = NH,
y is —CO— or —SO_2—,
R_1 is H or optionally substituted alkyl or phenyl,
R_2 is H or optionally substituted alkyl, phenyl or



K is a 2-hydroxy-3-naphthoic acid phenyl- or naphthylamide, wherein the phenyl or naphthyl of the amide radical may be further substituted, and the rings A and B may be further substituted;
are suitable for the pigmentation of plastics and synthetic resins, e.g. polyethylene, polystyrene, polyvinyl chloride, and of rubber, synthetic leather, printing inks and surface coatings. In addition they can be employed for the spin dyeing of viscose rayon and cellulose acetate, and for pigment printing, paper dyeing in the stock, and the coloration of coating mixtures applied to textiles. In these materials they are of yellow to red shade and show outstandingly good light and migration fastness, along with good to very good fastness to washing, chlorite, hypochlorite and peroxide bleaching, cross dyeing, blind vats, hydrosulphite, dry cleaning, rubbing overspraying and sulphates. They show good transparency and heat stability

3,671,515
SPHERICAL PRODUCTION OF SMALL PARTICLE NITROCELLULOSE

Charles D. Cox, Bryans Road, and Thomas Liggett, Indian Head, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 20, 1970, Ser. No. 39,171

Int. Cl. C08b 5/00, 21/02

U.S. Cl. 260—223 8 Claims

An improved process for manufacturing spherical small particle nitrocellulose wherein the prepared nitrocellulose lacquer is mixed with water and immediately subjected to a high shear emulsifying action to form the desired particles. No colloids, surfactants or emulsifying agents are employed in the process.

3,671,516
REVERSE-OSMOSIS MEMBRANES

Juanita J. Hillman, Silver Spring, Md., and Raymond H. Horowitz, Willow Springs, Ill., assignors to The United States of America as represented by the Secretary of the Interior

Filed March 2, 1971, Ser. No. 120,361

Int. Cl. C08b 1/02, 3/00

U.S. Cl. 260—229 4 Claims

Reverse-osmosis membranes are prepared by surface acetylation of cellulose film. A pre-treatment consisting of exposure of the film to high relative humidity, prior to acetylation, is employed to provide superior salt rejection.

3,671,517
PREPARATION OF 2,3,4,5-TETRAHYDRO-5-PHEN-YL-1H-1,4-BENZODIAZEPINES AND INTERMEDIATES

Giles Allan Archer, 88 Fells Road, Essex Fells, N.J., and Leo Henryk Sternbach, 10 Woodmont Road, Upper Montclair, N.J.

Division of Ser. No. 744,337, July 12, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,326

Int. Cl. C07d 53/06

U.S. Cl. 260—239 BD 2 Claims

2,3,4,5-Tetrahydro-5-phenyl-1H-1,4-benzodiazepines are prepared from corresponding 5-desphenyl, 4,5-unsaturated benzodiazepines by treatment of the latter compounds with an organo metallic phenyl compound. The product compounds are useful as intermediates in the preparation of medicinally valuable 5-phenyl-2,3-dihydro-1H-1,4-benzodiazepines. Methods for preparing the 5-desphenyl, 4,5-unsaturated 1H-1,4-benzodiazepines are provided and intermediates useful in such preparation are identified.

3,671,518
BENZODIAZEPIN-2-ONES AND PROCESSES FOR THEIR PREPARATION

Joseph Hellerbach; Andre Szente, both of Basel, Switzerland, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed March 6, 1970, Ser. No. 17,318

Claims priority, application Switzerland, March 13, 1969, 3784/69; April 30, 1969, 6595/69

Int. Cl. C07d 53/06

U.S. Cl. 260—239.3 D 16 Claims

3-substituted benzodiazepin-2-ones, derivatives thereof and processes for their preparation are described. These compounds are useful as anti-convulsants, muscle relaxants and sedatives.

3,671,519
N-SUBSTITUTED 2,3,4,5,-TETRAHYDRO-1H-3-BENZAZEPINES

Joseph Tokolics, King of Prussia; Gordon A. Hughes, Haverford, and Herchel Smith, Wayne, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 572,676, Aug. 16, 1966, Pat. No. 3,483,185. This application July 14, 1969, Ser. No. 860,449

Int. Cl. C07d 41/08

U.S. Cl. 260—239 BB 10 Claims

N-substituted-2,3,4,5-tetrahydro-1H-3-benzazepines are prepared having pharmacological activity including analgesic and hypoglycemic action.

3,671,520
ANTIMICROBIAL INDANONES

Rudolf Albrecht; Hans-Joachim Kessler, and Eberhard Schroder, all of Berlin, Germany, assignors to Schering AG, Berlin und Bergkamen, Berlin, Germany

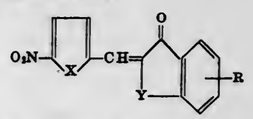
Filed March 27, 1970, Ser. No. 23,487

Claims priority, application Germany, March 29, 1969, P 19 16 825.3; Oct. 29, 1969, P 19 55 386.7

Int. Cl. C07d 99/04

U.S. Cl. 260—240 A 21 Claims

Compounds of the formula



wherein X is O, S or NH, Y is —CH_2— and R is nitro, benzoyloxy, alkoxycarbonyloxy, N-mono-alkylaminocarbon-

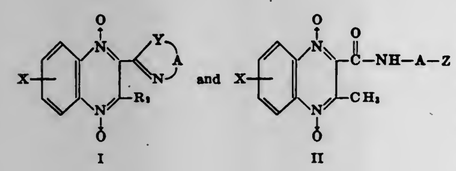
yloxy, N,N-dialkylaminocarbonyloxy or an N-substituted-aminoalkoxy group, having antimicrobial activity, e.g., against *Trichomonas vaginalis*.

3,671,521
2-HETEROCYCLIC SUBSTITUTED QUINXALINE-1, 4-DIOXIDES

Marwan J. Abuel-Haj, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed March 18, 1970, Ser. No. 20,842
Int. Cl. C07d *51/78, 87/14, 85/36*
U.S. Cl. 260—244 R **6 Claims**

The 2-heterocyclic- and 2-[N-(ω-haloalkyl)carbamyl]substituted quinoxaline-1,4-dioxides having formulas I and II, respectively:



I and II

wherein X is a 6- or a 7-position substituent and is hydrogen, chloro, bromo, fluoro, methyl, methoxy and trifluoromethyl;
Y is O, S and NR_1 wherein
R_1 is hydrogen and lower alkyl;
A is alkylene of from two to five carbon atoms which places at least two carbon atoms between the N and Y or Z atoms to which it is attached;
R_3 is lower alkyl;
Z is chloro and bromo;
the non-toxic acid addition salts of those compounds wherein Y is $-NR_1$; and methods for their preparation are described. All compounds of formulas I and II are useful as antibacterial agents and many of them are effective animal growth promotants. Compounds of formula II are valuable intermediates for further synthesis.

3,671,522
PRODUCTION OF 2-CARBAMYLTETRAHYDROPYRIMIDINES

Helmut Hagen, Ludwigshafen, and Friedrich Becke, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 17, 1970, Ser. No. 47,149
Claims priority, application Germany, June 28, 1969, P 19 32 833.7
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R **9 Claims**

Production of 2-carbamyltetrahydropyrimidines by reaction of haloacetamides with 1,3-alkylenediamines and elementary sulfur, and the new 2-carbamyltetrahydropyrimidines. The products are auxiliaries for the textile and leather industries, plant protection agents and starting materials for the production of textile auxiliaries, leather auxiliaries and plant protection agents.

3,671,523
HERBICIDAL AGENTS

Kurt Westphal, Wuppertal-Vohwinkel; Werner Meiser, Wuppertal-Elberfeld; Ludwig Fue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 630,225, April 12, 1967. This application Jan. 28, 1970, Ser. No. 6,647
Claims priority, application Germany, April 16, 1966, F 48954
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS **16 Claims**

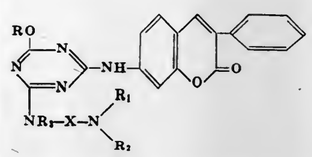
3-[hydrogen-, (unsubstituted and halo, amino, alkylamino, nitro, alkyl, alkoxy, alkylmercapto, aryloxy and/or haloarylmercapto, -substituted) aliphatic-, cycloaliphatic-, araliphatic-, aryl-, or N-heterocyclic- or O-alkanoyl-, -substituted oxy, mercapto or amino]- 4-[amino; mono and di (unsubstituted and cyano, hydroxy and/or halo, -substituted) alkyl- and/or alkanoyl-, -amino; N- (unsubstituted and cycloalkyl, aryl, haloaryl, alkaryl, alkoxy aryl, nitroaryl, halo-nitro-aryl, arylalkenyl, heterocyclic and/or nitro- heterocyclic- -substituted) alkylidene-amino or cycloalkylidene- amino; or N-heterocyclic]-6-[(unsubstituted and halo, nitro, carbo lower alkoxy, alkyl, alkoxy, aryloxy, alkylmercapto, arylmercapto and/or aralkylmercapto, -substituted) aliphatic, cycloaliphatic, araliphatic, aryl, heterocyclic or heterocyclic- alkyl]-1,2,4-triazine-5-ones, which possess herbicidal properties, and which may be produced by conventional methods; herbicidal compositions containing such compounds; and methods of using such compounds as herbicides.

3,671,524
TRIAZINYL-COUMARINS

Kazuaki Suzuki, Kawanishi City, Japan, assignor to Showa Kagaku Kogyo Kabushiki Kaisha, Kawanishi City, Japan

Filed Sept. 18, 1968, Ser. No. 760,667
Claims priority, application Japan, Sept. 20, 1967, 42/59827; Sept. 20, 1967, 42/59828; Nov. 4, 1967, 42/72808
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.8 **1 Claim**

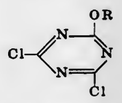
A process for preparing a fluorescent whitening agent of the formula



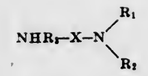
wherein R represents an alkyl group having one to four carbon atoms, each of R_1, R_2 and R_3 represents a hydrogen atom, or a lower alkyl group, and X represents a divalent organic residue such as lower alkylene group, hydroxy(lower)alkylene group or phenylene group, characterized by treating cyanuric chloride with an alcohol represented by the formula

ROH

wherein R represents an alkyl group having one to four carbon atoms, in the presence of acid binding agent to form a compound represented by the formula



wherein R is the same as defined above, and subsequently treating the compound with 3-phenyl-7-aminocoumarin and an amine represented by the formula



wherein R_1, R_2, R_3 and X are the same as defined above, in an optional order in an inert organic solvent or a mixed solution or dispersion of the inert organic solvent and water in the presence of acid binding agent.

3,671,525
PYRIDAZONIUM COMPOUNDS

Franz Reicheneder, and Rudolf Kropp, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed March 11, 1970, Ser. No. 18,692
Claims priority, application Germany, Mar. 15, 1969, P 19 13 265.1
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 A **2 Claims**

The production of 2-alkylpyridazonium compounds by reaction of pyridazones-(6) with alkylating agents, and the new 2-alkylpyridazonium compounds. The compounds which can be prepared by the process according to the invention are pharmaceuticals and valuable starting materials for the production of dyes, pharmaceuticals and pesticides.

3,671,526
THIAZOLOPYRIMIDINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 827,996, May 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 741,856, July 2, 1968, abandoned, which is a continuation-in-part of Ser. No. 680,307, Nov. 3, 1967, abandoned. This application May 25, 1970, Ser. No. 40,367
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A **18 Claims**

Substituted thiazolopyrimidines, e.g., 3-p-chlorophenyl-6,7-dihydro-5H-thiazolo[3,2-a]pyrimidine hydrochloride, are prepared from phenacyl halides and propylene thiourea and are useful as CNS stimulants and analgesics.

3,671,527
DIALKYLAMINOALKYL ESTERS OF ADAMANTANETHIOCARBOXYLIC ACIDS

Carl Peter Krimmel, Wauconda, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 644,099, June 7, 1967, Pat. No. 3,565,942, which is a continuation-in-part of Ser. No. 466,812, June 24, 1965, abandoned. This application July 6, 1970, Ser. No. 52,703
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 PC **4 Claims**

The present dialkylaminoalkyl and related esters of adamantanethiocarboxylic acids possess anti-inflammatory activity and activity against a variety of organisms. Thus, they are anti-bacterial, anti-protozoal, anti-fungal, and anti-algal agents. The compounds are prepared by the reaction of an adamantanecarboxylic acid halide with an appropriate dialkylaminoalkanethiol or similar compounds.

3,671,528
5-PHENYL-1,2,4-BENZOTHIADIAZEPINE-1,1-DIOXIDES

John B. Wright, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed June 23, 1967, Ser. No. 648,226
Int. Cl. C07d *99/00*
U.S. Cl. 260—268 BC **4 Claims**

1,2,4-Benzothiadiazepine-1,1-dioxide derivatives are disclosed. These compounds can be prepared by condensation of a 2-benzoylbenzenesulfonyl chloride with guanidine, amidine, or with 2-alkylisothiourea, followed by cyclization of the obtained condensation product, and, optionally, by subsequent hydrogenation. These compounds are useful as intermediates for mothproofing agents, herbicides, and pickling inhibitors.

3,671,529
BASIC ANTHRAQUINONE DYES, WITH PYRIDINIUM 2- OR 4-DIMETHYLENE GROUP

Rudolf Altermatt, Tecknau, Basel-land; Roland Entschel, Basel, and Curt Mueller, Binningen, Basel-land, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 481,404, Aug. 20, 1965, Pat. No. 3,518,247. This application Aug. 20, 1969, Ser. No. 851,743
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 B **13 Claims**

Basic anthraquinone dyes free from sulphonic acid groups produced with a vinylpyridine group which are highly suitable for dyeing and printing acrylonitrile polymers or copolymers.

3,671,530
CERTAIN SUBSTITUTED 1,3-BISDILOWER-ALKYLAMINOETHOXY-INDANS

John William Van Dyke, Jr., Elkhart, and Margaret Jo Van Laecke, Osceola, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 27, 1970, Ser. No. 67,637
Int. Cl. C07c *93/06*; C07d *31/42*
U.S. Cl. 260—295 F **5 Claims**

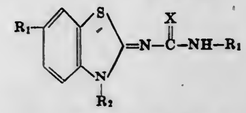
Certain diaminoalkyl ethers of substituted 1,3-indandiols and a method for their preparation are disclosed. These compounds are useful as antihistaminics.

3,671,531
BENZOTHIAZOLINYLIDENE SUBSTITUTED UREAS

William D. Dixon, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1970, Ser. No. 97,054
Int. Cl. C07d *91/24*
U.S. Cl. 260—305 **15 Claims**

Novel ureas and thioureas of the formula



where X is oxygen or sulfur, R_1 and R_2 are alkyl radicals of not more than four carbon atoms, R_3 is alkyl of not more than 12 carbon atoms, alkenyl of not more than 12 carbon atoms, cycloalkenyl of six through eight carbon atoms, haloalkyl of not more than 12 carbon atoms and with not more than three halogen atoms therein on the one and two carbon atoms, halophenyl of not more than five halogen atoms, haloalkylphenyl of not more than three haloalkyls having not more than four carbon atoms and not more than three halogen atoms therein, with the provision that the double bond in said alkenyl and cycloalkenyl are not in the 1-position.

These compounds are useful as herbicides.

3,671,532
COMPOSITION AND METHOD FOR LOWERING THE BLOOD SUGAR CONTENT OF DIABETIC MAMMALS

Gilbert L. Carraz, St. Jean de Moirans, and Andre Boucherie, Grenoble, both of France, assignors to Societe De Recherches Industrielles S.O.R.d., Dijon, France

Filed March 6, 1967, Ser. No. 620,631
Claims priority, application France, Aug. 5, 1966, 838; Dec. 29, 1966, 844
Int. Cl. A61k *27/00*
U.S. Cl. 424—305 **3 Claims**

The invention relates to a method of lowering the blood sugar content in mammals by exploiting the hypoglycemic ac-

tivity of certain pentacyclic triterpene derivatives such as mixtures of glycyrrhetinic acids and their esters, to treat obese diabetic subjects.

3,671,533
2,3,5,6-TETRAHYDROIMIDAZO[2,1-B]THIAZOLES

William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 790,449, Jan. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 748,929, July 31, 1968, abandoned. This application Jan. 26, 1970, Ser. No. 5,894
Int. Cl. C07d 99/06
U.S. Cl. 260—306.7 10 Claims

Substituted imidazo thiazoles, e.g., 3-(4'-chlorophenyl)-2-ethyl-3-hydroxy-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole are prepared from 2-haloalkylphenones and 2-imidazolinethione and are useful as anorexics and anti-depressants.

3,671,534
6,6-DI-LOWER ALKYL-2,3,5,6-TETRAHYDROIMIDAZO [2,1-B] THIAZOLES

William J. Houlihan, and Robert E. Manning, both of Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed March 16, 1970, Ser. No. 20,071
Int. Cl. C07d 99/06
U.S. Cl. 260—306.7 2 Claims

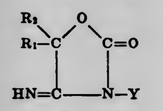
Substituted imidazo thiazoles, e.g., 3-(4'-chlorophenyl)-6,6-dimethyl-2-ethyl-3-hydroxy-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole are prepared from 2-haloalkylphenones and 4,4-di-lower alkyl-2-imidazolinethione and are useful as diuretics.

3,671,535
4-IMINO-OXAZOLIDIN-2-ONES AND PROCESS OF PREPARATION

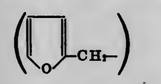
Michel Faidutti, Saint-Auban; Jacques Boileau, Paris; Jean-Paul Konrat, Sorgues, and Rene Billaz, Le Bouchet, all of France, assignors to Etat Francais, represente par le Ministre des Armees, Delegation Ministerielle pour l'Armement (Direction Des Poudres), Paris, France

Continuation-in-part of Ser. No. 349,943, March 6, 1964, abandoned. This application March 7, 1968, Ser. No. 711,384
Int. Cl. C07d 85/28
U.S. Cl. 260—307 C 14 Claims

The present invention relates to 4-imino-oxazolidin-2-ones corresponding to the following formula:



wherein Y represents an alkyl of from one to 18 carbon atoms such as methyl, ethyl, isopropyl, hexyl, octadecyl; cycloalkyl such as cyclohexyl; an aralkyl such as benzyl; an aryl such as phenyl and naphthyl; a substituted aryl such as tolyl, o-, m- and p-chloro-phenyl, methoxy phenyl, nitrophenyl; heterocyclic group such as furyl; and wherein R_1 and R_2 each represent hydrogen; a straight or branched unsubstituted alkyl of from one to eight carbon atoms such as methyl, propyl, isopropyl, butyl, tert-butyl and heptyl; aryl such as phenyl; heterocyclic group such as furyl derivatives



or R_1 and R_2 may represent the necessary groups which when joined form a ring with the carbon atom of the main oxazolidin-2-one ring such as a cyclohexane ring. The invention is also directed to various methods for preparing the subject compounds which have been found to possess valuable plant growth regulating properties.

3,671,536
ANTHRAQUINONE DYES

Manfred Patsch, Ludwigshafen, and Heinz Ellingsfeld, Frankenthal, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed March 17, 1970, Ser. No. 20,405
Claims priority, application Germany, March 20, 1969, P 19 14 207.5; Sept. 30, 1969, P 19 49 295.6
Int. Cl. C07d 85/52
U.S. Cl. 260—307.5 5 Claims

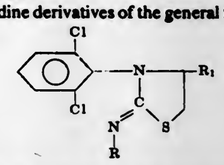
1,4-diaminoanthraquinones bearing in position 2 a 1,2,4-oxadiazole group which is substituted in position 3 by an aromatic or aliphatic radical. These anthraquinone derivatives are valuable blue disperse dyes for use in dyeing and printing synthetic textile materials.

3,671,537
CERTAIN 3-(2,6-DICHLOROPHENYL)-2-IMINOTHIAZOLIDINES

Lajos Teldy; Jozsef Borsi; Sandor Elek; Istvan Elekes, and Ferenc Andrasi, all of Budapest, Hungary, assignors to Gyogyszerkutato Intezet, Budapest, Hungary

Filed June 1, 1970, Ser. No. 42,462
Claims priority, application Hungary, June 5, 1969, GO-1096
Int. Cl. C07d 91/18
U.S. Cl. 260—306.7 3 Claims

New thiazolidine derivatives of the general formula I



(I)

wherein R is an alkyl-group having from one to five carbon atoms, and R_1 is hydrogen, methyl, ethyl and hydroxymethyl groups, and their acid addition salts formed with non-toxic acids. The compounds show a special effect on the central nervous system.

3,671,538
POTASSIUM 4-METHYL-1,2,4-OXADIAZOLIDINE-3,5-DIONE AND SODIUM 4-METHYL-1,2,4-OXADIAZOLIDINE-3,5-DIONE

John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 853,945, Aug. 28, 1969, Pat. No. 3,590,054. This application Aug. 14, 1970, Ser. No. 63,945
Int. Cl. C07d 85/52
U.S. Cl. 260—307 B 3 Claims

This invention discloses the compound 2-(2,4-dichlorophenoxyacetyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione and its use as a herbicide. Further disclosed are the compounds potassium 4-methyl-1,2,4-oxadiazolidine-3,5-dione and sodium 4-methyl-1,2,4-oxadiazolidine-3,5-dione.

3,671,539
PREPARATION OF AMINO-ETHYL ISOXAZOLYL SUBSTITUTED TETRAHYDROPYRANS AND INTERMEDIATES THEREFOR

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Jan. 19, 1970, Ser. No. 4,026
Int. Cl. C07d 85/22
U.S. Cl. 260—307 H 12 Claims

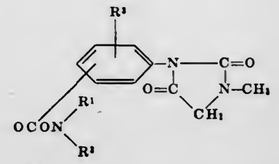
Alternate process routes to 2-(substituted amino)-6-(2-[3,5-dimethyl-4-isoxazolyl]ethyl)-tetrahydropyran-2-ols and their optionally alkylated analogs are described. The preparative routes involve multi-step procedures starting from 2-(2'-substituted aminoethyl)-2-hydroxy-6-vinyl-tetrahydropyrans and their alkyl substituted analogs including a last step isomerization and amine addition to a 1-(3,5-disubstituted-4-isoxazolyl)-7-hydroxy-non-8-en-3-one or its tautomer. The final product aminoethyl-isoxazolyl substituted tetrahydropyrans are intermediates useful in the preparation of pharmaceutically valuable steroidal compounds. In preferred embodiments the amino substituent group in the final products is an optically active amine which renders such products particularly suitable, via resolution procedures, to serve as intermediates in the preparation of optically active steroidal compounds.

3,671,540
SUBSTITUTED HYDANTOINS

Albrecht Zschocke, 5 Berliner Strasse, 6702, Bad Duerkheim; Wolfgang Rohr, 19 Hebelstrasse, 6800, Mannheim, and Adolf Fischer, 43 Speyerer Strasse 6704, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed March 13, 1970, Ser. No. 19,470
Claims priority, application Germany, March 18, 1969, P 19 13 631.3
Int. Cl. C07d 49/32
U.S. Cl. 260—309.5 5 Claims

Valuable hydantoins having the formula



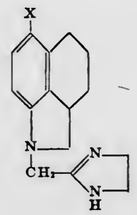
where R^1 denotes hydrogen or a lower alkyl group, R^2 denotes a saturated or unsaturated aliphatic radical which may be substituted by halogen, hydroxyl, alkoxy, cyano or alkylmercapto, and R^3 denotes hydrogen or the methyl group, and a process for controlling the growth of unwanted plants with these compounds.

3,671,541
1,2,2A,3,4,5-HEXAHYDRO-1-(2-IMIDAZOLIN-2-YLMETHYL)BENZ[CDINDOLES

Gerhard Bormann, Basel; John Gmunder, Muttenz, both of Switzerland, and Heinrich Wilkens, Brombach, Germany, assignors to Sandoz Ltd. (a/k/a Sandoz AG), Basle, Switzerland

Filed Aug. 19, 1970, Ser. No. 65,281
Claims priority, application Switzerland, Aug. 27, 1969, 12967/69; March 31, 1970, 4703/70; April 6, 1970, 5039/70
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 4 Claims

The invention concerns compounds of the formula:



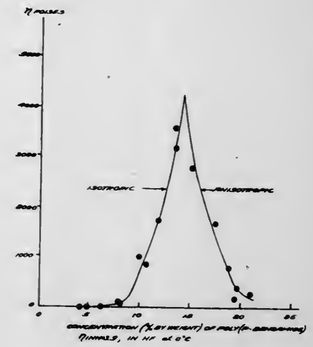
wherein X is hydrogen, halogen or methyl.

The compounds are useful peripheral and systemic vasoconstrictors.

3,671,542
OPTICALLY ANISOTROPIC AROMATIC POLYAMIDE DOPES

Stephanie Louise Kwolek, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 736,410, June 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 644,851, June 9, 1967, abandoned, which is a continuation-in-part of Ser. No. 556,934, June 13, 1966, abandoned. This application May 23, 1969, Ser. No. 827,345. The portion of the term of this patent subsequent to June 20, 1999, has been disclaimed.
Int. Cl. C08g 51/44, 51/46, 51/50
U.S. Cl. 260—30.8 R 2 Claims



Compositions or dopes comprising carbocyclic aromatic polyamides in suitable liquid media are prepared which are optically anisotropic (exhibit different light transmission properties in different directions in the dope). These dopes, and related isotropic dopes, are used in preparing fibers of unique internal structure (evidenced by low orientation angle and/or high sonic velocity) and exceptionally high tensile properties (e.g., initial modulus).

3,671,543
IMIDOMETHYL DERIVATIVES OF 1,3,3-TRIMETHYLINDOLINO-SPIROPYRAN

Koichi Koga, Toyonaka; Minoru Hatori, Takarazuka, and Takashi Akamatsu, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed May 28, 1970, Ser. No. 41,584
Int. Cl. C07d 27/38
U.S. Cl. 260—326 D 11 Claims

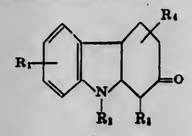
Novel imidomethyl or amidomethyl derivatives of 1,3,3-trimethylindolino-spiropyran are produced by reacting a 1,3,3-trimethylindolino-spiropyran derivative with an imidomethylating or amidomethylating agent in the presence of a condensing agent and optionally in a solvent. These novel compounds are adapted to be used as a coloring matter for pressure sensitive copy papers and particularly as one component of a coloring matter for black pressure sensitive copy papers.

3,671,544
3,4,4A,9A-TETRAHYDRO-2-(1H)CARBAZOLONES

Robert I. Meltzer, Rockaway, and Raymond R. Wittekind, Morristown, both of N.J., assignors to Warner-Lambert Company

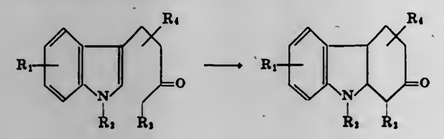
Filed July 13, 1970, Ser. No. 54,602
Int. Cl. C07d 27/68
U.S. Cl. 260—315 5 Claims

The present invention discloses a new class of carbazolones having the following structural formula:



1

These compounds are prepared in accordance with the following reaction scheme:



2 1

In the above, R_1 is hydrogen, lower alkyl, aryl, substituted aryl, aralkyl, lower alkoxy, aryloxy, lower alkylmercapto, arylmercapto, halo, trihaloalkyl, nitro, amino, substituted amino, acetamido, and substituted acetamido. R_2, R_3, R_4, which can be alike or different, are hydrogen, lower alkyl, aryl, substituted aryl and aralkyl. The compounds are useful as analgesic agents.

3,671,545
POLYVINYLPYRROLIDONE-IODINE COMPOUNDS

Alfred Halpern, Great Neck, N.Y., assignor to Synergistics, Inc., New York, N.Y.

Filed May 5, 1969, Ser. No. 822,008
Int. Cl. C07d 27/08
U.S. Cl. 260—326.5 FL 11 Claims

Hydrogen-bonded complexed compounds formed from an iodophor and a polyhydroxylated compound containing at least two hydroxyl groups which are useful in the preparation of iodophor-containing, abrasive, detergent compositions comprising said hydrogen-bonded complexed compound, a detergent, an abrasive substance and a pharmaceutically acceptable carrier therefor, said compositions being suitable to the abrasive germicidal cleansing of the skin and in the treatment of acne.

3,671,546
FLUORINATED ALIPHATIC ACIDS AS PROCESSING AIDS FOR SILICONE RUBBER COMPOSITIONS

Bruce D. Karstedt, Charlotte, N.C., and John S. Razzano, Troy, N.Y., assignors to General Electric Company

Filed Oct. 1, 1970, Ser. No. 77,369
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 14 Claims

A silicone rubber composition of improved processing characteristics including (a) a polydiorganosiloxane having the formula,

$$(R)_nSiO_{\frac{4-n}{2}}$$

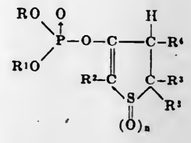
(b) a structure defining inorganic filler, (c) a process aid and (d) a fluorine-substituted hydrocarbon acid where R is a monovalent hydrocarbon radical and n has a value of from 1.98 to 2.01 inclusive. The above composition is used with a peroxide curing agent at elevated temperatures to produce a cured silicone rubber.

3,671,547
DIALKYL DIHYDROTHIENYL PHOSPHATES

Lawrence E. Stevick, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 15, 1969, Ser. No. 885,291
Int. Cl. C07d 63/08
U.S. Cl. 260—329 P 7 Claims

Compound of the formula:



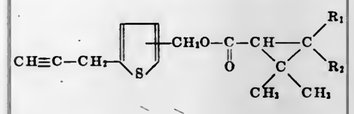
wherein R and R^1 and alkyl of 1 to 4 carbon atoms, R^2 is hydrogen, halogen of atomic number 17 to 35 or alkyl of one to three carbon atoms and R^3, R^4 and R^5 are hydrogen or alkyl or one to three carbon atoms and n is 0, 1 or 2. These phosphates are insecticidal.

3,671,548
5-PROPARGYLTHENYL CYCLOPROPANECARBOXYLATES

Nobushige Itaya, Minuo; Toshio Mizutani, Hirakata; Shigeyoshi Kitamura; Yositosi Okuno, both of Toyonaka, and Keimei Fujimoto, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed March 26, 1970, Ser. No. 23,018
Claims priority, application Japan, April 4, 1969, 44/26433; April 11, 1969, 44/28586
Int. Cl. C07d 63/12
U.S. Cl. 260—332.2 R 7 Claims

A thiophene derivative having the formula,



wherein R_1 is hydrogen or methyl, and R_2 is methyl, 2-methyl-1-propenyl or 2-methoxycarbonyl-1-propenyl when R_1 is hydrogen, and R_2 is methyl when R_1 is methyl, which may be used as insecticides with high insecticidal activities.

3,671,549
PROCESS FOR PREPARING ASCORBYL-3-PHOSPHATE AND SALTS THEREOF

David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 578,983, Sept. 13, 1966. This application March 5, 1970, Ser. No. 16,940
Int. Cl. C07d 5/12
U.S. Cl. 260—343.7 6 Claims

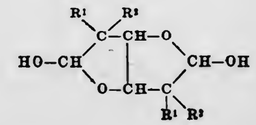
A process for the preparation of ascorbyl-2-phosphate and the alkali or alkaline earth metal salts which comprises reacting ascorbic acid or the alkali metal or alkaline earth metal salts thereof sequentially with a phosphorylating agent, water, and an alkali or alkaline earth meal base. The ascorbyl-2-phosphate is useful as a stabilized form of Vitamin C.

3,671,550
HEXAHYDRO-3,3,6,6-TETRA ALKYLFURO(3,2-B)FURAN-2,5-DIOL

Hugh J. Hagemeyer, Jr., and Alfred G. Robinson, III, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1970, Ser. No. 45,218
Int. Cl. C07d 5/04
U.S. Cl. 260—347.8 6 Claims

Novel bicyclic furofuran-diols having the structure:



wherein R^1 and R^2 are the same or different, and each of R^1 and R^2 are alkyl groups of one to 10 carbons, have been discovered. The compounds are valuable intermediates, for the preparation of polyols, dilactones, simple esters and polyesters.

3,671,551
MYRCENE EPOXIDE DIELS-ALDER ADDUCTS

James O. Bledsoe, Jr., Jacksonville, Fla., assignor to SCM Corporation, Cleveland, Ohio

Filed Dec. 8, 1969, Ser. No. 883,266
Int. Cl. C07d 1/12
U.S. Cl. 260—348 R 4 Claims

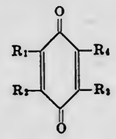
Diels-Alder adducts of myrcene epoxide have been found to exhibit excellent olfactory and perfumery properties. The adducts are made by reacting myrcene epoxide with an $\alpha\beta$-unsaturated carbonyl compound (dienophile), such as acrolein, in a Diels-Alder reaction. Additionally the adducts can be hydrogenated to form the saturated adduct which also possesses excellent olfactory properties.

3,671,552
PROCESS FOR THE PREPARATION OF QUINONES AND HYDROQUINONES

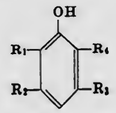
Louis Le Bris; Daniel Michelet, and Michel Rakoutz, all of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Filed July 2, 1970, Ser. No. 52,071
Claims priority, application France, July 4, 1969, 6922816
Int. Cl. C07c 49/64, 49/66, 49/68
U.S. Cl. 260—369 13 Claims

Quinones of the formula:



in which the symbols R_1, R_2, R_3 and R_4 represent hydrogen, halogen, or hydrocarbon radicals, not more than three of the symbols representing hydrogen, are obtained by oxidation of a phenol of the formula:



in the presence of thallic cations in an aqueous acid medium optionally containing an inert organic solvent.

3,671,553
PROCESS FOR THE PREPARATION OF VERY PURE MONOSULFONIC ACIDS OF TRIPHENYL-METHANE DYESTUFFS

Theodor Papenfuss, Niederhofheim/Taunus, and Ernst Spietschka, Oberauroff, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany

Filed April 13, 1970, Ser. No. 28,153
Claims priority, application Germany, April 18, 1969, P 19 19 724.1
Int. Cl. C09b 11/12
U.S. Cl. 260—392 14 Claims

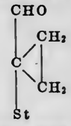
Process for the preparation of very pure monosulfonic acids of triphenyl-methane dyestuffs by treating a solution of the appropriate color base with aqueous sulfuric acid, filtering the suspension obtained, treating the filter residue with an inert less polar organic solvent which is not miscible with water, and isolating the color base sulfate or diluting the solution of the color base with an inert less polar organic solvent that is not miscible with water, and then treating it with dilute sulfuric acid, filtering the suspension obtained, treating the filter residue consisting substantially of color base sulfate and amine sulfate, and isolating the color base sulfate.

3,671,554
20,20-ETHYLENE-21-OXOSTEROIDS

Rudolf Wiechert, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

Filed July 16, 1970, Ser. No. 55,592
Claims priority, application Germany, July 16, 1969, P 19 37 062.8; Aug. 13, 1969, P 19 41 604.7
Int. Cl. C07c 169/34
U.S. Cl. 260—397.3 29 Claims

20.20-Ethylene-21-oxosteroids of the formula



which are useful as intermediates in the production of cardioactive steroids having a lactone at the 17-position, are produced by reacting a 20-keto-21-sulfonyloxy steroid with dimethyl-sulfoxonium methylide.

3,671,555
TRIALKYLSYLILOXY-STEROID COMPOUNDS AND PROCESS FOR MAKING SAME

Gerhard Teichmuller; Kurt Barnikol-Oettler, and Werner Hartmann, all of Jena, Germany, assignors to VEB Jenapharm, Jena, Germany

Filed March 5, 1969, Ser. No. 804,662
Int. Cl. C07c 169/08, 169/20
U.S. Cl. 260—397.4 21 Claims

Trialkylsilyloxyether-substituted steroid compounds. The compounds are made from steroids which include phenolic hydroxyl groups by dissolving the steroid compound in a dipolar aprotic solvent and reacting it with hexamethyldisilazane, or a mixture of this compound with trimethylchlorosilane, followed by recovery of the trimethylsilyloxyether.

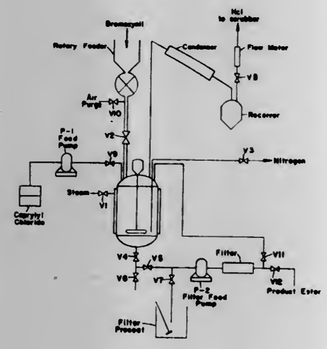
3,671,556
MANUFACTURING PROCESS FOR ESTERS OF DIHALO-HYDROXYBENZONITRILES

Robert Jay Goldstick, Philadelphia, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Nov. 21, 1969, Ser. No. 878,724
Int. Cl. C09f 7/00, 7/10
U.S. Cl. 260—404 4 Claims

Aliphatic, cycloaliphatic or aromatic esters of 3,5-dihalo-4-hydroxybenzonitrile are prepared by gradually adding the

solid benzonitrile derivative to a slight molar excess of the corresponding acid chloride kept at temperatures above 120° C



and venting the liberated hydrogen chloride through an alkaline scrubber.

3,671,557

1,2-DIACYLGLYCEROL 3-(2,2,2-TRICHLOROETHYL) CARBONATES

Francis R. Pfeiffer, Cinnaminson, and Jerry A. Weisbach, Cherry Hill, both of N.J., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 722,538, April 19, 1968, Pat. No. 3,558,656. This application Sept. 17, 1970, Ser. No. 73,224

Int. Cl. C07c *69/30*, *69/00*; C07d *13/04*

U.S. Cl. 260—408 4 Claims

1,2 and 2,3-Diacylglycerols are prepared from sn-glycerol 1,2-acetonide via the intermediate sn-glycerol 1,2-acetonide 3-(2,2,2-trichloroethyl) carbonate, which, after hydolysis with acid to the 1,2-diol derivative rearranges stereospecifically in pyridine or thermally to give sn-glycerol 2,3-carbonate.

3,671,558

NOVEL ESTERS AND DERIVATIVES

John B. Siddall, Palo Alto, Calif., and Jeans Pierre Calame, Locarno, Switzerland, assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 800,266, Feb. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 618,351, Feb. 24, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 579,490, Sept. 15, 1966, abandoned, and Ser. No. 590,195, Oct. 28, 1966, abandoned, and Ser. No. 592,324, Nov. 7, 1966, abandoned, and Ser. No. 594,664, Nov. 16, 1966, abandoned, and Ser. No. 605,566, Dec. 29, 1966, abandoned, and Ser. No. 605,578, Dec. 29, 1966, abandoned. This application July 22, 1969, Ser. No. 843,818

Int. Cl. C07c *69/74*, *61/16*; A01n *9/24*

U.S. Cl. 260—410.9 R 13 Claims

Novel aliphatic hydrocarbon esters, acids and alcohols having a backbone of at least 12 carbon atoms, a lower alkyl group at C-3, C-7 and C-11 and unsaturation or saturation at C-2,3, C-6,7 and/or C-10,11 which are substituents with, for example, halo, hydroxy, methylene, oxido, dihalo-methylene, and the like, and the esters and ethers of said hydroxy substituent useful as arthropod maturation inhibitors.

3,671,559

PROCESS FOR CARBONYLATING ALKANOLS

Arien Kwantes, and Bernhard Steunhamer, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,196

Claims priority, application Great Britain, Nov. 15, 1968, 54,331/68

Int. Cl. C07c *51/12*

U.S. Cl. 260—413 4 Claims

Controlled addition of olefins to alcohol carbonylation zone to prevent water build-up and sustain acidic liquid catalyst activity.

3,671,560

MANUFACTURE OF PALLADIUM OR PLATINUM-CONTAINING COMPOUNDS

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 29, 1970, Ser. No. 76,607

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R 9 Claims

Compounds of the formula $M(Z_3P)_4$, where M is palladium or platinum and Z is a hydrocarbon or substituted hydrocarbon radical, are produced by reacting the metal in elemental form with a corresponding Z_3P compound. One specific example is the production of tetrakis(triphenylphosphine)palladium(O) by reacting elemental palladium with triphenylphosphine.

3,671,561

METHOD OF MAKING HEXAORGANODIPLUMBANES

Max Buschhoff, Luenen, Germany, assignor to Scherting AG, Berlin, Germany

Filed Dec. 31, 1969, Ser. No. 889,708

Claims priority, application Germany, Jan. 7, 1969, P 19 01 030.1

Int. Cl. C07f *7/24*

U.S. Cl. 260—437 R 7 Claims

Method of making hexaorganodiplumbanes, Pb_2R_6, by reacting a lead carboxylate and an organoaluminum compound, AlR_3, where R is aliphatic or cycloaliphatic.

3,671,562

UREA SILICON PRODUCT AND THE PREPARATION THEREOF

Enrico J. Pepe, and James G. Marsden, both of Amawalk, N.Y., assignors to Union Carbide Corporation

Continuation-in-part of Ser. No. 729,895, May 17, 1968, abandoned. This application Sept. 12, 1968, Ser. No. 759,524

Int. Cl. C07f *7/02*, *7/04*

U.S. Cl. 260—448.8 R 10 Claims

This invention relates to urea containing silicon compounds and the uses thereof, particularly as coupling agents on glass and to the similar use of substituted urea containing silicon compounds.

3,671,563

GLYCEROL 3-(2,2,2-TRICHLOROETHYL) CARBONATE

Francis R. Pfeiffer, Cinnaminson, and Jerry A. Weisbach, Cherry Hill, both of N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 722,538, April 19, 1968, Pat. No. 3,558,656. This application Sept. 17, 1970, Ser. No. 73,225

Int. Cl. C07c *69/00*; C07d *13/04*; C07c *69/30*

U.S. Cl. 260—463 1 Claim

1,2 and 2,3-Diacylglycerols are prepared from sn-glycerol 1,2-acetonide via the intermediate sn-glycerol 1,2-acetonide

3-(2,2,2-trichloroethyl) carbonate, which, after hydrolysis with acid to the 1,2-diol derivative rearranges stereospecifically in pyridine or thermally to give sn-glycerol 2,3-carbonate.

3,671,564

BENZYLIDENE CYANO-ACETALS

Ronald Morton Cresswell, Scarsdale, and John William Mentha, Hartsdale, both of N.Y., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

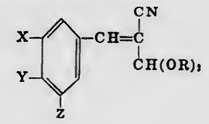
Continuation-in-part of Ser. No. 587,392, Oct. 18, 1966, Pat. No. 3,573,185. This application June 12, 1969, Ser. No. 832,830

Claims priority, application Great Britain, Oct. 28, 1965, 45,657/65

Int. Cl. C07c *121/74*

U.S. Cl. 260—465 F 8 Claims

Unsaturated acetals of the formula



where X, Y and Z are hydrogen, halogen or lower alkoxy and R is lower alkyl. The unsaturated acetals are useful as intermediate to prepare the corresponding saturated acetals which may then be reacted with guanidine to produce the corresponding 2,4-diamino-5-benzyl pyrimidines which are useful as antibacterials.

3,671,565

PROCESS FOR HYDROGENATING ACRYLONITRILE TO PROPIONITRILE

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 16, 1970, Ser. No. 3,519

Int. Cl. C07c *121/16*

U.S. Cl. 260—465.1 10 Claims

The hydrogenation of acrylonitrile to propionitrile is disclosed using a catalyst having a complex of (A) nickel, and (B) an organometallic reducing agent on (C) an acidic, silica-based support material. The complex has a molar ratio of (B) to (A) of about 2:1 to 50:1 or more, preferably about 3:1 to 20:1, and with (A) being a minor catalytic amount, e.g. from about 0.1 to 5 weight percent, based on the support. Preferred catalyst components include nickel acetylacetonate and diisobutylaluminum hydride on a solid, acidic silica-based support.

3,671,566

MANUFACTURE OF ADIPONITRILE

Martin Decker; Joseph Schmidt, both of Ludwigshafen; Herwig Hoffmann, Frankenthal, and Hans Joachim Pistor, Walldorf, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

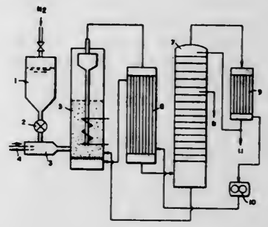
Filed March 30, 1970, Ser. No. 23,675

Claims priority, application Germany, April 1, 1969, P 19 16 601.9

Int. Cl. C07c *121/10*

U.S. Cl. 260—465.2 3 Claims

Production of adiponitrile by introducing adipic acid in solid powder form or in liquid form and simultaneously introducing ammonia into a fluidized bed of a usual catalyst at a temperature of from 250° to 420°C and recovering the adiponitrile from the reaction gases by fractional distillation wherein there is added to the reaction gas before entry into the distillation column sufficient water to make the molar ratio of water vapor to ammonia 0.8 to 1.5 in the mixture entering the column. Adiponitrile is an intermediate in the manufacture of synthetic fibers of, for example, nylon 6.6.



3,671,567

PRODUCTION OF ADIPONITRILE

Olav Torgeir Onsager, Waldwick, N.J., assignor to Halcon International, Inc.

Filed April 29, 1970, Ser. No. 33,042

Int. Cl. C07c *121/26*

U.S. Cl. 260—465.8 D 8 Claims

The invention relates to the reductive coupling of organic halo compounds, especially organic halo nitriles, using a coupling composition comprising a metal and a salt of the same metal. The invention is especially concerned with recovery and reuse of the coupling composition.

3,671,568

PRODUCTION OF ADIPONITRILE

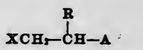
Olav Torgeir Onsager, Waldwick, N.J., assignor to Halcon International, Inc.

Filed April 29, 1970, Ser. No. 33,043

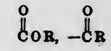
Int. Cl. C07c *121/26*

U.S. Cl. 260—465.8 D 4 Claims

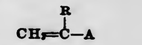
A process for the reductive coupling of a compound having the formula



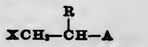
wherein X is Cl, Br, or I, R is H or lower alkyl, and A is —CN,



or $-CONR_2$, using as reducing agent a metal or a lower valent compound thereof in combination with a promoter salt. The invention especially relates to an overall process for the production of linear dimers of compounds of the formula



by first hydrohalogenation to



followed by the reductive coupling. The specific improvement of the present process is the provision of a nitrile solvent during the reductive coupling whereby improved coupling selectivities are achieved.

3,671,569
PROCESS FOR THE PREPARATION OF ALIPHATIC DINITRILES
Pierre Chabardes; Pierre Gandilhon; Charles Grard, all of Lyon, and Michel Thiers, Birgnais, all of France, assignors to Rhone-Poulenc S.A., Paris, France
Filed March 18, 1966, Ser. No. 535,322
Claims priority, application France, March 18, 1965, 659738; July 19, 1965, 6525155; Dec. 2, 1965, 6540725
Int. Cl. C07c 121/26
U.S. Cl. 260—465.8 D 5 Claims
1,4-Dicyanobutene and adiponitrile are made by heating acrylonitrile with a ruthenium catalyst in the presence of hydrogen.

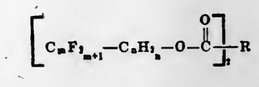
3,671,570
DERIVATIVES OF 9-OXO-15-HYDROXYPROSTANOIC ACID, HOMOLOGS THEREOF AND THEIR PREPARATION
Jehan F. Bagli, Valois Gardena, and Tibor Bogri, Montreal, Quebec, both of Canada, assignors to Ayerst McKenna and Harrison Limited, Ville St. Laurent, Quebec, Canada
Filed July 30, 1970, Ser. No. 59,702
Int. Cl. C07c 61/36, 65/20
U.S. Cl. 260—468 R 5 Claims
There are disclosed herein derivatives of 9-oxo-15-hydroxy prostanoic acid, lower alkyl esters thereof, and homologs thereof, as well as a process for preparing the above acids, lower alkyl esters thereof, and homologs thereof. The compounds possess hypotensive, antihypertensive, bronchospasmolytic and gastric acid secretion inhibiting properties, as well as inhibiting the aggregation of platelets and promoting the disaggregation of aggregated platelets. Methods for their use are also disclosed.

3,671,571
BISCARBAMATES
Karl-Heinz Koenig, Ludwigshafen; Gustav Steinbrunn, Schwegenheim; Hermann Windel, Frankenthal, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany
Continuation-in-part of Ser. No. 649,097, June 27, 1967, Pat. No. 3,551,477. This application July 17, 1970, Ser. No. 55,984
Int. Cl. C07c 125/06
U.S. Cl. 260—471 C 3 Claims
Biscarbamates and their use for controlling undesirable plant growth.

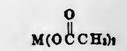
3,671,572
UNSATURATED POLYESTERS PREPARED FROM α,α'-DIMETHYL MUCONIC ACIDS
Gary L. Driscoll, Boothwyn, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed March 10, 1969, Ser. No. 805,818. The portion of the term of this patent subsequent to Feb. 25, 1986, has been disclaimed.
Int. Cl. C07c 69/52
U.S. Cl. 260—485 G 10 Claims
Normally liquid curable polyesters that are plasticizers which add ultraviolet stability to solid vinyl chloride polymers are prepared from α,α'-dimethyl muconic acids and derivatives thereof and polyethylene glycols.

3,671,573
SUBSTITUTED D-HOMOESTRA TETRAENE AND PENTAENE COMPOUNDS
Marinus Los, Edinburg, Scotland, assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 708,498, Feb. 27, 1968, Pat. No. 3,565,958. This application June 17, 1970, Ser. No. 47,165
Int. Cl. C07c 49/76, 69/14
U.S. Cl. 260—488 CD 6 Claims
This invention relates to substituted D-homoestra tetraenes and pentaenes useful in the synthesis of other D-homosteroids. The latter steroids are useful as estrogenic agents in the treatment of laboratory and domestic animals.

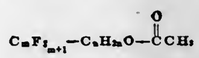
3,671,574
PREPARATION OF POLYFLUOROALKYL ESTERS OF FUMARIC AND OTHER ACIDS
Martin Knell, Ossining, and Peter P. Klemchuk, Yorktown Heights, both of N.Y., assignors to Ciba-Geigy Corporation
Filed Dec. 19, 1969, Ser. No. 886,723
Int. Cl. C07c 69/52, 69/60
U.S. Cl. 260—485 F 12 Claims
0000
A process for the preparation of ester compounds of the formula:



wherein *m* is an integer of 3 to 18; *n* is an integer of 2 to 10; and R is an ethylenically unsaturated hydrocarbon radical derived from fumaric, maleic, citraconic, mesaconic, or itaconic acid, which comprises reacting the compound $C_mF_{2m+1}-C_nH_{2n}$ X wherein *m* and *n* are as defined above, and X is iodine, bromine or chlorine with an acetate of the formula



wherein M is a metal selected from cadmium, lead, mercury, and zinc, to form a polyfluoroalkyl acetate of the formula



wherein *m* and *n* are as defined above, then reacting the polyfluoroalkyl acetate with fumaric, maleic, citraconic, mesaconic, or itaconic acid, or a diloweralkyl ester of said acid and recovering the ester from the reaction mixture. The esters prepared by the process of this invention form polymers which are useful in oil and water-repellent textile finishes.

3,671,575
PROCESS FOR PREPARING VITAMIN A ESTERS
Marcel Weinstock, Edgware, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Nov. 30, 1970, Ser. No. 93,817
Int. Cl. C07c 67/00
U.S. Cl. 260—491 14 Claims
This invention is directed to a new and improved process for preparing vitamin A alcohol esters by treating 1-alkanoyloxy-6-hydroxy or alkanoyloxy-3, 7-dimethyl-9-[2,6,6-trimethyl-cyclohexen-1-yl]-nonatriene-(2,4,7), with a halogenated hydrocarbon dissolved in an inert organic solvent having a high dipole moment.

3,671,576
PROCESS FOR PREPARING OLEFIN ESTERS
Benedetto Calcagno, and Luciano Cairati, both of Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy
Filed April 22, 1968, Ser. No. 723,311
Claims priority, application Italy, April 29, 1967, 15536 A/67
Int. Cl. C07c 67/04
U.S. Cl. 260—497 A 11 Claims
A process for preparing unsaturated esters from olefins and carboxylic acids is provided, in which the catalytic reaction medium is regenerated by precipitating the catalytic salts as carbonates, recovering them, and re-dissolving them in the acid for return to the reaction.

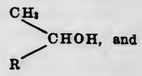
3,671,577
PROCESS FOR PRODUCING 1, 4-DIACYLOXY-2-BUTENE
Isao Ono; Kentaro Fukabori, and Seiichi Shimomura, all of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Oaza Tonda, Nanyo-cho, Tsuno-gun, Yamaguchi-ken, Japan
Filed March 13, 1970, Ser. No. 19,509
Claims priority, application Japan, March 18, 1969, 44/20099
Int. Cl. C07c 67/04
U.S. Cl. 260—497 A 13 Claims
1,4-diacyloxy-2-butene is produced by passing a gaseous mixture of butadiene, an aliphatic monocarboxylic acid and an oxygen-containing gas over a catalyst comprising at least one of palladium, iridium, platinum, rhodium and ruthenium and carboxylate and inorganic acid salt thereof.

3,671,578
PROCESS FOR THE PREPARATION OF NAPHTHALENE-2,6-DICARBOXYLIC ACID
Kazuo Ogata, and Kazuo Shimozato, both of Ehime-ken, Japan, assignors to Teijin Limited, Osaka, Japan
Filed Aug. 5, 1969, Ser. No. 847,682
Int. Cl. C07c 51/00
U.S. Cl. 260—515 P 4 Claims
A process for the industrially advantageous preparation of high purity naphthalene-2,6-dicarboxylic acid which is particularly suitable as the material in the preparation of high quality polyalkylene 2,6-naphthalenedicarboxylate with good qualitative reproducibility. This process comprises heating a monoalkali salt of naphthalene-2,6-dicarboxylic acid in water or water-containing organic medium to cause its disproportionation into the corresponding free dicarboxylic acid and dialkali salt thereof, and separating the precipitated free dicarboxylic acid.

3,671,579
PROCESS FOR OXIDIZING A 1,1-BIS(ALKYLPHENYL) ALKANE
Thomas P. Joyce, Jr., Penn Hills Township; Ralph W. Lagally, and Johann G. D. Schulz, both of Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed March 4, 1970, Ser. No. 16,598
Int. Cl. C07c 65/20
U.S. Cl. 260—517 8 Claims
A process for converting a 1,1-bis(alkylphenyl)alkane to the corresponding benzophenone polycarboxylic acid which involves passing the 1,1-bis(alkylphenyl)alkane and aqueous nitric acid downwardly through a reactor maintained under oxidation conditions.

3,671,580
SUBSTITUTED BIPHENYL ACETIC ACIDS AND ESTER DERIVATIVES THEREOF
Tsung-Ying Shen, Westfield, and Conrad P. Dorn, Jr., Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Dec. 22, 1969, Ser. No. 887,416
Int. Cl. C07c 65/14
U.S. Cl. 260—520 4 Claims
New 4(and 5)-substituted phenylacetic acids useful as anti-inflammatory, analgesic and anti-pyretic agents.

3,671,581
PRODUCTION OF CERTAIN CARBOXYLIC ACIDS
John Francis Edmund Keenan, Cheadle Hulme, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed April 24, 1969, Ser. No. 819,084
Int. Cl. C07c 51/00, 51/30
U.S. Cl. 260—527 R 12 Claims
Improvements in the production of carboxylic acids of the formula R—COOH wherein R represents alkyl of from four to six carbon atoms via their alkali metal salts are described, which improvements comprise reacting a starting material selected from
a. a methylketone of the formula R—$COCH_3$,
b. a mixture of said methyl ketone and the corresponding methyl alkyl carbinol of formula



c. the non-acidic by-product obtained from the oxidation of castor oil to produce sebacic acid,
R in (a) and (b) having the aforesaid meaning, with fused alkali metal hydroxide at a temperature between 250° and 375° C.

3,671,582
PROCESS FOR THE PREPARATION OF CARBONYL DERIVATIVES AND CARBOXYLIC ACIDS
Reginald David, and Jean Estienne, both of Lyon, Rhone, France, assignors to Rhone-Poulenc S.A., Paris, France
Filed Dec. 5, 1968, Ser. No. 781,594
Claims priority, application France, Dec. 6, 1967, 67131213
Int. Cl. C07c 51/32
U.S. Cl. 260—533 R 8 Claims
Aldehydes, ketones and carboxylic acids are made by the oxidation of organic compounds, especially olefines, with oxygen in the presence of a Group VIII metal catalyst and in a liquid medium comprising dimethylsulphoxide alone or mixed with water.

3,671,583
GLUTARIC ACID DERIVATIVES
Rudolf G. Griot, Florham Park, and Mario G. Buzzolini, Morristown, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.
Filed March 25, 1968, Ser. No. 715,501
Int. Cl. C07c 59/12, 33/10
U.S. Cl. 260—535 P 2 Claims
This invention relates to 3-hydroxy-3-trifluoromethyl glutaric acid. The compound is useful as a hypolipidemic.

3,671,584
PROCESS FOR THE CONTINUOUS PRODUCTION OF α-CHLOROPROPIONIC ACID
Helmut Schlecht, Ludwigshafen, and Robert Aurnhammer, Limburgerhof, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany
Filed May 20, 1969, Ser. No. 826,267
Claims priority, application Germany, May 24, 1968, P 17 68 536.8
Int. Cl. C07c 53/32
U.S. Cl. 260—539 R 6 Claims
An improved process for the continuous production of α-chloropropionic acid by reaction of propionic acid with chlorine in the presence of halides or acid halides of the elements phosphorus and sulfur at elevated temperature, the improvement consisting in carrying out the reaction in the presence of α-chloropropionic acid as solvent and distilling the resultant reaction mixture using the gas formed in the reaction as carrier gas. α-chloropropionic acid is used for the production of plant protection agents.

3,671,585
CARBONYLATION OF ORGANOBORANES

Herbert C. Brown, 1840 Garden Street, West, Lafayette, Ind.

Filed May 20, 1968, Ser. No. 730,654
Int. Cl. C07d 107/02
U.S. Cl. 260—545 R 8 Claims

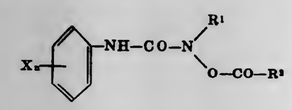
Organoboron derivatives of the general formula R_2CBO and $(R_2CBO)_3$ are formed by reacting an organoborane compound with carbon monoxide in the substantial absence of water at pressures of less than about 5 atmospheres and at temperatures ranging from about 25° to about 200° C. The organoboron derivatives may be used as additives for gasoline and diesel fuels. More importantly, they may be oxidized to form tertiary alcohols of the formula R_3COH.

3,671,586
N-PHENYL-N'-ESTER UREA DERIVATIVES

Adolf Fischer, Mutterstadt/Pfalz; Karl-Heinz Koenig, Ludwigshafen/Rhine; Gustav Steinbrunn, Schwegenheim/Pfalz, and Albrecht Zschocke, Bad Duerkheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Division of Ser. No. 652,034, July 10, 1967, Pat. No. 3,621,055. This application June 23, 1970, Ser. No. 49,159
Int. Cl. C07c 127/22
U.S. Cl. 260—545 R 7 Claims

Phenyl urea derivatives having the formula



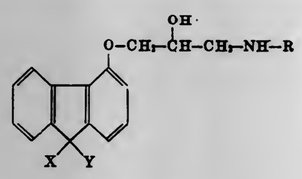
wherein X, *n*, R^1 and R^2 have the meanings designated below, and method for controlling unwanted plant growth.

3,671,587
4-(2-HYDROXY-3-AMINOPROPOXY)-9-FLUORENONES AND THE SALTS THEREOF

Franz Troxler, Bottmingen, and Fritz Seemann, Basel, both of Switzerland, assignors to Sandoz Ltd., (a.k.a. Sandoz AG), Basel, Switzerland

Continuation-in-part of Ser. No. 779,268, Nov. 26, 1968, abandoned. This application May 26, 1970, Ser. No. 40,728
Claims priority, application Switzerland, June 3, 1969, 8399/69
Int. Cl. C07c 93/06
U.S. Cl. 260—570.7 9 Claims

The present invention provides fluorene derivatives of formula,



in which R is isopropyl, secondary butyl, tertiary butyl, 3-phenylpropyl, 1-cyano-2-propyl,tert. pentyl or 3-pentyl, and either X is hydrogen and Y is hydroxy, or X and Y together are oxo, and pharmaceutically acceptable acid addition salts thereof.

The compounds of the invention exhibit β-blocking activity.

3,671,588
OXIDATION OF CYCLOHEXANE

Edward J. Murray, Snyder, and Leon O. Winstrom, East Aurora, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 30, 1969, Ser. No. 837,890
Int. Cl. C07c 45/02
U.S. Cl. 260—586 B 6 Claims

The invention relates to an improvement in the liquid phase catalytic oxidation of cyclohexane to cyclohexanone and cyclohexanol at elevated temperatures and superatmospheric pressures using an oxygen containing gas, such as oxygen or air, while maintaining substantially anhydrous conditions by removal of water during the oxidation reaction. The improvement resides in the use of more than one part and less than about six parts by weight of benzene per part of cyclohexane in the oxidation feedstock. Significantly increased yields of the above oxidation products, particularly at high cyclohexane oxidation conversion levels, are realized by utilizing this process.

3,671,589
PROCESS FOR PREPARATION OF 2-SUBSTITUTED-1,3-CYCLOPENTANEDIONES

Edward J. Watson, and Dale H. LaBar, both of West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 656,708, July 28, 1967, abandoned. This application May 23, 1969, Ser. No. 827,133
Int. Cl. C07c 49/28, 45/18
U.S. Cl. 260—586 R 4 Claims

This invention is concerned with the process of preparing 2-substituted-1,3-cyclopentanediones in good yields by reacting a succinic anhydride with an appropriate carboxylic acid anhydride, in the presence of aluminum chloride, in a reaction-inert organic solvent.

3,671,590
PROCESS FOR FORMING CARBONYL COMPOUNDS

Herbert K. Wiese, Crapford, and Paul E. Burton, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 376,554, June 19, 1964, abandoned. This application Sept. 9, 1968, Ser. No. 758,623
Int. Cl. C07c 49/04, 45/02, 47/02
U.S. Cl. 260—593 R 16 Claims

A process for the formation of carbonyl compounds and certain new ketone compositions by reacting the appropriate acyclic or alicyclic Type II, III, IV or V olefin with an organic nitrite in the presence of an acid catalyst. The specific end product(s) produced depend upon the starting olefin, type of organic nitrite employed, etc.

3,671,591
DEHYDROGENATION OF ALCOHOLS TO KETONES

Irving Schwager, Hopewell Junction; Robert J. Leak, Wappingers Falls, and Edward L. Cole, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed July 3, 1969, Ser. No. 839,082
Int. Cl. C07c 45/16, 85/10
U.S. Cl. 260—596 7 Claims

A Group VIII metal containing pyrolyzed polyacrylonitrile polymer catalyst and hydrocarbon conversion process for the dehydrogenation of alcohols to ketones particularly isopropyl alcohol to acetone and the hydrogenation of nitro compounds to amines, particularly 2-nitropropane to isopropyl amine by the use of said catalyst.

3,671,592
MODIFICATION OF ALICYCLIC OR ALIPHATIC DIEPOXY COMPOUNDS

Mitsuo Yoshihara, Takatsuki, and Kazunori Mizutani, Ibaraki, both of Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Nov. 12, 1969, Ser. No. 876,071
Claims priority, application Japan, Nov. 12, 1968, 43/82736
Int. Cl. C08g 30/12; C07d 1/00
U.S. Cl. 260—2 EP 7 Claims

This invention relates to a method of modifying alicyclic or aliphatic diepoxy compounds having two epoxy groups in the molecule, and is more particularly directed to the modification of the above mentioned diepoxy compounds which are low in the viscosity at the normal temperature with certain dicarboxylic acid and acid anhydride to increase the viscosity. The resultant materials are excellent electrical insulators and are suitable for compression molding, general molding, laminating and binding.

3,671,593
PROCESS FOR MAKING THIOPHENOL

Robert J. Laufer, Colts Neck, N.J., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 693,185, Dec. 26, 1967, abandoned. This application Jan. 26, 1970, Ser. No. 5,952
Int. Cl. C07c 149/28
U.S. Cl. 260—609 D 8 Claims

An improved process for making thiophenol wherein high yields of thiophenol are obtained by reacting cyclohexane with a sulfurizing agent at a temperature above 350° C.

3,671,594
PREPARATION OF 2,3-DIBROMO-2-BUTENE-1,4-DIOL

Robert W. Wynn, and Max E. Chiddix, both of Easton, Pa., assignors to General Aniline & Film Corporation, New York, N.Y.

Filed Aug. 9, 1967, Ser. No. 659,318
Int. Cl. C07c 33/10
U.S. Cl. 260—633 7 Claims

Process for the preparation of 2,3-dibromo-2-butene-1,4-diol which comprises reacting bromine with 2-butyne-1,4-diol in an aqueous medium at a temperature of about −10° to 100° C. and recovering the product produced.

3,671,595
PROCESS FOR THE PRODUCTION OF 1,2,4,5,6,7,8,8-OCTACHLORO-3A,4,7,7A-TETRANYDRO-4,7-METHANOINDANE

Henry K. Suzuki, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,872
Int. Cl. C07c 17/04; c07c 23/24
U.S. Cl. 260—648 C 8 Claims

This invention discloses a process for the production of 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-4,7-methanoindane by chlorinating 4,5,6,7,8,8-hexachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene in the presence of carbon disulfide.

3,671,596
LOW TEMPERATURE MELT CHLORINATION PROCESS

Harold Edward Bellis, North Tonawanda, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 2, 1968, Ser. No. 764,643
Int. Cl. C07c 17/06
U.S. Cl. 260—658 R 13 Claims

A melt chlorination process which produces tetrachloroethane by chlorinating ethylene, vinyl chloride, ethylene dichloride, and mixtures thereof, with a melt consisting essentially of iron chloride, copper chloride, alkali metal chloride(s) and water by dispersing the material to be chlorinated in the melt whereby said material is chlorinated by the melt, wherein certain proportions and process conditions are utilized to provide desired product selectivity.

3,671,597
ISOMERIZATION PROCESS EMPLOYING A NOVEL HETEROGENEOUS CATALYST

Woltram R. Kroll, Somerville, N.J., assignor to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 674,709, Oct. 10, 1967, Pat. No. 3,536,632. This application July 17, 1970, Ser. No. 55,965
Int. Cl. C07c 5/24, 13/28
U.S. Cl. 260—666 PY 17 Claims

Aliphatic and cyclic mono-olefins, diolefins, and polyolefins are isomerized by contacting an organic feed containing said olefinic compounds with a heterogeneous conversion catalyst prepared by forming, in an inert atmosphere, complexes between a reduced transition metal and a support and thereafter stabilizing the complex by heating at elevated temperatures. The complex is formed by impregnating a suitable catalytic support material with a solution of a soluble Group IVB through VIIB and Group VIII transition metal; reducing the impregnated support with an organometallic reducing agent at a temperature of about ambient to about 60° C.; removing excess solvent and excess reducing agent, and thereafter heating the product at a temperature of 100° C. to about 600° C. under substantially anhydrous conditions.

3,671,598
ISOMERIZATION OF CYCLIC HYDROCARBONS

Robert E. Moore, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 24, 1971, Ser. No. 127,772
Int. Cl. C07c 3/54, 13/78
U.S. Cl. 260—666 M 10 Claims

Saturated cyclic hydrocarbons having a carbon range of from seven to 50 carbon atoms are isomerized by contacting with sulfuric acid having an H_2SO_4 equivalent in the range of 85 to 102 percent by weight or fluorosulfonic acid and an adamantane hydrocarbon containing zero to four alkyl groups and at least one unsubstituted bridgehead position.

3,671,599
OXIDATIVE DEHYDROGENATION OF MULTICYCLIC HYDROCARBONS

Robert E. Moore, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

Filed March 24, 1971, Ser. No. 127,784
Int. Cl. C07c 13/28
U.S. Cl. 260—666 PY 8 Claims

Conjugated dienes of polycyclic naphthenes having three to 11 rings of five to six carbon atoms each of which at least three are adjacent fused rings are produced by contacting the polycyclic naphthenes with a strong acid and a monool or diol of an adamantane hydrocarbon having zero to four alkyl groups with at least one alkyl group at a non bridgehead position when the number of alkyl groups is four at a reaction temperature between the freezing point of the acid and 50° C., and recovering a polycyclic conjugated diene from the reaction mixture.

3,671,600
ETHYLATION OF ADAMANTANE NUCLEUS WITH BF ETHERATE

Robert E. Moore, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

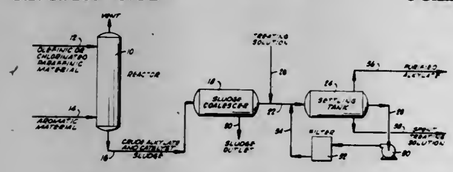
Filed Oct. 27, 1971, Ser. No. 193,148
Int. Cl. C07c 3/54, 13/28
U.S. Cl. 260—666 M 6 Claims

Adamantane hydrocarbons of the C_{10}–C_{20} range having one to four open bridgehead positions are ethylated by the reaction of a mixture of boron fluoride etherate and sulfuric acid (90–100 percent H_2SO_4 equivalent by weight) or fluorosulfonic acid ($HFSO_3$) at a temperature in the range of −10° to 100° C. During the reaction, the adamantane nucleus remains intact and any alkyl groups attached thereto in the adamantane hydrocarbon charge remain at the original position. Ethylation occurs only at bridgehead positions of the nucleus and from one to four alkyl or cycloalkyl groups can be substituted if such bridgehead positions are open in the starting hydrocarbon. The ethylation product has one or more ethyl substituents than the starting hydrocarbon, which substituents are attached to the adamantane nucleus at bridgehead positions.

3,671,601
PROCESS FOR THE PURIFICATION OF ALKYLATE

Charles L. Sanderson, Glen Burnie, and Earl S. Sauer, Baltimore, both of Md., assignors to Continental Oil Company, Ponca City, Okla.

Filed Sept. 3, 1970, Ser. No. 69,199
Int. Cl. C07c 3/56
U.S. Cl. 260—671 B 6 Claims



The present invention relates to the purification of crude alkylate produced by the reaction of an olefinic material or a chlorinated paraffinic material with an aromatic compound in the presence of an aluminum halide catalyst. By the present invention, a major portion of the entrained solid impurities resulting from the reaction are separated from the crude alkylate product. The crude alkylate is then contacted with an aqueous treating solution to remove remaining solids and other impurities therefrom and passed to a settling tank. While within the settling tank, the crude alkylate is separated from the treating solution by gravity, and treating solution-alkylate emulsion formed by and containing solids is accumulated at the interface between the layers of separated alkylate and treating solution. The emulsion and solids are withdrawn from the settling tank, passed through a filter whereby the emulsion is broken and the solids removed, with the resultant liquid filtrate being returned to the settling tank. Purified crude alkylate and spent treating solution substantially free from solids are removed from the settling tank.

3,671,602
TRANSALKYLATION OF AROMATIC HYDROCARBONS

Takehisa Inoue; Masaki Sato, and Takeshi Hashiguchi, all of Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Feb. 24, 1970, Ser. No. 13,756
Claims priority, application Japan, Feb. 25, 1969, 44/13599; March 31, 1969, 44/23880; March 31, 1969, 44/23881; April 14, 1969, 44/28233
Int. Cl. C07c 3/62
U.S. Cl. 260—672 T 10 Claims

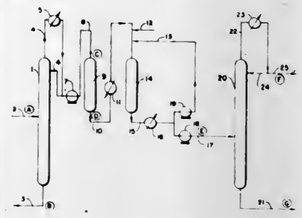
A process for the transalkylation of aromatic hydrocarbons of nine carbon atoms which comprises heat contacting the starting feed containing at least one aromatic hydrocarbon of nine carbon atoms as a main component in the presence of hydrogen gas with a catalyst selected from the group consisting of:

a. dealkalized mordenites,
b. compositions composed of a dealkalized mordenite and at least one metal selected from metals of Group Ib or VIa of the Periodic Table, and
c. compositions composed of a dealkalized mordenite, an aluminum fluoride and at least one metal selected from metals of Group Ib or VIa of Mendelejeff's Periodic Table.

3,671,603
BUTENE RECOVERY

Hugh J. Hagemeyer, Jr., Longview, and Harry F. Goss, White Oak, both of Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 10, 1970, Ser. No. 44,961
Int. Cl. C07c 11/02
U.S. Cl. 260—677 A 4 Claims



Butenes are recovered from hydrocarbon cracking streams by a process which comprises (1) distillation of the crude feed stream to remove C_4 and heavier materials, (2) desulfurization of the butene-containing stream, (3) partial hydrogenation of the desulfurized butene-containing stream to convert diolefins to monoolefins and (4) distillation of the hydrogenated butene-containing stream to remove C_3 and lighter materials. The recovered butene can be oxidized to form methyl ethyl ketone or hydrogenated to form valeraldehydes.

3,671,604
CATALYTIC COPOLYMERIZATION OF ACETYLENE AND MONOOLEFINS

Thomas F. Rutledge, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Oct. 21, 1970, Ser. No. 82,847
Int. Cl. C07c 11/02
U.S. Cl. 260—677 9 Claims

Disclosed is a process for the catalytic copolymerization of acetylene and olefins which comprises heating a mixture of acetylene and olefin in the presence of a catalyst comprising an acidic catalyst carrier having deposited thereon a compound selected from the group consisting of zinc acetate, zinc oxide, cadmium oxide, cadmium acetate, nickel oxide, nickel acetate, cobalt oxide, and cobalt acetate. The novel products produced by the process of this invention are useful for the preparation of motor fuels and polymeric coating compositions.

3,671,605
ISOMERIZATION OF ALLENES INTO THEIR CORRESPONDING TERMINAL ACETYLENIC ISOMERS

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Division of Ser. No. 858,107, Sept. 15, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 98,043
Int. Cl. C07c 11/24
U.S. Cl. 260—678 10 Claims

A catalyst for the isomerization of allenes into their corresponding terminal acetylenic isomers is prepared by combining an alkali metal having an atomic weight greater than that of lithium with alumina in the presence of sufficient heat for the free alkali metal to melt and react with the alumina. Passing a stream of an allene compound through a bed of this catalyst converts the allene into the corresponding terminal acetylenic isomer.

3,671,606
OXIDATIVE DEHYDROGENATION UTILIZING MANGANESE FERRITE

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 671,237, Sept. 28, 1967, abandoned. This application Oct. 2, 1969, Ser. No. 863,380. The portion of the term of this patent subsequent to Jan. 7, 1968, has been disclaimed.
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E 6 Claims

Oxidative dehydrogenation of organic compounds in vapor phase utilizing manganese ferrite which has been prepared by heating precipitates which are the precursors of manganese ferrite.

3,671,607
METHOD FOR IMPACT MODIFICATION OF ETHYLENICALLY UNSATURATED NITRILE POLYMERS AND POLYMER BLENDS PRODUCED THEREBY

Yoon Chai Lee, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 14, 1969, Ser. No. 866,375
Int. Cl. C08f 41/12, 37/18
U.S. Cl. 260—876 R 18 Claims

A polyblend with good impact properties, good light stability, good heat stability, low water vapor transmission and low oxygen permeability has a polymerization graft component with a rubbery substrate and a composite superstrate. Initially, the rubbery substrate is grafted with a monomer mixture containing little or no nitrile monomer and generally comprised of monomers selected from the group consisting of monovinylidene aromatic hydrocarbon, alkyl esters of unsaturated carboxylic acids, unsaturated carboxylic acids, vinyl alkanoates and vinyl ethers. Thereafter, the resultant graft copolymer is admixed and grafted with a second monomer formulation containing at least 60 percent by weight of ethylenically unsaturated nitrile monomers. The resultant composite graft copolymer is then blended with a matrix of an ethylenically unsaturated nitrile polymer to provide the desired impact modified polymer blends.

3,671,608
PLASTIC COMPOSITION AND METHOD OF PREPARING SAME

Curtis L. Meredith, and George A. Von Bodungen, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed Nov. 21, 1969, Ser. No. 878,874
Int. Cl. C08f 15/04
U.S. Cl. 260—878 R 28 Claims

An improved plastic composition formed by the reaction of an alkenyl aromatic monomer, an acrylic monomer and an interpolymer of ethylene, at least one other straight chain alpha-monoolefin and a compound selected from the group consisting of aliphatic and cycloaliphatic polyene compounds in the presence of a free radical catalyst in an organic solvent, and in the presence of a seed mixture comprising a mixture of said monomers and said interpolymer which has been reacted to at least 15 percent conversion based on said monomers.

3,671,609
NEW POLYMERIC COMPOSITIONS

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 27, 1970, Ser. No. 58,699
Int. Cl. C08f 1/68, 3/20, 15/02
U.S. Cl. 260—879 5 Claims

Polymeric compositions characterized by being fiber-forming and stereospecific and capable of being melted and drawn into strong crystalline filaments and fibers. The compositions are useful as storage stable binders as well as adhesives for fluorcarbon material.

3,671,610
CROSS-LINKED GRAFT COPOLYMER OF STYRENE AND METHYL METHACRYLATE UPON A BUTADIENE POLYMER

Yasuo Amagi; Masaki Ohya; Zenya Shiiki, and Haruhiko Yusa, all of Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 570,261, Aug. 4, 1966, abandoned. This application Nov. 14, 1969, Ser. No. 876,920
Claims priority, application Japan, Aug. 9, 1965, 40/48036; Feb. 5, 1966, 41/6652; Feb. 5, 1966, 41/6653
Int. Cl. C08f 19/08, 37/18
U.S. Cl. 260—880 R 2 Claims

Butadiene-styrene-methyl metnacrylate copolymers prepared by graft-polymerization with cross-linked butadiene or polybutadiene-styrene copolymer latex of styrene-methyl methacrylate monomers and a cross-linking agent capable of copolymerizing with said monomers in two steps.

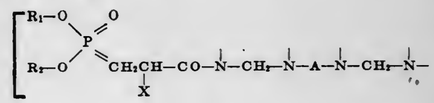
Polyvinyl chloride resins incorporated with the graft copolymer exhibits improved mechanical strength and other physical properties.

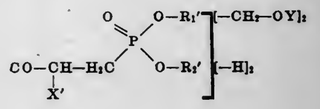
3,671,611
PHOSPHORUS ACID ESTERS

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba Limited

Filed Dec. 23, 1969, Ser. No. 887,729
Claims priority, application Switzerland, Jan. 7, 1969, 124/69; July 8, 1969, 10370/69
Int. Cl. C07f 9/40
U.S. Cl. 260—932 14 Claims

Phosphorus compounds are provided which correspond to the formula





in which each R is an alkyl, alkenyl or halogenalkyl radical, X and X′ each is a methyl group or a hydrogen atom, A is a —C-O—, —CS—, —SO_2—, —CNH— or —CO—NE—CO— radical, wherein E is a hydrogen atom or a Y—CH_2—O— radical and wherein Y is an alkyl radical or a hydrogen atom. The phosphorus compounds are manufactured from the corresponding phosphorus carboxylic acid amides, a diamide and

formaldehyde. These compounds optionally together with a curable aminoplast precondensate are useful for flameproofing and creaseproofing of cellulose-containing fiber materials.

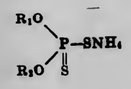
3,671,612

PROCESS FOR THE MANUFACTURE OF AMMONIUM DIALKYLDITHIOPHOSPHATES

Hilmar Roszinski, Kendenich near Cologne, and Heinz Harnisch, Loevenich near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Cologne, Germany

Filed March 21, 1969, Ser. No. 809,408
Claims priority, application Germany, April 5, 1968, P 17 68 151.5
Int. Cl. C07f 9/16
U.S. Cl. 260—987 7 Claims

Production of noncaking ammonium dialkyldithiophosphates of the general formula:



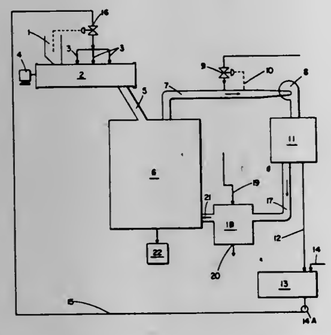
in which R_1 and R_2 represent identical or different alkyl radicals having from one to six carbon atoms. The phosphates are produced by mixing dialkyldithiophosphoric acids with an alcohol in a molar ratio of smaller than 1:0.25, introducing gaseous ammonia into the resulting mixture, filtering off precipitated salt, washing the salt and drying it.

3,671,613

PELLETING OF OIL-COATED CARBON PARTICLES

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Filed March 25, 1970, Ser. No. 22,647
Int. Cl. B01j 2/12
U.S. Cl. 264—115 8 Claims



Oil-coated pulverized carbon particles are pelleted by mixing with roughly 5 to 15 percent by weight methanol, then drying in a solvent recovery system to provide a pelletized product while leaving the oil-coatings intact.

3,671,614

AROMATIC POLYAMIDES CONTAINING THE QUINAZOLONE RING

Hans-Egon Kunzel; Gerhard Dieter Wolf, both of Dormagen; Gunter Blankenstein, Stommeln, and Gunther Nischik, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 19, 1969, Ser. No. 878,237
Claims priority, application Germany, Nov. 28, 1968, P 18 11 411.9
Int. Cl. C08g 20/20
U.S. Cl. 260—47 CZ 16 Claims

New thermally stable aromatic polyamides that are soluble in organic solvents, which polyamides contain quinazolone ring systems and which are produced by poly-condensation of aromatic diamines having one or two quinazolone ring systems in their molecule and aromatic dicarboxylic acid dihalides.

ERRATA

For Classes 260—210, 260—240, 260—252, 260—294, 260—463 and 260—539 see:
Patent Nos. 3,671,647 thru 3,671,652

3,671,615

METHOD OF MAKING A COMPOSITE BOARD PRODUCT FROM SCRAP MATERIALS

Herbert K. Price, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Nov. 10, 1970, Ser. No. 88,275
Int. Cl. D21b 1/07
U.S. Cl. 264—39 11 Claims

A method of making a composite board product from scrap materials such as are customarily available from a printing plant. The scrap materials are derived from three types of materials designated herein as plastic materials, fibrous materials and filler materials. The scrap materials are shredded or pulverized into small particles after which particles of a specified size are separated, filtered or culled out for further processing. The separated particles of the required size are homogenized in a mixing step and then placed in a preheated mold. Here the particles are subjected to unusually low pressure and temperature while formed into a finished product with the aid of a platen press. Typical finished products are employed as floor tiles, counter tops, wall panels or insulation.

ERRATUM

For Class 264—39 see:
Patent No. 3,671,654

3,671,616

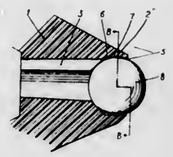
METHOD OF MANUFACTURING BALL-PENS

Tozaburo Nakata, deceased, late of Tokyo, Japan, and by Fusahide Nakata, heir, 4-14 Kita 1-chome, Loenji-Suginami-ku, Japan

Continuation of Ser. No. 716,873, March 27, 1968, abandoned. This application Aug. 6, 1970, Ser. No. 61,862
Claims priority, application Japan, March 30, 1967, 42/20120
Int. Cl. B29d 23/00
U.S. Cl. 264—68 4 Claims

Ball pen tips are made of a heat moldable synthetic resin by molding and a steel ball is inserted in an inwardly diverging

ball-embracing recess of the molded tip then the outwardly



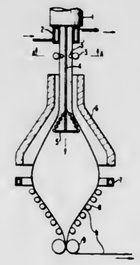
opening ball-embracing tip portion is squeezed under pressure during heating at predetermined temperatures.

3,671,617

METHOD OF DRAWING THERMOPLASTIC SYNTHETIC RESIN FILM OVER A POLYANGULAR MANDREL

Sadao Nagase, Mie, Japan, assignor to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1969, Ser. No. 881,096
Claims priority, application Japan, Oct. 22, 1969, 44/84436; Nov. 30, 1968, 43/87799
Int. Cl. B29c 23/00
U.S. Cl. 264—89 6 Claims



A method of drawing a tubular thermoplastic resin film comprising transporting said tubular film onto a mandrel which has a polyangular conical shape, causing the uniform occurrence of necking initiation points around the circumference of said film by drawing said film around said mandrel, and continuing to draw said film by the action of fluid pressure exerted within said film after said film has passed over said mandrel.

3,671,618

METHOD FOR DRY PRESSING CERAMIC TILE

William W. Huber, North Canton, and Richard L. Dana, Canton, both of Ohio, assignors to United States Ceramic Tile Company, Canton, Ohio

Division of Ser. No. 636,983, May 8, 1967, Pat. No. 3,523,344.
This application April 30, 1970, Ser. No. 43,628
Int. Cl. B28b 3/00
U.S. Cl. 264—120 7 Claims

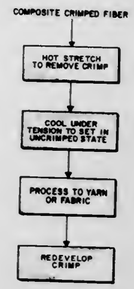
A method is illustrated for dry pressing granular ceramic material in situ by subjecting the material to a first peak pressure, then relieving the pressure on the pressed material while confining the material to retain its general pressed form and subsequently applying pressure to the material which is no greater than the original pressure applied but no less than 75 percent thereof.

3,671,619

CRIMP RESERVATION PROCESS

Warren E. Fitzgerald; John P. Knudsen, both of Raleigh, and Jessie O. Brock, Cary, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 331,890, Dec. 19, 1963, abandoned. This application March 8, 1967, Ser. No. 621,650
Int. Cl. D01d 5/22
U.S. Cl. 264—168 8 Claims



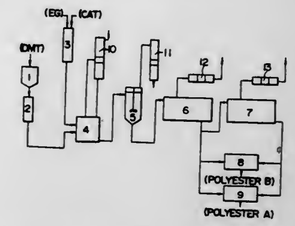
There is disclosed a process for reserving and redeveloping crimp involving removing the crimp from self-crimped composite fibers, which originally developed their crimp under rather severe temperature or humidity conditions or both, then processing the decrimped fiber to the desired end product and finally redeveloping the original crimp by mild processing conditions.

3,671,620

PROCESS FOR THE MANUFACTURE OF COMPOSITE FILAMENTS AND YARNS

Takeshi Inoue, Kurashiki, Okayama Prefecture, Japan, assignor to Kurashiki Rayon Co., Ltd., Okayama Orefecture, Japan

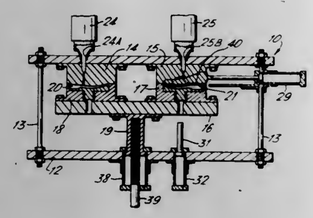
Filed July 25, 1969, Ser. No. 844,910
Claims priority, application Japan, July 27, 1968, 43/53241
Int. Cl. B29f 3/10
U.S. Cl. 264—171 7 Claims



Composite filaments and yarns having excellent spinnability, dyeability and crimp developing properties, and exhibiting improved properties such as a small bulk density after development of crimps, a lower number of breakages in the monofilament or yarn during spinning, reduced deep dyeing defects, improved natural draw ratio, and development of fine, uniform helical crimps are obtained by melt-spinning component (A) a mixture, preferably having Mw/Mn of more than 2.5 selected from (i) mixtures obtained by continuously mixing an end product in the molten state obtained by a multistep continuous polycondensation reaction with at least one intermediate product in the molten state occurring in this polycondensation reaction system, and (ii) mixtures obtained by continuously mixing at least two of said intermediate

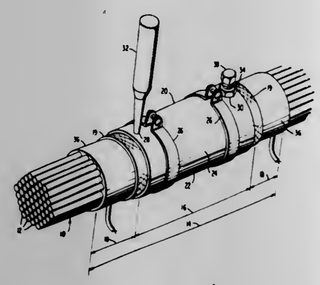
products, and component (B) at least one polymer having a viscosity different from that of component (A).

3,671,621
INJECTION MOLDING METHOD FOR SANDALS
Tatsuo Fukuoka, No. 3, 3-Ban, 2-chome-Minami-Fukushima, Tokushima, Japan
Filed July 1, 1970, Ser. No. 51,568
Int. Cl. B29b 1/00; B29h 7/08; A43d 65/00
U.S. Cl. 264—244 1 Claim



The method according to the present invention comprises injecting the first resinous material into the first cavity of a movable mold, cooling the material into a cured condition, shifting the movable mold with the cured first material up to the second stational mold, injecting the second resinous material into the second cavity, cooling the second material into a cured condition and finally releasing the articles from the mold.

3,671,622
METHOD OF FORMING SEAL FOR MULTI-WIRE STRAND
Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation
Division of Ser. No. 779,536, Dec. 27, 1968. This application Nov. 13, 1970, Ser. No. 89,335
Int. Cl. B29c 6/00; B29g 7/00
U.S. Cl. 264—263 2 Claims



A short length of a multi-wire strand is surrounded with a mold to provide an annular space about said length. Said space is filled with a thermosetting plastic sealant and pressure is applied to force said sealant into and along the interstices of said strand. During said application of pressure, the strand is circumferentially heated at the ends of said mold to provide a radial temperature gradient across said ends. Pressure is applied to said sealant until the ends of the seal are substantially convex.

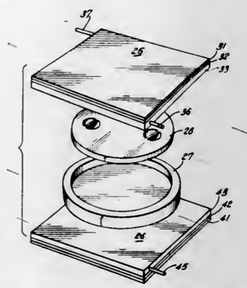
3,671,623
METHOD OF DRAWING AND HEAT TREATING SYNTHETIC FILAMENTS
Takaaki Fukushima, Mihara; Haruki Takizawa, Matsuyama; Kikuo Hori, Matsuyama; Yoshito Sato, Matsuyama, and Haruhiki Mizumori, Amagasaki, all of Japan, assignors to Teijin Limited, Osaka, Japan
Continuation-in-part of Ser. No. 658,799, Aug. 7, 1967, Pat. No. 3,539,680. This application June 29, 1970, Ser. No. 50,809
Int. Cl. B29c 17/02
U.S. Cl. 264—290 5 Claims



A method of drawing and heat treating undrawn filaments of condensation polymer between a heated feed roller rotating at a constant peripheral speed and a draw roller rotating a constant peripheral speed greater than that of the former, the surface of said feed roller being heated at a temperature within the range of from the second order transition point of said filaments to a temperature 55° C. higher than the second order transition point, characterized in that,

a. a pressure roller is provided which rotates by contacting with the aforesaid heated feed roller and presses against at least the final turn of the filament wound around the heated feed roller to thereby fix the necking point at the point of contact of the two rollers; and
b. a slit heater having a groove width of 0.5–3.0 mm is disposed between the heated feed roller and the drawing roller, the temperature (y° C.) of the slit heater and treating time (x sec.) being so chosen as to satisfy the following conditions: $y \geq -1770.8x + 255$, $100 \leq y \leq 480$, and $0.01 \leq x \leq 0.12$.

3,671,624
METHOD OF USING A PORTABLE COOLING PLATEN
Michael P. Antalek, c/o Texaco Inc., P.O. Box 509, Beacon, N.Y.
Division of Ser. No. 739,801, June 25, 1968, abandoned. This application April 30, 1970, Ser. No. 43,622
Int. Cl. B29c 3/00
U.S. Cl. 264—294 5 Claims

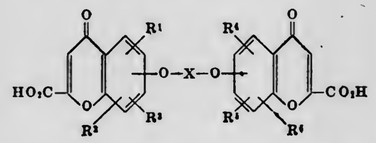


A method of cooling a molded plastic article in a press without cooling the heated press platens. It employs portable

cooling platens and involves opening the press, inserting the cooling platens and reapplying pressure while cooling the plastic article until it is frozen.

3,671,625
COMPOSITIONS FOR TREATING ASTHMA COMPRISING BIS-CHROMONYL COMPOUNDS AND METHOD OF EMPLOYING SAME
Roger Edward Collingwood Altounyan, Wilmslow, England, assignor to Fisons Pharmaceuticals Limited, Leicestershire, England
Continuation of Ser. No. 650,663, July 3, 1967, abandoned, which is a continuation of Ser. No. 536,285, March 22, 1966, abandoned. This application March 12, 1970, Ser. No. 19,119
Claims priority, application Great Britain, Dec. 17, 1965, 53,744/65
Int. Cl. A61k 13/00, 27/00
U.S. Cl. 424—45 14 Claims

Bis-chromonyl compounds of the formula:



and therapeutically acceptable salts, esters and amides thereof, wherein R^1, R^2, R^3, R^4, R^5 and R^6 are the same or different and each is H or halogen, lower alkyl, hydroxy, lower alkoxy, substituted lower alkyl or substituted lower alkoxy, and X is a saturated or unsaturated, substituted or unsubstituted, straight or branched polymethylene chain which may be interrupted by one or more carbocyclic rings or oxygen-containing heterocyclic rings, oxygen atoms or carbonyl groups are particularly useful for the relief and prophylaxis of asthma when mixed with bronchodilators.

3,671,626
INHIBITING DENTAL PLAQUE
Carl B. Felger, College Park, Md., assignor to The Gillette Company, Boston, Mass.
Filed Dec. 14, 1970, Ser. No. 98,068
Int. Cl. A61r 7/16
U.S. Cl. 424—49 19 Claims

Inhibiting the formation of dental plaque with a composition comprising about 0.05 to 3 percent by weight of pyromellitic acid in a physiologically acceptable vehicle.

3,671,627
REACTION PRODUCTS OF PLACENTA EXTRACTS AND PENICILLIN
Louis W. Granirer, deceased, late of Belle Harbor, N.Y.; by Minna B. Granirer, executor; by Samuel Granirer, executor, both of Belle Harbor, N.Y., and by Robert I. Pearlman, executor, Elizabeth, N.J., assignors to Minna B. Granirer, Belle Harbor, N.Y.
Division of Ser. No. 701,465, Nov. 7, 1967, Pat. No. 3,584,117, which is a continuation-in-part of Ser. Nos. 113,059, May 29, 1961, abandoned, and Ser. No. 299,114, July 31, 1964, abandoned. This application June 5, 1969, Ser. No. 830,884
Int. Cl. A61k 21/00, 17/00
U.S. Cl. 424—105 12 Claims

The present invention relates to new penicillin formulations formed by contacting penicillin and pharmaceutically acceptable salt complexes formed from extracts of placenta.

3,671,628
TIRANDAMYCIN AND PROCESS FOR MAKING SAME
Oldrich K. Sebek, Kalamazoo, and Curtis E. Meyer, Galesburg, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed Sept. 8, 1969, Ser. No. 856,082
Int. Cl. A61k 21/00
U.S. Cl. 424—120 9 Claims

Antibiotic tirandamycin producible by culturing *Streptomyces tirandis* var. tirandis in an aqueous nutrient medium. Tirandamycin is active against *Bacillus subtiles* and can be used to minimize or prevent odor in fish and fish crates caused by this organism.

3,671,629
STERILIZING COMPOSITION COMPRISING POTASSIUM MONOPERSULPHATE AND SODIUM CHLORIDE COATED WITH AN EDIBLE OIL AND MAGNESIUM STEARATE
Alan A. Levy, Stanmore; Mitchell N. Rodger, High Wycombe, and Geoffrey D. Breach, South Norwood, London, all of England, assignors to Richardson-Merrell Limited, London, England
Filed Feb. 16, 1968, Ser. No. 705,940
Claims priority, application Great Britain, Feb. 21, 1967, 8,308/67
Int. Cl. A01n 17/00
U.S. Cl. 424—153 7 Claims

In order to maintain uniformity of composition when fed into small packages from bulk, the individual particles of the salts in a solid water soluble sterilizing composition, containing an alkali metal monopersulphate and an alkali metal chloride, are coated with a non-aqueous physiologically acceptable liquid, such as corn oil or medicinal paraffin, and a solid anti-static lubricant, such as magnesium stearate.

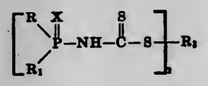
3,671,630
HALOGENATED PHENOLIC GERMICIDAL COMPOSITIONS CONTAINING TERPENE COLOR STABILIZERS
Francis Emery Carroll, Wyckoff, and Walter Charles Seebold, Westwood, both of N.J., assignors to Lever Brothers Company, New York, N.Y.
Continuation-in-part of Ser. No. 673,264, Oct. 6, 1967, abandoned. This application Aug. 17, 1970, Ser. No. 64,623
Int. Cl. A01n 9/30; C11d 3/48, 9/50
U.S. Cl. 424—174 22 Claims

Aqueous solutions containing halogenated phenolic germicidal compositions are stabilized against color change on exposure to light by providing in the solutions an effective amount of a discoloration inhibitor selected from the group consisting of alpha-phellandrene, allo ocimene, ocimene, terpinolene, myrcene, isoprene, rosin, tall oil, myrcene hydrate, and abietic acid. The solutions may also contain up to 35 percent of a detergent and other conventional detergent adjuvants.

3,671,631
METHOD FOR CONTROL OF HELMINTHS IN WARM-BLOODED ANIMALS USING PHOSPHINYLDITHIOCARBAMATES.
Mary Ehlers Doscher, Trenton, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed April 15, 1971, Ser. No. 134,454
Int. Cl. A61k 27/00
U.S. Cl. 424—205 10 Claims

This invention relates to a novel method for controlling helminths in warm-blooded animals. More particularly, the invention relates to a method for the control of helminths in warm-blooded animals by administering to said animals, an

anthelmintically effective amount of a compound of the formula:



wherein R and R_1 are each members selected from the group consisting of loweralkyl, loweralkoxy and phenyl; X is sulfur or oxygen; and R_3 is a loweralkylene radical, such as ethylene, loweralkyl substituted ethylene, trimethylene, loweralkyl substituted trimethylene, oxydimethylene, tetramethylene or loweralkyl substituted tetramethylene.

3,671,632

INSECTICIDAL COMPOSITIONS OF ENDOSULFAN IN FENITROTHION FOR U.L.V. TREATMENT

Claude S. Aronica, Ecully, and Louis Moulin, Tassin La Demi Lune, both of France, assignors to Pechiney-Progil, Lyon, France

Filed Sept. 15, 1969, Ser. No. 858,108

Claims priority, application France, Sept. 16, 1968, 6850388

Int. Cl. A01n 9/36, 9/28

U.S. Cl. 424—218 **3 Claims**

A composition comprising a solution of endosulfan in fenitrothion is used to control insect parasites on plants, particularly cotton plants. The composition is suitable for use in ultra low volume treatment of plants and may be sprayed from an aircraft.

3,671,633

PROCESS FOR TABLETTING ACETAZOLAMIDE

Prabhakar Ranchhordas Sheth, Nanuet, N.Y., and James Henry Wiley, Westwood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 783,765, Dec. 13, 1968, abandoned. This application May 10, 1971, Ser. No. 141,974

Int. Cl. A61j 3/10

U.S. Cl. 424—273 **6 Claims**

A process for producing pharmaceutically acceptable tables of acetazolamide which comprises compressing a mixture containing a binder and a mixture of acetazolamide crystals. The mixture of acetazolamide crystals is characterized by a binodal size distribution and is obtained by adding acetazolamide seed crystals to a saturated solution of acetazolamide while cooling and agitating the mixture of seed crystals and solution.

3,671,634

STABLE AQUEOUS ANTI-DANDRUFF SHAMPOO CONTAINING CAPTAN

Bernard C. Carlson, Weston, and Francis E. Hutchins, Norwalk, both of Conn., assignors to R. T. Vanderbilt Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 570,053, Aug. 3, 1966, abandoned. This application Feb. 16, 1970, Ser. No. 11,788

Int. Cl. A61k

U.S. Cl. 424—274 **4 Claims**

N-Trichloromethyltrhio-4-cyclohexene-1,2-dicarboximide (captan) may be incorporated in an aqueous shampoo formulation having an acceptable shelf life if the pH of the formulation is in the range of from about 3.0 to about 7.0 and the detergent is at least one of an organic sulfate or sulfonate detergent or a non-ionic detergent free from amino nitrogen.

ERRATUM

For Class 424—305 see:
Patent No. 3,671,532

3,671,635

CHEMOSTERILANT COMPOSITIONS FOR FLIES AND METHOD OF USE

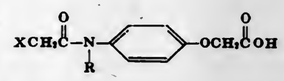
Philip C. Hamm, Glendale, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 677,082, Oct. 23, 1967, abandoned. This application May 27, 1970, Ser. No. 41,100

Int. Cl. A01n 9/24

U.S. Cl. 424—319 **7 Claims**

Compounds of the following formula are insect chemosterilants:



wherein R is alkyl of not more than four carbon atoms and X is halogen (Cl, Br, F and I).

3,671,636

METHODS FOR TREATING HYPERTENSION OR INHIBITING GASTRIC SECRETION

Walfred S. Saari, Landsdale, Pa., assignor to Merck & Co, Inc., Rahway, N.J.

Division of Ser. No. 636,586, May 8, 1967. This application Oct. 29, 1969, Ser. No. 871,214

Int. Cl. A61k 27/00

U.S. Cl. 424—330 **8 Claims**

Novel derivatives of 3-hydroxy-α-(1-aminoethyl)-benzyl alcohol particularly 3-ether derivatives of erythro and threo 3-hydroxy-α-[1-aminoethyl]-benzyl alcohol and their pure enantiomers are described. Also processes for the preparation of the above identified compounds are shown.

The novel derivatives of 3-hydroxy-α-(1-aminoethyl)-benzyl alcohol are useful as antihypertensive agents and inhibitors of gastric secretion.

3,671,637

REPELLANT COMPOSITION COMPRISING CERTAIN CYCLOHEXYL UREAS AND THIOUREAS

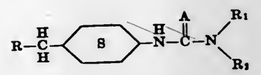
Richard N Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,301, April 20, 1967, which is a continuation-in-part of Ser. No. 574,498, Aug. 18, 1966. This application Oct. 24, 1968, Ser. No. 770,448

Int. Cl. A01n 9/12, 9/18, 9/20

U.S. Cl. 424—322 **10 Claims**

Repelling animals with 1-(4-higher alkyl-substituted cyclohexyl)-3-alkyl and 3,3-dialkylureas and thioureas of the formula:



wherein

R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl or tricycloalkyl;

R_1 and R_2 are hydrogen, alkyl, haloalkyl, cyanoalkyl, nitroalkyl, alkoxyalkyl, or thioalkoxyalkyl, and

A is oxygen or sulfur. Typical is 1-(cis-4-cyclohexylmethyl-cyclohexyl-3-methyl-urea useful as an animal repellant.

3,671,638

ANIMAL REPELLENT METHODS USING SUBSTITUTED CYCLOHEXYL UREAS

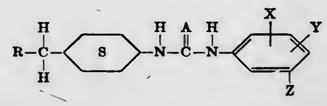
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,307, April 20, 1967, which is a continuation-in-part of Ser. No. 574,499, Aug. 18, 1966. This application Oct. 24, 1968, Ser. No. 770,450

Int. Cl. A01n 7/00, 9/20

U.S. Cl. 424—322 **9 Claims**

Repelling animals with compounds of the formula:



wherein

A is oxygen or sulfur,

R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl and tricycloalkyl.

Typical is 1-phenyl-3-(cis-4-cyclohexylmethylcyclohexyl)-urea useful as an animal repellent.

3,671,639

1-PHENYL-4,4-DI-SUBSTITUTED-THIOSEMICARBAZIDE FUNGICIDAL AND ACARICIDAL AGENTS

Klaus Sasse; Hans Scheinpflug, and Ferdinand Grews, all of c/o Farbenfabriken Bayer AG, Leverkusen, Germany

Filed June 30, 1969, Ser. No. 837,933

Claims priority, application Germany, July 2, 1968, P 17 67 924.2

Int. Cl. A01n 9/12

U.S. Cl. 424—323 **9 Claims**

Fungicidal and acaricidal compositions of and methods of combatting fungi and acarids using certain 1-phenyl-4,4-di-substituted-thiosemicarbazides, i.e., 1-(optionally mono to tri chloro, bromo, methyl and methoxy -substituted)-phenyl-4,4-[di(alkyl and alkenyl) or tetramethylene, pentamethylene, oxa -pentamethylene or thia-pentamethylene]-thiosemicarbazides.

3,671,640

2-METHOXY-4-METHYLPHENYL-N-METHYLCARBAMATE AND INSECTICIDAL COMPOSITIONS CONTAINING THE SAME

Tatsumi Nishinura, Shimizu; Tadahiko Inoue, Ogasagun; Takeo Tsuboi, Ikeda, and Masaru Kado, Yokohama, all of Japan, assignors to Kumial Chemical Industry Co., Ltd., Tokyo, Japan

Filed July 2, 1969, Ser. No. 838,700

Int. Cl. C07c 125/06; A01n 9/24

U.S. Cl. 424—300 **2 Claims**

Novel 2-methoxy-4-methylphenyl-N-methyl-carbamate and insecticidal compositions comprising the same as an active ingredient.

3,671,641

METHODS OF COMBATTING BACTERIA AND FUNGI USING CYANOALKYL ESTERS OF 2-HALOACRYLIC AND 2,3-DIHALO PROPIONIC ACIDS

John D. Buckman; John D. Pera, and Fred W. Raths, all of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Jan. 2, 1969, Ser. No. 789,082

Int. Cl. A01n 9/20

U.S. Cl. 424—304 **7 Claims**

Substituted alkyl esters of 2-haloacrylic and 2,3-dihalo propionic acids and their use in controlling micro-organisms, nematodes, and insects are described.

ERRATUM

For Class 424—312 see:
Patent No. 3,671,654

3,671,642

N-ACYLCYCLOHEXYLAMINE REPELLANTS AND METHODS OF USE

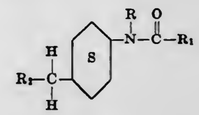
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,306, April 20, 1967, which is a continuation-in-part of Ser. No. 574,276, Aug. 18, 1966. This application Oct. 24, 1968, Ser. No. 770,447

Int. Cl. A01n 9/20, 23/00

U.S. Cl. 424—320 **10 Claims**

Repelling animals with N-acylcyclohexylamines of the formula:



wherein

R is hydrogen, methyl, or ethyl;

R_1 is hydrogen or alkyl of one through four carbon atoms; and

R_2 is straight chain or branched alkyl of three through eight carbon atoms.

Typical is N-acetyl-cis-4-n-butylcyclohexylamine useful for repelling animals.

3,671,643

TREATMENT OF EXCESSIVE SEBACEOUS GLANDS SECRETION WITH SUBSTITUTED CYSTEAMINE COMPOUNDS

Gregoire Kalopissis, Paris, France, assignor to Societe Anonyme dite:-L'Oreal, Paris, France

Continuation-in-part of Ser. No. 736,960, June 14, 1968, abandoned, Continuation-in-part of Ser. No. 801,840, Feb. 24, 1969. This application Sept. 15, 1969, Ser. No. 858,161

Claims priority, application France, Jan. 29, 1964, 641472021; Luxembourg, Dec. 22, 1965, 55553; France, June 21, 1967, 671560250; July 28, 1967, 6794913; Luxembourg, Feb. 23, 1968, 55553; April 19, 1968, 55935; Belgium, June 3, 1969, 733993

Int. Cl. A61k 27/00

U.S. Cl. 424—330 **2 Claims**

A process of treating acne with a composition containing substituted cysteamine compounds.

3,671,644

ANTISEPTIC COMPOSITIONS CONTAINING PHENOLIC BACTERICIDES POTENTIATED WITH PHOSPHONIC ACID DERIVATIVES

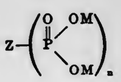
Riyad R. Irani, and H. Evan Roberts, both of St. Louis, Mo., assignors to Monsanto Chemical Company, St. Louis, Mo.

Continuation of Ser. No. 352,942, March 18, 1964. This application July 18, 1969, Ser. No. 872,437

Int. Cl. A61k 27/00, 13/00

U.S. Cl. 424—346 **5 Claims**

An antiseptic composition is described containing a phenolic or quaternary ammonium bactericide and, as a potentiating agent, a water-soluble polyphosphonic acid compound having the formula



wherein n is an integer from 2 to 3 inclusive, M is a member selected from the group consisting of hydrogen and cations, and Z is a connecting radical equal in valence to n and containing not more than about 12 atoms, exclusive of hydrogen, in chemical combination, as well as compositions containing the foregoing and other additives such as are found in sanitizing compositions, antiseptic detergent compositions, cosmetic compositions, drilling mud compositions and the like.

3,671,645
METHOD FOR INDUCING ANETHESIA

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Division of Ser. No. 699,060, Jan. 19, 1968, Pat. No. 3,579,595. This application June 29, 1970, Ser. No. 60,179

Int. Cl. A61k *13/00*

U.S. Cl. 424—351 **1 Claim**

1-bromo-1-chloro-2,3,3-trifluoropropene, useful as a general anesthetic.

3,671,646
LIQUID DEVELOPERS FOR ELECTROSTATIC PHOTOGRAPHY

Takaji Kurita; Masaya Motoki; Kazuhiro Emoto, and Katsuo Hojo, all of Otokuni-gun, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed July 24, 1969, Ser. No. 844,598

Claims priority, application Japan, July 27, 1968, 43/53234; Feb. 14, 1969, 44/131769

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 **9 Claims**

A liquid developer for electrostatic photography is prepared by dispersing in a dispersion medium composed essentially of a paraffinic hydrocarbon, an alkylaminoethyl methacrylate-containing polymer; a carboxyl group-containing copolymer or acrylic or methacrylic acid and an ester thereof; a coloring material; and/or a dihydroabietic ester.

Colloidal particles of the developer have favorable electric charging properties, and, after development of a photoconductive material and simultaneously with the drying of the liquid, they firmly adhere to the photo-sensitive layer to give a clear image. Further, the developer, which is a colloidal dispersion system, is stable and does not easily cause precipitation or agglomeration.

3,671,647
LINCOMYCIN 3-NUCLEOTIDES AND THE SALTS THEREOF

Alexander D. Argoudelis, and John H. Coats, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

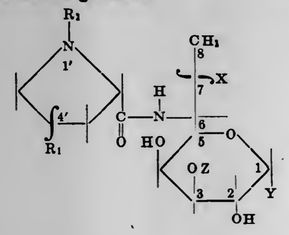
Continuation-in-part of Ser. No. 30,254, April 20, 1970, abandoned. This application March 24, 1971, Ser. No. 127,852

Int. Cl. C07c *47/18*

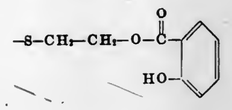
U.S. Cl. 260—210 R **19 Claims**

0000

This invention relates to novel antibacterial compounds and to processes for preparing them. It is particularly directed to novel 3-nucleotides of lincomycin, and of analogs thereof, and of celesticetins. The compounds of the invention can be shown by the following formula:



wherein Y is —SR wherein R is alkyl of one to six carbon atoms, inclusive,



, or —S—CH_2—CH_2—OH, R_1 is H, or cis or trans lower-alkyl of from one to eight carbon atoms, inclusive; R_8 is H, CH_3, or C_2H_5; X is OH, chlorine, bromine, iodine or —OR_9 wherein R_9 is alkyl of one to six carbon atoms, inclusive, each in the (R) or (S) configuration; and Z is a nucleoside —5'— phosphate group wherein said nucleoside can be adenosine, guanosine, cytidine or uridine; and salts thereof.

Examples of alkyl of from one to eight carbon atoms are methyl, ethyl, propyl, butyl, pentyl, hexyl, heptyl, and octyl and isomers thereof.

3,671,648
CARBOCYANINE FILTER DYES AND SENSITIZERS FOR SILVER HALIDE EMULSIONS

Arthur Fumia, Jr.; Donald W. Heseltine, and Leslie G. S. Brooker, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 574,947, Aug. 25, 1966. This application May 15, 1969, Ser. No. 825,072

Int. Cl. C09b *23/08*

U.S. Cl. 260—240 R **11 Claims**

New tricarbocyanine dyes derived from enamine and enaminium salts are useful as filter dyes and spectral sensitizers for photographic silver halide emulsions. They sensitize such emulsions over a wavelength range of about from 660 to 850 μ, and higher in some instances, with maximum sensitivity ranging about from 750 to 800 μ.

3,671,649
PRODUCTION OF A HETEROCYCLIC COMPOUND HAVING AN IMIDAZOLE RING

Yoshitaka Yamada; Moritaro Sakurai, and Izumi Kumashiro, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed April 11, 1969, Ser. No. 816,061

Claims priority, application Japan, Apr. 15, 1968, 43/24764

Int. Cl. C07d *57/64, 49/34*

U.S. Cl. 260—252 **8 Claims**

Adenine (AD) and/or 4,5-dicyanoimidazole (DCI) and derivatives thereof (2,8-methyl-AD and/or 2-methyl-DCI) are produced by the reaction of diaminomaleonitrile or diaminofumalonitrile with an amidine salt in an organic medium.

AD and DCI have been industrially produced by heating liquid hydrogen cyanide (or ammonium cyanide or a mixture of alkali cyanide and ammonium halide) in liquid ammonia (Japanese Pat. No. 483,920; U.S. Pat. No. 3,287,452). However, this known method is not satisfactory, because the dangerous treatment of poisonous hydrogen cyanide or its salt under a high pressure is necessary and the insoluble colored byproducts, which make the separation and purification of the desired product difficult, are formed in a substantial amount. Further, according to the known method, AD and DCI are usually produced in nearly the same amount and the selective production of one of the compounds is difficult.

3,671,650
CERTAIN 2-(HETEROCYLIC ACYLIMINO)-5-NITRO-4-THIAZOLINE-3-ACETAMIDES

Peter John Islip, Hampton, England, assignor to Parke, Davis & Company, Detroit, Mich.

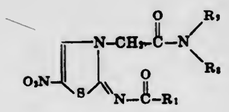
Filed May 14, 1970, Ser. No. 37,295

Claims priority, application Great Britain, June 18, 1969, 30,950/69

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 D **8 Claims**

5-Nitro-4-thiazoline-3-acetamide compounds having the formula



and salts thereof; where R_1 is 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl, or 4-pyridyl, and each of R_2 and R_4 is hydrogen or an alkyl radical containing not more than three carbon atoms. The compounds are produced by reacting a 5-nitrothiazole with an α-haloacetamide and are useful as schistosomacides and trichomonacides.

3,671,651
PEROXY COMPOUNDS CONTAINING A HALOFORMATE GROUP

Antonio Joseph D'Angelo, Buffalo, N.Y., assignor to Pennwalt Corporation

Continuation-in-part of Ser. No. 285,857, June 6, 1963. This application May 7, 1968, Ser. No. 727,323

Int. Cl. C07c *73/10, 73/00*; C08f *29/10*

U.S. Cl. 260—463 **7 Claims**

A novel class of compounds $X_n—R_p—Y_m$ where R is a 2–4 valence aliphatic, cycloaliphatic or aromatic radical; X is an acylating function; Y is a peroxy containing group and n and m are each equal to 1–2 and p is at least 1.

A novel class of polymers $([A_n—(R—D_n)_m]_r—P)_w^{-z}$ where A is a peroxy containing group; R is a 2–4 valence aliphatic, cycloaliphatic or aromatic radical, P is a polyvalent polymeric residue; D is a carbonyl containing connecting group; Z is H. OH, NH_2, NHR_2, SH or R_2O group; v and w are each equal to 1–100; and n is equal to 1–2.

Polymers II are useful with vinyl monomers in the formation of block and graft polymers.

Peroxides having an acylating function are prepared by reacting at 0°–80° C an organic peroxide having an hydroxyl or carboxyl group with a defined acylating reactant.

Peroxides having at least one acylating function are prepared by peroxidizing a compound having at least two acylating functions as the only peroxidizable substituents.

3,671,652
COREACTED SALTS OF POLYCHLOROCARBOXYLIC ACIDS

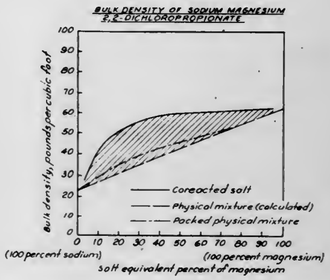
Jaime B. Fernandez, Midland, and James E. Ayers, St. Louis, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 18, 1968, Ser. No. 776,791

Int. Cl. C07c *53/16, 53/32*

U.S. Cl. 260—539 R **15 Claims**

Coreacted salts of polychlorocarboxylic acids with alkali metal and alkaline earth metal cations, such as sodium (90) magnesium (10) trichloroacetate or sodium (87.6) calcium (12.4) 2,2-dichloropropionate are prepared by reacting polychlorocarboxylate anion with a mixture of alkali metal and alkaline earth metal cations. The coreacted salts are free flowing crystalline solids with desirable anticaking and high bulk density properties. The coreacted salts are useful as herbicides.



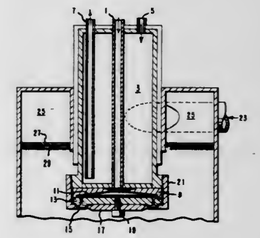
3,671,653
GAS PURGING OF SPINNING PACKS

Walter Cunningham Berry, Jr., Staunton, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1970, Ser. No. 81,829

Int. Cl. B28b *7/04*; D01f *7/00*

U.S. Cl. 264—39 **4 Claims**



A process for improving the percentage of successful startups in spinning polymer from solution is provided. Startups are often hindered by the presence of air in the spinneret assembly. The present invention provides for replacing the air in the spinneret assembly with a gas more soluble than air in the solution to be spun.

3,671,654
SYNERGISTIC ANTIBACTERIAL AND ANTIFUNGAL COMPOSITIONS OF DMSO, ETHANOL OR METHANOL AND DIESTER OF 2,2,4-TRIMETHYLPENTANEDIOL-1,3

Heinz Gunter Noeler, Monheim Rhineland, and Hararld Schnegelberger, Hilden Rhineland, both of Germany, assignors to Henkel & Cie GmbH, Duesseldorf-Holthausen, Germany

Filed June 11, 1968, Ser. No. 735,980

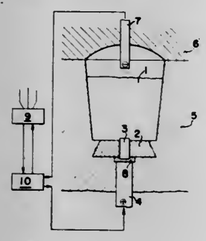
Claims priority, application Germany, Dec. 15, 1967, H 64793

Int. Cl. A61k *27/00*

U.S. Cl. 424—312 **13 Claims**

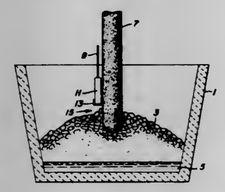
Novel antifungal and antibacterial agents having a short-kill time comprising dimethyl sulfoxide, ethanol or isopropanol and an effective amount of at least one diester of 2,2,4-trimethylpentanediol-1,3 and aliphatic carboxylic acids of two to 12 carbon atoms.

3,671,655
ELECTRICAL TRANSFER TYPE PLASMA ARC MELTING FURNACE
Toshio Adachi, Nagoya; Masayoshi Onishi, Tokai, and Kiyohide Hayashi, Nagoya, all of Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi-ken, Japan
Filed Dec. 22, 1970, Ser. No. 100,729
Claims priority, application Japan, Dec. 25, 1969, 44/104607
Int. Cl. H05b 7/00
U.S. Cl. 13—1 2 Claims



An electrical transfer type plasma arc melting furnace with one or more combined electrodes composed of a metal electrode having direct contact with the scrap or molten metal, a electric carbon electrode directly connected with the source and baked or unbaked electrically conductive compounded refractory which is inserted between the metal bar and the said carbon electrode arranged either in the furnace hearth or in the furnace wall.

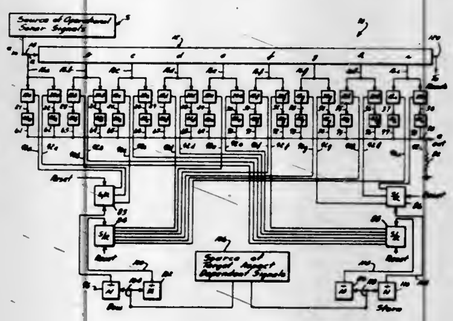
3,671,656
ELECTRODE CONTACT DEVICE
Arthur E. Smith, Niagara Falls, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 17, 1971, Ser. No. 143,955
Int. Cl. H05b 7/10
U.S. Cl. 13—14 2 Claims



An electrode contact device for use with metallurgical electric furnaces which comprises a copper body member and a contact member in the form of a powder metallurgical compact consisting essentially of copper and tungsten.

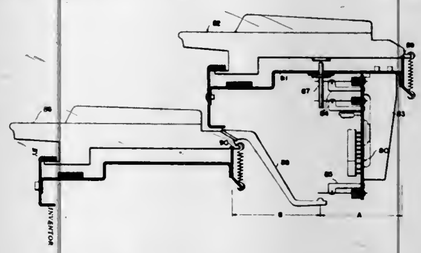
3,671,657
ECHO SYNTHESIZING APPARATUS
Francis J. Murphree, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 1, 1970, Ser. No. 94,134
Int. Cl. G09b 9/00
U.S. Cl. 35—10.4 7 Claims

Echo synthesizing apparatus utilizing a fixed delay line having spaced taps connected to attenuators by gate means which are operated in an aspect dependent manner by shift registers so as to generate across an output resistor a composite echo



signal having aspect dependent highlight characteristics. Embodiments providing also random and/or systematic variations as well as self-showing effects are described.

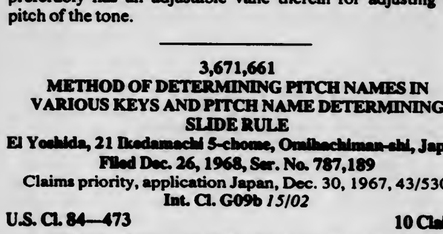
3,671,658
KEY SWITCH ASSEMBLY FOR ELECTRONIC MUSICAL INSTRUMENTS
Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed June 30, 1970, Ser. No. 51,106
Claims priority, application Japan, July 1, 1969, 44/62616
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 3 Claims



A key switch assembly for electronic musical instruments wherein there is mounted a printed circuit board close to the undersides of a row of parallel-arranged keys, the board being fitted with various circuit elements constituting a circuit for producing musical tones and also with a plurality of switch means operated by the corresponding key adjacent thereto through an actuator.

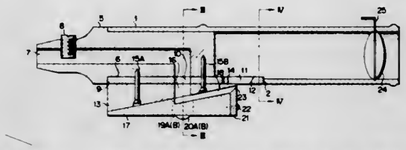
3,671,659
PLURAL TONE SELECTOR FOR AN ELECTRONIC MUSICAL INSTRUMENT
Syoichi Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed April 2, 1971, Ser. No. 130,602
Claims priority, application Japan, April 6, 1970, 45/32592
Int. Cl. G10h 3/06
U.S. Cl. 84—1.17 7 Claims

A plural tone selector for an electronic musical instrument comprises first and second latching selectors each having a plurality of input terminals supplied with tone signals of different pitches, a plurality of control terminals corresponding to the input terminals and one common output terminal. A plurality of key switches are provided for causing one of the plural control terminals of the first and second latching selectors respectively to be impressed with control voltage to selectively derive from the common output terminals of the first



and second latching selectors two tone signals supplied to the input terminals thereof corresponding to the control terminals upon the selective actuation of the key switches due to key depression. The derived tone signals are supplied to first and second sustain keyers, respectively, which are conducted by control voltage impressed by other key switches actuated upon key depression.

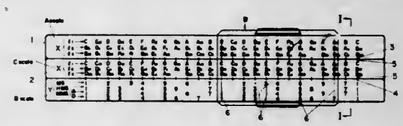
3,671,660
BAMBOO ORGAN PIPE ASSEMBLY
Hidehiko Kita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan
Filed Feb. 18, 1971, Ser. No. 116,485
Claims priority, application Japan, Feb. 23, 1970, 45/17134
Int. Cl. G10b 3/08
U.S. Cl. 84—349 12 Claims



A bamboo organ pipe assembly including a foot airtightly inserted into a bamboo tubular pipe, the foot having an air passage formed therein for directing air supplied from the outer end thereof toward a peripheral portion of the pipe, and wherein there is fixed on the peripheral portion of the pipe a member having a recess therein communicating with the air passage of the foot for receiving the air therefrom. The bamboo tubular pipe is provided with a mouth or aperture through a peripheral portion thereof adjacent the inner end of the foot inserted thereinto, and the recess formed in the member terminates in a slit defined by a languid and a lower lip, the slit being adapted to direct a sheet of air toward a peripheral edge of the mouth of the tubular pipe to produce a tone. The member preferably is formed of a pair of tapered boards, one of which is slidable relative to the other, and the tubular pipe preferably has an adjustable vane therein for adjusting the pitch of the tone.

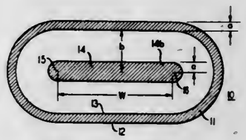
3,671,661
METHOD OF DETERMINING PITCH NAMES IN VARIOUS KEYS AND PITCH NAME DETERMINING SLIDE RULE
Ei Yoshida, 21 Ikedamachi 5-chome, Omihachiman-shi, Japan
Filed Dec. 26, 1968, Ser. No. 787,189
Claims priority, application Japan, Dec. 30, 1967, 43/5303
Int. Cl. G09b 15/02
U.S. Cl. 84—473 10 Claims

A method of theoretically determining musical scales, chords and pitch names of transposition in various musical keys, and a music slide rule of the hand operated type for



determining such pitch names which is capable of using said method.

3,671,662
COAXIAL CABLE WITH FLAT PROFILE
Calvin Max Miller, Millersville, and Robert Charles Sacks, Ellicott City, both of Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Dec. 16, 1970, Ser. No. 98,787
Int. Cl. H01b 9/04
U.S. Cl. 174—28 6 Claims



A flattened coaxial cable structure has been found to exhibit advantages over conventional circular coaxial structures for some applications. This structure is a bifurcated conventional coaxial cable with the two semicircular segments joined by flat solid metal. A wide range of impedances can be realized without any significant penalty in added loss. Furthermore, tolerances to achieve certain design objectives, such as attenuation deviation, may be appreciably relaxed with the new structure.

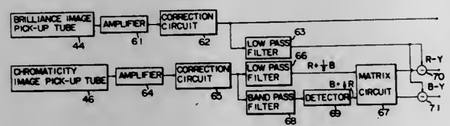
3,671,663
CONDUCTIVE THERMOPLASTIC COMPOSITION USEFUL FOR HIGH TENSION CABLES
Friedrich Seifert, Marl, and Josef Bittscheidt, Datteln, both of Germany, assignors to Chemische Werke Huels, A.G., Marl, Germany
Filed March 25, 1970, Ser. No. 22,672
Claims priority, application Germany, March 25, 1969, P 19 15 061.9
Int. Cl. H01b 7/02
U.S. Cl. 174—120 SC 11 Claims

The invention relates to electrically conductive thermoplastic compositions suitable for use as intermediate layers in high tension cables having an outer insulating layer comprising poly (butene-1). The composition comprises stated amounts of isotactic poly (butene-1), amorphous and/or atactic thermoplastic compositions, and an electrically conductive carbon black.

3,671,664
COLOR TELEVISION IMAGE PICK-UP DEVICES
Hisao Tajiri, Sagamihara-shi; Ituzo Sato; Yasuo Takemura, both of Kawasaki-shi, and Shigeo Tsuji, Fujisawa-shi, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Nov. 14, 1968, Ser. No. 775,825
Claims priority, application Japan, April 19, 1968, 43/25446; Nov. 16, 1967, 42/73370; Nov. 27, 1967, 42/75641; Nov. 14, 1967, 42/72767
Int. Cl. H04a 9/08
U.S. Cl. 178—5.4 ST 4 Claims

In a color television image pick-up device the light received

through an objective lens is divided to follow two discrete paths, a part of the light being supplied to a brilliance image pick-up and the other part of the light being supplied through a Magenta filter to a chromaticity image pick-up tube including a stripe filter formed on the inner surface of a face plate and consisting of alternate monochromatic portions of red or blue color and transparent portions, thus obtaining color television signals from the output from two image pick-up tubes.



ERRATUM

For Class 178—6 see:
Patent No. 3,671,391

3,671,665
SIGNAL EDITING SYSTEM AND APPARATUS FOR RECORDING AND REPRODUCING APPARATUS

Yoshiteru Kosaka, Kamakura, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Kanagawta-ken, Japan

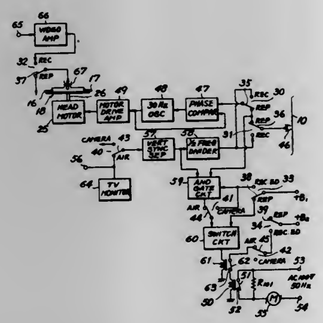
Continuation-in-part of Ser. No. 778,666, Nov. 25, 1968, Pat. No. 3,580,994. This application June 30, 1970, Ser. No. 51,103

Claims priority, application Japan, Nov. 27, 1967, 42/75626; Nov. 27, 1967, 42/75627; July 2, 1969, 44/51743

Int. Cl. G11b 5/04, 27/02; H04n 5/78

U.S. Cl. 178—6.6 P

3 Claims



A signal editing system edits and records a new signal on the way of an already recorded signal on a recording medium in a recording and reproducing apparatus. Editing and recording are started and ended respectively at the time when a control signal already recorded on the recording medium and a control signal responsive to the new recording signal become coincident each other at the starting and ending time of editing and recording.

3,671,666
APPARATUS FOR PRODUCING CORRECTED PHOTOGRAPHIC COLOR RASTERED REPRODUCTIONS

Eberhard Hennig, Ascheberg, Germany, assignor to Rudolf Hell Kommanditgesellschaft

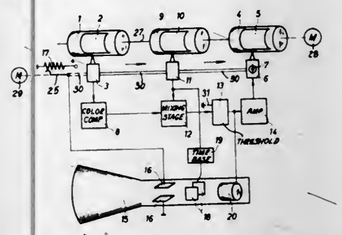
Filed Feb. 18, 1969, Ser. No. 800,072

Claims priority, application Germany, Feb. 22, 1968, P 16 22 336.2

Int. Cl. H04n 1/06, 1/20, 1/41

U.S. Cl. 178—6.7 R

4 Claims



A method and apparatus for producing a color corrected and rastered reproduction wherein a continuous tone picture is photoelectrically scanned and combined with the output of a second scanning head which scans a raster pattern to be superimposed over the picture and the outputs of the two heads are combined and applied to a recording head through a threshold circuit.

A cathode ray tube is provided for allowing the method to be monitored so as to assure that the proper reproduction is occurring.

3,671,667
SPECIAL EFFECTS GENERATORS FOR PROVIDING IRIS-TYPE TELEVISION DISPLAYS

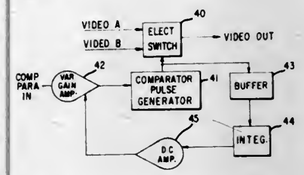
Laurence Joseph Thorpe, Marlton, N.J., assignor to RCA Corporation

Filed April 22, 1971, Ser. No. 136,326

Int. Cl. H04n 5/22

U.S. Cl. 178—6.8

7 Claims



A special effects generator employs an electronic switch controlled by a comparator which operates to provide a series of pulses of varying durations to control the switch in a manner to produce a single video signal containing a plurality of different video signals to be displayed simultaneously in an iris display.

A feedback scheme permits the comparator to provide greater selectivity for enabling the generator to provide smaller diameter iris displays.

3,671,668
TEACHING SYSTEM EMPLOYING A TELEVISION RECEIVER

Leonard Reiffel, 62 East Division, Chicago, Ill.

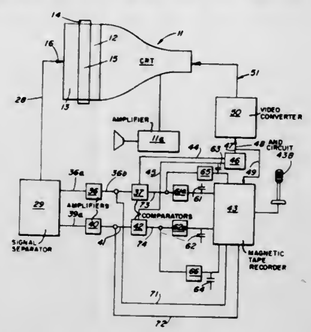
Continuation-in-part of Ser. No. 720,130, April 10, 1968, abandoned. This application Nov. 18, 1968, Ser. No. 776,723

Int. Cl. H04n 7/18

U.S. Cl. 178—6.8

5 Claims

An electronic audio-visual teaching system employing essentially a cathode ray tube and associated electronic apparatus and a transparent manually operated spatial response signal generator which coacts with the cathode ray tube whereby feedback between students and teaching machine is readily achieved. Provides considerable ease in programming. Also can be used for remote polling of viewers.



3,671,669
RECOVERY OF HORIZONTAL SYNC PULSES FROM A COMPOSITE SYNCHRONIZING FORMAT

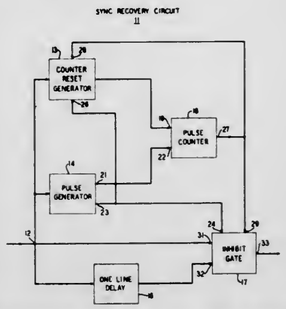
Robert Plowden Abbott, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J.

Filed Dec. 14, 1970, Ser. No. 97,567

Int. Cl. H04n 5/10

U.S. Cl. 178—7.3 S

6 Claims



A synchronizing circuit of a video receiver removes the vertical synchronizing pulses from a composite synchronizing pulse waveform that contains both vertical and horizontal synchronizing pulses. A counter in the synchronizing circuit anticipates the occurrence of a vertical synchronizing pulse by counting the number of horizontal synchronizing pulses and removing the vertical synchronizing pulse to substitute a delayed horizontal synchronizing pulse. The circuit synchronizes within one video frame upon start-up and will not allow any lock-out condition to exist for more than one frame.

3,671,670
DIGITAL FILTER FREQUENCY-SHIFT MODULATOR

Burton R. Saltzberg, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

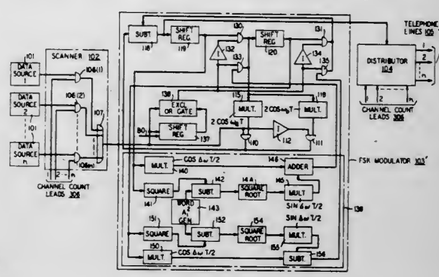
Filed April 15, 1970, Ser. No. 28,872

Int. Cl. H04l 27/12; H04b 1/04

U.S. Cl. 178—67

11 Claims

Unity gain feedback places a second-order digital filter on the borderline of stability. The filter therefore oscillates in a numerical sense. Two feedback multipliers, each capable of determining a different central coefficient (and thus different oscillation frequencies) are alternatively inserted into an independent feedback path under control of an input baseband data signal whereby the output frequency is shifted in accordance with the input data. Phase discontinuities and amplitude variations due to the frequency shift are eliminated by extracting the numbers stored in the filter when a data transition occurs and reinserting new numbers representing samples of the new frequency wave, the new numbers further defining points on the new wave having the same instantaneous amplitude and phase as the wave samples defined by the extracted numbers.



3,671,671
PULSE TRANSMITTING AND RECEIVING SYSTEMS

Kazutaka Watanabe, Toyko, Japan, assignor to Yokogawa Electric Works, Ltd., Toyko, Japan

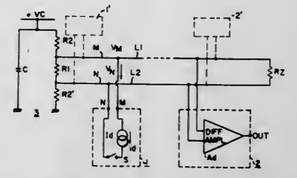
Filed June 10, 1970, Ser. No. 44,944

Claims priority, application Japan, June 13, 1969, 44/46551

Int. Cl. H04l 25/00

U.S. Cl. 178—68

5 Claims



A pulse transmitting and receiving system comprises a transmission circuit including a balanced pair transmission line, impedances having the same characteristic impedance as the transmission circuit and connected on the opposite ends thereof, a pulse transmission circuit connected across the transmission lines so as to cause currents of equal magnitude but of opposite polarities to flow through transmission lines and a pulse receiving circuit including a differential amplifier responsive to the variation in the potentials of the transmission lines caused by the flow of the currents.

3,671,672
AUTOMATIC CHANNEL EQUALIZATION APPARATUS WITH DATA EQUALIZATION MODE ADAPTOR

Harold G. Sullivan, Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 18, 1971, Ser. No. 116,363

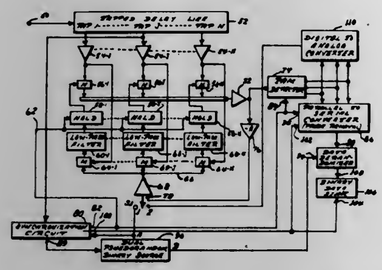
Int. Cl. H04l 25/02

U.S. Cl. 178—69 A

1 Claim

Apparatus for automatically equalizing a data channel while data is being transmitted therethrough. This is accomplished

by using the data itself, which is randomized, to adjust the receiving apparatus to reduce or eliminate the degrading effects of channel induced inter-symbol interference upon the reception of multilevel pulse amplitude or pulse mode modulation.

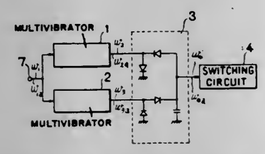


High data transmission rates are achieved by switching to a data equalization mode of operation following a training period in the conventional system probe equalization mode.

3,671,673
SIGNAL SWITCHING CIRCUIT OPERABLE IN RESPONSE TO A VOICE SIGNAL

Kozo Uchida, Nishitama, and Toshiyuki Tsuji, Kokubunji, both of Japan, assignors to Iwasaki Tsushinki Kaisha (also known as Iwatsu Electric Co., Ltd.), Tokyo, Japan

Filed April 6, 1971, Ser. No. 131,756
Claims priority, application Japan, April 8, 1970, 45/29397
Int. Cl. G10l *1/04*
U.S. Cl. 179—1 VC **5 Claims**



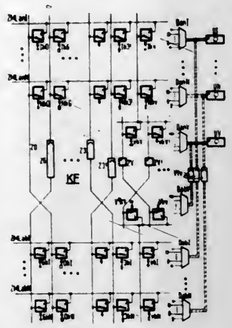
A signal switching circuit operable in response to a voice signal but not operable in response to an audible periodic signal or signals, in which a pair of signal convertors having different trigger levels from each other are provided to generate a first pulse train and a second pulse train in response to respective intersections of the instantaneous level of the voice signal with the different trigger levels. A switching circuit is switched to a desired state when a difference between respective number of pulses of the first pulse train and the second pulse train reaches a predetermined value.

3,671,674
CIRCUIT ARRANGEMENT FOR THE RECEPTION AND FORWARDING OF MESSAGE SIGNALS IN TIME DIVISION MULTIPLEX EXCHANGE STATIONS

Karl-Anton Lutz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Sept. 14, 1970, Ser. No. 71,655
Claims priority, application Germany, Sept. 16, 1970, P 19 46 883.8
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 AT **2 Claims**

A circuit arrangement for telecommunication exchange installations is described wherein connections are completed utilizing time multiplex techniques. In the described embodiment the message signals are PCM signals, and transmissions take place over four-wire networks. Delay is introduced into the connection elements between arriving and departing lines so that pulse frames of departing transmission lines have a time position different from the corresponding pulse frames

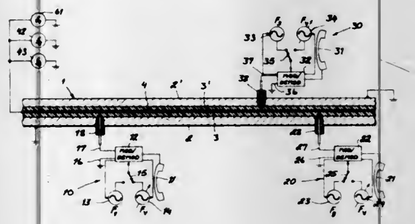


for arriving lines. A common address store is provided for approaching coupling point switches over which a connection may be made to each given transmission line.

3,671,675
HIGH-FREQUENCY COMMUNICATION SYSTEM

Thomas I. Rees, 8245 Baldwin Circle, Buena Park, Calif.

Filed June 17, 1969, Ser. No. 834,100
Int. Cl. H04j *1/00*
U.S. Cl. 179—15 FD **12 Claims**



A panel consisting of two dielectric sheets on opposite sides of a thin metallic layer, sandwiched between two grounded metal plates, serves for the conveying of messages between several transmitting and receiving stations operating on different carrier frequencies. A station can be plugged in, for transmission or reception, at virtually any location along the panel by insertion of a probe through the proximal dielectric sheet; communication is thus possible between stations on either side of the panel.

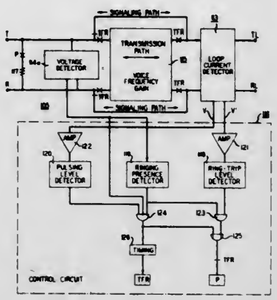
3,671,676
SUBSCRIBER LOOP RANGE EXTENDER

James L. Henry, and Luther G. Schimpf, both of Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 17, 1969, Ser. No. 885,949
Int. Cl. H04g *1/30*
U.S. Cl. 179—16 F **9 Claims**

This disclosure describes a telephone subscriber loop range extender having a signaling mode and a transmission mode. In the former, a resistive shunt is applied across the loop with each dial pulse to aid operation of the pulsing relay for an originating cell. For a terminating call, the shunt is applied upon answer, either during ringing or during the silent interval, to aid operation of the ring-trip relay. In the transmission

mode, voice frequency gain and greater transmitter voltage are applied to the loop. A control circuit consisting of logic,

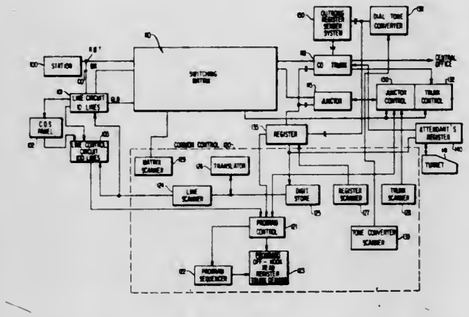


timing and relay driving circuits, acts upon loop voltage and current data to control shunt action and mode selection.

3,671,677
OUTGOING REGISTER SENDER SYSTEM

Ernest O. Lee, Jr., and John A. Adams, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,550
Int. Cl. H04m *3/38*
U.S. Cl. 179—18 DA **57 Claims**



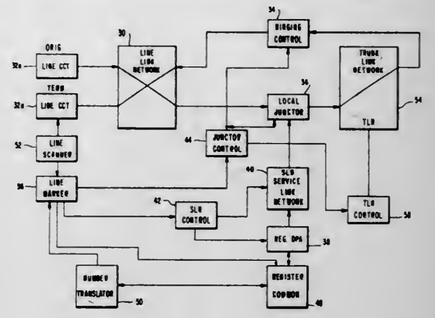
An outgoing register sender system, which is capable of receiving and storing dialed digits for outpulsing to a central office, includes a register sender which may be selectively associated with a central office trunk for the duration of the outpulsing operation, a tone dial converter and a digit analyzer and decoder arrangement to provide toll restriction, the digit analyzer and decoder arrangement being provided on a time share basis so as to be available for use with a plurality of register senders.

3,671,678
RINGING CONTROL CIRCUIT

Otto Altenburger, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,647
Int. Cl. H04m *3/02*
U.S. Cl. 179—18 HB **20 Claims**

A ringing control circuit is provided in each terminating line between the trunk link network and the line link network so that once a path to the terminating line circuit is established, the ringing control is automatically available as a result of its being a part of this connection. In addition, a splash ring circuit in the ringing control provides for an immediate ring of

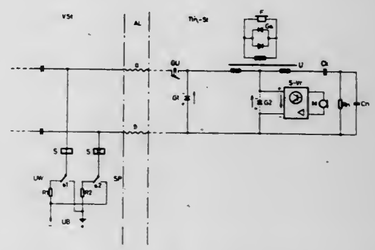


the terminating line circuit as soon as the path is established thereto.

3,671,679
ARRANGEMENT FOR THE RECOGNITION OF LOOP CLOSURE IN SUBSCRIBER STATIONS HAVING SEMICONDUCTOR AMPLIFIERS FED VIA THE CONNECTING TRUNK

Hans Ulrich Knauer, Ludwigsburg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 18, 1969, Ser. No. 877,806
Claims priority, application Germany, Dec. 7, 1968, P 18 13 347.6
Int. Cl. H04m *3/40, 19/00*
U.S. Cl. 179—81 B **6 Claims**



An arrangement is provided for the recognition of call initiating loop closure in telephone subscriber stations employing semi-conductor amplifiers fed over a connecting trunk. On loop-closure, there is first created a virtual short circuit in the supervisory current direction. After recognition, the exchange switches over to the feed current direction for the amplifiers in the subscriber station. In this way the loop closure criterion is made independent of the d-c resistance of the amplifiers.

3,671,680
PRIVACY OF DICTATE STATIONS USING A RECORDER AND SELECTION OF RECORDERS BY DICTATE STATIONS WHILE MAINTAINING PRIVACY

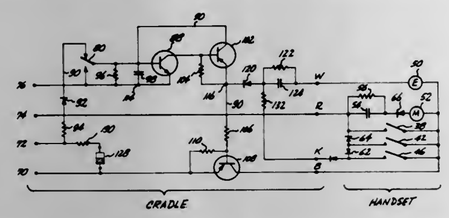
William M. Nye, Bellevue, and Stanley W. Jones, Seattle, both of Wash., assignors to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Aug. 11, 1969, Ser. No. 849,026
Int. Cl. G11b *19/00*; H04m *11/10*
U.S. Cl. 179—100.1 DR **15 Claims**

Persons are able to dictate promptly and privately using dictate stations which are connected to one or more recorders.

Circuits, incorporating transistors and preferably physically located within a dictate station, assure privacy and/or select a recorder quickly. These additional control circuits for privacy and/or selection constantly monitor recording operations by sensing recorder voltage changes which indicate their immediate status of either being in use, i.e., not available, or not in use, i.e., available.

Therefore, as a person, for example, lifts a handset from a cradle of a dictate station, the status of a recorder is immediately and automatically determined. The privacy circuits of a dictate station with respect to any recorder already in use sense recorder voltages which fail to activate two transistors serving, sensing and latching functions. If, however, a recorder is not in use, these two transistors do serve a latching function



and switch on a third transistor for entry into a particular recording circuit.

Where additional recorders may be available, additional selector sensing and latching transistors and their related circuits are utilized with the privacy transistors in immediately and automatically selecting one of the available recorders. As the transistor latching and switching on occurs in privately connecting a respective dictate station to a respective recorder, additional interrelated privacy and selection transistors and their circuits function together to prevent any interference with this connection thereby assuring privacy of the dictation as it is recorded.

3,671,681

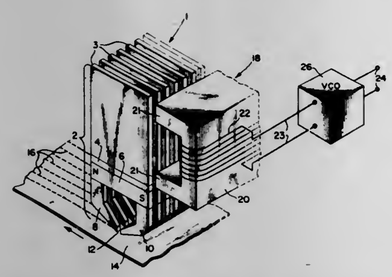
MAGNETOSTRICTIVE RECORDING ASSEMBLY

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sept. 11, 1970, Ser. No. 71,575

Int. Cl. G11b *5/30*

U.S. Cl. 179—100.2 CH **10 Claims**



A magnetic recording head assembly for recording input signals by selectively energizable recording heads on respective recording tracks on a recording member. The head assembly includes a plurality of recording heads with each of the recording heads having a frequency resonant structure including a magnetostrictive element accoustically coupled to a pair of pole pieces defining a recording gap and having a permanent magnet associated therewith for producing a magnetic flux through said gap. An input means including an electromagnet energized by an input signal source is arranged to apply a time varying electromagnetic field concurrently to the magnetostrictive element of each of the recording heads.

3,671,682

AUTOMATIC CARTRIDGE PLAYING SYSTEM

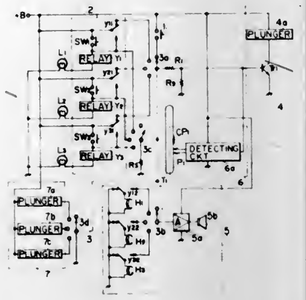
Tsutomu Suzuki, Yokohama, Japan, assignor to Pioneer Electronic Corporation, Ohtaku, Tokyo, Japan

Filed June 5, 1970, Ser. No. 43,882

Claims priority, application Japan, June 7, 1969, 44/44797

Int. Cl. G11b *5/02*

U.S. Cl. 179—100.2 Z **5 Claims**



An automatic cartridge playing system which has a start-switch means, a selective switch means for selecting in advance a predetermined cartridge, and a tape end detecting means for detecting the end of a magnetic tape. The device also has a rotary switch group, a rotary switch rotating means for rotating the rotary switch group by any of the start-switch means, and a selective switch means or tape end detecting means. The device further has holding means for holding one or more cartridges operative by the first rotary switch of the rotary switch group, a magnetic head held in reproduceable state by the second rotary switch of the selective switch means and rotary switch group, and reproducing means for amplifying the output of the magnetic head and for increasing the volume of its output. Thus, the automatic cartridge playing system of this invention may selectively and automatically play any cartridge or cartridges in preset order.

3,671,683

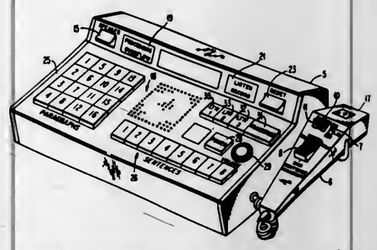
SENTENCE ORIENTED DICTATION SYSTEM FEATURING RANDOM ACCESSING OF DICTATION SEGMENTS

Robert A. Rahenkamp, and William R. Stewart, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1970, Ser. No. 50,605

Int. Cl. G11b *15/02, 27/08*

U.S. Cl. 179—100.2 MD **2 Claims**



The present invention concerns a system for recording audio signals on a record medium cooperating with a transducer means, with the record media having a plurality of segment storage areas, such as individual storage areas on a tape, belt or card, or the like, and with storage of information taking place on a sentence, paragraph, or letter basis under dictator control. The system includes means mounting a record medium for transducing operations to record and reproduce signals, a microphone input means having control buttons and a separate control panel with provision for random selection of signal tracks on the medium. In a preferred embodiment, the system includes a magnetic tape or belt medium recording-reproducing console with tracks on the medium arranged to store audio information by sentences, paragraphs, and letters. The unit may also be used for transcription purposes with accessing of the information under transcriber control.

3,671,684

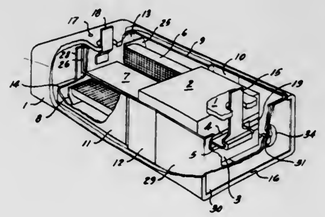
MAGNETIC TRANSDUCER

George C. Tibbetts, and Joseph A. Sawyer, both of Camden, Maine, assignors to Tibbetts Industries, Inc., Camden, Maine

Continuation of Ser. No. 10,093, Feb. 16, 1970, abandoned, which is a continuation of Ser. No. 638,892, May 16, 1967, abandoned. This application Nov. 6, 1970, Ser. No. 87,629

Int. Cl. H04r *9/02*

U.S. Cl. 179—117 **22 Claims**



A miniaturized electromechanical transducer has magnets providing polarizing flux across a working gap, an electrical signal coil, an armature extending through the coil and into the working gap, and a casing of particular configuration. The casing comprises a sleeve of magnetic material, elongate in the direction of its axis, which substantially surrounds the armature, coil, and magnets, said sleeve providing a substantially uninterrupted high permeability path between the magnets.

3,671,685

ELECTRO-ACOUSTIC HEADSET WITH RATCHET

John P. McCabe, Miller Place, N.Y., assignor to Instrument Systems Corporation, Jericho, N.Y.

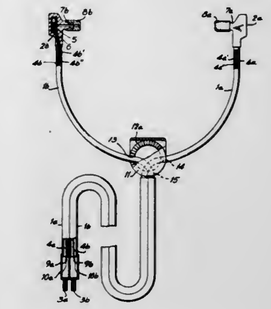
Filed Nov. 9, 1970, Ser. No. 87,692

Claims priority, application Germany, Jan. 25, 1969, P 19 03 794.6

Int. Cl. H04m *1/05*; H04r *5/00*

U.S. Cl. 179—156 **10 Claims**

A headset incorporating a tubular conductor for sound waves having an earpiece at one end and a connector at the other, and electrical conductor means for coupling said connector to an electro-acoustic transducer mounted within said earpiece. The headset is preferably provided with a pair of earpieces, each connected by a tubular sound wave conductor and electrical conductor means to a respective connector. The pair of tubular sound conductors are joined at a junction means at a point therealong spaced from said earpieces, said junction means including a pair of support members, each receiving one of said sound wave conductors and being adapted for relative angular displacement for the selective positioning of the earpieces by the user.



3,671,686

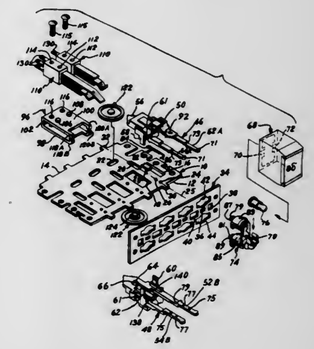
PUSH BUTTON SWITCH ASSEMBLY WITH IMPROVED DISCRETE AND IDENTICAL GEOMETRIC SHAPED INTERLOCKING SLIDER MEANS

Walter C. Sadogierski, Park Ridge, Ill., assignor to Guardian Electric Manufacturing Company

Filed Nov. 9, 1970, Ser. No. 88,018

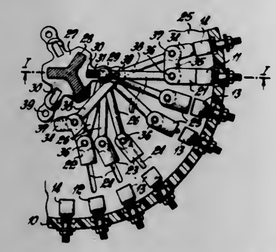
Int. Cl. H01h *9/26*; G05g *1/00*

U.S. Cl. 200—5 EA **23 Claims**



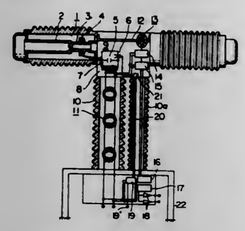
An improved push button switch includes a single body plate with assembled push rods or actuators fastened to the single body plate and cooperable with moving disc members, a ratchet and spring, or biasing means. The disc members are held in position by a bracket, the bracket also being fastened to the single body plate. Contact blocks are fastened to the outside of the bracket and cooperate with assembled contact cam block members of the push rods or actuators. Biasing leaf springs of the contact blocks cooperate with the actuators to facilitate switching action. A push button fastens to the end of the actuators to secure alignment of the actuators through a front plate of the switch and provide a manual interface to the operator.

3,671,687
TRANSFER SWITCH FOR TAP-CHANGING REGULATING TRANSFORMERS INCLUDING LOST MOTION INTERCONNECTION DRIVING MECHANISM
Alexander Bleibtreu, Regensburg, Germany, assignor to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany
Filed Dec. 7, 1970, Ser. No. 95,428
Claims priority, application Germany, Dec. 16, 1969, P 19 62 958.4
Int. Cl. H01h 21/38, 21/20
U.S. Cl. 200—11 TC 6 Claims



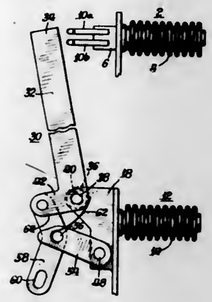
In a polyphase transfer switch for tap-changing regulating transformers the cooperating fixed and movable contacts of each phase are arranged to form a pattern in the shape of a sector of a circle. The movable current-carrying contacts are hingedly supported by the movable main contacts. Due to the presence of a lost motion connection the current-carrying contacts are separated prior to separation of the main contacts, and on account of this lost motion connection cooperating current carrying contacts are brought into engagement only after the main contacts are brought into engagement.

3,671,688
POWER CIRCUIT BREAKER
Yoshio Nitta, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Dec. 22, 1970, Ser. No. 100,719
Int. Cl. H01h 33/82
U.S. Cl. 200—48 R 1 Claim



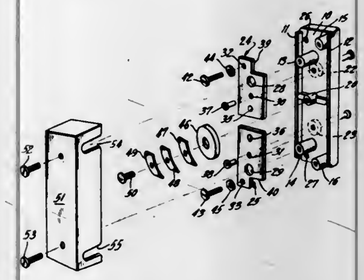
An improved power circuit breaker comprising a pair of electrodes which are to be broken in the case of accidental trouble ; a condenser ; an electromagnetic coil coupled electromagnetically with an electrode of said pair electrodes, opening of said electrodes being attained by discharging charged energy of said condenser into said electromagnetic coil ; and an electromagnetic wave generating device provided at a high potential part ; in which said electromagnetic wave is passed through interior of a support insulator, and electric energy necessary for operating said electromagnetic wave generating device is supplied from a power source for charging said condenser, whereby an electromagnetic wave corresponding to line current is produced at a high potential part and said wave is converted to an electric signal by means of a receiver provided at an earth potential part, thus introducing said signal to various control devices.

3,671,689
DISCONNECT SWITCH
Vincent G. Falvo, Pittsburgh, Pa., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Jan. 7, 1971, Ser. No. 104,579
Int. Cl. H01h 31/00
U.S. Cl. 200—48 A 6 Claims



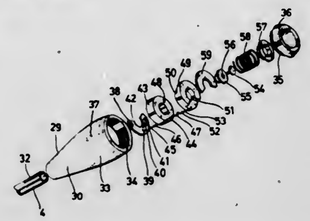
A disconnect switch is disclosed which may be mounted in a vertical or underhung position and operated from below. The disconnect switch includes a switch blade having a pivoting end and a laterally extending lever arm at the pivoting end. A toggle linkage operating mechanism is positioned opposite the lever arm in a direction away from the switch blade. When the disconnect switch is positioned vertically, the toggle linkage will be below the switch blade. The toggle linkage is connected between the lever arm and a fixed terminal pad and has an operating arm integral with the toggle link connected to the lever arm and extending away from the toggle linkage. The operating arm is rotatable by a hook stick about the knee of the toggle linkage and about the lever arm to pivot the switch blade between a closed and open position with a fixed contact.

3,671,690
VIBRATING SWITCH
Philip J. Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.
Filed March 16, 1971, Ser. No. 124,791
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 7 Claims



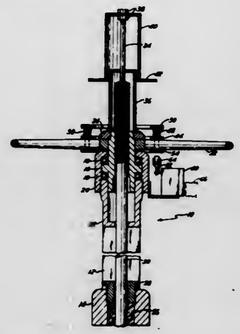
A switch which is operable responsive to impact comprises a ring-shaped contact biased into bridging contact with spaced stationary contacts. The ring-shaped contact is rotatable relative to the spaced contacts to present new contacting surfaces upon rotation, and is biased toward the stationary contacts by the pressure of leaf springs pressed against the ring contact by an adjustable screw which passes through the center of the contact.

3,671,691
MULTIPLE SWITCH CONSTRUCTION
Masaru Suzuki, Aichi-ken, and Yukinobu Murakami, Hiroshima, both of Japan, assignors to Kabushiki Kaisha, Tokai Rika Denki Seisakusho, Aichi-ken, Japan
Filed Dec. 4, 1970, Ser. No. 95,119
Int. Cl. H01h 9/00
U.S. Cl. 200—61.54 5 Claims



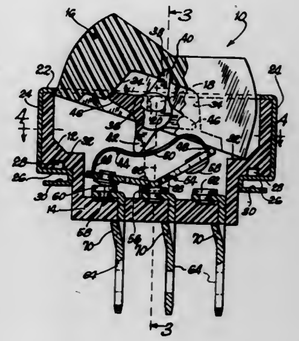
A multiple switch construction particularly for use in automotive vehicles or the like having a plurality of switches, for example, for operating a head-light controlling device, a windshield wiper, a windshield washer and a turn indicator device. Of which, two switches are housed in the steering column and the remaining two switches are accommodated in a handle mounted on a free end of a lever of which the other end is drivingly associated with said first mentioned two switches. These switches can be operated by turning the lever in the direction parallel to the plane of the steering wheel, shifting the lever in the direction at right angles to the plane of the steering wheel, turning the handle in the circumferential direction with respect to the lever and/or pushing the handle in the axial direction with respect to the lever.

3,671,692
RISING STEM VALVE REMOTE POSITION INDICATOR
Jack D. Potter, and Bernard W. Reams, both of Tulsa, Okla., assignors to Warren Petroleum Corporation, Tulsa, Okla.
Filed June 7, 1971, Ser. No. 150,363
Int. Cl. H01h 9/06
U.S. Cl. 200—61.86 7 Claims



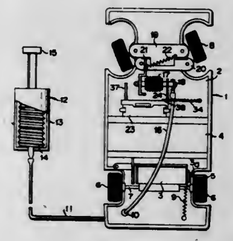
A rising stem valve position indicator having a sleeve mounted on the handwheel of the valve extending upwardly a distance adequate to enclose the valve stem when the valve is in the full open position. A rod extends from the end of the valve stem through the sleeve to support a sleeve cover that moves down over the sleeve to cover it when the valve is closed. Downward movement of the cover on closing the valve depresses an upwardly biased ring to close a switch and actuate a signal indicating the valve is closed.

3,671,693
ROCKER SWITCH
Guy M. Farrell, Elmhurst, Ill., assignor to Chicago Switch, Inc., Chicago, Ill.
Filed May 28, 1971, Ser. No. 147,819
Int. Cl. H01h 13/28
U.S. Cl. 200—67 G 8 Claims



A switch construction comprising a base carrying at least two stationary contacts with a movable contact arm being disposed over said base for engaging the stationary contacts. A spring is positioned on the contact arm, and this spring includes downwardly depending end portions connected to the ends of the arm and a central portion spanning the arm. A star wheel is located within a rocker used for operating the switch. One point of the star wheel engages the spring, and an opposite point engages the rocker. Additional intermediate points of the star wheel alternately engage interior wall portions defined by the rocker. The structural combination provides an easily assembled and highly effective over-center rocker switch.

3,671,694
CONTROL DEVICE FOR AN ELECTRICALLY DRIVEN TOY
Yukio Masuda, Saitama, Japan, assignor to Kabushiki Kaisha Okuma Seisakusho, Saitama-ken, Japan
Filed Nov. 25, 1970, Ser. No. 92,802
Claims priority, application Japan, Nov. 27, 1969, 44/112130
Int. Cl. H01h 35/32; A63h 30/00
U.S. Cl. 200—81 H 5 Claims

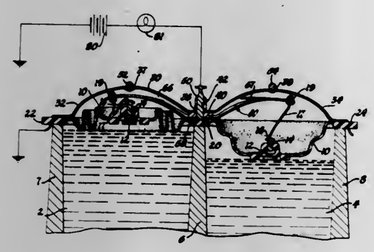


A control device for an electrically driven toy so improved as to facilitate its remote control by an operator wherein the steering and switching mechanisms for controlling the advance, retreat and stop of said toy can be effected by a single control device using air pressure.

3,671,695
BRAKE FLUID LEVEL SENSOR

Douglas J. Wing, St. Clair Shores, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed April 24, 1970, Ser. No. 31,678
Int. Cl. H01h 35/18
U.S. Cl. 200—84 R 1 Claim

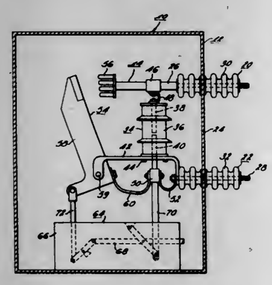


A switch for use in a low fluid surface level warning system. A sealed diaphragm follows the varying fluid surface level. A string-like pull member whose one end is fixed to the diaphragm has its other end fixed to the free end of a leaf spring member of concavo-convex cross-section and of greater rigidity near its fixed end than its free end. Near the free end of the leaf spring member is an electrically conducting tongue extending toward the fixed end. As the liquid surface falls the string-like pull member forces the leaf spring member to bend near its free end until it snaps through and projects the tongue against another contact to complete an actuating circuit for a warning device.

3,671,696
VACUUM INTERRUPTER SHUNTED WITH MECHANICAL SWITCH

Richard G. Brunner, Dedham, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 16, 1970, Ser. No. 89,893
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 1 Claim

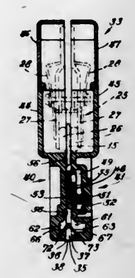


An electric circuit breaker for switching capacitive loads, such as capacitor banks or long electric power transmission lines, comprises a metallic housing having a pair of spaced apart terminal bushings extending through the wall thereof. Each bushing comprises a conductor and an insulator. A vacuum interrupter comprising an evacuated envelope and a stationary and a movable contact therein is mounted in the housing between the bushings and each contact is connected to the conductor in a respective bushing. A shunting switch for parallel connection with the vacuum interrupter is mounted in the housing between the bushings. The shunting switch has less current interrupting capacity but greater current carrying capacity than the vacuum interrupter. The shunting switch comprises a stationary contact which is mounted on one bushing and electrically connected to the conductor therein. The shunting switch further comprises a pivotable blade type contact which is mounted on the other bushing and electrically connected to the conductor therein. Operating means are located in the housing and comprises a first and second insulated contact rods which are connected to the movable contact of the vacuum interrupter and the blade of the shunting switch, respectively. In operation, the operating means causes the vacuum interrupter to close before and open after the closing and opening, respectively, of the shunting switch.

3,671,697
SWITCH CONSTRUCTION WITH LOAD BREAK DEVICE HAVING A MOVABLE SLAT, A GAS EXPANSION CHAMBER AND A GAS MUFFLER

Robert H. Harner, Park Ridge, and Otto Meister, Evanston, both of Ill., assignors to S & C Electric Company, Chicago, Ill.

Filed Jan. 7, 1971, Ser. No. 104,589
Int. Cl. H01a 33/08
U.S. Cl. 200—144 R 11 Claims



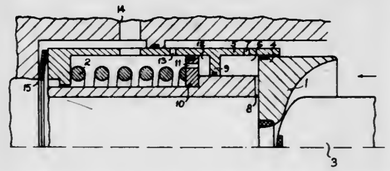
Switch construction for power distribution alternating current circuits having a switch blade for pivotal movement into and out of contacts enclosed by an insulating housing having a slot through which the switch blade is movable. A slat is biased transversely of the slot to close off the space between the switch blade and the contacts on opening of the circuit. A gas expansion chamber at the entrance to the slat is closed off by a pair of flexible insulating strips. A gas muffler is located at one end of the expansion chamber. The switch blade, in closed position, is spaced from the housing, the slat and the sealing strips by heat resisting spacers.

3,671,698
SWITCH CONTACT CHAMBER FOR ELECTRICAL CIRCUIT BREAKERS OF THE GAS BLAST TYPE

Wilhelm Kramer, Sandhausen, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed July 10, 1970, Ser. No. 53,730
Claims priority, application Germany, July 11, 1969, P 19 35 298.8
Int. Cl. H01h 33/54
U.S. Cl. 200—148 R 2 Claims

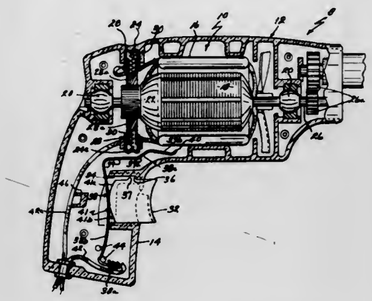
A circuit breaker of the gas blast type includes a switch contact chamber housing a stationary contact member and a movable contact member which is actuated by pressurized gas against a counter force applied by a spring which effects reclosure of the contacts when the pressurized gas ceases to be applied. Associated with the movable contact member is a dual piston structure operating in a damping cylinder which damps the opening movement of the movable contact as well as the reclosing movement.



3,671,699
POWER TOOL CONTROL

Benjamin H. Matthews, Peninsula, Ohio, assignor to Lucerne Products, Inc., Northfield, Ohio

Filed Nov. 19, 1970, Ser. No. 90,985
Int. Cl. H01h 21/10
U.S. Cl. 200—157 16 Claims



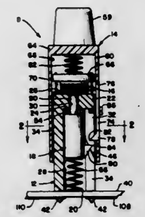
A control for power tools, power appliances, or the like, such as for instance, an electric drill, wherein a trigger member is movable on a support from an off position to an on position and vice versa. An electrical conducting spring-like member coacts with the trigger for movement therewith. An electric motor including opposing brush assemblies is provided in the tool with a current conducting line connected to one side of the motor and another current conducting line connected to the electrical conducting member. The trigger is operative to move the electrical conducting member into electrical conducting relation to one of the brush assemblies thereby completing the circuit to the motor upon predetermined movement of the trigger toward its on position. Release of the trigger by the finger of the operator causes the spring-like electrical conducting member to move away from circuit completing relation with the motor thereby deenergizing the motor, and moving the trigger toward off position.

3,671,700
MOMENTARY MULTIPLE CONTACT SWITCH AND OPERATING KEY THEREFOR

Jack L. Metz, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Del.

Filed Oct. 19, 1970, Ser. No. 82,029
Int. Cl. H01h 13/50
U.S. Cl. 200—160 12 Claims

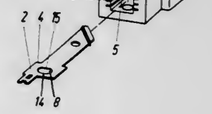
The contact assemblies of a pile-up are separated each from an adjoining thereof by a thin spacer with an opening through which a flexible contact portion of one assembly is projectable into engagement with a like portion of an adjoining assembly. A key operated impactor is arranged adjacent one end of the pile-up in alignment with the flexible portions and becomes tensioned upon key operation. Tensioning force of the impactor is released during key operation through the agency of a cam which overcomes the impactor tensioning means for driving the impactor into impacting engagement with the flexible portion of the proximate contact assembly. In consequence of the impacting force, the contact portions of the assemblies successively are driven into engagement and develop a condition of simultaneous momentary engagement to close a circuit, the input to which is through the contact assembly on the end of the pile-up distal to the impactor.



3,671,701
CONTACT SPRING ASSEMBLY FOR RELAYS AND SIMILAR SWITCHES

Alfred Bellmann, Berlin, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,153
Claims priority, application Germany, Dec. 4, 1969, P 19 60 865.2
Int. Cl. H01h 1/00
U.S. Cl. 200—166 J 5 Claims



A contact spring assembly is held together by a body of insulating material provided with guide slots into which the contact spring sheets are inserted individually. A cut-out projection portion of the sheets engages the block but does not always guarantee a reliable and firm seating. An eccentric bolt is passed through boreholes in both the sheets and the body of insulating material, and is turned therein for providing a firm assembly therebetween.

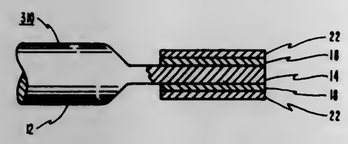
3,671,702
AN ELECTRICAL CONTACT STRUCTURE FOR A SWITCH REED COMPRISING GOLD AND PALLADIUM LAYERS

Edward S. Penczek, Fisher, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed March 15, 1971, Ser. No. 124,312
Int. Cl. H01h 1/02
U.S. Cl. 200—166 C 11 Claims

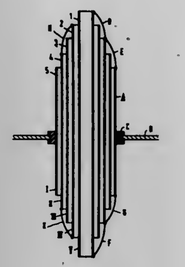
A switch reed embodies an electrical contact comprising a plurality of layers of electrical contact material disposed on at

least one surface of a flattened portion of the reed. A layer of gold of the contact is disposed on the reed surface and at least



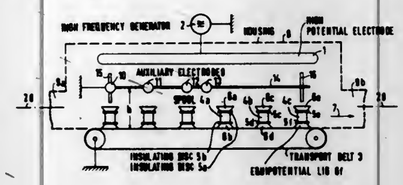
one of the other layers comprising the contact is of palladium metal.

3,671,703
DEVICE FOR CRUCIBLE-FREE, FLOATING ZONE MELTING A CRYSTALLINE
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 27, 1970, Ser. No. 23,366
Claims priority, application Germany, March 29, 1969, P 19 11 317.8
Int. Cl. H05b 9/06
U.S. Cl. 219—10.75 **7 Claims**



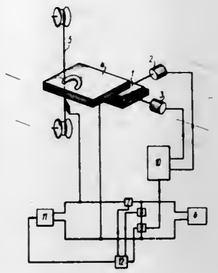
Device for zone melting a crystalline rod includes a vessel, an induction heating coil mounted in the vessel for heating a molten zone formed in a crystalline rod, and an electric current supply for the induction heating coil extending into the vessel through an opening formed in a wall of the vessel, the current supply including a plurality of mutually telescoped conductor tubes radially spaced from one another, the plurality of telescoped conductor tubes including a first sequence of alternately disposed tubes and a second sequence of tubes disposed in alternating relationship with the first sequence of alternately disposed tubes, all of the tubes of the first sequence of alternately disposed tubes being electrically connected at both ends thereof, and all of the tubes of the second sequence of alternately disposed tubes being electrically connected at both ends thereof.

3,671,704
APPARATUS FOR CONTROLLING THE FIELD INTENSITY IN MATERIAL PROCESSED IN A CAPACITIVE HIGH FREQUENCY FIELD
Hans-Christian Graessmann, Igelsdorf, and Emil Walther, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 6, 1970, Ser. No. 17,175
Claims priority, application Germany, March 14, 1969, P 19 12 929.4
Int. Cl. H05b 9/04
U.S. Cl. 219—10.81 **9 Claims**



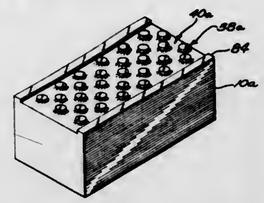
A plurality of auxiliary electrodes positioned between material being processed in a capacitive high frequency field and between a high potential electrode and a grounded electrode permit the control of the field intensity in such material.

3,671,705
METHOD OF ELECTROEROSION MACHINING OF PARTS AND DEVICE FOR EFFECTING SAME
Mikhail Alexeevich Ramaitsya, ul Arbat 54/2, kv. 83, Moscow, U.S.S.R.
Continuation of Ser. No. 654,836, July 20, 1967. This application Aug. 12, 1970, Ser. No. 63,296
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 C **8 Claims**



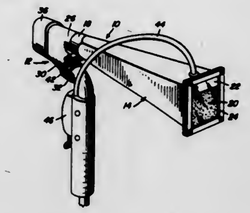
A method and device for effecting electroerosion machining comprises a high-frequency source of pulses of a relatively low amplitude of current and a low-frequency source of pulses of a relatively high amplitude of current controlled by circuits for automatically switching over said sources in response to a decrease in the interelectrode gap value and for switching them back after a predetermined period of time. Alternatively a source of variable frequency of pulses of electric energy with a high amplitude of voltage may be employed with a pulse step-down transformer and circuits for automatic decrease of the frequency of the source and its direct connection with the electrodes for a predetermined period of time in response to a decrease in the interelectrode gap value, there being provided control elements for disconnecting the windings of the transformer and directly connecting the high-voltage source with the electrodes, and for restoration of the circuits after a predetermined period of time.

3,671,706
SHEET-GRIPPER POST FORMED BY EDM
Luther W. Littrell, West Carrollton, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Sept. 21, 1970, Ser. No. 74,027
Int. Cl. B23p 1/08
U.S. Cl. 219—69 M **1 Claim**



A gripper post cooperates with a gripper finger to grip a sheet therebetween. The gripper post comprises a body and a plurality of raised portions. The plurality of raised portions are distributed throughout a surface of the body and have substantially coplanar contact surfaces for contacting the sheet when the sheet is gripped thereby. The raised portions are defined by valleys surrounding the raised portions and are formed by an electrical discharge machining process.

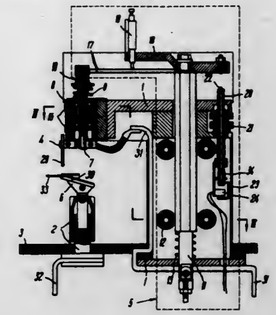
3,671,707
UNDERWATER WELDING DEVICE
William G. Cunningham, 315 Buquet Street, Houma, La.
Filed March 16, 1971, Ser. No. 124,868
Int. Cl. B23k 9/16
U.S. Cl. 219—74 **9 Claims**



An elongated viewing tube tapering from an enlarged viewing window mounting end to a narrower nozzle connected end. The nozzle includes a straight passage therethrough which defines a continuation of the viewing tube, and a branch passage which receives the electrode. Inert gas is introduced into the viewing tube adjacent the viewing window and moves through the viewing tube so as to meet with the gas from the torch tip at the weld puddle at which point the water is blown out of the end of the device so as to provide a clear view of the welding operation. An internal light is provided within the viewing tube and the outer end of the nozzle includes a flexible skirt which assists in excluding water.

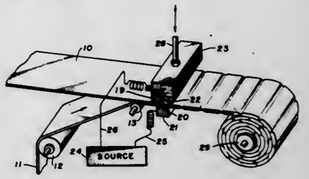
3,671,708
APPARATUS FOR ELECTRIC CONTACT SPOT WELDING, PREFERABLY OF SMALL-SIZE PARTS
Vladislav Eduardovich Moravsky, Bulvar Lesi Ukrainki, 2, kv. 50; David Solomonovich Verona, ulitsa Scherbakova, 51, kv. 21, both of Kiev, and Boris Pavlovich Shinkarenko, ulitsa Sovetskaya, 1, Fastov Kievskoi Oblasti, all of U.S.S.R.
Filed Oct. 7, 1969, Ser. No. 864,972
Int. Cl. B23k 9/00
U.S. Cl. 219—78 **2 Claims**

The present invention relates to apparatus for electric contact welding, preferably, of small-size parts, wherein a movable rod supporting the top electrode holder is connected through at least one leaf spring to a mechanism adapted to develop a contact welding pressure. The end of this leaf spring is rigidly secured to the mechanism adapted to develop the contact welding pressure and the other end of this leaf spring



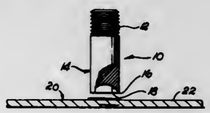
freely bears upon the rod supporting the top electrode holder. The high-current electric conduit which supplies the welding current to the top electrode holder has a portion, adjacent to the top electrode holder, which extends perpendicularly to the housing of the bottom electrode holder.

3,671,709
HEAT SEALING OF POROUS MATERIALS
Lester Gidge, Nashua, N.H., assignor to Monsanto Company, St. Louis, Mo.
Filed Sept. 14, 1970, Ser. No. 71,656
Int. Cl. B23k 13/02
U.S. Cl. 219—10.53 **5 Claims**



An apparatus for seam bonding layers of fabric by radio frequency power is provided with electrodes at least one of which is flanked by and is recessed in a resilient insulating member which acts to fill the voids in the fabric during bonding and resultingly prevents electrical arcing through the fabric.

3,671,710
WELDING STUD AND METHOD
Ivan G. Coombs, Redondo Beach, Calif., assignor to John A. Stephens, Los Angeles, Calif.
Filed June 17, 1970, Ser. No. 47,053
Int. Cl. B23k 9/20
U.S. Cl. 219—99 **2 Claims**



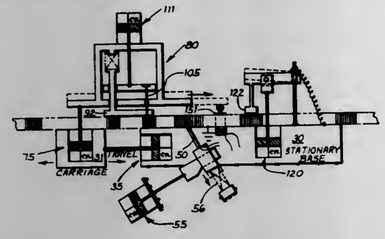
A welding stud having a cylindrical welding end with a continuous annular peripheral edge surrounding a centrally axial

recess, the weldable end and the metal sheet to which it is to be attached being brought together in a substantially parallel relationship, whereby a ring discharge of the arc is effected along the annular edge.

3,671,711
HONEYCOMB RIBBON PAD MANUFACTURING APPARATUS

Frederick L. Cox, and Jack E. Krumreich, both of Terre Haute, Ind., assignors to Tri-Industries, Inc., Terre Haute, Ind.

Filed May 20, 1970, Ser. No. 38,994
Int. Cl. B23k *11/10*
U.S. Cl. 219—117 HD **9 Claims**

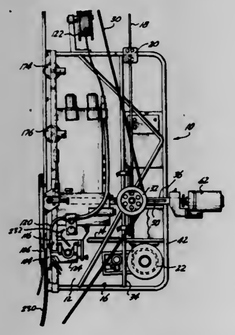


An apparatus to assemble and weld corrugated metal ribbon to form a honeycomb pad. A horizontal feeding mechanism is provided by a pair of clamping arrangements one mounted on a stationary base and one mounted on a horizontally movable carriage which moves the one clamping arrangement toward and away from the other. The movable carriage has mounted thereon a ribbon pressure pad and an alignment pin. An air cylinder on said carriage moves the ribbon pressure pad and alignment pin toward the corrugated ribbons until the pointed alignment pin is projecting into a cell between the ribbons and the ribbons are oriented. The air cylinder moves the pressure pad into the resilient contact with the ribbons holding them in a flat uniform condition while a carriage mounted welding electrode is moved into contact with the ribbons for welding them together.

3,671,712
SUSPENDED STAGING TYPE WELDING MACHINE

Sidney L. Fisher, Renton, Wash., assignor to Spider Staging, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 861,757, Sept. 29, 1969. This application Dec. 10, 1970, Ser. No. 96,757
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R **11 Claims**

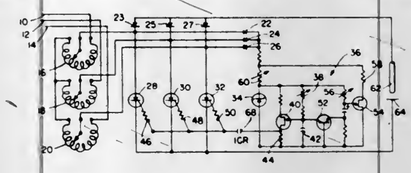


A single cable type suspended staging is guided for vertical travel along plate members being welded together by coplanar, vertically spaced apart guide wheels. The guide wheels run in the gap between the members and are each spring biased towards the work surface. Two electroslag form shoes are supported from the staging below the guide wheels. Each shoe is independently spring biased into contact with its side of the plate members. One or more tensioned hold-in lines hold the staging inwardly against the plate members. Each hold-in line rides on a sheave which is automatically controlled to move either towards or away from the object for the purpose of maintaining proper tension in the hold-in line.

3,671,713
ARC SPOT WELD CONTROL AND POWER SUPPLY

Richard P. Huriebaus, Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Nov. 25, 1968, Ser. No. 778,437
Int. Cl. B23k *9/00*
U.S. Cl. 219—127 **3 Claims**

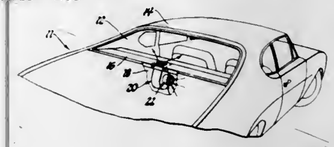


A three phase power source is used to trigger a welding gun. A timing circuit produces a series of pulses to actuate switching circuits to permit application of the power from the three phase power supply to the welding gun.

3,671,714
HEATED BLOWER MOTOR FOR DEFROSTING WINDOWS

Norman Charns, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,798
Int. Cl. H05b *3/02*; F24h *3/04*
U.S. Cl. 219—203 **2 Claims**



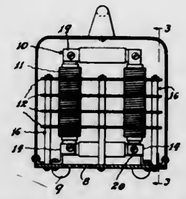


An electric motor driven blower adapted to defrost an automobile window and having inlets and outlets in opposite ends of the motor casing to direct air through the interior of the motor past the motor armature. The air is warmed during passage by contact with a plurality of electrically isolated closed loops of conductive material mounted in circumferentially spaced, axially directed slots on the armature. Hysteresis heat losses are produced in the loops by the movement of the closed loops through the motor's magnetic field. A fan and duct at one end of the motor direct the warmed air against the automobile window for defrosting.

3,671,715
ELECTRIC INDUCTION GAS HEATER

Henry J. Burnett, 55 Glenwood Road, West Hartford, Conn.

Continuation-in-part of Ser. No. 554,955, June 1, 1966, Pat. No. 3,534,197. This application June 1, 1970, Ser. No. 42,324
Int. Cl. H05b *5/08*
U.S. Cl. 219—374 **2 Claims**

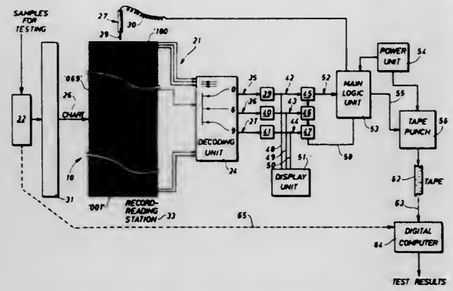


An electric induction heater has at least one primary coil wound on a magnetic core. Fins are provided which have a pair of holes therethrough through which spaced portions of the core extend. The fins are mounted in such a manner as to be spaced from and thereby electrically insulated from the core and primary coil. The fins act as short-circuited secondaries so that heat is generated by induced current at two places in each fin when the primary coil is energized. Circuit means are provided whereby power is applied gradually to the heater so as to prevent a sudden overload of the electric supply line.

3,671,716
METHOD AND APPARATUS OF DIGITIZING ANALOG RECORDS

Arthur Samuel Slutsky, 555 Shepherd Avenue West, Downsview 473, Ontario, Canada

Filed Aug. 24, 1970, Ser. No. 66,538
Int. Cl. G06k *7/06, 9/00*; G08b *5/00*
U.S. Cl. 235—61.6 A **17 Claims**

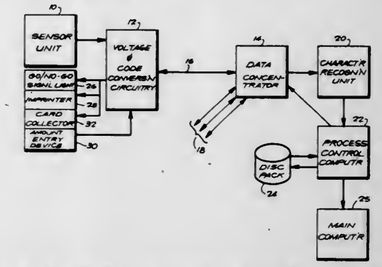


An analogue chart or record obtained from an automatic analyzer is positioned on a record-reading panel structure and a probe electrode is manually pushed through the chart at a desired position thereon, for example, at the peak of a curve, so as electrically to contact an underlying one of a number of mutually separated electrical contact strips. Individual conductors extend from all such strips to a decoding unit which provides a multi-digit decimal identification of the strip which is contacted by the probe electrode. The decoding unit is in turn coupled to a coding unit in which the decimal digits identifying the actuated strip are converted into a binary coded decimal form for subsequent sequential recording in a tape punch unit to provide an output in a form suitable for further processing in an off-line digital computer.

3,671,717
CREDIT CARD VERIFICATION SYSTEM

Albert H. Bieser, 609 Carroll Drive, Garland, Tex.

Filed Oct. 24, 1969, Ser. No. 869,188
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.17 B **7 Claims**

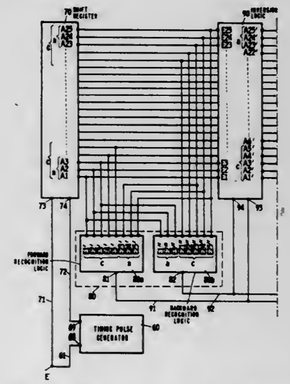


Credit card verification system wherein feelers are used for displaying flags positioned in the path of beams of light which impinge upon photo cells. As the raised characters on an embossed credit card pass beneath the feelers, the flags will be displaced. Movement of the flags is sensed and pulses applied to a transmission line each time the feelers sense a leading edge of a character. The pulses are applied to a bank of shift registers which selectively permit signals of discrete frequencies identified or associated with particular stages of the shift registers to be applied through a summing junction to an operational amplifier. The mixed frequencies produce two sets of chords, one set of which provides horizontal information as to a particular character and the other which provides vertical information as to the character. The unique chord sets representative of each character are detected in a filter-integrator matrix in which amplitude is used to discriminate against extraneous noise. The information is converted to binary form and applied to a computer which can use the information furnished to determine that the card is good or bad and otherwise process the information furnished.

3,671,718
METHOD AND APPARATUS FOR IDENTIFYING ARTICLES AND IDENTIFICATION SIGN THEREFOR

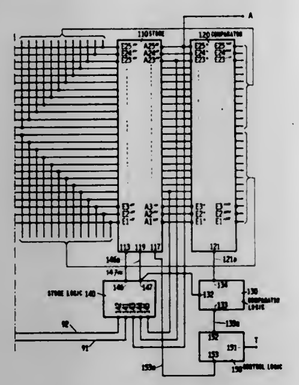
Hans-Ulrich Werner Genzel, Uster; Hans-Rudolf Hafell, Seengen, and Hans Robert Steiner, Rapperswil, all of Switzerland, assignors to Zellweger Ltd., Uster, Switzerland

Filed July 29, 1970, Ser. No. 59,116
Claims priority, application Switzerland, Aug. 20, 1969, 12606/69
Int. Cl. G06k *7/10, 19/04*; E04g *17/00*
U.S. Cl. 235—61.11 E **21 Claims**



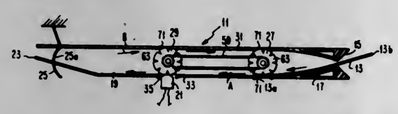
The identification sign is formed with a starting code, an in-

termediate information code and end code. The starting and end codes are used in the code recognition logic to indicate when a valid configuration of a pulse sequence of the identification sign has been read either forwards or backwards by a



trace of a reader. The recognition logic can be constructed to initiate reading out of a valid configuration for further processing either in dependence on a single trace or two traces passing through the center of the identification sign.

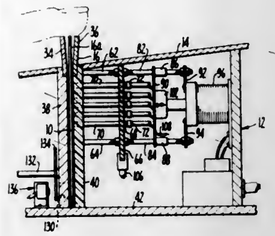
3,671,719
ROLLER STRUCTURE FOR CARD READER
Gordon Herbert May, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed April 19, 1971, Ser. No. 135,000
Int. Cl. B65h 5/06; G06k 17/00
U.S. Cl. 235—61.11 D **9 Claims**



A magnetic card reader has one or more specially structured resilient rollers of generally cup-shaped configuration, which engage successive cards to align them with a guiding surface and propel them past a transducer head. The rollers have a series of wedge-shaped cuts formed in their annular periphery to produce a plurality of radially projecting and individually flexible teeth. When these teeth engage the card after it has reached the transducer head by movement in a first direction, they perform the dual purposes of: 1) reducing the prospects of rupture and severe wear, while repetitively driving the cards, 2) positively driving the trailing edge of each card from one side to the other of its path preparatory to initiation of the return movement of the card in a second direction opposite to said first direction, and 3) providing positive registration for the card in both directions.

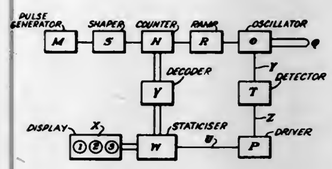
3,671,720
ENCODED CARD READOUT SYSTEM
James E. White, and George S. Oberhart, both of San Mateo, Calif., assignors to Albert J. Day
Continuation-in-part of Ser. No. 867,567, Oct. 20, 1969, which is a continuation-in-part of Ser. No. 855,068, Aug. 4, 1969.
This application Nov. 20, 1969, Ser. No. 878,410
Int. Cl. H01h 43/08; G06k 19/06, 7/04
U.S. Cl. 235—61.11 C **7 Claims**

A system employing encoded cards and a card readout machine wherein the cards incorporate both embossments and a light responsive encoding surface which cooperate with said machine to read out information encoded on individual cards. The readout machine which is employed in the system may be adapted for either "on line" usage with a computer or perform "off line" functions. Regardless of the usage to which it is adapted, the machine employs embossment encoding readout means in the form of a plurality of sensing pins which are mounted for movement within the machine and are adapted to be brought into engagement with an encoded card



when it is suitably positioned within the machine. The pins perform switching functions in the machine's card readout circuitry in response to the locations of the embossments on the card. The embossments may take the form of embossed card identification numerals or a pattern of discrete embossments arranged in accordance with a predetermined code. The card further includes a light responsive encoding surface which cooperates with a suitable light source on the machine for anticounterfeit or fraud detection purposes.

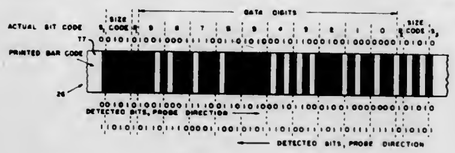
3,671,721
DATA READING SYSTEMS
Bernard Albert Hunn, Berkhamsted, and Elgan Neville Howell, Hatfield, both of England, assignors to Revenue Systems Limited, Luton, Bedfordshire, England
Filed Dec. 12, 1969, Ser. No. 884,601
Claims priority, application Great Britain, Dec. 12, 1968, 59,162/68
Int. Cl. G06k 7/08, 19/06; H03b 23/00
U.S. Cl. 235—61.11 H **17 Claims**



A data reading system for use particularly in cash- or goods-dispensing machines in which the data to be read is represented by a plurality of passive resonant devices in or on a card and in which, when said data is to be read from said card, said card is placed in the field of a reactive element fed with variable frequency oscillations and associated with counting means in such a way that the count registered by said counting means indicates the resonant frequency of any one or more of said resonant devices located in said field.

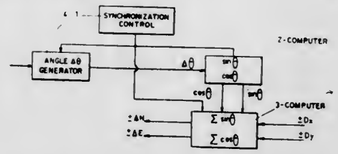
A card for use in such a system comprises a plurality of passive resonant devices, the resonant frequencies of which represent the data carried by the card.

3,671,722
TRANSITION CODE RECOGNITION SYSTEM
John B. Christie, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed June 30, 1969, Ser. No. 837,850
Int. Cl. G06k 7/10, 9/18, 19/06
U.S. Cl. 235—61.12 N **11 Claims**



A transition code recognition system which includes a coded record medium (like a color-coded label) which may, if desired, be secured to an article. The record medium utilizes detectable indicia like color bands placed on the record medium in a reading order so that each color band is different from the preceding one. The color transitions from one color band to the next, when reading, are used to identify binary states "1" and "0," and the transitions obviate the need for a separate clocking arrangement. An optical probe scanner is used to read the record medium by "scribing" or gliding the probe scanner across the color bands, and the changing light signals resulting from the reading operation are routed to electronic circuitry for interpretation and processing.

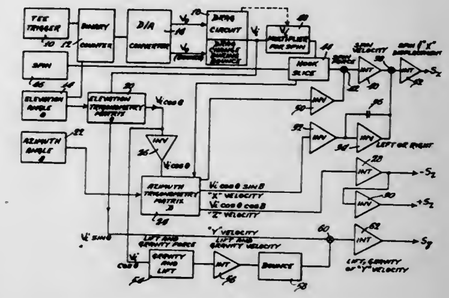
3,671,723
DEVICE FOR COORDINATE CONVERSIONS
Robert Delignieres, Colombes, and Jean-Francois Therond, Neuilly, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison (Hauts de Seine), France
Filed Oct. 2, 1970, Ser. No. 77,588
Claims priority, application France, Oct. 2, 1969, 6933777
Int. Cl. G06f 15/50
U.S. Cl. 235—150.27 **6 Claims**



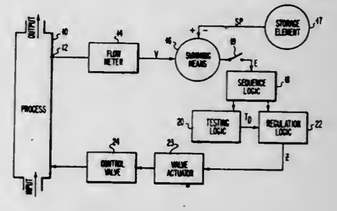
This invention relates to a coordinate converting device for the determination of the coordinates of a moving body with respect to a couple of stationary axes, the values of the distance increments during its displacement, with respect to a couple of axes related to the moving body being known, comprising means for sensing the value of the angle between one of the stationary axes and the corresponding related axis and means for accumulating the values of said distance increments and determining therefrom the travel path of the moving body with respect to said stationary axes.

3,671,724
GOLF GAME COMPUTER INCLUDING MEANS FOR APPROXIMATING THE EFFECTS OF BACKSPIN ON RANGE
James W. Sanders, Grand Haven, Mich., assignor to Brunswick Corporation
Filed Dec. 30, 1969, Ser. No. 889,067
Int. Cl. G06g 7/48; A63b 67/02
U.S. Cl. 235—151 **1 Claim**

A computing system for calculating the free flight trajectory of a golf ball struck from a tee having backspin imparted thereon including a backspin corrector therein for modifying the calculated distance of the golf ball so as to simulate the effects of backspin. A signal modifier alters the magnitude of a signal related to the distance the golf ball would travel proportionally according to a characteristic of the flight trajectory.



3,671,725
DEAD TIME PROCESS REGULATION
Roger M. Bakke, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 490,592, Sept. 27, 1965, abandoned. This application Oct. 1, 1970, Ser. No. 77,387
Int. Cl. G05b 13/00
U.S. Cl. 235—150.1 **10 Claims**

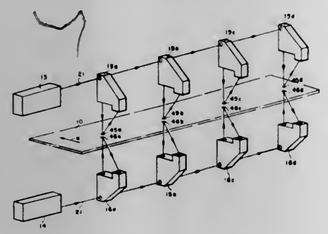


Method of regulating processes having dead time wherein an error signal is generated representing the deviation of a controlled variable from a set point. The error signal is compared to a predetermined limit, and if it exceeds the limit, it is employed to regulate the process. If it does not exceed the limit, the process dead time is determined by impressing a high frequency disturbance onto the process at a control point, detecting the disturbance at the process output, and the time interval therebetween determined.

3,671,726
ELECTRO-OPTICAL APPARATUS FOR PRECISE ON-LINE MEASUREMENT OF THE THICKNESS OF MOVING STRIP MATERIAL
James Richard Kerr, Tigard, Oreg., assignor to Morvue, Inc., Tigard, Oreg.
Filed May 23, 1969, Ser. No. 827,266
Int. Cl. G01b 11/06
U.S. Cl. 235—151.3 **17 Claims**

On-line apparatus for monitoring and determining the instantaneous thickness of a moving longitudinal strip of planar material simultaneously at several locations along the lateral cross-section thereof. The apparatus is particularly useful where the material is of non-uniform lateral cross-section and in addition is subject to flopping and undulatory movement in its travel past the monitoring station. The electro-optical system utilizes a pair of laser light sources, with associated

beam splitter and lens systems, for focusing a plurality of spots of light of well-defined small diameter on the respective major surfaces of said material at locations along the lateral cross-section thereof, and then projecting the reflected images of said respective light spots onto corresponding detector units. Each of the detector units is in the form of a plurality of individual photo-sensors arranged in masked array to generate a binary-coded electrical output signal, the numerical significance of which is indicative of the displacement of the light image from a nominal position and thus is representative of the distance deviation of the surface of said material at each cross-section location from a predetermined reference plane.



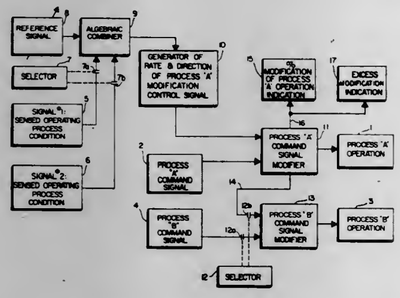
Arithmetic and logic elements next operate on the respective digital output signals from said detector units to derive resultant numerical measurements of the instantaneous thickness of said moving material at each of said lateral locations. In cases where one of the major surfaces of the moving material is constrained to a fixed plane, for example by having its bottom surface in contact with a moving conveyor bed, then distance deviation measurements need only be made at lateral locations on the other, unconstrained major surface of the material to determine the instantaneous thickness of the material at each of said locations.

3,671,727

ADAPTIVE CONTROL

John M. Rhoades, Waynesboro, Va., assignor to General Electric Company

Continuation of Ser. No. 633,295, April 24, 1967, abandoned. This application Sept. 10, 1970, Ser. No. 71,195
Int. Cl. G05b 19/18, 13/02
U.S. Cl. 235—151.11 **25 Claims**



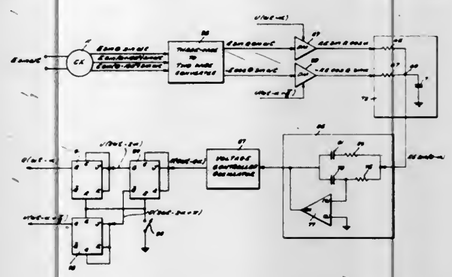
To provide control for an automatic processing operation which is self-adapting to changes in operating conditions during the processing operation, selected combinations of the operating conditions are sensed and utilized to modify the programmed commands controlling the processing operation. Where the commands are in the form of digital signals, the recurrence rate of such signals is modified in a direction and at a rate which is a function of the sensed operating conditions.

3,671,728

ELECTRONIC REPEATER SERVO

Richard A. Day, Playa Del Rey, and William E. French, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 5, 1970, Ser. No. 77,784
Int. Cl. G06g 7/22
U.S. Cl. 235—189 **19 Claims**



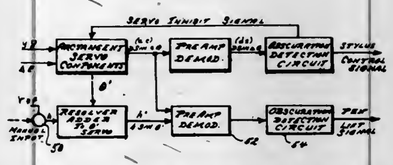
An electronic servo system utilizing a voltage controlled oscillator to drive a plurality of associated flip-flops to develop phase-variable, quadrature square wave output signals. These quadrature output signals are then used in a feedback loop, in conjunction with electrical signals corresponding to the sine and cosine functions of a shaft angle of a remote synchro transmitter, to drive demodulators whose outputs are summed in an amplifier to produce an error signal which controls the oscillator signal. The system operates to null the error signal and phase-lock the oscillator signal such that the electrical phases of the quadrature output signals are accurately positioned to be proportional to the shaft angle of the remote synchro transmitter. The respective quadrature output signals of, for example, two of the electronic servo systems may be utilized in conjunction with signals to be resolved to drive demodulators whose outputs are respectively summed in one channel and remodulated, demodulated and selectively summed in another channel to compute the vector rotations necessary for electronic resolution.

3,671,729

OBSCURATION DELINEATION CIRCUITRY

Foss Britton Lux, Oak Park, Mich., assignor to the United States of America as represented by the Secretary of the Air Force

Filed March 10, 1971, Ser. No. 122,707
Int. Cl. G06g 7/22
U.S. Cl. 235—186 **3 Claims**



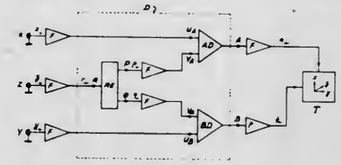
A device for providing an indication, on a radial plot, of all the terrain obscured from the view of an assumed observer who is located at some reference elevation above the origin of the plot. The output is obtained by means of an X-Y plotter or coordinatograph. The stylus of the coordinatograph traces a series of radial straight lines from the point corresponding to the observation point. The stylus is lowered to provide a visible record if the terrain is visible from the observation point, and is raised to record a gap if the terrain is obscured or not visible. The device functions by storing a quantity representative of the largest value of the look angle, as the terrain is scanned from the center outward, and treats all terrain with a look angle smaller than any previous look angle as obscured.

3,671,730

ELECTRONIC DEVICE FOR PLANE GRAPHICAL REPRESENTATION WITH PERSPECTIVE EFFECT

Maurice J. M. Pilato, Paris, France, assignor to Marc Norbert Collet, Paris, France

Filed March 30, 1970, Ser. No. 23,659
Claims priority, application France, March 24, 1969, 6908571
Int. Cl. G06g 7/04, 7/26
U.S. Cl. 235—189 **15 Claims**



The present invention concerns an electronic device supplying a plane graphical representation with perspective effect of three voltages.

An electronic device comprising three electrical signal input channels denoted by X, Y and Z, a signal distributor receiving electrical signals denoted by x, y and z supplied respectively by the three channels X, Y and Z and supplying electrically signals a and b to two channels respectively denoted by A and B, the function of the signal distributor to amplify and combine the electrical signals x, y and z supplied to it for supplying to the channel A a signal $a = kx + mz$ and for supplying to the channel b a signal $b = ly + nz$, the amplification factors k, l, m and n being independent of each other and negative or positive.

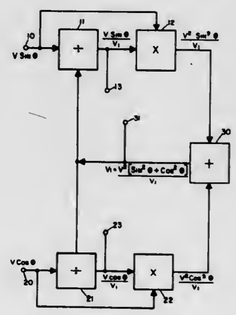
Generally, the invention is applied to the representation of any quantities which can be translated into electrical signals, the variations of some of which as are functions of the other it is useful to know.

3,671,731

PYTHAGOREAS ADDER OR SOLID STATE RESOLVER

Gilles J. Desoucourt, Anjou, Quebec, and Peter T. Nejedly, Montreal, Quebec, both of Canada, assignors to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Sept. 30, 1969, Ser. No. 862,344
Claims priority, application Canada, Oct. 9, 1968, 032,096
Int. Cl. G06g 7/22
U.S. Cl. 235—192 **2 Claims**



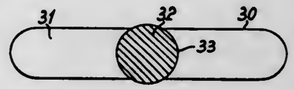
A system for providing the square root of the sum of the squares of two input signals which can also be used to extract the common carrier component of the sin and cos output windings of a synchro differential resolver. Each input signal is applied to a divider means and to a multiplier means. The output of the divider means constitutes the other input to the multiplier means, and the output of both multiplier means are fed to an adder. The output of the adder constitutes the other input to the divider means. In addition, the output of the adder constitutes the square root of the sum of the squares of the two input signals or the common carrier component of the sin and cos output windings of a synchro differential resolver — depending on the application.

3,671,732

LAMP

Knut Otto Sassmanshausen, Idar-Oberstein, Rothenbach, Germany

Filed Dec. 8, 1969, Ser. No. 882,997
Int. Cl. B60q 1/30
U.S. Cl. 240—8.3 **19 Claims**



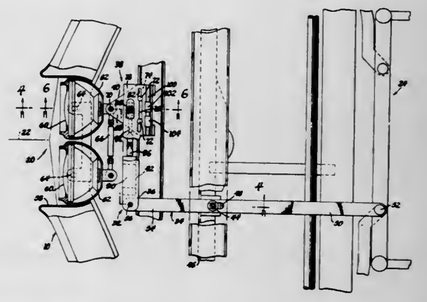
A double-beam lamp, such as a taillight or warning light has a collective lens bulb in the axis of a surrounding reflector in whose focal space, the luminous wire of the lens bulb is located. The collective lens projects a first beam, and the reflector, whose shape deviates from a geometrical parabola, projects a second beam, and while one of the beams is made narrow and conical, the other beam is spread in horizontal direction by ε cylindrical dispersing lens over a wide angle for lateral visibility while remaining narrow in the vertical direction to avoid loss of light.

3,671,733

STEERABLE LAMP SYSTEM FOR MOTOR VEHICLES

John W. Yee, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 20, 1971, Ser. No. 108,070
Int. Cl. B60q 1/12
U.S. Cl. 240—8.25 **3 Claims**



A steerable lamp system for a motor vehicle wherein a pair of supplemental driving lamps operable through a control linkage connected to the vehicle steering system are rotated in the direction of vehicle travel in response to steering movement. The control linkage includes a motor-powered extensible link electrically coupled to the vehicle turn signal system that pivots the lamps in the direction of a contemplated turn prior to initiation of the actual turning sequence.

3,671,734
RELOADABLE ELECTRIC FLASHLIGHT

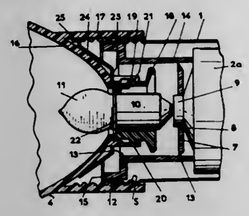
Rene M. Angibaud, Bois-Jerome, France, assignor to Societe Les Piles Wonder, Saint Ouen (Seine Saint Denis), France

Filed Dec. 21, 1970, Ser. No. 99,776

Claims priority, application France, Dec. 23, 1969, 6944538

Int. Cl. F21l 7/00

U.S. Cl. 240—10.66 2 Claims



A battery and case assembly attachable to the head of a flashlight to facilitate replacement of batteries. The head has a recess and the case has a closure member at the end thereof received into the recess. The closure member includes a pierced cap and readily breakable means attaching the cap to an annulus around the cap. A sleeve secured to the annulus spaces the batteries from the annulus and prevents normal electrical contact with the batteries until the cap is detached from the annulus.

3,671,735
LIGHTING FIXTURE

Charles S. King, Old Manor House, Cubbington, England

Filed July 20, 1970, Ser. No. 56,352

Int. Cl. F21m 7/00

U.S. Cl. 240—41.1 7 Claims



A lighting fixture in which a parallel beam of light is projected from the base of the fixture onto a reflector supported by a rod secured to the base and extending in the path of the beam.

3,671,736
FILM TRAINING PROJECTOR

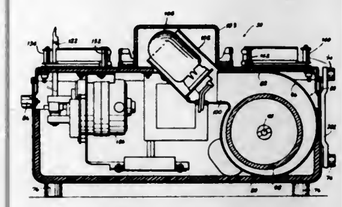
Richard P. Gundlach, Belleville, Ill., assignor to Gamco Industries, Inc., Big Spring, Tex.

Division of Ser. No. 814,127, April 7, 1969. This application June 8, 1970, Ser. No. 44,478

Int. Cl. F21v 29/00; G03b 21/16

U.S. Cl. 240—47 1 Claim

A visual training projector for projecting intelligible matter from one or two films. The projector may be used to project stationary pictures or motion pictures, as desired, by control from a remote control unit such as a remote operator's handle. Provision is made through a specially designed blower to provide for cooling the projector lamp bulb to accommodate projection from either a horizontal or vertical plane. Special loading means are provided for the film in pressure plates at the projector through solenoid operated gates to provide ready accessibility for loading and unloading. Advancement of the film, past the film aperture, is effected through solenoid and cam operated vibrated shuttles, which are mounted on a ball pivot for two directions of freedom to hold and actuate the film. In order to reduce wear on the film, the film is taken from



a supply reel and fed to a take-up reel by sensing arms which sense the tension in guided film loops and control supply and take-up motors to control the play out and take up of the film reels. Where, in addition to the front film, a rear film is used for fixation upon the front film, provision is made for feeding the films in the same direction to facilitate timing. The construction of the film reels and spindles is so designed that the film reels may be wound in either clockwise or counterclockwise direction.

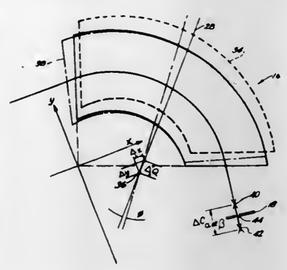
3,671,737
METHOD FOR FOCUSING A DOUBLE FOCUSING MASS SPECTROMETER

Charles W. Hull, Sierra Madre, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 7, 1969, Ser. No. 822,610

Int. Cl. H01j 39/34

U.S. Cl. 250—41.9 ME 5 Claims



A double focusing mass spectrometer utilizing an electric and a magnetic analyzing sector in tandem provided with a mechanically adjustable magnetic sector. Optimum focusing of the instrument is obtained by translational and rotational adjustments of the magnetic sector.

3,671,738
LIGHTING STANDARD OR POLE WITH DOUBLY HINGED BASE

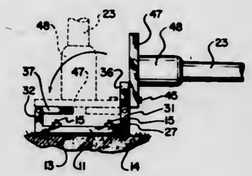
Robert W. Beachley, P.O. Box 11281, Charlotte, N.C.

Filed Jan. 13, 1971, Ser. No. 106,180

Int. Cl. F21s 13/10

U.S. Cl. 240—84 10 Claims

A lighting standard or pole is provided with a base assembly including a ground concrete base having upstanding studs arranged at the corners of a square, a base plate having openings receiving the studs and adjustable nuts upon the studs for securing the base plate to the studs in a manner that the base plate can be leveled so that the lighting pole will be extended vertically plumb with respect to the ground. The opposite sides of the base plate are extended upwardly and to these opposite sides are opposing hinged plates one of which can be pivoted upwardly and over to the right and the other of which can be pivoted upwardly and over to the left. A top plate is secured by bolts to the hinge plates and upon releasing the bolts at one side of the top plate and from one hinge plate the top plate and the pole can be tilted downwardly from one direction and upon releasing the bolts from the other hinge plate while leaving the bolts attached to the one hinge plate the lighting pole can be tilted downwardly from the opposite



direction. With the pole tilted one way or the other the fixture and the base are made accessible for servicing. The base plate while being connected to four studs has multiple openings to permit the base plate to be oriented detaching the base plate from the studs and replacing the same into other holes angularly disposed from one another about a center opening in the base plate so that the base plate can be angularly oriented to free the lighting fixture from trees or the like when it is desired to tilt the lighting post toward the ground. A split skirt formed of hingeable parts is detachably fitted about the base plate assembly and pole to enclose the same and give a more pleasing appearance. A rust-proof pan is provided under the base plate with sides extending upwardly to enclose the base plate and the hinge plates to permit a recessing of the base assembly into the ground so that the pole top plate would lie just slightly thereabove.

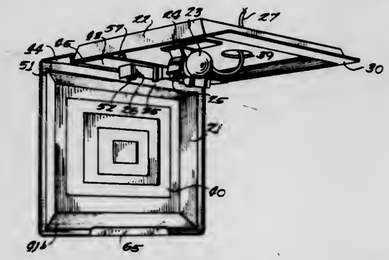
3,671,739
LAMP ASSEMBLY

Lawrence G. McCain, Beverly Hills, Calif., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Dec. 8, 1970, Ser. No. 96,136

Int. Cl. F21v 23/04

U.S. Cl. 240—122 14 Claims



A lamp assembly is provided which is operated by means of the lens or cover. The lens is slidably attached to the metal base, which is electrically grounded, and a light bulb holder is secured to the base and also electrically grounded. A contact connected to a suitable power source is carried by the lens, and sliding movement of the lens with respect to the base brings the contact into and out of electrical engagement with the light bulb.

ERRATUM

For Class 250—41 see:
Patent No. 3,671,737

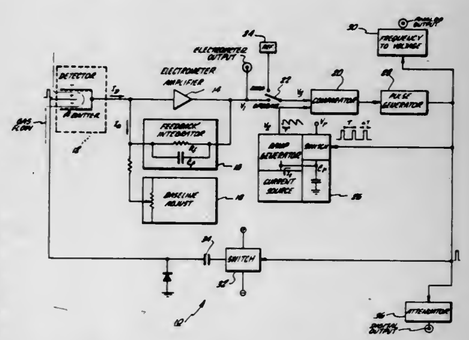
3,671,740
FREQUENCY-PROGRAMMED ELECTRON-CAPTURE DETECTOR

J. Howard Marshall, III, Pasadena, and Timothy M. Harrington, Sierra Madre, both of Calif., assignors to Analog Technology Corporation

Filed March 15, 1971, Ser. No. 124,291

Int. Cl. G01n 23/12

U.S. Cl. 250—43.5 R 10 Claims



Improved circuitry for increasing the sensitivity of an electron-capture ionization detector includes a closed-loop feedback circuit which varies the frequency of pulses which are applied to the detector. The circuit responds to greater concentrations of predetermined compounds such as gases by increasing the pulse repetition frequency and responds to lower concentrations by decreasing the pulse repetition frequency, always tending to keep the current flowing in the detector circuit near a constant preset value. The pulse frequency will then vary directly with the concentration of sampled compound in the detector, and simple frequency-to-voltage conversion devices can be used to signal such concentrations.

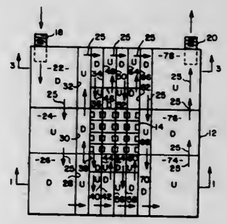
3,671,741
IRRADIATOR APPARATUS WITH A FLUID FLOWPATH DETERMINED BY COMMUNICATING CORE AND CASTING BAFFLES

David D. Woodbridge, and Leland A. Mann, both of Brevard County, Fla., assignors to Energy Systems, Inc., Brevard County, Fla.

Filed Jan. 12, 1970, Ser. No. 2,198

Int. Cl. G01n 21/26

U.S. Cl. 250—44 8 Claims



An irradiator apparatus designed to perform a sterilization treatment or like process on waste material especially in the

liquid state such as sewage or general industrial waste wherein a radiation source in the form of radioactive material is utilized to eliminate various types of micro-organisms or other undesirable elements which are carried by the liquid waste material. The apparatus includes a structure comprising a plurality of parallel baffles arranged about a substantially centrally located core mounted within the casing and structurally designed to support a plurality of radioactive material elements serving as the radiation source. The core also includes a plurality of parallel baffles which communicate with the baffles of the casing to define a somewhat serpentine flowpath along which the liquid travels as it passes through the irradiator.

3,671,742
FILM TRANSFER MECHANISM FOR ELECTRON MICROSCOPES

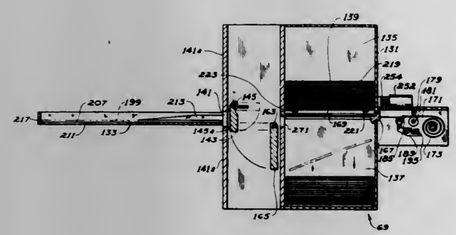
George William Browning, Gt. Chesterford, England, assignor to Associated Electrical Industries Limited, London, England

Filed April 28, 1970, Ser. No. 32,750

Claims priority, application Great Britain, June 17, 1969, 30,657/69

Int. Cl. H01j 37/36; G01n 23/00

U.S. Cl. 250—49.5 E **15 Claims**



An electron microscope comprising a microscope chamber having a passageway extending therethrough and a film mechanism for driving an electron stimulated means, or film plate, into the microscope chamber. The film mechanism includes a tray disposed within the microscope chamber and communicating with the passageway, a closure member positioned across the passageway for preventing the passage of X-rays through the passageway, a storage chamber disposed externally of the microscope for storing a film plate, and transport means for driving a film plate from the storage chamber to the tray so that the film plate is moved to a position to intercept a beam of electrons passing through an object to be viewed.

3,671,743
ELECTRON MICROSCOPY

William Charles Nixon, 2 Causewayside Fen Causeway, Cambridge, England

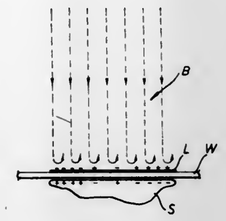
Filed April 3, 1969, Ser. No. 813,259

Claims priority, application Great Britain, July 3, 1968, 15,935/68

Int. Cl. H01j 37/26; G01n 23/00

U.S. Cl. 250—49.5 A **1 Claim**

Mirror electron microscope techniques are used indirectly to examine the electric or magnetic field in a specimen, such as a biological cell, situated outside the evacuated microscope chamber by examining the field on a layer or surface immediately inside a wall of the chamber adjacent the outside of which the specimen is placed.



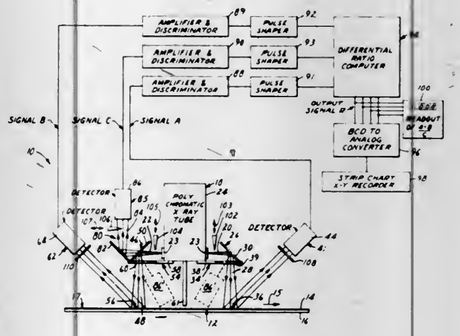
3,671,744
DIGITAL DIFFERENTIAL EMISSION X-RAY GAUGE

Nikiforos Constantine, Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Oct. 5, 1970, Ser. No. 77,833

Int. Cl. G01n 23/22

U.S. Cl. 250—51.5 **13 Claims**



Apparatus and method to indicate the concentration of a selected element within a target wherein separated polychromatic X-rays produce first and second monochromatic X-ray beams, the wavelength of the first beam being slightly less than the absorption edge of the selected element and the wavelength of the second beam being slightly greater than the absorption edge of the selected element. The first and second beams irradiate the target to produce fluorescent characteristic radiation of the target elements which is received by a first and second detecting means for producing a first and second digital signal, respectively. A monitoring means produces a third digital signal indicative of intensity fluctuations of the polychromatic x-rays. A differential ratio computer means produces an output signal which is the difference between the first and second digital signals divided by the third digital signal, which output signal indicates the concentration of the selected element within the target. First, second and third movable wedges are utilized in calibrating the device and to provide an indication of the concentration of the selected element in percent deviation from a standard or in engineering units (mg/dm²).

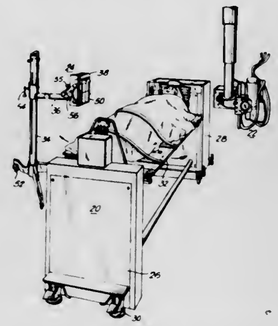
3,671,745
THREE DIMENSIONAL AND/OR TIME SEQUENCE X-RAY APPARATUS

John Jacques Fouquart, Northport, N.Y., assignor to Photosystems Corporation, Hauppauge, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,168

Int. Cl. G01n 23/04; H01j 37/22

U.S. Cl. 250—61 **12 Claims**



X-ray apparatus including a cradle or platform unit, X-ray recording unit and an X-ray source. The cradle unit supports a patient and provides for rotating the same about a horizontal axis through an arc either clockwise or counterclockwise. The cradle is driven by a motor. The recording unit includes a casette and a casette support in which is located part of a control unit. The casette includes a part which selectively operates switches controlling, at least partially, the taking of three-dimensional or action sequence X-rays. These switches select panels on a rotatable drum which are constituted by two groups respectively controlling operation of the cradle motor and the duration of the X-ray exposure. The aforesaid drum is driven by a motor through the intermediary of a slip clutch with which is associated a cam having the purpose of causing relative movement between a film and grid in the recording unit to provide for recording a sequence of exposures on adjacent strips of the film. The drum is either automatically operated or alternatively is stepped through a sequence of operations under manual or operator control.

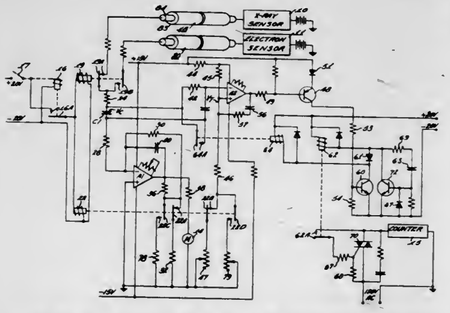
3,671,746
STABLE, LOW LEVEL RADIATION MONITOR

Tom N. Thiele, Oconomowoc; Lester O. Gerlach, Muskego, and Thomas P. Gilmore, Wauwatosa, all of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed June 2, 1970, Ser. No. 42,739

Int. Cl. G01t 1/16

U.S. Cl. 250—83.3 R **12 Claims**



A radiation monitor has a low-loss integrating capacitor connected to be charged by the output of a radiation sensor, a high input impedance operational amplifier operating in the inverting mode connected across the integrating capacitor, and a reference voltage source applied to the noninverting input, whereby the operational amplifier is initially in positive saturation and switches to negative saturation when the charge across the capacitor equal the reference voltage. Means responsive to the negative saturation output of the operational amplifier are provided to discharge the integrating capacitor and to generate a pulse, and a pulse counter gives an indication of total radiation received by the sensor. A second high input impedance operational amplifier operating in the inverting mode has its inverting input connected to one electrode of the integrating capacitor and holds it at zero potential, and a current meter driven by the output of the second operational amplifier provides an analog indication of the current from the radiation sensor flowing through the integrating capacitor and is calibrated in roentgens per minute received by the sensor.

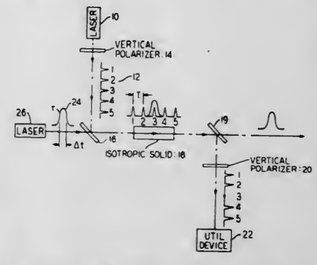
3,671,747
PICOSECOND OPTICAL APPARATUS UTILIZING OPTICALLY INDUCED BIREFRINGENCE IN SOLIDS

Michel Albert Duguay, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkely Heights, N.J.

Filed March 30, 1970, Ser. No. 23,849

Int. Cl. H04b 9/00

U.S. Cl. 250—199 **8 Claims**



Birefringence, optically induced in solid materials by pulses of picosecond duration and high intensity, is utilized in a light gate, an amplitude modulator, a multiplexer and other optical devices.

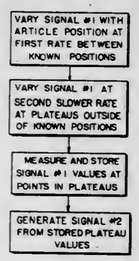
3,671,748
METHOD AND APPARATUS FOR POSITIONER CALIBRATION SYSTEM

David Friedman, Framingham, Mass., assignor to Computervision Corporation, Burlington, Mass.

Continuation-in-part of Ser. No. 850,976, Aug. 18, 1969, Pat. No. 3,617,757. This application Aug. 24, 1970, Ser. No. 66,211

Int. Cl. G01j 1/20; G05b 1/00; G01b 11/26

U.S. Cl. 250—201 **18 Claims**



A method and apparatus for automatically calibrating the position of a movable article between two reference positions

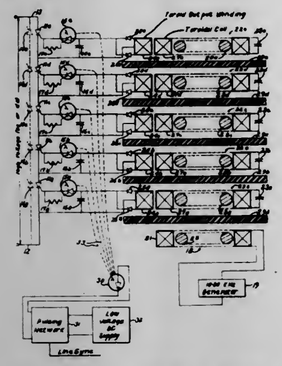
in terms of the output of an electrical position sensor. The method and apparatus are used in an article positioning system in which it is desired to precisely position the article at a preselected proportion of the distance between the reference positions. Variations in the sensing paths are compensated for by automatically registering the sensor outputs when the article is at each reference position and then interpolating other sensor values between these to obtain the article's position.

3,671,749

SIMULTANEOUS LIGHT TRIGGERING OF THYRISTOR ARRAYS

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company

Filed Feb. 17, 1971, Ser. No. 116,152
Int. Cl. H01j *39/12*
U.S. Cl. 250—208 **11 Claims**



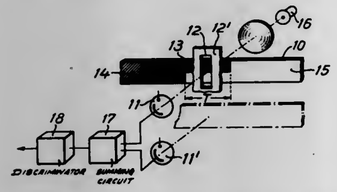
Series and parallel thyristor arrays are switched synchronously with respect to their own anode in high voltage a-c and d-c circuits using light activated gating circuitry controlled by a common light emitting diode for simultaneous triggering. Each individual gating circuit includes a light sensor device and an almost continuously available source of gating energy obtained from its own isolated power supply in the form of a tuned high frequency resonant circuit. The toroidal coils in each resonant circuit are coupled together and to a power coil. Non-magnetic unit gating circuit power supplies are also described.

3,671,750

METHOD OF SYNCHRONIZING THE CHANGE OF DIGITS IN ABSOLUTE-VALUE MEASURING DEVICES AND APPARATUS THEREFOR

Knut Heitmann, Wetzlar, and Eckart Schneider, Berghausen, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed July 20, 1970, Ser. No. 56,372
Claims priority, application Germany, July 29, 1969, P 19 38 377.8
Int. Cl. H01j *5/16*
U.S. Cl. 250—237 R **6 Claims**



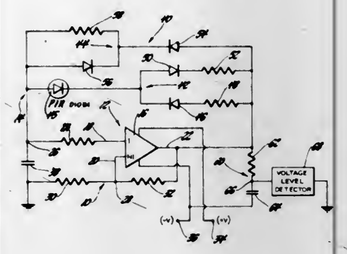
A method of synchronizing the change of digits in the indicator of absolute-value measuring devices. The method makes use of three possible electrical signals of different amplitude level obtained from scanning at least one track of markings subdividing the track to a certain degree of fineness, and of a control signal obtained from scanning a track of higher fineness. The combined signals control a threshold value discriminator of which the output signal is used for changing the digits. An apparatus for practicing the method comprises a displaceable record carrier having tracks of different degrees of fineness thereon with only one sensing means associated with each track. Each sensing means is connected to a summing circuit stage which, further, is in connection with the sensing means associated with the track of higher fineness. The summing circuit stage is, in turn, connected to the threshold value discriminator.

3,671,751

PHOTON ENERGY DETECTOR GENERATING SIGNAL IN WHICH DURATIONS OF FIRST AND SECOND HALF CYCLES ARE RESPONSIVE TO PHOTON ENERGY AND DIODE CONTINUITY RESPECTIVELY

Jerry W. Kortge, and James A. Rodaer, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 18, 1970, Ser. No. 73,501
Int. Cl. G01j *5/00*; G01k *7/00*; H01j *39/12*
U.S. Cl. 250—211 J **3 Claims**



A relaxation oscillator produces a cyclical output signal having alternate first and second half cycles. The oscillator includes a timing circuit having a resistance-capacitance network. The resistance includes a PIN photo diode which exhibits a reverse leakage current responsive to the photon energy incident upon the diode. The photo diode defines the duration of the first half cycles as a function of the reverse leakage current of the diode and defines the duration of the second half cycles as a function of the forward drive current of the diode. The first and second half cycles of the output signal are averaged to provide an output level having a magnitude which is responsive to the photon energy incident upon the photo diode and is responsive to the continuity of the photo diode.

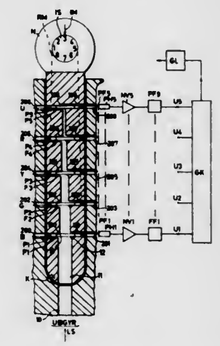
3,671,752

LOCKING DEVICE USING RADIATION CONDUCTING KEY

Sten-Lennart Bostrom, Box 607, Hagersten, Sweden

Filed Jan. 5, 1970, Ser. No. 5,420
Claims priority, application Sweden, Jan. 7, 1969, 154/69
Int. Cl. H01j *39/12*
U.S. Cl. 250—220 R **8 Claims**

Security locking device comprising mechanical locking means adapted to be electrically controlled, a source of laser radiation a plurality of opto-electrical transducers, a light conducting key insertable into a mating key hole and arranged to thereby connect the source with the transducers for transmission of laser radiation thereto to open the mechanical locking means.



3,671,753

STACK SENSING SHEET FEED CONVEYOR CONTROL MEANS

Raymond L. R. Lucas, Avenue de La Republique, Prechac, Gironde, France

Filed April 29, 1970, Ser. No. 32,861
Int. Cl. G06m *7/00*
U.S. Cl. 250—222 R **10 Claims**

A stop plate is provided against which the forward edge of sheets discharged from a conveyor to form a stack impinge with a photoelectric cell being mounted in the stop plate for sensing the top of the stack to actuate a drive motor for sequentially lifting the discharge end of the conveyor as the height of the stack progresses.

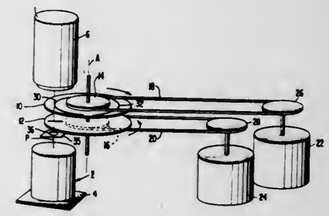
3,671,754

SCANNING APPARATUS FOR BIOLOGICAL MICRODENSITOMETRY

Balaji Mundkur, Storrs, Conn., assignor to University of Connecticut, Storrs, Conn.

Filed June 18, 1968, Ser. No. 737,967
Int. Cl. H01j *5/16*; G02f *1/30*
U.S. Cl. 250—236 **9 Claims**

A scanning device that includes a pair of opaque members which rotate about a common axis and lie across the path of radiant energy where one member has a transparent area in the form of a straight line and the other member contains a transparent area in the form of a logarithmic spiral so that when the discs are rotated at different speeds they produce a scanning aperture of constant shape and configuration formed by the intersection of the transparent areas.

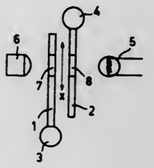


3,671,755

APPARATUS FOR ALIGNING TWO OBJECTS WHICH COMPRISES A SOURCE OF LIGHT, A PHOTOSENSITIVE DETECTION SYSTEM AND TWO PATTERN CARRIERS

Eerenst Frans Hovius, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,135
Claims priority, application Netherlands, Sept. 24, 1969, 6914531
Int. Cl. H01j *3/14*
U.S. Cl. 250—237 R **4 Claims**



An apparatus for the relative alignment of two objects is described which comprises at least one light source, a photosensitive detection system and two carriers which are made of a translucent material or an opaque material and on which have been formed patterns of areas of an opaque material or a translucent material respectively. It is shown that a direct indication of the direction of a deviation is obtainable by using a special embodiment in which the patterns of the carriers each consist of two regular component patterns, one of the component patterns on one of the carriers being staggered with respect to the other component pattern on this carrier through a small distance in the direction of width of the areas, the region to one side of one of the component patterns and that to the other side of the other component pattern on this carrier being made of an opaque material, while with each of the said component patterns there is associated a separate detector.

3,671,756

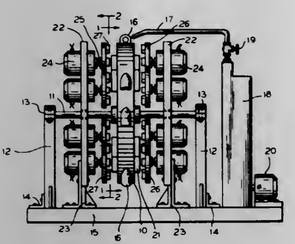
ELECTRICAL POWER GENERATOR

Emil S. Meier, P.O. Box 83, Babcock, Wis.

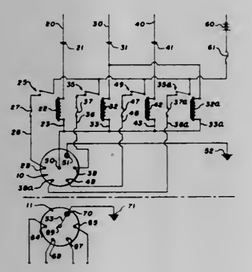
Filed Oct. 26, 1970, Ser. No. 84,047
Int. Cl. F03b *13/00*
U.S. Cl. 290—54 **3 Claims**

An air driven wheel is magnetically coupled to drive a plu-

rality of electrical generators to generate electrical power responsive to the actuation of the wheel.



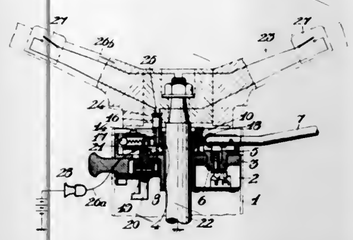
3,671,757
TRACTOR TRAILER LIGHTING SYSTEMS
John Ray Klein, Burnaby, British Columbia, Canada, assignor to Klein & Anderson Ltd., Vancouver, British Columbia, Canada
Filed June 1, 1970, Ser. No. 42,000
Int. Cl. H02g 3/00
U.S. Cl. 307—10 LS **11 Claims**



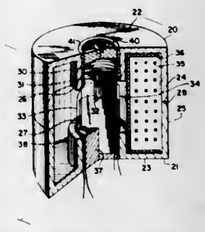
To protect the tractor lighting system from the effects of short circuits in the trailer lighting system the tractor and trailer lighting systems are separated. The tractor system includes a control element such as the coil of a relay and the trailer system a switching element operable by the control element.

3,671,758
STEERING STRUCTURE CAPABLE OF SIMULTANEOUSLY COMPLETING A HORN CIRCUIT IN A MOTOR-CAR
Masaru Suzuki, Hekikai-gun, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-Prefecture, Japan
Filed Nov. 17, 1970, Ser. No. 90,357
Claims priority, application Japan, Nov. 17, 1969, 44/108964
Int. Cl. H01h 9/00
U.S. Cl. 307—10 R **2 Claims**

A steering structure capable of simultaneously completing a horn circuit in a motor-car which comprises a cam cylinder rotatable with the steering wheel and having a cam with one or more cancelling projections for cancelling the turn signal indicator. A contact pin serves to couple the cam cylinder to the steering wheel for joint rotation therewith and also to electrically connect the lower circuit part in the steering wheel with the horn circuit part in the car body.



3,671,759
MAGNETIC SENSOR
Otto Walter Dopheide, Beaconsfield, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Sept. 2, 1970, Ser. No. 68,924
Int. Cl. H03k 17/82
U.S. Cl. 307—88 R **5 Claims**

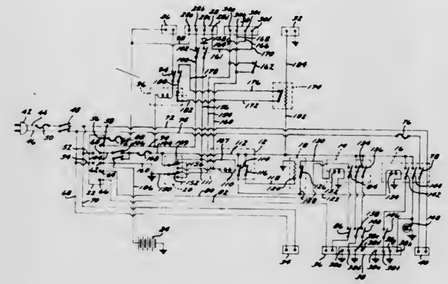


A ferrod sensor comprising an elongated ferrite stick having a pair of spaced apertures through which are threaded an interrogate winding and a read-out winding. Pulses or alternating current on the interrogate winding induce output pulses in the read-out winding as long as the ferrite stick is not saturated. A control winding is wound about the ferrite stick and is adapted to be energized by a pair of telephone lines, for example when the receiver is taken off the hook switch. This current causes saturation of the ferrite stick so that flux switching cannot take place and no pulses are induced in the read-out winding. The ferrite stick and its windings are placed within a ferromagnetic pot core thereby gaining higher sensitivity for the same amount of current as compared to known sensors as well as shielding from external magnetic fields. The device is very compact and a screw in one end of the pot core allows for varying the sensitivity of the device.

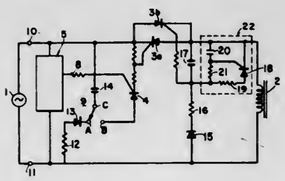
3,671,760
CONDITION MONITORING APPARATUS
Oliver W. Holmes, 3321 Rowena Drive, Los Alamitos, Calif.
Filed April 26, 1971, Ser. No. 137,204
Int. Cl. H01h 35/00
U.S. Cl. 307—116 **6 Claims**

A condition monitoring apparatus for use by homeowners, small business operators and the like to provide a warning of unauthorized entry, fire, flooding, or other condition change. A variety of detection, sensor, and monitoring devices can be attached to the apparatus as inputs, including both parallel and series connected switches and independent monitoring systems. Certain of the input circuits incorporate a time delay

device to delay response to the apparatus to an input condition change. On actuation of the apparatus, a latching relay provides power to a pair of control relays. One control relay remains energized until the latching relay is reset, while the other control relay becomes de-energized after a predetermined time interval. Energization of the control relays is adapted to apply power to various lighting, alarm and indicator devices attached to the apparatus as outputs. The apparatus permits selection of any of a variety of input and output devices to suit the apparatus to the needs of a particular user, with optional on-off control of certain input and output circuits.



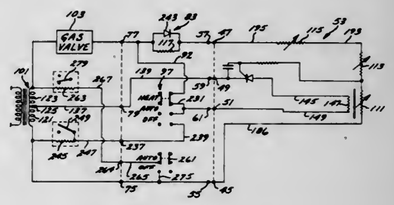
3,671,761
SINGLE PULSE GENERATING CIRCUIT
Koji Shibuya, and Teruhi Takano, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1971, Ser. No. 108,287
Claims priority, application Japan, Jan. 22, 1970, 45/6996
Int. Cl. H01h 47/32
U.S. Cl. 307—106 **3 Claims**



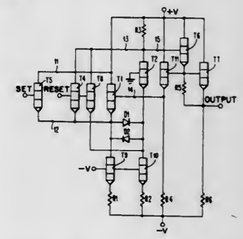
Electronic switching apparatus employs oppositely poled, shunt connected thyristors selectively activated for energizing a load during only a single half cycle of an applied alternating current waveform. A stabilizing circuit is provided to suppress subsequent, repetitive thyristor conduction intervals which otherwise occur when the load exhibits a significant inductive reactance component.

3,671,762
THERMOSTAT SET
James Brooks, Hermosa Beach; Ralph E. Drummond, Cudahy; Frank J. Heinz, Garden Grove, and William W. Chambers, Anaheim, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed April 29, 1971, Ser. No. 138,440
Int. Cl. H01h 37/12
U.S. Cl. 307—117 **12 Claims**

A thermostat set for selective connection with a center tap transformer and a temperature control device operator and to be selectively assembled to provide a thermostat with or without a control switch. The thermostat set includes a base including first through fourth electrical terminals and having a bridge circuit thereon which includes first and second resistance means formed with a node at their common end. The first resistance means is in the form of a temperature sensor. The base circuit includes rectifier means having its gate connected with the first node, lead means connecting the free end of the first resistance means with the first electrical terminal and the free end of the second resistance means with the second electrical terminal and the power circuit of the rectifier means with the third and fourth terminals. A first sub-base is provided which includes first and second input terminals for connection with opposite sides of said transformer and a third input terminal for connection with the center tap thereof, such sub-base further including first through fourth output terminals. A first sub-base circuit connects the respective first through third input terminals of such sub-base with the first through third output terminals thereof and the second input terminal with the fourth output terminal thereof. A second sub-base also includes first through third input terminals and first through fourth output terminals and second sub-base circuit means connects the first through third input terminals with the respective first through third output terminals and the second input terminal with the fourth output terminal. The second sub-base circuit further includes switch means for breaking the circuit through such second sub-base. Electrically conductive mechanical connector means is provided for selectively connecting the first through fourth terminals in the sub-base with the respective first through fourth output terminals of the respective first and second sub-bases whereby a workman may select either the first or second sub-base for assembly with the base to thereby provide a thermostat with or without switch means depending upon the requirements of the particular installation.



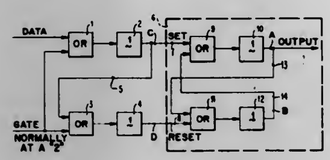
3,671,763
TERNARY LATCHES
Gerald A. Maley, Fishkill, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,935
Int. Cl. H03k 19/08
U.S. Cl. 307—209 **9 Claims**



Two latch circuits are disclosed for three-state operation in the ternary mode. The set input may be raised to a 1 or inter-

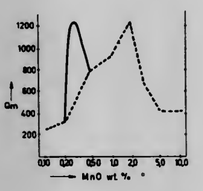
mediate voltage level thereby providing a 1 level at the output which remains latched at that level after the set input is lowered to the 0 or lowermost level. When the set input is raised to the uppermost or 2 level the output is set at the 2 level and remains latched at that level when the set input is lowered to the 0 level. The circuits are reset to 0 by raising the reset input to the 2 level.

3,671,764
AUTO-RESET TERNARY LATCH
Gerald A. Maley, Fishkill, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 5, 1971, Ser. No. 112,983
Int. Cl. H03k 19/00, 3/14
U.S. Cl. 307—209 13 Claims



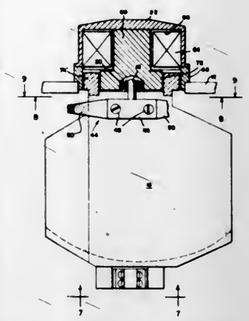
An auto-reset ternary latch has a data input line, a gate line and an output line. Each of said lines is adapted to assume any one of three potential levels. When the potential of the gate is lowered from the uppermost level to an intermediate level, the potential of the output line moves up or down one level to an intermediate value. When the potential of the gate is lowered all the way to the lowermost level, the potential of the output line matches that of the data input line. The potential of the output line is maintained at said value when the potential of the gate line is thereafter raised.

3,671,765
ELECTROMECHANICAL RESONATOR EMPLOYING PIEZOELECTRIC CERAMIC CONSISTING OF LEAD ZIRCONATE-TITANATE CONTAINING MANGANESE MONOXIDE
Karl Heinz Hardtl, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,414
Claims priority, application Netherlands, Oct. 7, 1969, 6915115
Int. Cl. H01v 7/00
U.S. Cl. 310—9.5 4 Claims



An electromechanical resonator having a ceramic piezoelectric member consisting of MnO-containing lead zirconate-titanate of the composition $Pb(Zr_xTi_{1-x})O_3 + y$ % by weight of MnO, where $x = 0.52 - 0.58$ and $y = 0.22 - 0.40$.

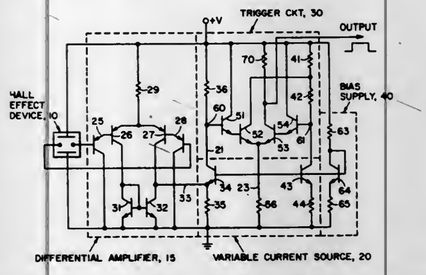
3,671,766
OSCILLATING MECHANISM
Spencer D. Howe, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Continuation of Ser. No. 766,699, Oct. 11, 1968, abandoned.
This application June 29, 1970, Ser. No. 56,094
Int. Cl. H02k 33/18
U.S. Cl. 310—39 15 Claims



The invention teaches a mirror oscillating through an angular arc defined by arc terminal points. Springs associated with the mirror absorb the kinetic energy of halt at the terminal points and provide the primary driving force and energy to the mirror for reversing the direction of oscillation thereof toward the opposing terminal point. Magnetic means provides a source force to induce oscillation from dead stop and to supplement the spring action by compensating for frictional and other energy losses during operation. Means are provided to bias the mirror to one of the terminal positions when inoperative. The mirror is powered at each terminal point and freely moves at a substantially constant angular velocity between the terminal points.

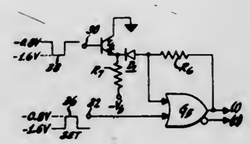
This invention relates to an arrangement for oscillating an element, such as a reflecting surface, back and forth in an arcuate path at a substantially constant angular velocity through a major arc segment.

3,671,767
HALL EFFECT SWITCHING DEVICE
Walter Richard Davis, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 15, 1971, Ser. No. 106,865
Int. Cl. H01r 5/00
U.S. Cl. 307—309 10 Claims



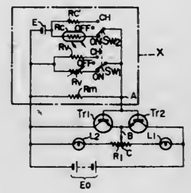
There is disclosed a Hall effect switching device involving the combination of a Hall effect device, a differential amplifier and a current control trigger circuit. The use of the differential amplifier in conjunction with the current control-trigger circuit amplifies the Hall effect voltage and permits the use of high hysteresis triggers. Control of the current control-trigger circuit is accomplished by a pair of current sources, the output of one of which is varied in response to the output of the differential amplifier. The trigger circuit is initially unbalanced in its OFF mode and is turned ON by the output of the amplifier reaching a predetermined high value. The trigger is turned OFF by the output of the differential amplifier returning to some specified low value.

3,671,768
HIGH SPEED SET-RESET FLIP-FLOP
Michael Cooperman, Cherry Hill, N.J., assignor to RCA Corporation
Filed Oct. 31, 1966, Ser. No. 590,830
Int. Cl. H03k 3/26, 19/30; G11c 19/00
U.S. Cl. 307—289 7 Claims



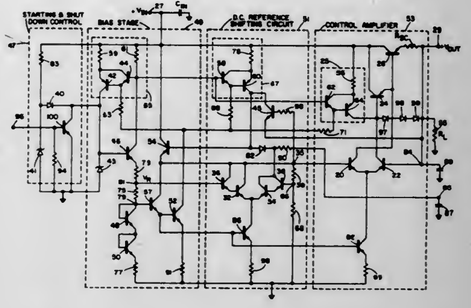
A two input OR gate with resistive feedback between the output terminal and one of the input terminals of the OR gate. The second input terminal of the OR gate serves as s the set input terminal to the flip-flop and is normally maintained at a level indicative of a binary "0". To set the flip-flop, a voltage indicative of a 1 is momentarily applied to this set terminal. To reset the flip-flop, a voltage indicative of a zero is momentarily applied to the reset terminal of the flip-flop. The latter is coupled through a level shift circuit, including active element means, to the first input terminal of the OR gate.

3,671,769
EXPOSURE MEASURING DEVICE
Toshio Tomomitsu, and Tatsuo Fujii, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 6, 1970, Ser. No. 865
Claims priority, application Japan, Jan. 10, 1969, 44/1684
Int. Cl. G01j 1/00
U.S. Cl. 307—311 8 Claims



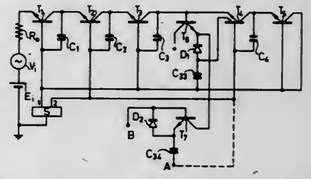
Exposure measuring device having means for compensating the variation of power source voltage. A feedback means is incorporated in the exposure measuring device so that upon switching the switches to the contacts for the compensation of the variation of the voltage of the power source, the compensation of the voltage is automatically affected and the proper exposure measuring is performed.

3,671,770
TEMPERATURE COMPENSATED BIAS CIRCUIT
Thomas M. Frederiksen, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Division of Ser. No. 701,235, Jan. 29, 1968, Pat. No. 3,538,424. This application Aug. 17, 1970, Ser. No. 64,549
Int. Cl. H03k 17/14
U.S. Cl. 307—310 6 Claims



Disclosed is a monolithic voltage regulator having a high current capability, a constant low output impedance from DC to several hundred kilocycles, and a high ripple reduction factor. The regulator has excellent transient response; it provides a wide range of regulated output voltage and has a low temperature drift. The voltage regulator includes a voltage standard or bias source, an input differential amplifier stage having a pair of transistors coupled to a current sink (a current source passing current to ground), and one of the transistors in the pair is connected through a current gain stage to an output terminal. A DC reference shifting circuit is connected to the input of one transistor in the pair and provides a reference voltage to the differential amplifier stage which has been translated to provide the required voltage level at the output terminal. The output terminal is connected directly to the input of the other transistor in the pair in order to achieve a unity feed back factor to provide excellent constant loop performance independent of the output voltage. The direct coupled feedback connection eliminates any undesirable gain loss and phase shifting due to resistance in the input circuits of the differentially coupled transistor pair.

3,671,771
CHARGE AMPLIFIER FOR A BUCKET BRIGADE CAPACITOR STORE
Frederik Leonard Johan Sangster, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 20, 1970, Ser. No. 65,367
Claims priority, application Netherlands, Sept. 6, 1969, 6913618
Int. Cl. H03k 17/26
U.S. Cl. 307—293 7 Claims



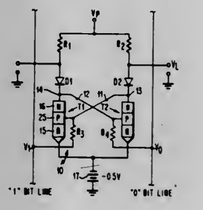
A charge amplifier for a bucket brigade storage circuit uses two transistors, a pair of diodes and two auxiliary capacitors

connected in the charging path of one of the bucket brigade capacitors for amplifying the capacitor charge of the bucket brigade capacitor without reducing the permissible driving range of the bucket brigade storage circuit.

3,671,772
DIFFERENCE AMPLIFIER

Robert A. Henle, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,703
Int. Cl. H03k 3/26
U.S. Cl. 307—291 **8 Claims**

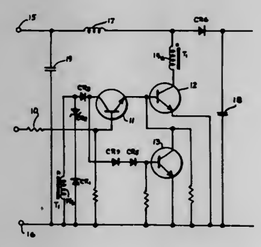


A difference amplifier used as a sense amplifier for stored binary data being read from a computer memory. The amplifier includes a pair of cross-coupled transistors, a power source providing an operating voltage for said transistors, and means for intermittently applying said power source to the cross-coupled transistors. Selective application means apply each of the pair of voltage signals to be differentiated from each other to a respective one of the pair of cross-couplings, i.e., the pair of cross-connected regions in the transistors. In the case of reading from binary storage, the voltage signals are applied from the pair of sense lines from the memory storage. The signals are applied during a period when the voltage source is not being applied and, consequently, both of the paired transistors are in the non-conductive state. The signals establish a stored charge in each of the transistors; the difference between these charges will determine which of the transistors assumes the conductive state when the power is subsequently applied.

3,671,773
D.C. CONVERTER HAVING CONTROL TRANSISTOR IN BLOCKING OSCILLATOR FEEDBACK

Gilbert I. Cardwell, Jr., Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 18, 1971, Ser. No. 144,478
Int. Cl. H03k 3/30
U.S. Cl. 307—275 **2 Claims**

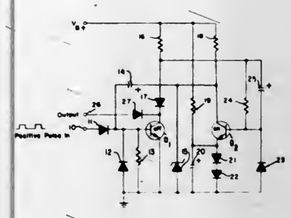


An apparatus for increasing an applied DC voltage level to a higher DC voltage level by utilizing a current feedback network to provide fast switching and control in the power transistors.

3,671,774
ZERO RECOVERY TIME TWO TRANSISTOR MULTIVIBRATOR

Sidney E. Millman, Van Nuys, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 28, 1970, Ser. No. 101,809
Int. Cl. H03k 3/26, 3/10
U.S. Cl. 307—273 **9 Claims**

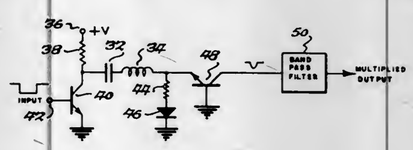


An improved two transistor monostable multivibrator having an extremely short retrigger time is disclosed. Recovery to the stable state is initiated by the abrupt removal of base current from the normally "off" transistor which causes that transistor to come out of saturation and revert back to its blocking state so that the circuit subsequently regenerates back to its stable state. Simultaneously, the normally "on" transistor saturates and the timing capacitor discharges via a very low impedance path. The discharge through the very low impedance path is responsible for the extremely fast retrigger time. Conversion of the multivibrator from monostable to astable operation is also disclosed.

3,671,775
PULSE SHAPING CIRCUIT WITH MULTIPLIER APPLICATION

George H. Kam, Tonawanda, N.Y., assignor to Sylvania Electric Products Inc.

Filed April 27, 1970, Ser. No. 32,073
Int. Cl. H03k 1/10
U.S. Cl. 307—271 **14 Claims**



A pulse shaping circuit comprising a series resonant circuit and a shunt resistor-diode damping circuit in combination with a square wave input and a grounded base transistor load to provide a pulse of controlled width and amplitude. The damping circuit dissipates all but the first half cycle of resonant circuit ringing. A dual circuit employs a parallel resonant circuit and common emitter load transistor. In a frequency multiplier application, the resonant circuit is tuned to the desired harmonic frequency and a bandpass filter is connected at the transistor output.

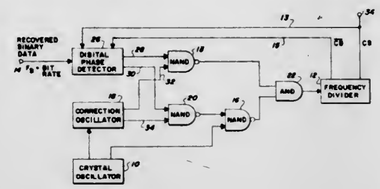
3,671,776
DIGITAL SIGNAL SYNCHRONIZING SYSTEM

Robert D. Houston, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 1, 1970, Ser. No. 33,805
Int. Cl. H03k 5/00, 17/00
U.S. Cl. 307—269 **1 Claim**

A digital signal synchronizing system wherein a locally generated timing signal is compared with received binary data.

If the timing signal lags the bit rate of the binary data, pulses are added to the timing signal and if the timing signal leads the binary data, pulses are deleted from the timing signal. Means

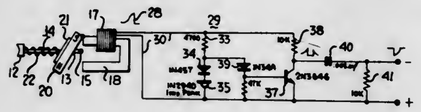


are provided for controlling the bandwidth of the system and the system, in addition, has a phase versus frequency response which is substantially constant over the range of operating frequencies.

3,671,777
FAST RISE TIME PULSE GENERATOR

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corporation, Warner, N.H.

Filed March 22, 1968, Ser. No. 715,372
Int. Cl. H03k 17/00
U.S. Cl. 307—268 **11 Claims**

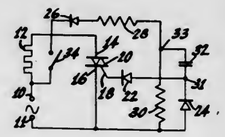


A device for generating fast rise time pulses, in which a mechanico-electric transducer translates mechanical operation or motion to a single electrical output pulse of relatively slow rise time characteristic for application to a semiconductive pulse shaper of monostable or bistable nature for producing a rapid rise time output pulse of the desired shape.

3,671,778
SWITCHING CIRCUITS

George D. Hanchett, Summit, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 590,320, Oct. 28, 1966, abandoned. This application Sept. 11, 1970, Ser. No. 71,389
Int. Cl. H03k 17/00
U.S. Cl. 307—252 B **13 Claims**

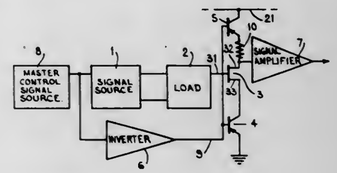


A bidirectional gate controlled device, such as a triac, is connected in circuit with a time constant circuit, an AC source, and a load. The time constant circuit is adapted to charge only when the AC source is of a given polarity; its discharge duration being sufficient to provide a triggering signal to the gate of the device to trigger it into consecutive conduction in both of its conducting directions.

3,671,779
FIELD EFFECT TRANSISTOR SWITCHING ARRANGEMENT FOR AMPLIFYING ONLY LOW LEVEL SIGNALS

James Krishen Draper, Farnham, and David Michael Chick, Bracknell, both of England, assignors to International Computers Limited, London, England

Filed Dec. 21, 1970, Ser. No. 100,023
Claims priority, application Great Britain, Jan. 28, 1970, 4,054/70
Int. Cl. H03k 17/16, 17/60
U.S. Cl. 307—251 **8 Claims**

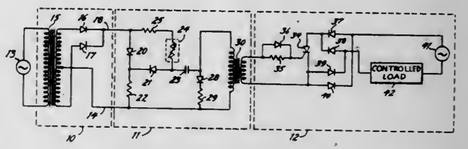


An output amplifier is fed from a load via a F.E.T. pre-amplifier included in switching means for disabling conduction of F.E.T. pre-amplifier during application of certain input signals to the load.

3,671,780
CONTROL CIRCUITS

Peter Lefferts, Hopewell, N.J., assignor to Heinemann Electric Company, Lawrence Township, N.J.

Filed Nov. 24, 1969, Ser. No. 879,173
Int. Cl. H03k 17/00
U.S. Cl. 307—252 UA **14 Claims**

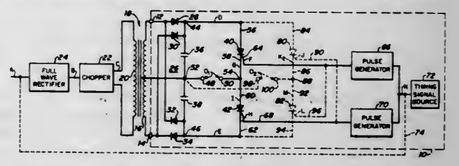


Circuits for generating a control pulse in response to a change in an external condition, by charging a capacitor from a pulsating direct current source over a substantial part of the source pulsation and discharging the capacitor rapidly near the zero crossover point of the pulsation. Subsequently the control pulse is applied to a power switching device, in particular the cathode terminal of a controlled rectifier.

3,671,781
WAVEFORM RESTORER CIRCUIT

Donald W. Shute, Burlington, Mass., assignor to Spacetac Incorporated, Burlington, Mass.

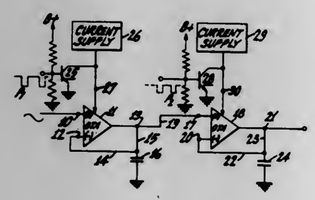
Filed July 8, 1970, Ser. No. 53,086
Int. Cl. H03f 3/38; H03k 5/13, 17/56
U.S. Cl. 307—252 W **10 Claims**



Apparatus is disclosed including a waveform restoring circuit for extracting portions of a fundamental waveform from a

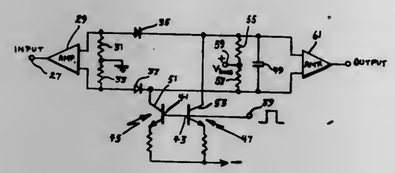
composite waveform and combining those portions to reproduce the fundamental waveform, including means for producing a series of pulses from the composite waveform, each pulse representing a portion of the fundamental waveform, switching means for selectively conducting the pulses and synchronized control means for driving the switching means to conduct the pulses in a predetermined pattern for reconstructing the fundamental waveform.

3,671,782
SAMPLE-HOLD AND READ CIRCUIT
Harold Allen Wittlinger, Pennington; Carl Franklin Wheatley, Jr., Somerset, and Russell Daniel Knapp, Somerville, all of N.J., assignors to RCA Corporation
Filed Dec. 1, 1970, Ser. No. 93,965
Int. Cl. H03k 17/00
U.S. Cl. 307—238 6 Claims



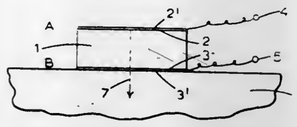
A sample and hold circuit using a first and second operational transconductance amplifier with a voltage storing device connected in circuit between the first and second amplifiers. A sample of the amplitude level of an input signal is stored in the storage device at predetermined times when the first amplifier is rendered operative. The sampled level is provided at the circuit output terminal at other predetermined times when the second amplifier is rendered operative.

3,671,783
SAMPLE AND HOLD CIRCUIT
Daniel Hampel, Westfield, and Joseph Bryan Lerch, North Brunswick, both of N.J., assignors to The United States of America as represented by the Secretary of the Air Force
Filed June 15, 1971, Ser. No. 153,309
Int. Cl. B03k 5/00; H03k 5/20
U.S. Cl. 307—238 2 Claims



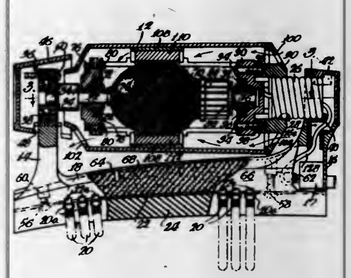
A balanced sample and hold circuit in which a pair of transistors control the bias on a pair of diodes and these transistors are activated by pulses applied to the bases thereof. The diodes connect the input signals to the output terminals and there is a holding capacitor in shunt with the output terminals. Resistors are connected across the input terminal to provide a load when the circuit is in the off condition.

3,671,784
PIEZO-ELECTRIC TRANSDUCERS HAVING VARIABLE SENSITIVITY BETWEEN THE BOUNDARIES OF THE PIEZO-ELECTRIC CRYSTAL
Richard Frank Mitchell, Cambridge, England, assignor to U.S. Philips Corporation
Filed July 23, 1970, Ser. No. 57,549
Claims priority, application Great Britain, July 29, 1969, 38,052/69
Int. Cl. H01v 7/02; H04r 17/00
U.S. Cl. 310—9.5 7 Claims



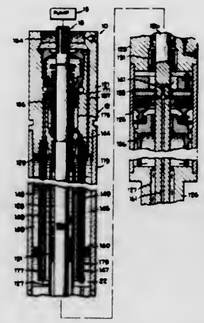
An acoustical transducer having an improved electrical impedance at the lower end of the useful acoustical passband comprises a body of material in which a stress is produced by the application of a magnetic or electrical field. The body of material has a first boundary substantially free of acoustical boundary, a second boundary acoustically matched to an acoustic wave transmission media and means for producing an electrical field stress in the material which will propagate from the first boundary to the second boundary with the stress decreasing in a substantially continuous manner along the propagation direction.

3,671,785
ELECTRIC VIBRATORY MASSAGER
Richard C. Fuchs, Milwaukee; Daniel L. Sukow, Grafton, and Dennis P. Wilke, Milwaukee, all of Wis., assignors to Oster Corporation, Milwaukee, Wis.
Filed July 12, 1971, Ser. No. 161,483
Int. Cl. H02k 7/06
U.S. Cl. 310—50 16 Claims



An improved electric hand-held vibratory massager is disclosed in which the brush holders for the massage are made of plastic, and the connectors for supplying electricity to the brushes are integrally molded into the plastic brush holders. The input power line is connected to the base of the massager and the electrical leads from the brush holders to the base pass through the vibratory spring that supports the motor on the base and then down through the standard that supports the spring whereby the amount of strain that the lead wires to the brushes must withstand is substantially reduced.

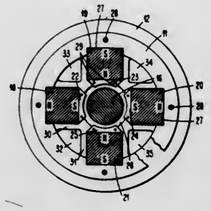
3,671,786
MOTOR AND SEAL SECTION UTILIZING A FLUORINATED ETHER AS A SINGLE, HOMOGENOUS, BLOCKING COOLING AND LUBRICATING FLUID
Johnny W. Jones, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 6, 1970, Ser. No. 52,490
Int. Cl. H02k 5/12
U.S. Cl. 310—87 5 Claims



A submersible motor and seal section containing a homogeneous lubricating and cooling fluid which, in addition, concurrently blocks the entry of ambient well fluid into the motor. The seal section is in fluid communication with the motor and with the ambient well environment. It accommodates thermal expansion and contraction of the lubricating and cooling fluid experienced due to the intermittent operation of the motor.

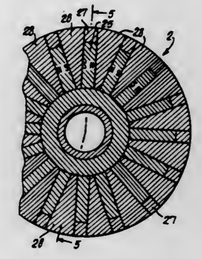
The fluid possesses essential properties of thermal conductivity, dielectric strength, lubricity, compatability with other motor component materials, and immiscibility with well fluid to provide lubrication and cooling of the motor and effective resistance to contamination by ambient well fluid.

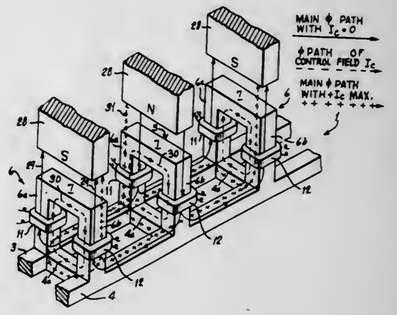
3,671,787
LAMINATED DYNAMOELECTRIC MACHINE HAVING NONMAGNETIC LAMINA FOR STRUCTURAL SUPPORT
Christopher C. Herron, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 16, 1971, Ser. No. 171,821
Int. Cl. H02k 21/26
U.S. Cl. 310—154 14 Claims



A permanent magnet dynamoelectric machine whose housing is formed by a plurality of continuous nonmagnetic lamina which support a plurality of discontinuous magnetic lamina in cooperative relation to permanent magnets. The nonmagnetic lamina structurally defines the machine housing and includes lamina cavities to hold the magnets. The nonmagnetic lamina includes other lamina portions which mount the discontinuous magnetic lamina in cooperative relation to the magnets to define the magnetic flux path and the working air gap.

3,671,788
REGULATABLE ALTERNATOR
Louis I. Knudson; Richard C. Frink, both of Norwich, and Charles H. White, Earlville, all of N.Y., assignors to General Laboratory Associates, Inc., Norwich, N.Y.
Filed Nov. 30, 1970, Ser. No. 93,582
Int. Cl. H02k 21/14
U.S. Cl. 310—156 12 Claims





An alternator comprising a permanent magnet rotor constructed to retain circumferentially polarized permanent magnets in place without substantial stress on the magnet material.

A stator cooperating with the rotor is constructed to permit regulation of the alternator output by the use of a control winding which may saturate part of the magnetic circuit in the stator.

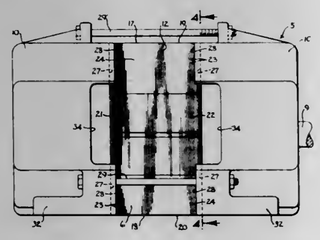
The magnetic structure of the stator includes an annular magnetic circuit means with inwardly projecting teeth. Each tooth is separated into at least two axially separated radial branches. The annular magnetic circuit means and the teeth define magnetic return circuits for the flux from the poles on the rotor. Each pair of axially spaced tooth branches is bridged at its inner and outer ends by magnetic members, which together with the two tooth sections define a magnetic loop circuit. The control winding encircles the stator inside the magnetic loop circuits. Application of current to the control winding produces a flux which cooperates with the alternating flux from the rotor pole to saturate one of the two parallel teeth, while leaving the other unsaturated. Thus, the saturation and hence the reluctance of the magnetic circuit in the stator is controlled but there is always present an unsaturated magnetic return circuit interrupted only by the air gaps at the stator periphery.

3,671,789
SYNCHRONOUS RELUCTANCE MOTORS HAVING ROTOR SEGMENTS OF EXTENDED POLE SPAN
Robert W. Menzies, Winnipeg, Manitoba, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada
Filed Jan. 19, 1971, Ser. No. 107,640
Int. Cl. H02k 19/06
U.S. Cl. 310—163 8 Claims



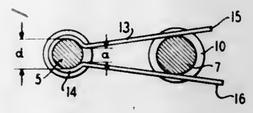
In reluctance motors having rotors with segmentally disposed, axially extended, radially laminated stacks of steel strips carried on a conducting core, improved synchronous performance and increased asynchronous torque are achieved when the rotors are modified to associate only one segmental body with each pair of adjacent MMF poles of the stator field. The modification is actually a simplification, namely the span of each segmental body is peripherally extended to nearly the span of two adjacent stator poles, whereby the steel laminae carry a higher peak magnetic flux centered on the strips lying at the radial mid-depth position of a stack. A higher total flux is also realized and the flux distribution in the air gap is more nearly sinusoidal, lacking the gaps characterizing flux patterns of prior art rotors. Odd-numbered harmonic coefficients of the flux distribution are thus minimized. Considerable savings in construction are also realized. Motors are described ranging from one pair of rotor poles up to four pairs, although the invention extends to any practicable higher pole numbers.

3,671,790
LOW-SHAFT, LOW-PROFILE ELECTRIC MOTOR
John C. Widstrand, Wausau, Wis., assignor to Marathon Electric Manufacturing Corporation, Wausau, Wis.
Filed April 26, 1971, Ser. No. 137,268
Int. Cl. H02k 1/26
U.S. Cl. 310—216 8 Claims



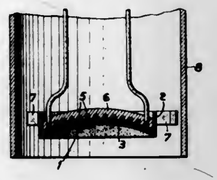
A two-pole induction-run motor can have asymmetrical poles at opposite sides of a horizontal plane on its axis. All stator core laminations are identical, generally octogonal in outline, with straight, parallel top and bottom edges, straight side edges, and intermediate edge portions curved on a uniform radius about the motor axis. The end bells have uniplanar shoulders, normal to the bearing axis, that engage the flat end surfaces of the stator core and have axially inward tongue-like projections that snugly engage the rounded surfaces on the stator core for end bell and bearing coaxiality.

3,671,791
WIPER AND SLIP RING ASSEMBLY
Erwin Muller, and Dino Bettini, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed March 16, 1971, Ser. No. 124,706
Claims priority, application Germany, March 20, 1970, G 70 10 427.7
Int. Cl. H02k 13/00
U.S. Cl. 310—219 3 Claims



Synchro sliding springs of hairpin shape, the closed end of which is in the form of a ring that surrounds the greater part of its supporting pin and whose elastic opening is a little smaller than the actual diameter of the support pin.

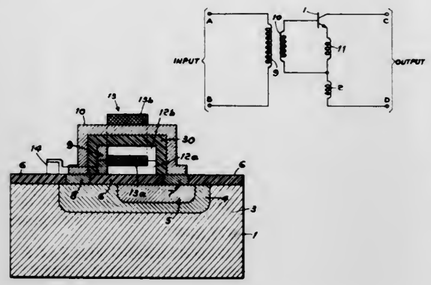
3,671,792
FAST WARM-UP INDIRECTLY HEATED CATHODE STRUCTURE
Clayton L. Waltermire, Easton, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Oct. 29, 1969, Ser. No. 872,323
Int. Cl. H01j 1/20, 19/14
U.S. Cl. 313—337 8 Claims



A tungsten heater, covered with a thin alumina layer (about 1 mil), is potted inside a molybdenum cathode cup in a sintered mass formed from a mixture of fine particles (of the order of 1–5 microns) of molybdenum and nickel in the weight ratio of at least 40 percent molybdenum, but preferably about 90 percent moly. The emissive surface of the cup has a matrix of sintered nickel carbonyl filled with alkaline earth metal emissive oxides. The cup is supported by invar struts.

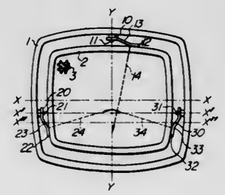
The processing includes: (1) preparing a sintered nickel carbonyl matrix layer for the emissive surface of the cup; (2) ball-milling molybdenum-nickel mix with butyl carbitol, and after covering the heater therewith, inserting the heater in the cup, firing the assembly in hydrogen at between 1,150° to 1,350° C until sintered; and (3) impregnating the nickel carbonyl matrix with a mix of alkaline earth carbonates in methyl alcohol and using heat and ultrasonic vibration to compete impregnation. After assembly in tubes, activation and aging follows.

3,671,793
HIGH FREQUENCY TRANSISTOR STRUCTURE HAVING AN IMPEDANCE TRANSFORMING NETWORK INCORPORATED ON THE SEMICONDUCTOR CHIP
Robert M. Scarlett, Palo Alto, Calif., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Sept. 16, 1969, Ser. No. 858,257
Int. Cl. H01l 11/00, 15/00
U.S. Cl. 317—235 R 7 Claims



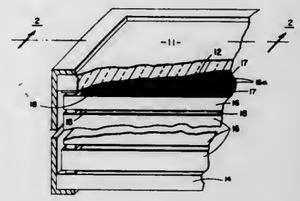
This is a semiconductor component having an active semiconductor device formed within a substrate, and an impedance transforming network incorporated on said substrate and coupled to said device so as to reduce the effect of the device lead inductance which is common to both a circuit input and output.

3,671,794
SHADOW MASK SUPPORT MECHANISM FOR A COLOR TELEVISION IMAGE TUBE
Hiroto Nakamura; Akira Sato, both of Takatsuki, and Ken-ichi Doi, Kobe, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan
Filed March 20, 1970, Ser. No. 21,422
Claims priority, application Japan, March 24, 1969, 44/24045
Int. Cl. H01j 29/06, 31/20
U.S. Cl. 313—85 S 1 Claim



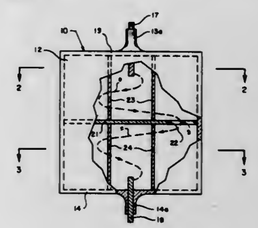
A shadow mask support means including three leaf springs for supporting a rectangular shadow mask on a face panel at three sides of a frame of the mask, said three leaf springs having a predetermined relationship with respect to the spring constant and deflection so that, even when the image tube is subjected to a shock load or the shadow mask in thermally expanded, the change in the relative position of the shadow mask and the face panel is minimized.

3,671,795
HIGH CONTRAST DISPLAY FOR ELECTRON BEAM SCANNER
Lester A. Jeffries, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.
Filed Aug. 28, 1970, Ser. No. 67,711
Int. Cl. H01j 1/70, 63/02
U.S. Cl. 313—109 4 Claims



An electron beam scanner has a broad surfaced target and an area cathode with control electrodes sandwiched therebetween for controlling the electron flow between the cathode and the target. The target comprises a transparent plate member having a phosphorescent coating thereon which emits light through the transparent plate in response to electrons incident thereon, electrons being passed from the cathode to the target through channels formed by alined apertures in the control electrodes. The surface of the control electrode directly opposite the phosphorescent coating on the target is light absorbent such that substantially all of the light passing through the target plate or reflected from the outer surface thereof is absorbed.

3,671,796
PLASMA ARC FLASH SOURCE
Anthony P. Passamante, Oreland, Pa., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 27, 1971, Ser. No. 110,203
Int. Cl. H01j 61/04
U.S. Cl. 313—204 4 Claims



A plasma arc flashtube for flash photography comprises a tube divided into an upper and lower cylindrical chamber by a disc having a peripheral aperture. Arcuate upright partitions in each chamber define a spiral inductive path leading from a central upper electrode through the upper and lower chambers terminating at a central lower electrode.

3,671,797
SPARKGAP CHAMBER WITH ARC STRETCHING TEETH EMBODYING OPTIMUM HEAT SINK MEANS
Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company
Filed March 15, 1971, Ser. No. 124,347
Int. Cl. H01j 29/84
U.S. Cl. 313—325 9 Claims

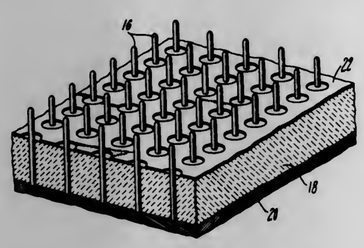
A sparkgap assembly for a surge voltage arrester is provided with arc-elongating teeth and arcing chamber wall means that,

in combination, afford an optimum heat sink arrangement for cooling and extinguishing arcs formed therein by sparkover of the arrester. The characteristic heat sink means of the assembly operates to stabilize its mechanical and thermal



characteristics so that the re-seal voltage of the arrester is increased without developing excessive arrester arc voltage, thus, affording performance characteristics that were not possible with prior art sparkgap assemblies.

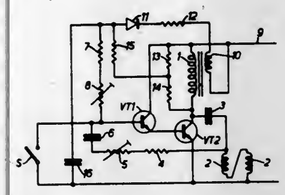
3,671,798
METHOD AND APPARATUS FOR LIMITING FIELD-EMISSION CURRENT
Wayne L. Lees, Lexington, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Continuation of Ser. No. 763,744, Sept. 30, 1968, abandoned.
This application Dec. 11, 1970, Ser. No. 97,343
Int. Cl. H01j *1/16, 19/10*
U.S. Cl. 313—336 10 Claims



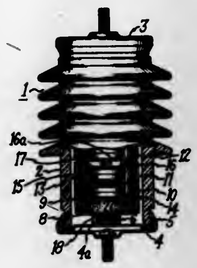
Self-protected electrodes which inherently limit field-emitted currents to a safe value and also stabilize such currents are disclosed. The electrodes are characterized by a plurality of columnar conductors connected at one end to a common potential source. The electrodes are insulated from one another along their lengths whereby the effective or exposed surfaces thereof are subdivided into a mosaic of conducting patches which are insulated from one another.

3,671,799
TELEVISION RECEIVERS UTILIZING TRANSISTORS CONNECTED AS A DARLINGTON PAIR
William Thomas Edwards, Harrow, and James Kirwan, Northwood, both of England, assignors to Communications Patents Limited
Filed Jan. 5, 1970, Ser. No. 566
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD 6 Claims

A transistorized vertical deflection circuit for television receivers is disclosed, where two transistors are connected as a Darlington pair to drive a d-c coupled deflection transformer-choke arrangement and the scan coils. To linearize the scan and control its amplitude two sources of variable d-c are coupled to the input transistor. A first source is rectified signals from the transformer-choke and the second source is the potential of the choke driving transistor.



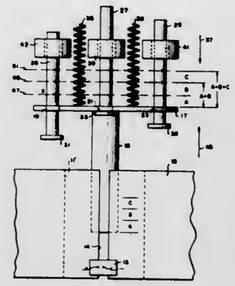
3,671,800
SELF-SUPPORTING LOAD BEARING VOLTAGE GRADING RESISTORS FOR A LIGHTNING ARRESTER
Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company
Continuation of Ser. No. 813,501, April 4, 1969, abandoned.
This application Jan. 11, 1971, Ser. No. 105,724
Int. Cl. H01t *5/04*
U.S. Cl. 315—36 3 Claims



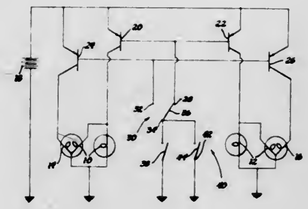
A lightning arrester characterized by having a plurality of self-supporting, semi-annular shaped voltage grading resistors that are adapted to support the weight of spark gap assemblies which are electrically connected in parallel therewith.

3,671,801
MAGNETRON RAPID FREQUENCY CHANGER
Roland C. Masek, Sykesville, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed March 25, 1971, Ser. No. 128,103
Int. Cl. H01j *25/50*
U.S. Cl. 315—39.55 6 Claims

A magnetron is rapidly tuned over a wide bandwidth by inserting and withdrawing a conductive tuning element in an anode cavity. The conductive element is mounted on a plate which is moved in increments by a plurality of solenoids. A stop is mounted on the solenoids and each solenoid when actuated pulls the plate an incremental distance. The plate, when actuated by a single solenoid slides along the other solenoid rods in the solenoid array. A spring pushes the plate against the force of the solenoids and returns the plate to position of maximum element insertion, when the solenoids are de-energized.



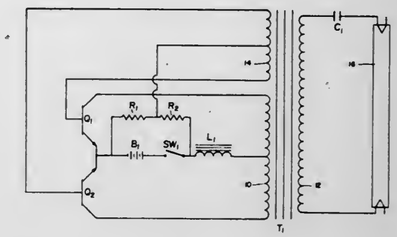
3,671,802
VEHICLE HEADLIGHT CONTROL CIRCUIT USING AN AUXILIARY CONTACT ON THE DIMMER SWITCH
Richard P. Ballou, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 8, 1971, Ser. No. 113,138
Int. Cl. B60q *1/06*
U.S. Cl. 315—83 2 Claims



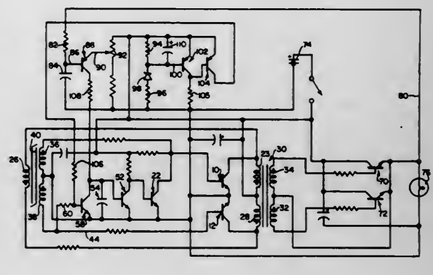
A solid state vehicle lighting control circuit having two control wires connecting the vehicle headlights to the foot dimmer switch and one control wire connecting the foot dimmer switch to the light switch which turns on the vehicle lights by grounding. A set of normally open contacts in parallel with the vehicle light switch is closed during actuation of the foot dimmer switch to illuminate the vehicle lights independently of the position of the vehicle light switch.

3,671,803
PORTABLE SELF-STARTING FLUORESCENT LAMP
Frank E. Hoxie, 8616 S. Atlanta, Tulsa, Okla.
Filed Jan. 28, 1970, Ser. No. 6,342
Int. Cl. H05b *41/29*
U.S. Cl. 315—99 1 Claim

A portable fluorescent lamp including a DC to AC inverter powered by a conventional 12-volt battery utilizing a saturating-type switching transformer having a core which produces a square-loop hysteresis effect. An inductance is provided in the primary winding of the transformer which is connected in circuit with the inverter and a capacitor is provided in series in the secondary with the fluorescent tube. No special starter filaments are needed. The combination of the inductance in the primary and the capacitor in the secondary provide sufficient power for igniting the fluorescent tube while, at the same time, limiting the current through the tube after ignition.



3,671,804
VARIABLE DUTY CYCLE SWTICHING CIRCUIT
Richard D. Church, Candor, N.Y., assignor to American Standard Linear Systems, Inc., Candor, N.Y.
Filed June 25, 1970, Ser. No. 49,802
Int. Cl. G05f *1/58*
U.S. Cl. 315—127 16 Claims

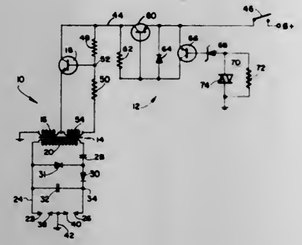


A magnetically coupled multivibrator is normally prevented from running free due to the presence of a forwardly biased transistor which holds the base electrode of one of the two multivibrator transistors below its level of base-emitter conduction. A variable current source charges a capacitor to a voltage level which cuts off the holding transistor and allows the multivibrator circuit to operate for one cycle, during the latter part of which cycle the capacitor is dumped so that the successive cycles are separated in time by that time necessary to charge the capacitor to the required level and which time is variable according to the charging current. The variable duty cycle thus obtained for the multivibrator circuit controls a voltage or power source whose output is fed back inversely to control the charging current so that a regulated voltage or power output is produced.

3,671,805
IGNITION SYSTEM
Gunter G. Schuette, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Jan. 9, 1970, Ser. No. 1,807
Int. Cl. H05b *37/02*
U.S. Cl. 315—209 4 Claims

An ignition system includes a step-up transformer wherein the primary winding is connected to an oscillator circuit to

receive pulses of direct current voltage at a relatively high frequency to cause corresponding high voltage pulses to be developed in the secondary winding thereof. One end of the secondary winding is coupled to a first electrode forming a first spark gap and the other end of the secondary winding is coupled to a secon[illegible]lectrode forming a second spark gap,



and each of the spark gaps includes a common potential electrode. The output of the secondary is accumulated in a high voltage capacitor until a sufficiently high voltage is obtained to cause simultaneous spark discharges at both spark gaps. A voltage regulator circuit is connected in series with the pulsing circuit to regulate the voltage supplied thereto, which, in turn, controls the rate of spark discharge between the spark gaps.

3,671,806

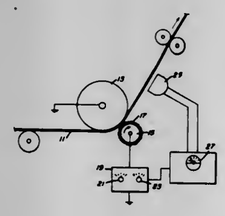
METHOD OF AND APPARATUS FOR APPLYING AN ELECTRICAL CHARGE TO A MOVING SHEET OF FLEXIBLE MATERIAL

Thomas C. Whitmore, Rochester, and Robert G. Cunningham, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 3,434, Jan. 16, 1970, abandoned. This application Nov. 20, 1970, Ser. No. 91,342

Int. Cl. H05f 3/00

U.S. Cl. 317—2 R **4 Claims**



A sheet of flexible material such as photographic film or paper is passed between a pair of rollers of electrically conducting material. One roller is connected to ground, and there is applied to the other roller a direct current voltage of magnitude and sign such as to develop a desired electrical charge condition on the sheet. Advantageously, the other roller has a soft yielding coat thereon of an electrically partially conducting material such as surfactant-treated plush cloth which improves contact with the sheet and prevents sparking if the two rollers should come into contact with one another. The sheet can be in the form of a continuous web or an individual sheet of small dimensions which has been chopped from a web. The electrical charge on a sheet can be monitored by an electrostatic field meter or volt meter, and the sign and magnitude of the applied voltage can be regulated to maintain the desired charge condition. When the sheet of flexible material has a coating of electrically conductive material such as carbon, aluminum, silver or gold on one side it is not necessary to employ the grounded roller adjacent to the charged roller. Instead, the charged roller engages a first side of the sheet opposite the second side carrying the electrically conductive coating, and the second side subsequently passes over a grounded roller such as an idler roller.

3,671,807

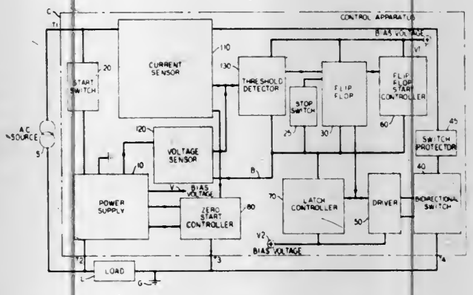
CONTROL APPARATUS

Lee J. Milligan, Fairfield, N.J., assignor to Peripheral Systems Corp., Fairfield, N.J.

Filed Dec. 7, 1970, Ser. No. 95,579

Int. Cl. H02h 7/00

U.S. Cl. 317—11 A **8 Claims**



Apparatus for controlling the application of power from an alternating current source to a load. The apparatus includes a high power triac switch that is in circuit with the source and the load is operated from a flip-flop by a low level start switch. Closure of the start switch enables a power supply which applies bias to the flip-flop and operates a controller to provide a common potential return for the flip-flop and other constituents when the magnitude of the alternating current source signal is below a prescribed level. This triggers the triac to establish a low impedance path between the source and the load. Excess voltage and current conditions are sensed to cause a change in states of the flip-flop and turn off the triac switch when either an overcurrent or an overvoltage condition is encountered.

3,671,808

ATTACHMENT FOR MAGNETIC STARTERS TO PROTECT THREE-PHASE ELECTRIC MOTORS

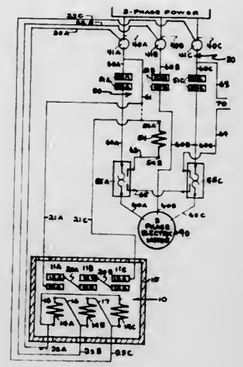
Frank C. Martin, 2325 North 70th Avenue, Omaha, Nebr.

Filed Sept. 18, 1970, Ser. No. 73,532

Int. Cl. H02h 7/085

U.S. Cl. 317—13 R **2 Claims**

This invention provides a small, simple and extremely inexpensive electric motor protector that can be quickly attached and become a part of the circuitry of a conventional magnetic starter, and can thus exert an on/off control over the magnetic starter and the 3–phase electric motor to which said magnetic starter is connected under certain conditions. By the arrangement and connection of two or more magnetic relays which are the components of this electric motor protector, it allows the electric motor to run as long as all three power phases are actively available to the magnetic starter. In the event that any one of the three power phases is lost, due to a blown fuse or other problem, all three phases are shut off, as is the electric motor. As a result, this motor protector positively eliminates



dangerous and destructive single-phasing of the motor (operation on the two remaining phases).

3,671,809

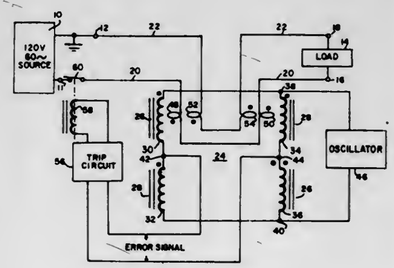
GROUND FAULT DETECTOR INCLUDING MAGNETIC AMPLIFIER BRIDGE MEANS

John T. Ryan, Hyde Park, and Jeffrey D. Ingalls, Lynn, both of Mass., assignors to GTE Sylvania Incorporated

Filed Nov. 1, 1971, Ser. No. 194,391

Int. Cl. H02h 3/16

U.S. Cl. 317—18 D **13 Claims**



A protective device for detecting abnormal leakage current to ground in an electrical circuit energized through two or more conductors connected to an AC source, one of the conductors being grounded at the source. The device comprises a magnetic amplifier having a pair of reactor cores upon which a plurality of gate windings are arranged to form a balanced inductance bridge. An oscillator is connected across the bridge to apply a carrier signal at a frequency many times higher than the frequency of the AC source, and the bridge output is connected through a peak detector and amplifier to drive the solenoid of a circuit breaker. Each supply line conductor of the monitored circuit is wound about both the reactor cores with the sense of each windings being arranged to provide a net magnetic flux of zero when equal currents are flowing through each conductor. In this manner the magnetic amplifier provides at the bridge output a null signal during normal current conditions and an error signal voltage in the presence of a current imbalance between the conductors.

3,671,810

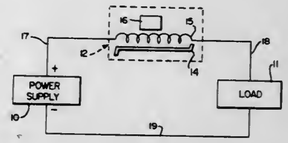
SATURATED CORE TRANSIENT CURRENT LIMITER

Lell E. Barnes, N. Caldwell, N.J., and David Morris, Brooklyn, N.Y., assignors to The Singer Company, New York, N.Y.

Filed Sept. 18, 1969, Ser. No. 859,025

Int. Cl. G05f 3/06

U.S. Cl. 317—20 **5 Claims**



A transient current limiting device which includes a saturated core reactor having its windings in circuit with a power supply and a load. The magnetic core is biased into saturation for normal load currents and driven out of saturation by abnormally high transient load currents, such as currents caused by semiconductor loads which have been irradiated by high energy electromagnetic radiation. In one embodiment, the reactor comprises a magnetic core in the form of a wound toroid which exhibits a square loop hysteresis curve and includes a permanent magnet for biasing the core into saturation. A number of configurations are disclosed for placement of the permanent magnet relative to the core to saturate the magnetic element. The invention also permits automatic resetting of the magnetic flux density in the core to saturation when the abnormal load current is removed.

3,671,811

DIODE MATRIX CARD

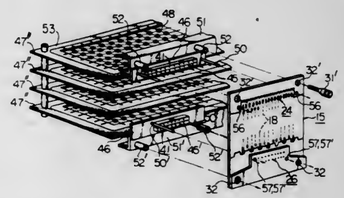
Joichiro Ezaki, Funabashi, Japan, assignor to TDK Electronics Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 856,058, Sept. 8, 1969, abandoned. This application June 30, 1971, Ser. No. 158,453

Claims priority, application Japan, Sept. 16, 1968, 43/80727

Int. Cl. H05k 1/04

U.S. Cl. 317—101 D **4 Claims**



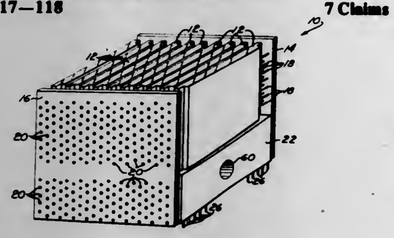
A coupling system of the diode matrix card to the memory assembly plane. The diode matrix card including a number of diodes loaded at a high density on a surface of an insulating base board and a printed circuit for inter connecting on the other surface selective ones of the diodes, as well as a grounding pattern plated on at least a surface of the boards as spaced from the printed circuit, is provided with a pair of connector-pin groups on a base board surface respectively connected to the printed circuit. A pair of separate connector means are preliminarily mounted to the memory assembly plane so as to be connected to memory driving lines in the memory matrix. A pair of grounding frame means are also mounted to the assembly plane substantially at the same position as the connector means. The diode matrix card is mounted to the grounding frame means with fixing screws so that the grounding pattern and the connector pin groups on the card are electrically con-

nected to the grounding means and the connector means on the assembly plane side simultaneously.

3,671,812
HIGH DENSITY PACKAGING OF ELECTRONIC COMPONENTS IN THREE-DIMENSIONAL MODULES

Raymond F. Peluso, and Richard F. David, both of Littleton, Colo., assignors to Martin Marietta Corporation, Friendship International Airport, Md.

Filed July 1, 1970, Ser. No. 51,442
Int. Cl. H02b 1/04; H05k 1/14
U.S. Cl. 317—118 7 Claims

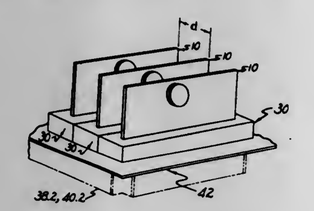


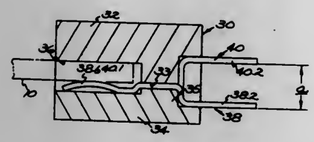
A high density three-dimensional package of flatpacks in which the flatpacks are stacked in a cordwood configuration and in which rigid pins carried at opposite ends of each flatpack are plugged into appropriate sockets in circuit boards in a pressure fit relationship. A double right angle connector is also plugged into the circuit boards. Each of the flatpacks may be removed, replaced or repaired by merely unplugging it from the circuit boards. A combined housing and heat sink is also disclosed.

3,671,813
PANEL BOARD SYSTEM AND COMPONENTS THEREOF WITH CONNECTOR AND INTEGRATED CIRCUIT DEVICE

Russell E. Wilcox, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1970, Ser. No. 96,809
Int. Cl. H05k 1/07
U.S. Cl. 317—118 6 Claims



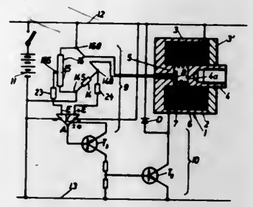


A panel board system detachably mounts medium scale integrated circuit devices in connectors on a panel board in a manner which provides improved device density on the board while permitting the device circuits to be electrically interconnected by inexpensive wire-wrapping techniques. The integrated circuit devices have an integrated circuit chip mounted on a ceramic card and electrically connected to printed circuit paths on the card, the circuit paths terminating with small center-to-center spacings between the paths along an edge of the card. The connectors receive edges of the cards and have contacts on small center-to-center spacings detachably engaging respective circuit path terminations along the card edges. The connector contacts have terminal posts which extend from the connectors through panel board apertures, the contact terminal posts extending in a selected staggered relation to each other to provide sufficiently large center-to-center spacings between the posts to permit wire-wrap connections to be made to each post without interference with adjacent terminal posts extending through the panel board.

3,671,814
ELECTROMAGNET WITH A FIELD-RESPONSIVE CONTROL SYSTEM

Heinrich Dick, Heidenheim, Germany, assignor to Voith Getrieb KG, Heidenheim (Brenz), Germany

Filed April 22, 1971, Ser. No. 136,397
Claims priority, application Germany, April 22, 1970, P 20 19 345.7
Int. Cl. H01h 47/32
U.S. Cl. 317—123 7 Claims

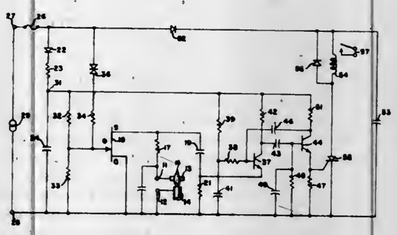


In an electromagnet, to generate a force which is independent from the armature position, an on-off control system for the excitation current is provided which operates as a function of the magnetic field intensity. The control system causes the excitation current to oscillate between two values and thus have a constant mean value according to a preset desired value. The timelag of the inductivity or its change between two close values is utilized for measuring the magnetic flux density and for a comparison with a desired value.

3,671,815
FLAME DETECTION APPARATUS

Arthur C. Eberle, and Lee H. Darby, both of Columbus, Ohio, assignors to Columbia Gas System Service Corporation, Wilmington, Del.

Filed June 20, 1972, Ser. No. 143,326
Int. Cl. H01h 47/26
U.S. Cl. 317—133.5 5 Claims



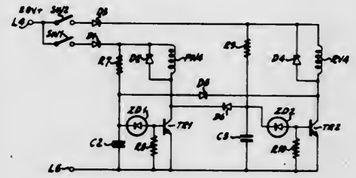
A gas flame produces a voltage between the burner and an electrode in the flame. This voltage is utilized in a circuit

which produces a pulse signal to control a relay that indicates flame presence. Failure of any critical component in the circuit prevents the relay from operating.

3,671,816
TIME DELAY CONTROL SYSTEM FOR DIRECTIONAL RELAYS WITH ELECTRICAL INTERLOCK

Gerald R. Ritzow, Racine, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed May 21, 1970, Ser. No. 39,414
Int. Cl. H01h 47/22
U.S. Cl. 317—136 3 Claims

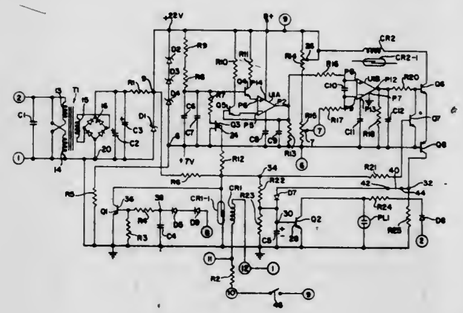


A solid state control circuit for completing selectively energizing circuits for the operating coils of directional relays in a motor control system which affords a predetermined time delay on energization for each relay, and electrical lockout against simultaneous energization of one relay operating coil while the other remains energized and vice versa.

3,671,817
HIGH ACCURACY SOLID STATE TIMER

William H. Scipp, Bettendorf, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 33,851, May 1, 1970, abandoned. This application Dec. 28, 1970, Ser. No. 101,598
Int. Cl. H01h 47/18
U.S. Cl. 317—141 S 20 Claims

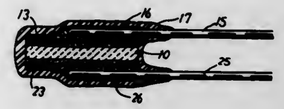


A timer circuit consists of a resistance-capacitor charging network with an adjustable potentiometer providing a predeterminable comparison voltage according to the length of time desired and operational amplifier connected as a comparator between the capacitor and the potentiometer providing current gain and high input impedance to prevent loading the capacitor. The non-inverting input of the operational amplifier is coupled to the capacitor and the output of the operational amplifier is fed back to the inverting input of the operational amplifier. A field-effect transistor is provided for discharging the capacitor to zero at the end of the timing cycle in order to avoid the effect of discharge potential difference of other types of discharge devices. A supplemental circuit is provided for illuminating a pilot light precisely during the time that the charging cycle is going on.

3,671,818
SEMICONDUCTIVE CERAMIC CAPACITOR

Minoru Chiba, Kyoto, Japan, assignor to Nichicon Capacitor Ltd., Kyoto, Japan

Division of Ser. No. 807,734, March 17, 1969, Pat. No. 3,570,113. This application July 27, 1970, Ser. No. 64,886
Int. Cl. H01l 7/06
U.S. Cl. 317—230 3 Claims



A semiconductor ceramic capacitor having a thin layer containing copper on at least one surface portion of a substrate formed of N-type barium titanate containing a small quantity of a rare earth element and a coating containing frit, lead, and powdered silver or silver oxide with the lead, silver and copper being diffused into said substrate and a conductive layer on another surface portion of said substrate to form said capacitor. The invention further provides a method of manufacturing the foregoing capacitor which is made by applying said copper layer and said layer containing frit, lead, and silver in overlying relationship and heating said substrate and layers in an oxidizing atmosphere.

3,671,819
METAL-INSULATOR STRUCTURES AND METHOD FOR FORMING

John G. Swanson, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 26, 1971, Ser. No. 109,846
Int. Cl. H01l 7/24
U.S. Cl. 317—234 16 Claims



Metal-insulator structures and methods for forming such structures wherein a substrate comprising a metallic material, which in the presence of an electrolyte under anodic conditions forms a porous oxide coating, such as aluminum, is completely anodized at selected areas to form insulating areas through the substrate. Also backing layers and masking layers comprising a material which forms a passivating coating in the presence of the electrolyte under anodic conditions, such as titanium, may be deposited on the substrate for controlling the anodization process.

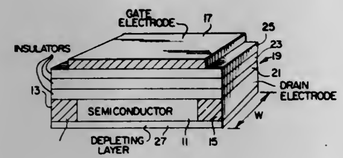
ERRATUM

For Class 317—235 see:
Patent No. 3,671,793

3,671,820
HIGH VOLTAGE THIN-FILM TRANSISTOR

Rudolph R. Haering, 647 Croydon Place, North Vancouver, British Columbia, Canada, and John F. O'Hanlon, RD 1, Box 41, Birdsall Dr., Yorktown Heights, N.Y.

Filed April 27, 1970, Ser. No. 32,252
Int. Cl. H011 5/06, 3/00, 3/20
U.S. Cl. 317—235 R 14 Claims

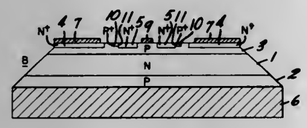


A high-voltage thin film field effect transistor has increased drain-source electrode separation and increased insulating layer thickness to avoid breakdown at high voltages. The insulating layer contains an electron-depleting film and an electron-enhancing film so that the offset voltage may be kept sufficiently low. The surface of the semiconductor layer opposite that in contact with the insulating layer is contacted by an electron-depleting layer to avoid shunt current conduction via this surface.

3,671,821
SEMICONDUCTOR CONTROLLED RECTIFIER INCLUDING TWO EMITTER REGIONS

Josuke Nakata, and Ryuji Denda, both of Itami, Hyogo Prefecture, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1971, Ser. No. 147,909
Claims priority, application Japan, June 2, 1970, 45/47392
Int. Cl. H011 9/12
U.S. Cl. 317—235 4 Claims



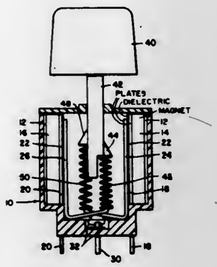
A semiconductor controlled rectifier is provided on its main surface having a gate electrode with first and second emitter layers separated from one another by a common base layer. The second emitter layer is disposed between the first emitter layer and the gate electrode. The device further comprises a high impurity concentration semiconductor layer of the opposite semiconductivity type to that of the second emitter layer. The high impurity concentration layer is disposed between the first and second emitter layers and adjacent to the second emitter layer.

3,671,822
VARIABLE CAPACITIVE APPARATUS

Theodore M. Leno, Arlington Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 17, 1970, Ser. No. 99,186
Int. Cl. H01g 5/10
U.S. Cl. 317—249 R 18 Claims

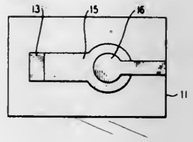
A variable capacitance apparatus particularly adapted for use with a manually-operated keyboard and having two parallel, conductive plates with a dielectric therebetween. Depression of a key moves one conductive plate farther from the other conductive plate so as to reduce the capacitive coupling between the conductive plates, in order to determine whether the key has been depressed.



3,671,823
THIN FILM CAPACITOR INCLUDING AN ALUMINUM UNDERLAY

Raymond Charles Pitetti, Wescosville, and Walter Worobey, Center Valley, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,788
Int. Cl. H01g 1/01
U.S. Cl. 317—258 6 Claims



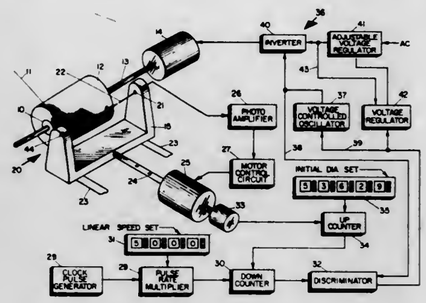
The use of an aluminum film beneath the tantalum anode of a tantalum thin film capacitor results in a significant enhancement in the frequency response of the capacitor and a lower dissipation factor at frequencies above 10 kilohertz than normally evidenced by devices not including the aluminum film.

3,671,824
SPEED CONTROL SYSTEM FOR A ROTATING ELEMENT OF CHANGING DIAMETER

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company

Filed Dec. 3, 1970, Ser. No. 94,756
Int. Cl. B65h 59/38
U.S. Cl. 318—6 8 Claims

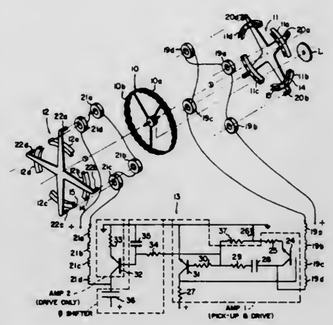
A photoelectric sensing assembly is used to monitor the diameter of material accumulating on a windup bobbin. The sensing assembly physically tracks the changing diameter and in so doing generates position signals representing the diameter. A digital system generates a pulse train for controlling the speed of rotation of the bobbin drive means and the repetition rate of this pulse train is controlled by the position signals and prescribed peripheral speed input data.



3,671,825
TIMING MOTOR WITH RESONANT MEMBERS

William W. Allison, Melville, N.Y., assignor to Armec Corporation, Huntington Station, N.Y.

Filed Aug. 7, 1970, Ser. No. 62,104
Int. Cl. H02k 33/00
U.S. Cl. 318—128 19 Claims



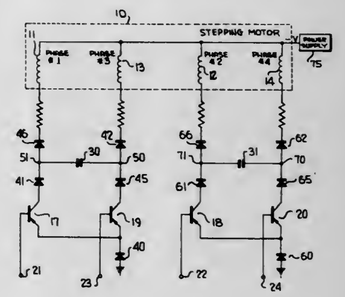
A D.C. energized timing motor with one or more resonators, having a plurality of coordinately moving arms, all magnetically coupled to the rim of a rotor and in which the motion of the resonator arms drives the rotor with driving force being applied in each quadrant of the rotor without retarding torque and in which the magnetic coupling between rotor and resonator is at no time released.

3,671,826
STEPPING MOTOR DRIVER

Harold R. Newell, South Newbury, N.H., assignor to Mesur-Matic Electronics Corp., Warner, N.H.

Filed Sept. 11, 1969, Ser. No. 857,158
Int. Cl. H02k 37/00
U.S. Cl. 318—138 6 Claims

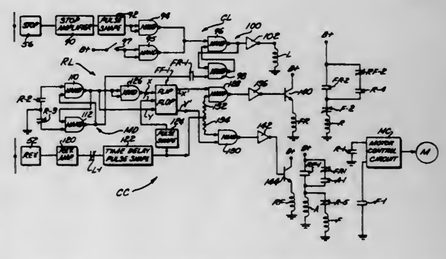
A driver circuit for controlling the excitation of windings of a multiphase stepping motor according to a sequential switching format includes a plurality of phase activation circuits each associated with a respective one of the windings. The activation circuits are coupled together in pairs and contain active elements arranged to perform in the manner of a flip-flop in response to the switching format so that first one and then the other excites its respective winding in complementary fashion, in that when one of the windings associated with the pair of activation circuits is on, the other is off, and vice versa. An electrical energy storage device is associated with and coupled to each pair of activation circuits for storing energy from the power supply and from the collapsing magnetic field of the de-energized winding, and for supplying the stored energy to the windings in the proper sequence during predetermined portions of the switching format, thereby raising the average current to the windings and the torque on the shaft.



3,671,827
DIRECTION REVERSING CONTROL FOR A MACHINE CONTROL SYSTEM

Richard G. Foley, Dayton, and James E. Murray, University Heights, both of Ohio, assignors to Harris-Intertype Corporation, Cleveland, Ohio

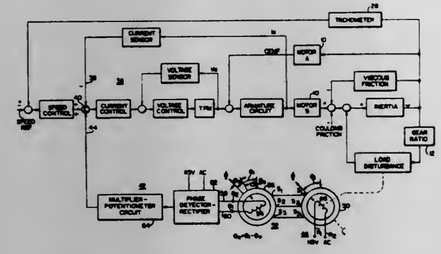
Filed Nov. 27, 1970, Ser. No. 93,375
Int. Cl. G05b 19/02
U.S. Cl. 318—162 17 Claims



A machine control system, such as a control for a paper cutting machine, is provided for purposes of reversing the direction of travel of a movable member, such as a back gauge in a paper cutting machine, driven by a reversible motor between forward most and rearward most positions relative to a work station. A control record has two spaced marks recorded thereon for defining the forward most and rearward most positions. A mark sensor serves to sense the marks and in response to each mark provides a reverse signal pulse. Relative motion is provided between the control record and the sensor proportional to the velocity of the movable member. A memory is actuated to one of two stable states in dependence upon the direction the movable member is traveling when a

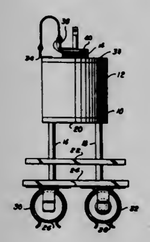
reverse mark is sensed. The commanded condition of the memory together with the occurrence of a reverse signal pulse generated in response to the sensed reverse mark, causes the motor to reverse and drive the movable member in the opposite direction. In addition, circuitry is provided to prevent the motor from reversing in response to a reverse mark when the movable member is traveling in a backward direction until a position command signal, also recorded on the control record, is sensed by a second sensor.

3,671,828
METHOD AND CONTROL SYSTEM FOR D.C. ELECTRIC MOTOR DRIVE MEANS
John H. Geffken, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed April 21, 1970, Ser. No. 30,500
Int. Cl. H02p 5/06
U.S. Cl. 318—164 **4 Claims**



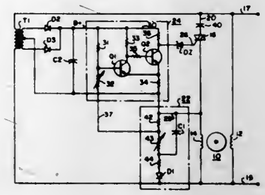
This disclosure relates to a method and a control system for a d.c. electric motor drive coupled to an oscillating load for the dual purposes of regulating the periodic velocity of the oscillating load in conformance with a predetermined function, and for the purpose of controlling the magnitude of the velocity excursion. A first component of armature current is applied to the electric motor drive for maintaining the motor speed constant, independently of cyclic perturbations in the load, and a second component of armature current is applied to the drive motor to provide a periodically variable disciplinary torque to compel the velocity excursions of the load to comply with the predetermined velocity patterns.

3,671,829
MOVING COIL DIRECT RECIPROCATING MOTOR
Joseph W. Mathews, 3752 Swansea Dr., Mobile, Ala.
Continuation-in-part of Ser. No. 858,942, Sept. 18, 1969, Pat. No. 3,575,649, which is a continuation-in-part of Ser. No. 542,116, April 12, 1966, Pat. No. 3,469,163. This application July 9, 1970, Ser. No. 53,510
Int. Cl. H02k 33/02
U.S. Cl. 318—128 **12 Claims**



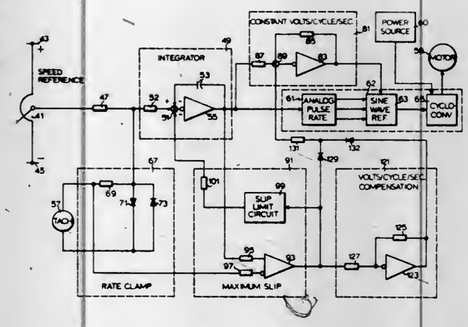
A direct current reciprocating motor having a coil moving in a magnetic field and a circuit for controlling the flow of current through the coil from a d.c. source in accordance with an alternating flux produced by reversal of direction of current flow through the coil to produce reciprocating movement of the coil. A capacitor whose state of charge varies as a function of the back EMF generated by the coil is connected for controlling the conductivity state of at least one of the transistors as a function of the capacitor's state of charge.

3,671,830
SINGLE PHASE MOTOR STARTING CONTROL APPARATUS
Andrew P. Kruper, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 24, 1970, Ser. No. 49,397
Int. Cl. H02p 1/44
U.S. Cl. 318—221 E **5 Claims**



A starting circuit for a single phase electric motor, particularly a capacitor start motor, is provided that includes a solid state switch connected in series with the motor starting winding and the capacitor for controlling the supply of power to the starting winding in accordance with switching signals that are developed by a triggering circuit one of whose inputs is a signal proportional to the voltage in the starting winding and is produced by means directly electrically connected across the starting winding. The improved reliability of solid state switching is provided as compared with mechanical relays as has previously been used. Pull in and drop out points may be readily set.

3,671,831
INDUCTION MOTOR SPEED CONTROL
Burnette P. Chausse, and Charles E. Konrad, both of Roanoke, Va., assignors to General Electric Company
Filed March 5, 1971, Ser. No. 121,256
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **6 Claims**



A control circuit for regulating the speed of a polyphase induction motor by changing the frequency and voltage level of the supply source supplying power to the motor. The difference between a speed reference signal and an output signal from a closed loop feedback circuit is converted to a sine wave alternating current signal having a frequency which varies with the time integral of the difference. A circuit for amplifying this alternating current signal provides power to the induction motor. A pair of diodes connected in the feedback circuit limits the rate of change of the frequency of the alternating current signal to a value determined by the design of the motor. The voltage amplitude of the alternating current supplied to the motor is adjusted as a function of the frequency and is further adjusted as a function of slip of the motor. Additional adjustment of the volts/cycle/second value of the alternating current supplied to the motor allows for overexcitation of the motor even beyond the design limits of the motor in order to provide the greatest possible torque to maximize the rate of change in speed and direction of the motor.

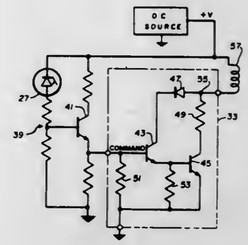
3,671,832
SUPPRESSION OF TORQUE MODULATION IN ELECTRIC MOTOR DRIVE SYSTEMS BY FREQUENCY CONTROL
Jalal T. Salihi, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 6, 1971, Ser. No. 140,843
Int. Cl. H02p 7/42
U.S. Cl. 318—231 **2 Claims**

An electric motor is supplied voltage having a continually varying frequency to obviate cyclic torque pulsations or torque modulation observed to cause vibrations in the motor and load. An AC alternator is connected through a frequency changer with an induction motor in a controlled slip motor drive system including a continually varying slip frequency signal to shift the slip frequency in relation to a nominal value to prevent cyclic torque pulsations. The slip frequency is varied at a rate such that the rotor and load operate at the nominal slip, being incapable of following the changes in input frequency.

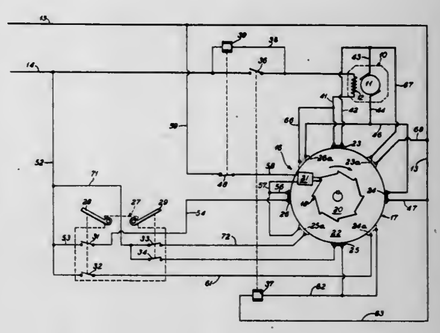
3,671,833
BI-LEVEL ELECTRONIC SWITCH IN A BRUSHLESS MOTOR
Rodney G. Rakes, Bristol, Tenn., assignor to Sperry Rand Corporation
Filed June 24, 1970, Ser. No. 49,413
Int. Cl. H02k 29/00
U.S. Cl. 318—254 **1 Claim**

An electronic switch for driving a load capable of operating in high or low current states includes a pair of transistors arranged in a modified Darlington circuit for switching power to the load. The input and output transistors of the pair are coupled through a diode and adjusted so that the diode is back-biased when the load is in its normal low current condition, but forward-biased when the load requires a high current.

With the diode back-biased, the output transistor saturates at a low voltage level and thus provides a minimum switch power loss at the normal operating point. With the diode forward-biased, however, the switch provides high current capability for driving the load in the high current state.



3,671,834
REVERSER PROTECTIVE CIRCUIT
Roger M. Buckeridge, Downers Grove, Ill., assignor to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed March 9, 1970, Ser. No. 17,599
Int. Cl. H02h 7/097
U.S. Cl. 318—293 **7 Claims**

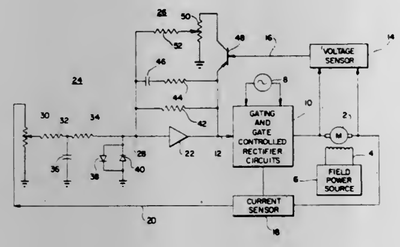


A motor reverser protective electrical circuit for a reversible motor or motors in which a control relay is employed to prevent energization of a reverser activating control circuit whenever the motor is under load. This circuit protects against "throwing" the reverser, primarily in the event a main line relay contactor, supplying power to the motor, is stuck or welded closed.

3,671,835
MOTOR SPEED CONTROL WITH DROOP COMPENSATION

Frederick McMenamy, Bethel Park; Louis A. De More, and Ludwig E. Del Mastro, both of Pittsburgh, all of Pa., assignors, to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 9, 1970, Ser. No. 53,520
Int. Cl. H02p 5/06
U.S. Cl. 318—308 6 Claims

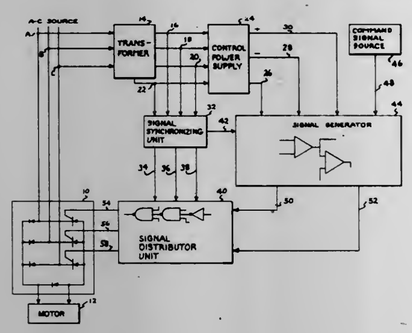


Compensating for droop in load-speed characteristic of a DC motor, an armature current signal, which is indicative of motor load, is amplified to control armature voltage. A negative feedback reduces amplification as armature voltage increases. An operational amplifier has an input related to armature current and a negative feedback responsive to armature voltage. A transistor in the feedback path varies the feedback impedance as a function of armature voltage.

3,671,836
POWER CONVERSION CONTROL SYSTEM

Edwin E. Kolatorowicz, Erie, and Werner K. Volkmann, Fairview, both of Pa., assignors to General Electric Company

Filed March 31, 1971, Ser. No. 129,844
Int. Cl. H02p ; H02m 7/00
U.S. Cl. 318—345 7 Claims

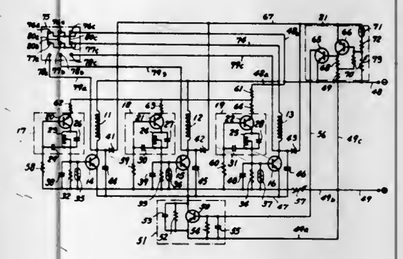


A static power conversion system for converting alternating current electric power to direct current power by means of controllable rectifiers is provided with control apparatus for controlling the firing angle of the controlled rectifier. The control apparatus generates a command signal proportional to a desired level of direct current power output, internal signal trains at various frequencies and timings determined at least in part by the frequency of the alternating current input wave form and the magnitude of the command signal, and output trains of firing pulses for delivery to the controllable rectifiers, the timing of the firing pulses being determined by the magnitude of the control signal.

3,671,837
ROTATION CONTROL CIRCUIT FOR TRANSISTOR MOTOR

Satoshi Kanno, Yamato, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Kanagawa-ku, Japan

Filed Oct. 20, 1970, Ser. No. 82,295
Claims priority, application Japan, Oct. 20, 1969, 44/83240
Int. Cl. H02p 7/28
U.S. Cl. 318—394 5 Claims

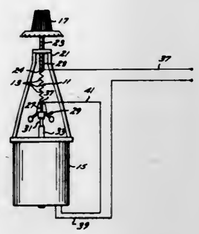


The rotation control circuit comprises a driving circuit performing a switching action to sequentially flow a current to stator windings of a transistor motor and a control switching circuit performing a switching action by a control signal responsive to the rotation speed of a rotor. The control switching circuit acts to perform a current control at the starting time of rotation of the motor and to perform a voltage-current control at the time of constant rotation of the motor.

3,671,838
ELECTRIC MOTOR CONTROL DEVICE

Harold A. McIntosh, South Pasadena, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 805,138, March 7, 1969, Pat. No. 3,577,066. This application March 11, 1971, Ser. No. 123,159
Int. Cl. H02p 3/02
U.S. Cl. 318—471 10 Claims



A motor control device for controlling the speed of an electric motor and including electrical resistor means formed with a plurality of portions disposed in heat exchange relationship with one another and flexible toward and away from one another to adjust the heat exchange rate therebetween, the electrical resistance of the portions being temperature responsive whereby current therethrough is responsive to the temperature thereof. Adjustment means is provided for moving the portions toward and away from one another to adjust the mutual proximity and consequent heat exchange rate therebetween so the electrical current therethrough can be correspondingly adjusted. Electrical circuit means is provided for connecting such resistance means with the motor circuitry.

3,671,839
METHOD AND APPARATUS FOR AUTOMATIC PROGRAMMED CONTROL OF A MACHINE TOOL

Jurgen Meyer, and Gerhard Sautter, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 23, 1970, Ser. No. 74,636
Claims priority, application Germany, Sept. 23, 1969, P 18 03 742.8
Int. Cl. G05b 19/24
U.S. Cl. 318—571 5 Claims

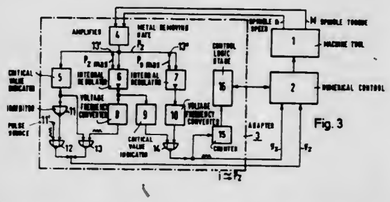


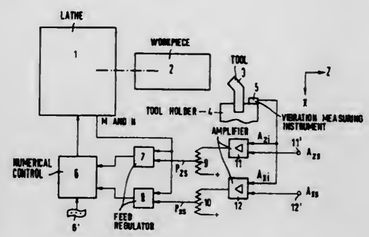
Fig. 3

In a system for programmed control of a machine tool for removal of material from a workpiece, the material removing rate P_z is derived from the speed and torque of the tool or workpiece and the feed velocity V_z is controlled in one direction of movement of the tool or workpiece in dependence upon the material removing rate. A feed velocity V_x is controlled in a direction perpendicular to the one direction in dependence upon the feed velocity V_z and the derivative dP_z/dt.

3,671,840
METHOD AND APPARATUS FOR ADAPTIVE CONTROL OF A TURNING MACHINE

Jurgen Meyer, and Gerhard Sautter, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 23, 1970, Ser. No. 74,637
Claims priority, application Germany, Sept. 23, 1969, P 18 03 742.8
Int. Cl. G05b 19/24
U.S. Cl. 318—571 5 Claims

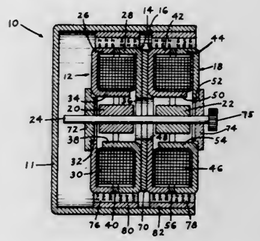


The vibrations of a tool or workpiece are measured during operation to produce vibration signals corresponding to actual vibrations in mutually perpendicular directions. The vibration signals are compared with signals corresponding to datum magnitudes of vibrations in both directions. The work feeding of the tool or workpiece is corrected in accordance with the comparison results.

3,671,841
STEPPER MOTOR WITH STATOR BIASING MAGNETS

Gotfred O. Hoffmann, Cheshire, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Filed May 1, 1970, Ser. No. 33,815
Int. Cl. H02k 37/00
U.S. Cl. 318—696 17 Claims

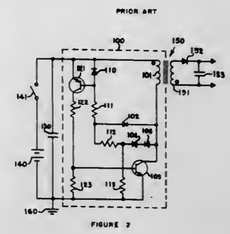


A stepper motor having a pair of field coils, a pair of permanent magnet rotors carried by a single shaft such that their magnetic polarities are displaced ninety mechanical degrees from each other, and two pairs of stator pole pieces. Each pair of stator pole pieces is associated with a separate rotor and a separate field coil. A stationary permanent magnet is mounted on each pair of stator pole pieces, and the magnet generates a bias flux in opposition to the flux of the field coil associated with that pair of pole pieces. When electrical pulses of predetermined polarities are applied selectively to the field coils, there is produced a pre-determined angular advance of the rotor shaft.

3,671,842
BATTERY POWERED EXPLOSIVE SYSTEM WITH RELAXATION OSCILLATION IN CHARGING CIRCUIT

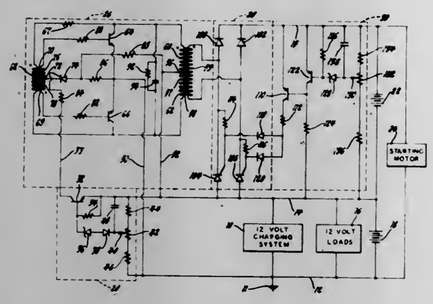
James E. McKeown, Sidney, N.Y., assignor to The Bendix Corporation

Filed March 22, 1971, Ser. No. 126,768
Int. Cl. H03k 3/26; H02m 3/24
U.S. Cl. 320—1 10 Claims



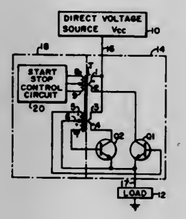
An electrical system for firing an explosive bridge wire device or the like which utilizes a battery powered blocking oscillator and a transformer having its primary winding in the oscillator circuit and its secondary winding in the charging circuit of a capacitor.

3,671,843
DUAL VOLTAGE CHARGING SYSTEM
Gerald O. Huntzinger, Anderson, and Leonard J. Sheldrake, Noblesville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 5, 1971, Ser. No. 140,342
Int. Cl. H02j 7/00, 7/14
U.S. Cl. 320—15 5 Claims



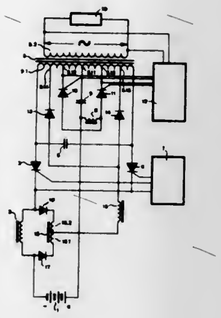
First and second batteries are connected in series between the terminals of a vehicle starting motor. The DC output terminals of a DC generator are connected across the first battery and also across a voltage sensitive switch and the oscillator transformer input stage of a DC to DC converter. The rectifier output stage of the DC to DC converter is combined with a voltage regulator that is connected across a second battery. The voltage sensitive switch renders the input stage of the converter operative when the output of the the generator is greater than a first predetermined voltage and inoperative below. The voltage regulator maintains a second predetermined voltage across the second battery by rendering the output stage of the converter operative to charge the second battery when the voltage thereon is below the second voltage and inoperative above.

3,671,844
DC POWER CONTROLLER WITH STATIC SWITCHING ELEMENTS AND COMMON CURRENT FEEDBACK TRANSFORMER BETWEEN DIRECT VOLTAGE SOURCE AND LOAD
Donal E. Baker, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 24, 1970, Ser. No. 92,348
Int. Cl. H02m 3/32
U.S. Cl. 321—2 5 Claims



Apparatus to control the application of DC power from a source to a load with static (transistor) switching elements driven by a highly efficient drive circuit. A common current feedback transformer is used to drive the switch from the DC load current. This provides base drive current that is proportional to the DC load current and is insensitive to supply voltage variations.

3,671,845
STABILIZED SINE WAVE INVERTER
Walter Bernhard Guggi, Im Boden 265, CH-8172, Niederglatt, Switzerland
Filed July 19, 1971, Ser. No. 163,801
Claims priority, application Switzerland, July 23, 1970, 11309/70
Int. Cl. H02m 1/08
U.S. Cl. 321—20 6 Claims

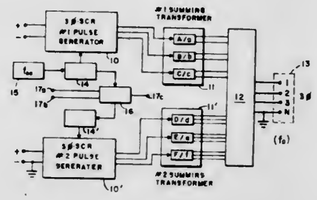


A stabilized inverter transforms direct current into sine-like alternating current by means of SCR current valves operating in conjunction with a tuned LC circuit. Chopped direct current, with alternating polarities, is applied across the primary winding of a transformer which has a commutating capacitor connected in parallel therewith. One terminal of a source of DC potential is connected to the center tap of the primary winding in series with a capacitor serving to separate alternating current and direct current. This source terminal is further connected, through an inductor, in parallel to the anodes of two SCR valves whose cathodes are connected to respective taps spaced symmetrically to either side of the center tap of the transformer primary winding. These two SCR valves are triggered by a phase control circuit connected to the transformer output to apply, to the capacitor connected in series with the DC source, either a positive or a negative charge, of variable magnitude, depending on the setting of the phase control circuit. This capacitor charge is either added to or subtracted from the direct current input voltage in accordance with the status of the latter.

3,671,846
REGULATED POLYPHASE INVERTER SYSTEM
Philip D. Corey, Raleigh, N.C., assignor to Gates Learjet Corporation, Wichita, Kans.
Filed Jan. 20, 1971, Ser. No. 107,933
Int. Cl. H02m 1/12
U.S. Cl. 321—9 A 6 Claims

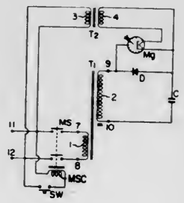
An important class of polyphase inverters employ pulse width modulation in the regulation of the power output voltage level. Such inverters are generally constructed in two symmetrical sections that are interconnected by summing transformers to a common polyphase output. Shifting the relative phase between the signal sets that gate the SCR's of the respective inverter sections correspondingly modulates the width of their resultant square wave pulses. The system output voltage level is correspondingly controlled. The secondary windings of the summing transformers of the present invention are uniquely arranged and interconnected to substantially reduce the

size, weight and cost of the output transformer array. Further, a four-wire three-phase inverter system is directly provided



without an auxiliary transformer that was heretofor required therefor.

3,671,847
POWER SUPPLY FOR DRIVING MAGNETRON
Takashi Shibano, Suita, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 28, 1970, Ser. No. 67,961
Claims priority, application Japan, March 20, 1970, 44/27165
Int. Cl. H02m 7/06; H03b 9/10
U.S. Cl. 321—32 6 Claims

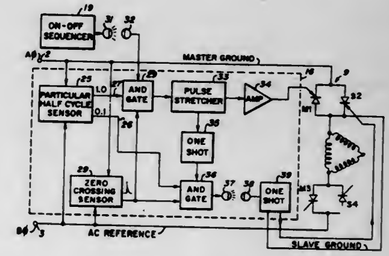


A compact power supply for driving a magnetron to oscillation used for an electronic cooking range. A transformer having a three-legged magnetic core with at least primary, secondary and tertiary windings. The primary winding is divided into two halves, each wound on a separate leg of the core and switching means are provided for changing the direction of the magnetic flux produced by one half of the winding with respect to the other half. The secondary winding is linked by the flux from each half of the primary winding and is arranged to selectively provide the magnetron with high voltage in accordance with the position of the switching means. The tertiary winding, which is arranged to provide voltage to the magnetron heater, is linked to the flux produced by only one of the halves of the primary winding winding regardless of the position of the switching means.

3,671,848
FREQUENCY CONVERSION WITH JOSEPHSON JUNCTIONS
Sidney Shapiro, and Andrew Longacre, Jr., both of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 27, 1971, Ser. No. 175,533
Int. Cl. H02m 5/00
U.S. Cl. 321—69 NL 4 Claims

Josephson junctions are utilized to accomplish frequency conversion—either down conversion or up conversion. The junction is coupled to a resonant cavity and simultaneously irradiated by an external source at frequency f, which differs from the resonant frequency of the cavity f_c. In order for an output to be produced at this frequency, f_c, the voltage bias across the junction must be at one of the values $V=h\ (f_c \pm nf)\ ]2e$, where n is an integer and the absolute value is used since nf may be larger than f_c.

3,671,849
THREE-PHASE POWER CONTROLLER
Floyd E. Kingston, 2282 Columbia St., Palo Alto, Calif.
Filed June 21, 1971, Ser. No. 154,898
Int. Cl. G05f 1/40
U.S. Cl. 323—24 10 Claims

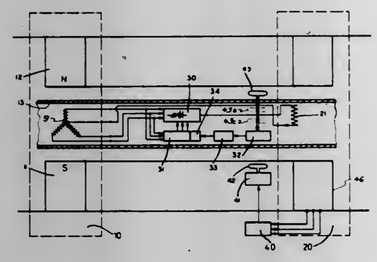


A three-phase power controller for controlling three-phase power to a non-unity power factor load is disclosed, which employs a separate bidirectional gate in series with each of the lines to the three-phase load for gating the load current to the load. Each bidirectional gate includes a master gate and a slave gate slaved to the master gate. A synchronous control circuit supplies a sequence of gating on signals to the respective gates. The synchronous control circuit includes a zero-crossing sensor for sensing the alternating potential supplied across each set of power supply terminals and a particular half-cycle sensor for sensing the particular half-cycle of each of the alternating potential applied across each respective set of power supply terminals. Light emitting diodes and photo detectors are employed in various ones of the gating control channels to provide high voltage isolation between the gates and the circuits generating the gate control signals.

3,671,850
ELECTRIC GENERATOR CONTROL SYSTEM WITH RADIO FEEDBACK LOOP
Walter E. Mehnert, Elvira-Strasse 29, and Horst A. Heller, Pfarrer-Grimm Strasse 24, both of Munich, Germany
Continuation-in-part of Ser. No. 724,478, April 26, 1968. This application Nov. 19, 1970, Ser. No. 91,196
Int. Cl. H02p 9/30
U.S. Cl. 322—28 3 Claims

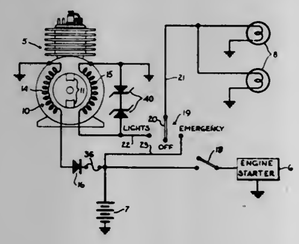
The illustrated embodiments include an exciting generator and a power generator. Each of the generators includes a common tubular rotor. The armature of the exciting generator is

maintained within the rotor and is fed through a control rectifier to the field of the power generator, which is also maintained within the rotor. The output voltage of the power generator is sampled for modulation of a radio transmitter which delivers power to a transmitting antenna. A receiving



means maintained within the tubular rotor receives and demodulates the signal from the transmitter. The demodulated signal, together with the output of the field generator armature is applied to the control elements of the control rectifier and thus determines the intensity of the power generator field and, correspondingly, the output of the power generator.

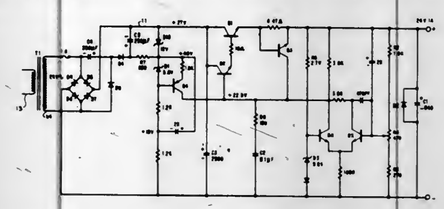
3,671,851
ELECTRICAL SYSTEM FOR TRACTOR POWERED BY MAGNETO IGNITION ENGINE
Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Milwaukee, Wis.
Filed Sept. 9, 1970, Ser. No. 70,669
Int. Cl. H02p 9/00
U.S. Cl. 322—90 **5 Claims**



An alternator driven by a magneto ignition engine has separate windings for battery charging and for lights. The battery charging winding is at all times connected with a storage battery through rectifier means and is designed for a maximum engine rpm output that will not harm the battery even when it is fully charged. The lights are normally energized only from the light winding, but switch arrangements are disclosed for energizing the lights from the battery when the engine is not running.

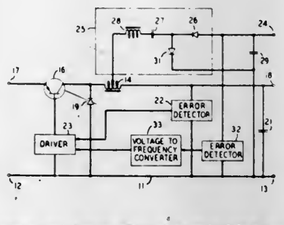
3,671,852
SERIES TRANSISTOR POWER SUPPLY REGULATOR
Jean Ritzenthaler, Geneva, Switzerland, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sept. 1, 1971, Ser. No. 176,957
Int. Cl. G05f 1/64; H02m 7/24
U.S. Cl. 323—9 **4 Claims**

A power supply regulator of the series transistor type employing a current limiter transistor circuit coupled to the output of the series transistor and a constant current supply comprising a transistor and Zener diode for supplying current to the current limiter transistor circuit, and a voltage multiplier



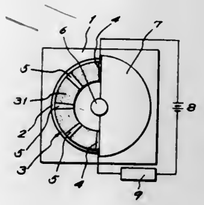
circuit coupled to the rectifier circuit input of the regulator circuit, said constant current supply being coupled to said voltage multiplier circuit.

3,671,853
DUAL-OUTPUT REGULATED SWITCHING POWER SUPPLY
Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 24, 1970, Ser. No. 101,318
Int. Cl. G05f 1/56
U.S. Cl. 323—17 **7 Claims**



The duty cycle and frequency of a switching transistor are individually controlled by separate feedback loop to give two independently regulated output voltages. The main output is controlled by the duty cycle feedback loop in a conventional manner. The auxiliary output is fed by a frequency-to-voltage converter and has a voltage-to-frequency converter in its feedback loop.

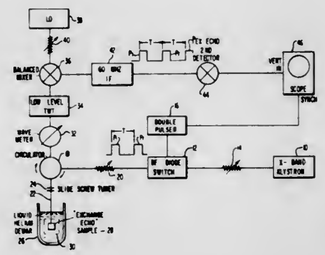
3,671,854
CONTACTLESS GALVANO-MAGNETRO EFFECT APPARATUS
Noboru Masuda, Kawaguchi, Japan, assignor to Denki Onkyo Co., Ltd.
Filed Nov. 30, 1970, Ser. No. 93,636
Int. Cl. G05f 7/00
U.S. Cl. 323—94 H **12 Claims**



A contactless galvano-magnetro effect apparatus comprised of a magneto resistance effect device which is provided with a

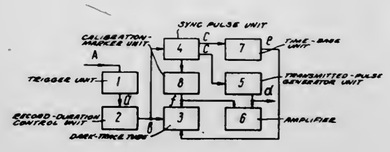
plurality of electrodes, between which a plurality of resistance yokes are provided, at least one of the yokes being associated with a magnetic field applying means which is capable of varying the condition of magnetic field applied to the resistance yoke.

3,671,855
BROADBAND ZERO FIELD EXCHANGE ECHO SYSTEM
Donald A. Bozanic; Dickran Mergerian, both of Baltimore, and Ronald W. Minarik, Lutherville, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 28, 1969, Ser. No. 845,406
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 **12 Claims**



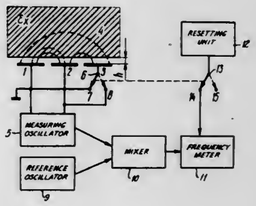
A system for the generation of an "exchange echo" signal similar to a spin echo signal utilizing a very heavily doped sample such as rutile, having paramagnetic defect centers in the order of 1×10^{19} to 1×10^{21} defect centers/cm, wherein no magnetic field of any kind is necessary for the production of the echo signals, and wherein echo bandwidths considerably greater than those generally associated with spin echoes (less than 300 MHz) are achievable.

3,671,856
PULSE REFLECTION TYPE FAULT LOCATION DEVICE UTILIZING A DARK-TRACE TUBE DISPLAY
German Mikhailovich Shalyt, prospekt Vernadskogo, 83, kv. 45; Svetlana Efimovna Sidorchuk, ulitsa Festivalnaya, 22, korpus 3, kv. 287, and Gely Georgievich Pavlov, Moskvorechie, 84, kv. 30, all of Moscow, U.S.S.R.
Filed Sept. 16, 1969, Ser. No. 858,430
Int. Cl. G01r 31/11
U.S. Cl. 324—52 **1 Claim**



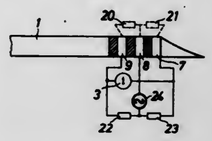
A device for the location of faults on power-transmission lines at the instant of a fault, in which transmitted and reflected pulses are registered in synchronism with calibration markers by a dark-trace tube, which fact considerably increases the speed of response of the recorder.

3,671,857
DEVICE FOR MEASURING PERMITTIVITY OF MATERIALS
Karlis Alfredovich Bergmanis, ulitsa Granda, 15, kv. 1; Erik Ernestovich Klotinsh, ulitsa Tvalka, 54, korpus 4, kv. 19, and Imant Gustovich Matis, ulitsa Laimdotas, 61, kv. 19, all of Riga, U.S.S.R.
Filed April 29, 1970, Ser. No. 32,823
Int. Cl. G01r 27/26
U.S. Cl. 324—61 QS **1 Claim**



A device for measuring permittivity of materials on the basis of at least two different capacitance values of a measuring capacitor connected to the material being tested and to a measuring oscillator the output of which is coupled to one input of a mixer whose other input is coupled to a reference oscillator and whose output is coupled through a frequency meter to a resetting unit, characterized in that the measuring capacitor has at least two main electrodes permanently connected to the input of the measuring electrodes permanently connected to the input of the measuring oscillator, and one additional electrode alternately connected by a switch to one of the main electrodes in the course of measurement, while said resetting unit is connected to a pulse counter of the frequency meter through a switch actuated synchronously with said switch of the measuring capacitor electrodes so that in one position of this switch the frequency of the measuring oscillator is above, and in the other position of the switch, below the frequency of the reference oscillator.

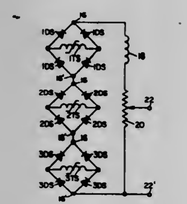
3,671,858
METHOD AND APPARATUS FOR MEASURING THE THICKNESS OF LAYERS OF FAT AND FLESH IN CARCASSES UTILIZING THE DIFFERENCE IN ELECTRICAL CONDUCTIVITY BETWEEN LAYERS
Erik Stenberg Knudsen, Roskilde; Svend Erik Iversen, Balkerup; Svend Aage Lund, Birkerod, and Allan Northeved, Barsvaerd, all of Denmark, assignors to Slagteriernes Forskaangsinstitut, Roskilde, Denmark
Filed Feb. 17, 1971, Ser. No. 115,963
Claims priority, application Denmark, Feb. 20, 1970, 853
Int. Cl. G01r 27/02
U.S. Cl. 324—65 **24 Claims**



A method and an apparatus for measuring the thickness of layers of fat and flesh in carcasses utilizing the difference in electrical conductivity between said layers. A probe with three surface electrodes is introduced in to the carcass said electrodes being connected to an AC bridge for connecting adjacent current paths formed in the layers between said elec-

trodes thereto. The probe is moved on, until an unbalanced condition of the bridge is observed by indicator means. The linear distance between measuring points associated with the carcass surface and the probe, respectively, being, then, measured in order to obtain the thickness of the fat layer. The probe may be moved right through the carcass in order to determine total thickness thereof by detecting flesh to air transition and retracted again for repeating the measurement made during insertion. Alternatively, a probe provided with a plurality of surface electrodes may be inserted in a stationary position in the carcass, said electrodes being then connected successively to the bridge by switching means and recordings being taken of the switching steps where the bridge enters from a balanced to an unbalanced condition.

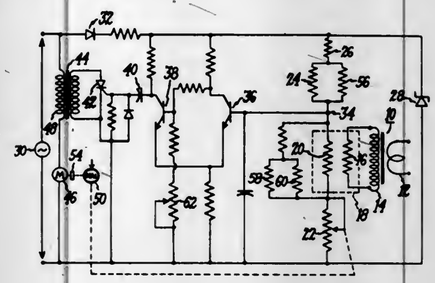
3,671,859
FREQUENCY TRANSDUCER
Dewitt H. Miller, Waynesboro, Va., assignor to General Electric Company
Filed Nov. 4, 1970, Ser. No. 86,751
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 R **5 Claims**



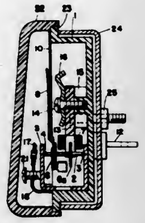
A novel frequency transducer is disclosed, the transducer providing a uni-directional average signal output which is proportional to the frequency of an applied three-phase generally sinusoidal input signal. In a preferred inventive embodiment, the transducer comprises a three-phase transformer having primary, secondary and tertiary windings on a saturable core with voltage clipping means including the tertiary windings of the transformer. Rectification and summation means are also provided for summing and rectifying the outputs of the secondary windings of said transformer, those outputs being averaged by averaging means. The frequency transducer output is essentially independent of the voltage of the input signal.

3,671,860
MAXIMUM CURRENT INDICATOR FOR ELECTRICAL APPARATUS
Clarence J. Kettler, and Clifford L. Downs, both of Lenox, Mass., assignors to General Electric Company
Filed Oct. 24, 1969, Ser. No. 869,067
Int. Cl. G01r *5/22, 19/16*
U.S. Cl. 324—103 P **5 Claims**

A maximum current indicator to monitor the current flow in an electrical apparatus. A facsimile of load current from a current transformer is applied to a heater resistor. A sensor resistor having a high positive temperature coefficient is coupled to the heater such that the steady state temperature of the sensor is directly proportional to the power dissipated in the heater, making such temperature a function of the facsimile load current. The sensor resistor is part of a voltage divider network which includes a rheostat, the voltage across such divider being determined by a Zener diode. The divider output voltage at a junction thereof is determined by the sensor resistor and the rheostat. A pair of transistors are arranged in an emitter coupled binary circuit whose conduction states are determined by the voltage at the junction of the divider network. An isolation transformer and a silicon controlled rectifier form a switching circuit which is actuated by the binary circuit. A motor is controlled by the switch, the motor acting to set an indicator dial and also to drive the rheostat to a position for resetting of the binary circuit.



3,671,861
CALIBRATION DEVICE FOR ELECTRIC METER INCLUDING A CONTROL MAGNET MOUNTED ON A FLEXIBLE ARM
Hobart H. Fleetman, Perkasie, and Harry E. Wohlbach, Allentown, both of Pa., assignors to Electro-Mechanical Instrument Company, Inc.
Filed April 8, 1965, Ser. No. 446,745
Int. Cl. G01r *5/16, 1/20*
U.S. Cl. 324—146 **7 Claims**



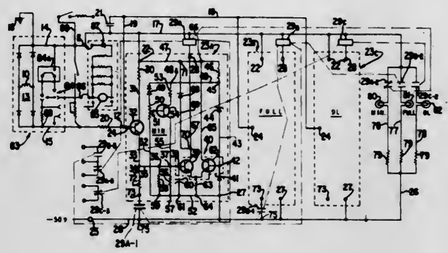
An electrical meter having a movement magnet and a control magnet for zeroing the meter pointer and also adjusting the meter sensitivity. The control magnet is pivotally mounted for rotation on a flexible arm. Zeroing of the meter is obtained by rotating the control magnet relative to the movement magnet. The sensitivity of the meter is adjusted by varying the distance between the movement magnet and control magnet by means of the flexible arm.

3,671,862
FLAT ARMATURE MOVING COIL ELECTRIC METER
Toyozo Nakata, 1643 Hiyoshihoncho, Kohoku-ku, Yokohama-shi, Japan
Continuation-in-part of Ser. No. 534,937, Jan. 27, 1966, abandoned. This application Dec. 9, 1969, Ser. No. 883,533
Claims priority, application Japan, Feb. 5, 1965, 40/7898
Int. Cl. G01r *1/20, 1/16*
U.S. Cl. 324—150 **5 Claims**

An electrical meter includes a rotatably mounted wheel shaped armature including a channel shaped rim and channel shaped spokes arranged in quadrature. A pair of sector shaped coils of insulator coated wire are nested in seats delineated by pairs of adjacent spokes and the connecting rim section, each coil including a plurality of superimposed flat sector shaped windings of abutting successive convolutions including radially extending legs whose outer ends are connected by circumferentially extending bridge sections. A magnet assembly produces a magnetic field perpendicular to the armature and not extending beyond the ends of the winding radial legs. The areas occupied by the coils are less than the unoccupied areas delineated thereby.



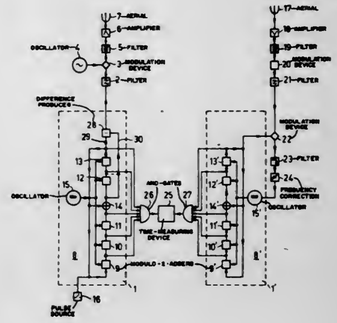
3,671,863
SOLID STATE METER RELAY
Earl C. Rhyne, Jr., Millis, Mass., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.
Filed Feb. 4, 1970, Ser. No. 8,653
Int. Cl. G01r *1/30*
U.S. Cl. 324—157 **6 Claims**



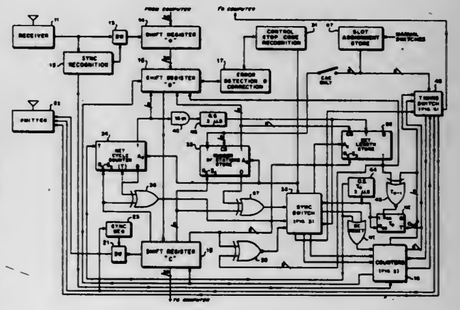
A meter relay in which the mechanical contacts on the meter of a mechanically operating type of relay are replaced by solid state circuitry. The circuitry is readily adjustable by a simple potentiometer of rheostat to operate an indicating signal and/or a control for industrial apparatus or the like at any desired point over the entire range of a meter. The circuitry is operative, however with or without a meter. A plurality of identical circuits mounted on separate panels or modular units may be ganged to operate different indicators and/or controls at a plurality of points over the range of one or more relay meter devices.

3,671,864
TRANSMISSION SYSTEM FOR MEASURING TIME OF TRANSMISSION
Leo Eduard Zegers, and Wilfred Andre Maria Suijders, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 17, 1970, Ser. No. 47,001
Claims priority, application Netherlands, June 21, 1969, 6909540
Int. Cl. H04b *1/00*
U.S. Cl. 325—38 A **4 Claims**

A transmission system wherein a periodic ternary pulse pattern is generated in the transmitter which pattern is transmitted after modulation on a carrier, for example, single sideband modulation, and which is correlated after demodulation with a periodic binary pulse pattern after reception in the receiver.

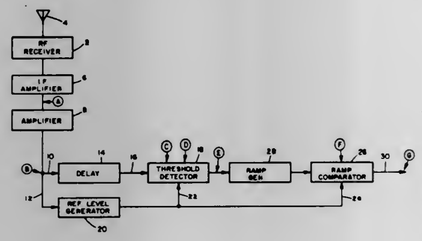


3,671,865
AUTOMATIC NET PARTICIPANT SYNCHRONIZER
Anthony D. Szumila, Levittown; Joseph J. Zimnoch, Trevose; John D. Bechtel, Hatboro, and Harvey M. Steinberg, Philadelphia, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 3, 1964, Ser. No. 415,827
Int. Cl. G08c *15/06*; H04j *3/06*
U.S. Cl. 325—58 **9 Claims**



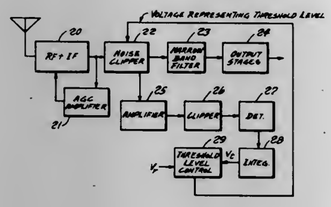
A digital data net communications system for a group of tactical units in which data is transmitted by each participant in turn to all of the other participants, in which participants may be added or subtracted from the net automatically and without interfering with the transmission of data between the others. One of the participants is designated the contact area commander and during his time slot automatically synchronizes the other participants' equipment, informs the other participants of the number of participants in the net, and any changes in the number of participants in the net thereby informing all participants of the net condition without the necessity of disrupting the transmission of data between other participants.

3,671,866
PULSE PROCESSING CIRCUIT HAVING IMPROVED RANGE RESOLUTION
Kenneth R. Rutherford; Marvin L. Hooker, Jr., both of Cedar Rapids, Iowa, and Joseph P. Allbrandi, Raleigh, N.C., assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed Jan. 8, 1971, Ser. No. 104,875
Int. Cl. H04b 1/16
U.S. Cl. 325—322 **3 Claims**



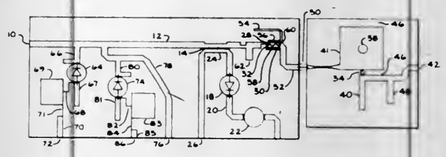
A pulse processing circuitry which substantially eliminates pulse position variations caused by compression of pulses in IF stages of video receivers as a result of conflicting requirements for narrow bandwidth and large dynamic range. The variations are eliminated while retaining the pulse width characteristics of a pulse train by splitting the input pulse into two signal channels, delaying the pulse in one channel for a predetermined interval, applying the delayed pulse to trigger a ramp generator, and comparing the resulting ramp signal with a reference level signal produced by the pulse in the second channel.

3,671,867
NOISE SUPPRESSION ARRANGEMENT FOR COMMUNICATION RECEIVERS
Hans G. Schwarz, Pennington, N.J., assignor to The United States of America as represented by the Secretary of the Navy
Filed April 15, 1970, Ser. No. 28,704
Int. Cl. H04b 1/16
U.S. Cl. 325—410 **5 Claims**



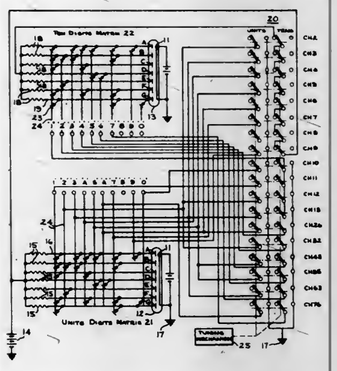
A noise suppression technique for a communication receiver is disclosed wherein the amplitude of the signal at the clipping point with respect to the clipping level, or vice versa, is automatically adjusted so that clipping takes place during a constant preset percentage of time. The gain of the RF or IF stages or the clipping level is automatically adjusted to achieve this mode of operation.

3,671,868
SUPERREGENERATIVE MICROWAVE RECEIVER
Bobby J. Sanders, Pacoima, Calif., assignor to The Bendix Corporation
Filed Jan. 21, 1970, Ser. No. 4,641
Int. Cl. H04b 1/26
U.S. Cl. 325—445 **8 Claims**



A highly sensitive superregenerative microwave receiver is disclosed having a special utility for radar altimeters. A tunnel diode oscillator-amplifier section is arranged on a stripline board one wavelength square with the housing forming the ground plane and with the tunnel diode centered on the board. A threaded member in the top of the housing cooperates with a conductor track on the stripline board to tune the oscillator resonant circuit. A detector and self-test stripline board is positioned in another compartment of the housing separated from the oscillator-amplifier board by means of a bulkhead but connected to said board by means of a feed-through connector. This board contains the radio frequency input port and includes a stripline coupler arrangement to connect the radio frequency signal to the detector diode. A stripline filter connected between the radio frequency input and the oscillator-amplifier provides both second harmonic rejection and d. c. blocking to prevent any d. c. component of the modulating pulse from reaching the detector. A self-test capability is provided including a pair of diode switching circuits which make it possible to effectively disconnect the received radio frequency signal and connect a test radio frequency signal to the detector.

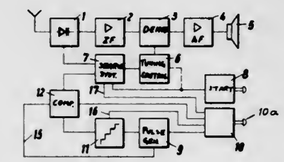
3,671,869
TELEVISION CHANNEL INDICATOR COMMON TO VHF AND UHF AND EASILY PROGRAMMABLE TO LOCALLY AVAILABLE CHANNELS
Adolf Egmont Wolfram, Portsmouth, Va., assignor to General Electric Company
Filed Feb. 16, 1971, Ser. No. 115,623
Int. Cl. H04b 1/06
U.S. Cl. 325—455 **14 Claims**



A channel indicator for a television receiver for indicating tuning to all channels whether UHF or VHF. Two segmented

decimal display devices are provided, one for the units digits and one for the tens digits of channels two to 83. Matrices control each display device. Switches assigned to each channel and associated with a conventional tuning mechanism control the matrices to cause the display devices to display the channel number of the channel to which the receiver is tuned by the tuning mechanism.

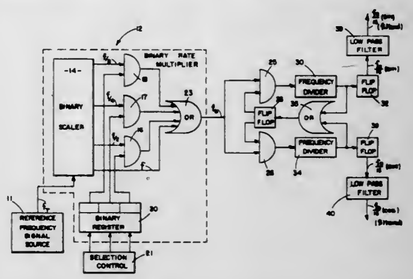
3,671,870
TUNING SYSTEM FOR COMMUNICATION RECEIVERS STORING PREDETERMINED TUNING POSITIONS WITHIN THE RECEIVER FREQUENCY BAND
Heinz Wellhausen, Hildesheim, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany
Filed April 1, 1970, Ser. No. 24,513
Claims priority, application Germany, April 2, 1969, P 19 16 834.4
Int. Cl. H04b 1/34
U.S. Cl. 325—470 **18 Claims**



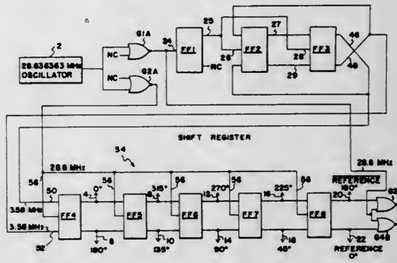
The receiver is designed to provide a control signal varying the tuning frequency thereof, for example derived from a signal searching system (7). A pulse source (9) and a digital stepping circuit (11), controlled by the pulse source provides a stepped, digitally changing signal, in a binary progression. A comparator circuit (12) has said stepped signal and said tuning control signal applied thereto, and compares a characteristic, typically voltage, of the signals. Upon detection of coincidence, a characteristic of the signal, for example voltage, is stored, for example as a level of magnetization in a transfluxor core (FIG. 4) or as the count of a flip-flop chain, including magnetic cores, in the digital stepping circuit. Upon re-energization of the receiver after disconnection, a voltage value derived from the digital stepping circuit, or from the storing means can be directly applied to the tuning control, or the signal search system, respectively, so that the receiver will be pre-tuned to the selected frequency.

3,671,871
SIGNAL FREQUENCY SYNTHESIZER
Robert E. Malm, Los Angeles, Calif., assignor to Northrop Corporation, Los Angeles, Calif.
Filed Dec. 14, 1970, Ser. No. 97,576
Int. Cl. H03b 19/00
U.S. Cl. 328—25 **4 Claims**

A plurality of binary related anti-coincident pulse trains which are precisely related in frequency and phase to a reference frequency are generated in a binary rate multiplier. The rate multiplier includes gating and control circuitry whereby predetermined combinations of these pulse trains are selectively summed together to provide various output frequencies. The output of the binary rate multiplier, which comprises square wave signals having a predetermined frequency relative to the reference signal frequency, are divided to minimize the effects of irregularities in the frequency of the multiplier output and to provide square waves having substantially uniform periods. These square waves are then appropriately gated and filtered to produce quadrature related sine waves.



3,671,872
HIGH FREQUENCY MULTIPLE PHASE SIGNAL GENERATOR
Donald E. Pauly, Salt Lake City, Utah, assignor to Telemation, Inc., Salt Lake City, Utah
Filed March 26, 1971, Ser. No. 128,838
Int. Cl. H03b 3/04
U.S. Cl. 328—55 **5 Claims**

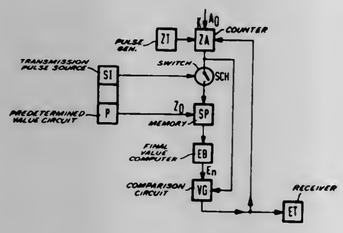


A high frequency phase generator comprising an oscillator, operating at eight times the desired frequency. A first set of flip-flop circuits divides the frequency down to the desired frequency. A second set of flip-flop circuits is provided with clock signals at the oscillator frequency and is connected so that the first flip-flop circuit of the second set is fed by the output of the first set and each subsequent flip-flop circuit in the second set is fed by the output of the preceding flip-flop circuit. Due to timing differences resulting from the two different frequencies, each flip-flop circuit in the second set produces two outputs which are 180° out of phase with each other and 45° out of phase with the outputs of the adjacent flip-flop circuits.

3,671,873
CIRCUIT ARRANGEMENT FOR GENERATION TIMING PULSES
Guenther Haas, and Dieter Reinhardt, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 15, 1971, Ser. No. 124,124
Claims priority, application Germany, March 23, 1970, P 20 13 880.1
Int. Cl. H03k 1/00, 5/00
U.S. Cl. 328—63 **12 Claims**

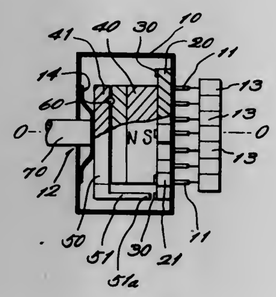
A circuit arrangement for generating timing pulses for a receiver system constantly synchronized with transmission im-

pulses of a transmitter system wherein a counter is operated by pulse generator and delivers to a memory the pulse count upon receipt of a transmission pulse. The counter has adjustable initial and final count values, the final count value being determined by means which compute the deviation of the mo-



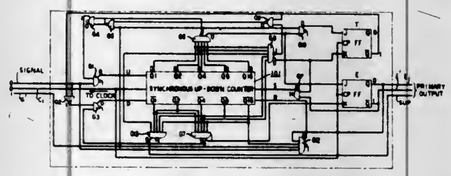
mentary value from a predetermined count value and a comparison circuit for generating the receiver timing pulse and utilizing the same to reset the counter. An initial value computer is also utilized in one embodiment for adjusting the initial count value of the counter in accordance with the output of the memory.

3,671,874
CONTACTLESS ROTARY SWITCHING APPARATUS
Tunekazu Kobayashi, Kawasaki, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan
Filed Sept. 17, 1970, Ser. No. 72,937
Claims priority, application Japan, Sept. 17, 1969, 44/88303; Sept. 17, 1969, 44/88304; Sept. 17, 1969, 44/88305; Sept. 30, 1969, 44/93603
Int. Cl. G05f 7/00
U.S. Cl. 323—94 H 11 Claims



A contactless rotary switching apparatus comprised of a disc-shaped fixed yoke which is stationary and a rotary yoke arranged in parallel with each other, a magnet positioned between the yokes, the magnet having one magnetic pole end fixed to one of the yokes while the other magnetic pole end is made free but arranged to lightly contact the other of the yokes, a number of balls made of magnetic material are arranged in succession in the form of a circle on the free end face of the magnet between the magnet and the yoke which lightly contacts the free end of the magnet, a plurality of magneto-electric converting devices are arranged radially towards the circumference at the peripheral portion of the fixed yoke, and at least one arm provided at the peripheral portion of the rotary yoke so that the arm or arms are extended towards the said fixed yoke so that an end or ends of the arms will be moved towards and away from the magneto-electric converting devices during rotation of the rotary yoke.

3,671,875
DIGITALLY OPERATED SIGNAL REGENERATOR AND TIMING CIRCUIT
Frank Louis Pente, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 20, 1971, Ser. No. 145,290
Int. Cl. H03k 17/26
U.S. Cl. 328—129 5 Claims



A digitally operated signal timing circuit employs a single synchronous up-down counter with overriding set and reset in combination with a group of flip-flops and logic gates. In effecting the regeneration of input pulses, such as the pulses produced by a telephone dial, a plurality of signal timing functions are provided by the combination indicated, which functions include the establishment of an operate threshold delay, a release delay, a minimum output pulse duration, a minimum duration interval between pulses and an idle condition holdover period.

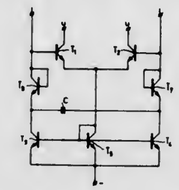
3,671,876
PULSE-PHASE COMPARATORS
George S. Oshiro, P.O. Box 90876, Los Angeles, Calif.
Filed Jan. 19, 1971, Ser. No. 107,724
Int. Cl. H03d 13/00
U.S. Cl. 328—134 8 Claims

The device disclosed herein is a pulse-phase comparator of a digital nature possessing a high degree of noise immunity due to the complete absence of triggerable elements such as binaries or one-shoe multivibrators, and featuring a mode of operation wherein a null output is defined by a corresponding in-phase condition of the compared input signals by virtue of the insertion of additional and externally-generated pulse signals whose fundamental-frequency and phasing character bears a fixed relationship to that of one of the compared signals.

3,671,877
PUSH-PULL AMPLIFIER
Rudy Johan Van Den Plassche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 9, 1970, Ser. No. 79,408
Claims priority, application Netherlands, Oct. 13, 1969, 6915478
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 2 Claims

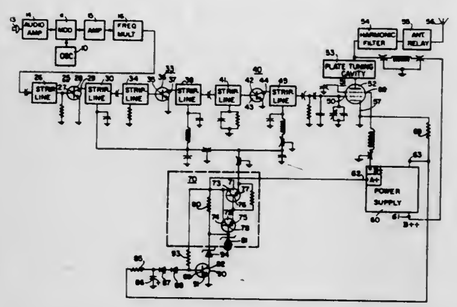
A low-resistance push-pull amplifier in which the inclusion of a diode in the emitter lead and of transistors in the base

leads of the amplifier provides a very high discrimination fac-



tor, while additional current sources for the quiescent current adjustment of the transistors may be dispensed with.

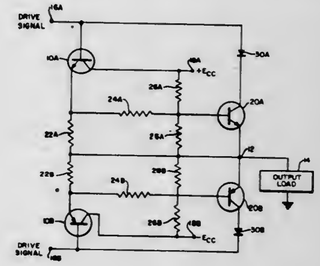
3,671,878
PROTECTION CIRCUIT FOR AN AMPLIFIER
John E. Becker, Wilmette, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed April 27, 1970, Ser. No. 32,204
Int. Cl. H03f 21/00, 5/00
U.S. Cl. 330—207 P 9 Claims



A protection circuit for a driver amplifier is provided which senses the absence of current to a driven amplifier and decreases the voltage supplied to the driver amplifier to a safe value thereby preventing damage to the same. The driver amplifier may be a semiconductor (transistor) amplifier and the driven amplifier may be a vacuum tube amplifier which has a warm up period much longer than that of the semiconductor amplifier. The protection circuit protects the semiconductor amplifier during warm up of the tube amplifier, or in the event of failure thereof by reducing the operating voltage applied thereto.

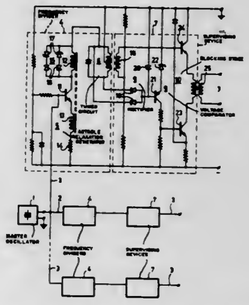
3,671,879
TRANSISTOR PROTECTION CIRCUIT
John J. Klanatsky, New York, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Nov. 9, 1970, Ser. No. 87,923
Int. Cl. H03y 21/00
U.S. Cl. 330—207 P 1 Claim

A protection circuit for use with a transistor amplifier comprises a normally non-conductive transistor adapted to be connected across the input and output terminals of the output transistors of a power amplifier. An impedance network is coupled to the power amplifier so that it can derive voltages dependent upon the current flow in the emitter-collector circuit of the power amplifier and the emitter-collector voltage drop. These voltages are applied to the base of the protection transistor to drive it into conduction in the event either one of the signals, or the combination of both exceeds a predetermined limit. Thus, in the event of an overload (due, for example, to excessive load currents or overdriving the transistor), the drive signal is shunted from the power amplifier output



stages. This action is analogous to a limiting action and prevents overload conditions from injuring or destroying the power amplifier.

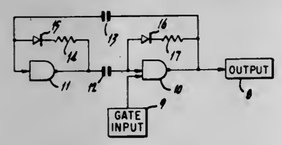
3,671,880
DEVICE FOR GENERATING A PLURALITY OF SINUSOIDAL OSCILLATIONS IN A CARRIER TELEPHONY SYSTEM
Wilhelmus Gerardus Kuiper, and Anne Klaassen, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,216
Claims priority, application Netherlands, Feb. 5, 1970, 7001606
Int. Cl. H04j 3/10
U.S. Cl. 331—51 6 Claims



A device for generating carrier oscillation while using astable relaxation generators which are synchronized by a common master oscillator. The astable relaxation generators in the output circuits of the common master oscillator include a supervising device which is constituted by a cascade circuit of a rectifier device, a voltage comparison stage and a blocking stage to suppress the cross-talk between the carrier channels due to erroneously generated frequencies when synchronization is lost.

3,671,881
RESETTABLE LOGIC GATE MULTIVIBRATOR
John James Yerganjian, West Palm Beach, Fla., assignor to RCA Corporation
Filed Dec. 14, 1970, Ser. No. 97,797
Int. Cl. H03k 3/282
U.S. Cl. 331—57 6 Claims
A multivibrator circuit which can be selectively started and

stopped in response to a control signal and in which phase and

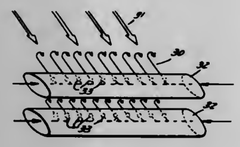


frequency relationships are maintained uniform and synchronized with the control signal.

3,671,882
APPARATUS FOR MIXING GAS IN A FLUID MIXING LASER

Terrill A. Cool, Trumansburg, N.Y., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 25, 1970, Ser. No. 75,593
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **2 Claims**

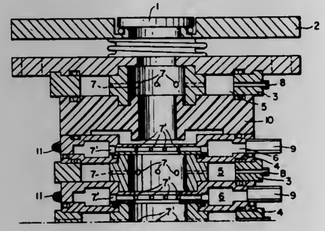


Apparatus is disclosed which can continuously mix indefinitely large volumes of gases in characteristic times that are short compared to characteristic collisional relaxation times for the excitation energy for the component gases. The present technique has application to flowing gas laser systems in that it provides a means to mix large volumes of gases together to initiate an energy exchange process between the mixing atomic or molecular components, or to initiate a chemical reaction involving the mixing of reactant components to form product atoms or molecules in an excited state.

3,671,883
PROCESS AND APPARATUS FOR EFFECTING HIGH GAS FLOW IN DISCHARGE TUBE OF GAS LASER

Erik Algot Smars, Taby, Sweden, assignor to AGA Aktiebolag, Lindingo, Sweden

Filed Oct. 20, 1970, Ser. No. 82,274
Claims priority, application Sweden, Oct. 20, 1969, 14322/69
Int. Cl. H01s 3/04
U.S. Cl. 331—94.5 **6 Claims**



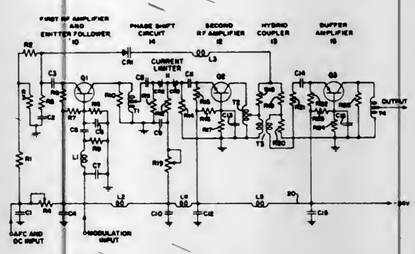
Gas lasers characterized by high gas flow through the discharge tube of the gas lasers are obtained by feeding the gas to the discharge tube radially in a plurality of sections along the discharge tube and preferably removing the gas via outlet sections provided between the gas inlet sections.

The holes or slots through which the gas is radially introduced may form a certain angle with the radius so as to give a rotary movement to the gas introduced and/or an angle with a plane perpendicular to the axis so that the inflowing gas is given an axial velocity component.

3,671,884
IMPROVED AMPLIFYING CIRCUIT

John H. Denny, Jr., Lynchburg, Va., assignor to General Electric Company

Division of Ser. No. 858,773, Sept. 17, 1969, Pat. No. 3,564,456. This application Sept. 29, 1970, Ser. No. 76,529
Int. Cl. H03f 3/38
U.S. Cl. 332—16 T **2 Claims**

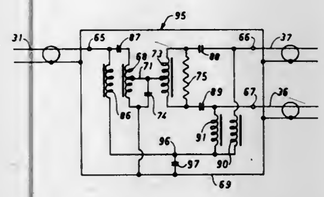


Radiofrequency signals and lower frequency signals are separately amplified without mixing in a single transistor by applying the lower frequency signals through a filter to the transistor base and deriving the amplified lower frequency signals in an emitter-follower circuit, and by applying the radiofrequency signals to the transistor emitter and deriving the amplified radiofrequency signals from the transistor collector with the transistor base being connected in a common base configuration.

3,671,885
HIGH FREQUENCY SIGNAL ROUTING DEVICES FOR USE IN CATV SYSTEMS

Frank C. Peaupacker, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, West Lindsay, Ontario, Canada

Filed Dec. 2, 1970, Ser. No. 94,230
Claims priority, application Canada, Oct. 20, 1970, 95,974
Int. Cl. H03h 7/48
U.S. Cl. 333—8 **16 Claims**

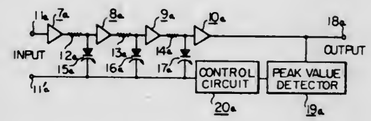


Passive devices for signal routing such as directional couplers, hybrid splitters and power inserters, for use in CATV or similar signal distribution systems having improved operating characteristics are obtained by the incorporation of pi-section high-pass filters into such devices. Conventional splitters and directional couplers are modified by the addition of inductances and capacitances so that the required pi-section high-pass filters are formed, with one inductive element of such a filter being constituted by an inductive deviation, for example, a leakage inductance of an existing component of such a device. Improved radiofrequency signal return losses and inter-tap isolation are provided over a much greater frequency range than was heretofore possible.

3,671,886
METHOD AND APPARATUS FOR AUTOMATIC GAIN CONTROL

Isao Fudemoto, Tokyo; Tsutomu Yoshibayashi, Sagamihara, and Tadao Miyamura, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed Aug. 28, 1970, Ser. No. 67,765
Claims priority, application Japan, Aug. 29, 1969, 44/68533
Int. Cl. H04b 3/04
U.S. Cl. 333—18 **5 Claims**

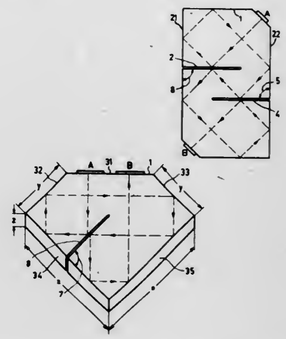


Disclosed herein is automatic gain control circuitry for a transmission line of a PCM regenerative repeater, wherein such circuitry uses multistage variable equalizing networks. Each network has a variable reactance element, and has a predetermined pole frequency which is automatically varied under the control of its associated reactance element. The pole frequencies are changes in proportion to the square of a ratio of a standard line loss to a changed line loss due to the line loss variation, both measured in db. Thus, the pole frequency changes compensate for variation of the line loss.

3,671,887
DELAY LINE

Rodney William Gibson, Haywards Heath, England, assignor to U.S. Philips Corporation

Filed Feb. 12, 1969, Ser. No. 798,665
Claims priority, application Great Britain, Feb. 16, 1968, 7,759/68
Int. Cl. H03h 9/30
U.S. Cl. 333—30 **19 Claims**

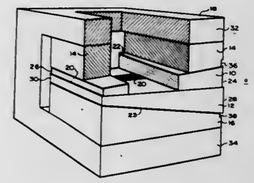


An improved ultrasonic delay line comprising a solid glass body having one or more slits in the side walls extending inwardly from the outer edge faces of the body. The slits are arranged in the path of the propagating ultrasonic energy so as to effectively increase the number of energy transmission paths in the body by acting as additional energy reflecting surfaces. The slits extend the effective length of the delay line. The slits also operate to reduce undesired cross-coupling between the input and output transducers.

3,671,888
WIDE BAND STOP BAND FILTER INCLUDING A FERRITE REGION BIASED BY A GRADED MAGNETIC FIELD

Pedro A. Szente, San Jose, and Robert Joly, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 7, 1970, Ser. No. 95,528
Int. Cl. H01p 3/08; H03h 7/04, 13/00
U.S. Cl. 333—73 R **7 Claims**

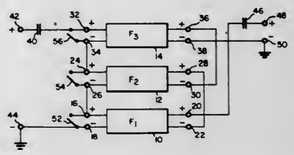


A stripline conductor is sandwiched between two ferrite slabs which, in turn, are sandwiched between two magnetic pole pieces. The pole pieces are in contact with opposite poles of a permanent magnet, placing the ferrite slabs in a magnetic field. The distance between the pole pieces varies along the length of the stripline, causing the magnetic field to be nonuniform. The ferrite slabs will absorb electromagnetic radiation at a frequency determined by the magnetic field strength and thus signals on the stripline will be absorbed in a frequency band determined by the range of magnetic field strengths along the length of the stripline.

3,671,889
BROADBAND COMPOSITE FILTER CIRCUIT

Hollice A. Favors, 5154 Chimineas Ave., Tarzana, Calif.

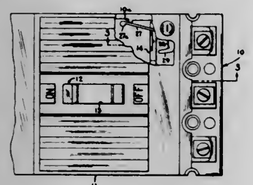
Filed June 1, 1970, Ser. No. 42,381
Int. Cl. H03h 7/08
U.S. Cl. 333—76 **6 Claims**



A broadband composite filter circuit is disclosed which includes a plurality of filter networks, each being tuned to respond to a respective frequency bandwidth of electrical signals. Each of the filter networks is a four terminal filter network having a positive and a negative network input terminal and a positive and a negative network output terminal. The input terminals of all of the filter networks are connected in series with each other in a first predetermined order. The output terminals of all of the filer networks are connected in a series circuit with each other in a second predetermined order which is the opposite to the above mentioned first predetermined order. The input signal is then applied across the series input circuits and the output signal is derived from across the

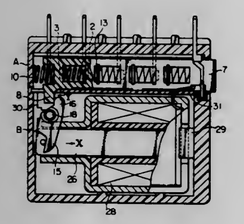
series output circuits. A switch is provided across the input terminals of each of the filter networks to enable each network to be selectively shorted out of the composite circuit to selectively vary the overall frequency response characteristic of the composite filter circuit.

3,671,890
MANUALLY OPERABLE MOLDED CASE CIRCUIT BREAKER WITH SPECIAL TRIP TESTING MEANS
Keith W. Klein, Simsbury, and Herbert M. Dimond, West Hartford, both of Conn., assignors to General Electric Company
Filed March 31, 1971, Ser. No. 129,915
Int. Cl. H01h 73/12
U.S. Cl. 335—22 **5 Claims**



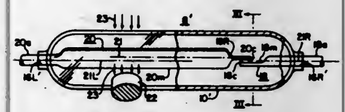
A molded case circuit breaker with manually operable ON-OFF handle means, and a separate rotatable trip testing button in an opening in the cover of the breaker casing and flush with the surface thereof. The trip testing button includes two parts which when assembled trap the button rotatably in the casing cover. The interior portion of the trip testing button has two angularly extending arms and is of resilient plastic material. One of the arms engages the circuit breaker trip bar when the button is rotated, and causes tripping. The other arm of the trip testing button is thin and elongated and serves to position the button in normal unoperated position and to act as a spring to return the button from trip operating position to its normal position. Positive stops are also provided for limiting rotation in each direction.

3,671,891
SMALL TYPE ELECTROMAGNETIC CONTACTOR
Yushito Usui; Kenji Shiojima, both of Seto, and Toshikatsu Hatakeyama, Owari Asahi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Aug. 30, 1971, Ser. No. 175,833
Claims priority, application Japan, Aug. 31, 1970, 45/76971
Int. Cl. H01h 51/06
U.S. Cl. 335—126 **4 Claims**



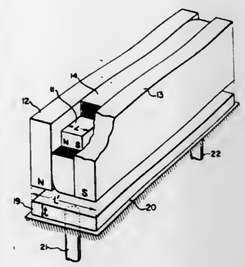
A small type electromagnetic contactor wherein a turning frame is rotatably bridged between a pair of opposing slots in a case having a build-in electromagnetic device, and actuating arm of an actuating rod member slidably mounted in an upper case member is disposed to be in contact with said turning frame.

3,671,892
WIPING CONTACT REED SWITCH
Bruce G. Eaton, deceased, late of Baltimore, Md. (by First Pennsylvania Bank and Trust Co., executor), assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed April 16, 1970, Ser. No. 29,156
Int. Cl. H01h 1/18, 1/50, 51/28
U.S. Cl. 335—154 **9 Claims**



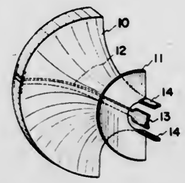
A reed switch containing two reeds at least one of which is controlled by a means for producing a magnetic field. Each reed or beam is twisted along a longitudinal axis such that during operation the means for creating a magnetic field is disposed perpendicular to one of the resulting surfaces and pulls one reed into physical contact with the other in such a direction that the contact surfaces are flush. A wiping action follows between the faces of the contacting surfaces in a direction parallel to the planes of the contacting surfaces due to a component of motion in the direction of the minimum flexure axis of the moving beam.

3,671,893
MAGNETIC LATCH AND SWITCH USING COBALT-RARE EARTH PERMANENT MAGNETS
Robert F. Edgar; Francois D. Martzloff, both of Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company
Filed Nov. 18, 1970, Ser. No. 90,676
Int. Cl. H01h 51/27
U.S. Cl. 335—179 **4 Claims**



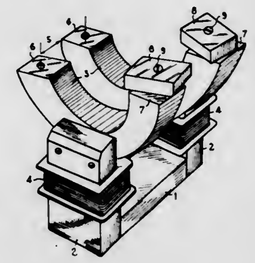
Magnetic latches and switches based on the flux cancellation or flux diversion principle use the high coercive force of cobalt-rare earth permanent magnets such as cobalt-samarium. These permanent magnets are not demagnetized by a flux cancellation coil and can be made thin in the field direction. Devices with thin magnetic circuits and low volume armature achieve high unlatching speeds.

3,671,894
DEFLECTION YOKES FOR CATHODE RAY TUBES
Eiji Sawada, Tokyo, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed April 15, 1970, Ser. No. 28,627
Claims priority, application Japan, April 18, 1969, 44/35196
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **4 Claims**



A deflection yoke for use in a cathode ray tube comprises a yoke bobbin, at least two pairs of segments projecting axially from the rear edge of the yoke bobbin and means for clamping the segments about the cathode ray tube to secure thereon the deflection yoke.

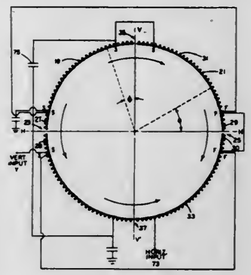
3,671,895
GRADED FIELD MAGNETS
Jeanne Aucouturier, and Rene Lacaze, both of Paris, France, assignors to Thomson-CSF
Filed April 27, 1970, Ser. No. 32,258
Claims priority, application France, May 5, 1969, 6914229
Int. Cl. H01f 1/00
U.S. Cl. 335—212 **1 Claim**



A lens effect is created at the entry to or the exit from, the airgap of a magnetic system by equipping the terminal faces of the polepieces thereof with ferromagnetic blocks, which are pivotally mounted on the output faces of the magnetic yoke so that the airgap has a variable width and a magnetic field gradient is produced. The upper face of the blocks may be sloped.

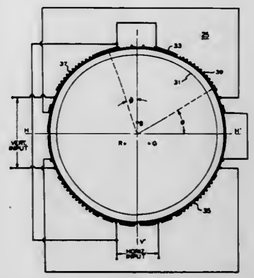
3,671,896
DEFLECTION SYSTEM FOR TRIAD-BEAM CATHODE RAY TUBE
Charles Edward Torsch, Rochester, N.Y., assignor to Sylvania Electric Products Inc.
Continuation of Ser. No. 841,893, July 15, 1969, abandoned. This application May 21, 1971, Ser. No. 145,884
Int. Cl. H01f 5/00
U.S. Cl. 335—213 **22 Claims**

A cathode ray tube deflection system includes a triad-type cathode ray tube and a toroid-type deflection yoke having horizontal and vertical axes with first and second horizontal windings symmetrical to the horizontal axis in mirror image of one another about the vertical axis and first and second vertical winding symmetrical to the vertical axis in mirror image of one another about the horizontal axis and said first and second horizontal and vertical windings each including a flux altering means for enhancing vertical convergence of horizontal trace lines. The deflection yoke is formed by a process wherein a core of magnetic material is wrapped with wire turns applied in toroidal fashion to form first and second horizontal



windings and first and second vertical windings advanced in opposite circumferential direction to form a mirror image relationship. Also, "ringing" is inhibited by circuitry wherein a specific terminal of each of the horizontal and the vertical windings associated with the start of electron beam scanning of the cathode ray tube is connected to a potential reference level while the other extremities of the horizontal and vertical windings are connected to a source of deflection signals whereby undesired distortions appearing on the trace lines of the viewing screen are minimized.

3,671,897
ASYMMETRICAL-WOUND TOROID YOKE CATHODE RAY TUBE DEFLECTION SYSTEM
Charles Edward Torsch, Geneva, N.Y., assignor to GTE Sylvania Incorporated
Filed July 8, 1971, Ser. No. 160,865
Int. Cl. H01f 5/00
U.S. Cl. 335—213 **15 Claims**

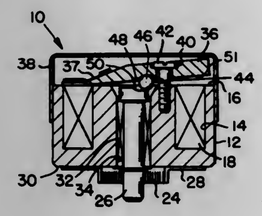


A color cathode ray tube deflection system includes a color cathode ray tube having triad-arrayed electron guns, a toroid deflection yoke having deflection windings symmetrical to the vertical axis and asymmetrical to the horizontal axis of a core of magnetic material, and dynamic convergence means for effecting radial movement of electron beams from said electron guns whereby horizontal and vertical trace lines on a viewing screen of the cathode ray tube are converged.

3,671,898
ROTARY SOLENOID

Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronics, Inc., Clifton Springs, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,361
Int. Cl. H01f 7/08
U.S. Cl. 335—228 16 Claims

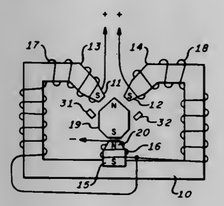


In a rotary solenoid employing a hinged armature, an output shaft and converter means including a ball located between oppositely inclined cam surfaces in the armature and the output shaft, for converting arcuate movement of the armature to rotary movement of the shaft upon energization of the solenoid, the improvement wherein the various cams in the output shaft are double cams of different length and opposite inclination joined at their deep end. Preferably the output shaft employs two pairs of such double cams arranged in diametrically opposed locations on the shaft, and including for example, a 90° RH cam joined to a 15° LH cam and also a 90° LH cam joined to a 15° RH cam. The armature can have either a single cam or a double cam comprising two cams of different length and opposite inclination. Depending on the direction of the torsion return spring, the solenoid can be set up for either left hand or right hand operation. Further, the use of the double cams according to the present invention reduces the tooling and stocking requirements of the manufacturer.

3,671,899
PERMANENT MAGNET DETENT MEANS FOR A ROTARY SOLENOID

Charles E. Clift, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed April 30, 1971, Ser. No. 139,102
Int. Cl. H01f 7/08
U.S. Cl. 335—253 14 Claims

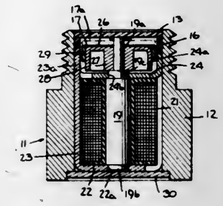


An electromagnetic rotary solenoid having a permanent magnet rotor and a plurality of selectable coils utilizes the combination of a permanent magnet and a coil for the no signal or detent position to effect a rotation restraining force on the rotor during a no signal input. The circuit effecting the operation of the solenoid simultaneously energizes the appropriate selectable coil and the coil associated with the permanent magnet whereby the selectable coils magnetic field creates a torque acting on the rotor to position it and the magnetic field of the coil associated with the permanent magnet nulls out the restraining force of the permanent magnet.

3,671,900
ROTARY ACTUATOR AND INDICATOR

Eugene F. Loughran, Jr., Oakville, Conn., assignor to North American Philips Corporation, Waterbury, Conn.

Filed Aug. 25, 1969, Ser. No. 852,634
Int. Cl. H01b 50/18
U.S. Cl. 335—272 15 Claims

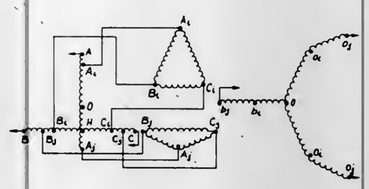


An indicator having an armature with spaced magnetic poles mounted to pivot back and forth on its axis to match indicia on the armature with fixed indicia at each end position of the pivotal motion. The armature poles are attracted alternately to the two end positions by stator poles energized by a coil supplied with current that corresponds in magnitude or direction of flow with the operating condition under surveillance. Pivotal motion of the armature is limited by a pin, either on the armature or on the stator, that fits into an annular slot in the stator or armature. The armature can move axially to a limited extent, and to hold the disc in either of its limit positions, the ends of the slot are further axially indented to receive the pin. The armature is free to move axially far enough to disengage the pin from the indentations but not completely free of the slot.

3,671,901
ANTI-HARMONIC TRANSFORMER

Jacques Francois Marie-Joseph Lys, 3 bis Place Marquis 92, Clamart, France

Filed Jan. 18, 1971, Ser. No. 107,048
Claims priority, application France, Jan. 19, 1970, 7001717
Int. Cl. H01f 33/00
U.S. Cl. 336—5 6 Claims



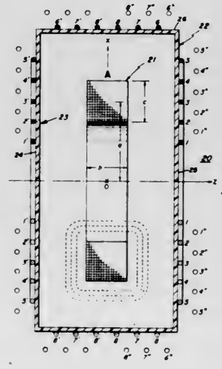
Devices for eliminating in a three-phase voltage transformer T, separating two networks A and B the voltage harmonics preexisting within the three phase voltage feeding A and detrimental to B, or the current harmonics generated by B and detrimental to A. The devices include single phase transformers, the primary windings of which are "delta" coupled and the secondary windings of which are "star" coupled, the angles determined by the legs of the triangles and of the stars exhibiting unique values, together with single phase autotransformers for connection to the A and B networks. When eliminating only current harmonics, T need only be constituted of two single phase transformers the primary secondary windings of which are in quadrature together with single phase transformers, the windings of which are connected to specific current taps provided on the above-mentioned trans-

formers. They can be used in installations for electrochemistry, electrometallurgy, power distribution of d.c. current and for installations of static power conversion.

3,671,902
SHIELDED INDUCTIVE DEVICE

Willem F. Westendorp, Schenectady, N.Y., assignor to General Electric Company

Filed May 25, 1971, Ser. No. 146,696
Int. Cl. H01f 15/04
U.S. Cl. 336—84 10 Claims

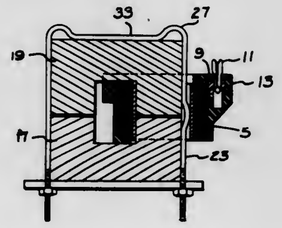


Cylindrical superconductive coil is shielded to provide net zero magnetic field exterior of a cylindrical shield located a predetermined distance from the coil by winding about the shield, and about the ends thereof, winding which carry predetermined currents sufficient to just neutralize the external field due to the current in the coil at the shield.

3,671,903
NON-INFLAMMABLE HORIZONTAL OUTPUT TRANSFORMER

William L. Arrington; Wayne Carlton Gantt, both of Batavia, and Leonard Joseph Gouger, Albion, all of N.Y., assignors to GTE Sylvania Incorporated

Filed Feb. 8, 1971, Ser. No. 113,463
Int. Cl. H01f 27/26, 27/30
U.S. Cl. 336—96 4 Claims

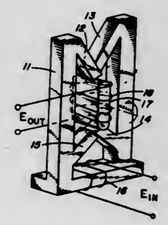


A non-inflammable horizontal output transformer includes a coil member having a plurality of leads extending therefrom, an arcuate ring member affixed to the coil member with a plurality of contact pins extending outwardly therefrom and connected to the leads, an envelope of non-inflammable material surrounding the coil member, ring member, and leads and the coil member supported by a hollow insulator telescoped over a pair of confronting leg members of a pair of U-shaped core members positionally held by a U-shaped wire member.

3,671,904
PICK-OFF

Everett R. Tribken, Scottsdale, Ariz., and Frederic L. Miller, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Continuation of Ser. No. 795,769, Jan. 16, 1969, abandoned.
This application Jan. 22, 1971, Ser. No. 109,027
Int. Cl. H01f 21/06
U.S. Cl. 336—132 5 Claims

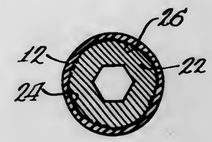


An electrical pick-off for measuring small quantities of angular rotation. An exciting coil energizes a core having two pairs of poles, spaced relatively close together. An output coil is located between the poles and has a low magnetic reluctance core arranged to move within the coil although the coil is fixed with respect to the pole pieces.

3,671,905
INTERNALLY POLYGONAL COIL FORM

John O. Renskers, Crystal Lake, Ill., assignor to Collcraft, Inc., Cary, Ill.

Filed Oct. 26, 1971, Ser. No. 191,993
Int. Cl. H01f 21/06
U.S. Cl. 336—136 4 Claims



A low cost tubular coil form having regularly spaced flats on the inside surface thereof for improved tuning core retention.

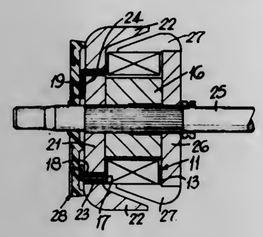
3,671,906
WINDING FORMERS FOR USE IN THE MANUFACTURE OF ROTOR ASSEMBLIES FOR DYNAMO ELECTRIC MACHINES

John Barry Hodges, 155, The Crescent, Walsall, and Gordon Howard Maybury, 14, Ashlawn Crescent, Solihull, both of England

Filed Oct. 29, 1970, Ser. No. 85,180
Int. Cl. H01f 27/30
U.S. Cl. 336—208 3 Claims

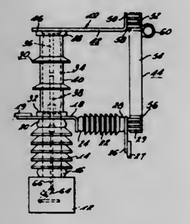
A winding former including a tubular, flexible cylindrical portion having an integral peripheral outwardly extending flange at each end thereof. The cylindrical portion and the

flanges are formed with a split which extends the full length of the former so that the former can be compressed radially. One



of the flanges has a hole through which one end of a coil wound on the former can extend in use.

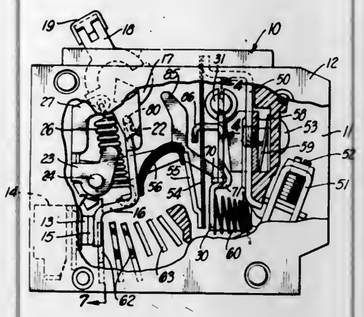
3,671,907
VACUUM SWITCH WITH POWER FUSE
Richard G. Brunner, Dedham, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 23, 1970, Ser. No. 92,030
Int. Cl. H01h *33/66*; **H1h** *85/02*; **H01h** *85/54*
U.S. Cl. 337—4 **6 Claims**



A vacuum switch used for switching high voltage capacitive loads comprises a support chassis on which a hollow support insulator is mounted. One or more vacuum interrupters, each comprising an insulated envelope and relatively movable contacts, are mounted on the hollow support insulator. Operating means are mounted on the support chassis and comprises an insulated operating rod which extends through the hollow support insulator for operating the vacuum interrupter(s). A replaceable power fuse is provided. Means, including a stand-off insulator and fuse connectors are provided to mount the switch in parallel physical relationship with the hollow support insulator and to electrically connect the fuse in series circuit with the vacuum interrupter(s). In one embodiment, a single vacuum interrupter is provided and it is disposed in parallel physical relationship with the hollow support insulator. In other embodiments, a plurality of vacuum interrupters are provided which are transversely disposed with respect to the hollow support insulator. In one of the other embodiments, one of the vacuum interrupters is physically located within the stand-off insulator.

3,671,908
CIRCUIT BREAKER
Harold E. Beittary, West Covina, and John G. Palmer, Pasadena, both of Calif., assignors to Zinsco Electrical Products, Los Angeles, Calif.
Filed April 10, 1970, Ser. No. 27,395
Int. Cl. H01h *71/16*
U.S. Cl. 337—54 **13 Claims**

A circuit breaker switch with thermal and magnetic tripping, with the thermal element positioned between the tripping mechanism pivots permitting increased contact force for a given latch load. A common trip for multipole switches with the overload latch and the common trip linkage having a common pivot axis, but independent pivots, with the latch



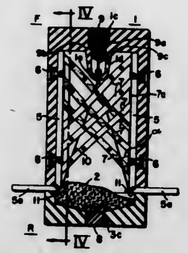
moving freely for a small tripping distance and on moving a greater distance, driving the common trip linkage. An open arc plate design and stamped latch and trip arm having engaging surfaces with smooth plastically deformed edges.

3,671,909
HIGH-VOLTAGE FUSE WITH ONE PIECE FUSE LINKS
Frederick J. Kozacka, South Hampton, and Richard A. Belcher, Hampton Falls, both of N.H., assignors to The Chase-Shawmut Company, Newburyport, Mass.
Filed Feb. 17, 1971, Ser. No. 116,037
Int. Cl. H01h *85/10*, *85/12*
U.S. Cl. 337—160 **12 Claims**



A high-voltage fuse for interrupting both protracted overload currents and major fault currents and operating as a current-limiting fuse when interrupting major fault currents. The fuse includes one or more fusible elements each operating in the fashion of a composite fusible element including serially connected ribbon sections and a wire section interposed between, and spot-welded to, the ribbon sections. In fuses according to this invention one single stamping, i.e. one single length of sheet silver stock takes the plate of a spot-welded composite of ribbon sections and a wire section. The wire like effect is achieved by providing an oblong hole, or window, in the center region of the ribbon fuse link, resulting in the formation of two wire-like strips of small cross-sectional area to both sides of the oblong hole or window.

3,671,910
COMPACT POLYPHASE FUSE
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Dec. 8, 1970, Ser. No. 96,110
Int. Cl. H01h *71/20*
U.S. Cl. 337—146 **9 Claims**



A polyphase fuse of reduced bulk having ribbon fuse links whose length exceeds the height of the individual chambers or compartments of the casing or housing of the polyphase fuse wherein the fuse links are located. The ribbon fuse links are conductively connected to terminal or conductor strips whose juxtaposed surfaces are—or may be—fully utilized for the arrangement of ribbon fuse links. The terminal strips are individually affixed to the housing of the fuse and insulating spacers between the terminal strips are dispensed with.

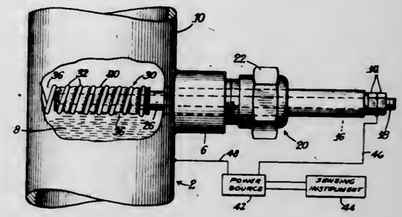
3,671,911
SYSTEM OF FLUID COOLED FUSES
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Dec. 10, 1970, Ser. No. 96,761
Int. Cl. H01h *85/04*
U.S. Cl. 337—166 **7 Claims**



A system of fluid cooled electric fuses is made up of a modular stack of alternating fuse units, and cooling units, or heat exchangers, which are cooled by transverse flows of a cooling medium which flows through said cooling units, or heat exchangers.

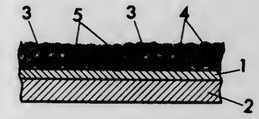
3,671,912
LIQUID MOISTURE DETECTOR
Leo S. La Sota, Heidelberg, Pa., assignor to McGraw-Edison Company, Elgin, Ill.
Filed Feb. 22, 1971, Ser. No. 117,359
Int. Cl. H01c *13/00*
U.S. Cl. 338—34 **10 Claims**

Detector apparatus or a moisture detection device is disclosed as having an electrode rod extending from the exterior of an enclosure containing insulating oil into the interior of the enclosure and a hollow electrode positioned coaxially around the rod electrode within the enclosure. The rod electrode is electrically insulated from the enclosure and hygroscopic material is positioned between the hollow electrode and the rod electrode and contacted by the insulating oil through at least one opening in the hollow electrode so that any moisture



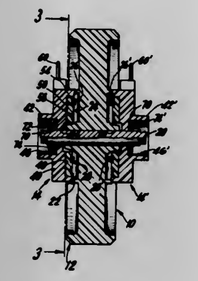
in the fluid will be taken up by the hygroscopic material. The rod electrode, the moisture in the hygroscopic material and the hollow electrode form an electrically conductive circuit connnected to a power source and to sensing instrumentation that will indicate, for example, current conducted by the circuit to thereby indicate the amount of moisture in the hygroscopic material and thus the amount of moisture in the insulating oil.

3,671,913
AGING-PROOF HUMIDITY SENSING ELEMENT AND METHOD FOR THE PRODUCTION THEREOF
Shigeo Maniya, and Ryoichiro Yajima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Seginomiya Seisakusho, Tokyo, Japan
Filed March 18, 1970, Ser. No. 20,620
Claims priority, application Japan, March 19, 1969, 44/20430
Int. Cl. H01c *13/00*
U.S. Cl. 338—35 **11 Claims**



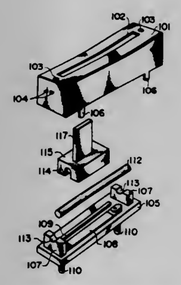
A humidity sensing element comprises an insulating base plate provided with gold electrodes and a film or layer metal oxide particles or a mixture of metal oxide particles and carbon particles. The micro-gaps between said particles are filled up with a hydrophilic high polymer, thereby minimizing the deterioration by aging. The humidity sensing element can be produced by a method which comprises forming a film made of metal oxide particles or a mixture of metal oxide particles and carbon particles on an insulating base plate provided with gold electrodes, immediately whereupon said film is impregnated with a solution of a hydrophilic high polymer in a water-miscible volatile solvent and subsequently volatilizing off said solvent. The thus produced humidity sensing element shows a substantially constant electric resistance at a given humidity even with the passage of a long period of time, thereby enabling a hydrometer capable of exactly indicating humidity with high durability to be provided.

3,671,914
ROTARY POTENTIOMETER
Hans H. Wormser, New Milford, N.J., assignor to Markite Corporation, New York, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,314
Int. Cl. H01c 9/02
U.S. Cl. 338—131 15 Claims



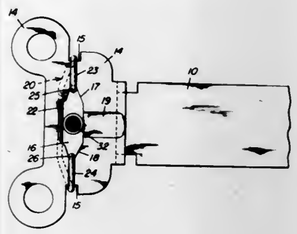
In a ganged potentiometer assembly, two elements containing a resistance track and a collector track are rigidly and nonrotatably mounted in support structure in spaced opposition to each other. An intermediate, rotatable wheel, loosely journaled on a shaft that extends between the two potentiometer elements, is provided with opposite facing wiper means which are in contact with the resistance and the collector tracks.

3,671,915
SLIDING TYPE VARIABLE RESISTOR
Nobuyuki Sasaki, Neyagawa; Shunzo Oka, Hirakata, and Tadashi Yano, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 26, 1971, Ser. No. 109,924
Claims priority, application Japan, Jan. 30, 1970, 45/9923; Jan. 30, 1970, 45/9924; Jan. 30, 1970, 45/9925; Jan. 30, 1970, 45/9926; Jan. 30, 1970, 45/9927
Int. Cl. H01c 9/02
U.S. Cl. 338—183 6 Claims



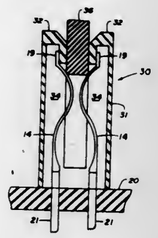
A sliding type variable resistor having a resistance element and a conductive element mounted in parallel with each other on a dielectric base, a slider having a conductor on its lower surface, a guide rail for guiding the sliding movement of the slider, a housing covering the dielectric base for accommodating thereinside the slider and the guide rail, and an operating means fixed to the slider and projecting to the exterior through a slot in the upper wall of the housing. In the variable resistor, supporting pedestals are provided at longitudinal opposite end portions of the dielectric base for supporting the opposite ends of the guide rail thereby to ensure smooth and stable sliding movement of the slider.

3,671,916
SINGLE SPRING WIRE GROUND CLIP
John J. Opalenik, New Britain, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.
Filed April 14, 1971, Ser. No. 133,965
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 5 Claims



A wire grounding clip uses only one spring wire member provided to engage the securing screw, and a portion of the bridge is pressed out of the plane of the bridge as an abutment in position to support the securing screw against the pressure of the spring wire, so as to hold the screw in a position perpendicular to the bridge to facilitate assembly into the metal box.

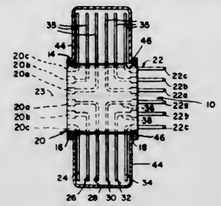
3,671,917
PRINTED CIRCUIT BOARD CONNECTOR
John P. Ammon, and Frederick T. Inacker, both of Dallas, Tex., assignors to Ammon & Champion Company, Inc., Dallas, Tex.
Filed May 20, 1970, Ser. No. 38,989
Int. Cl. H05k 1/07
U.S. Cl. 339—17 L 12 Claims



An apparatus for connecting and terminating contact fingers on the edge of a printed circuit board to connect them to external circuitry. Connector terminals are press fitted into a board and an insulative housing is snapped over the top of the terminals. The structure of the insulative housing permits the contactor portions of the terminals to be preloaded to the proper gap and tension and further provides a closed entryway for a printed circuit board to protect the terminal ends from damage during connection.

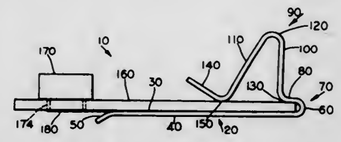
3,671,918
INTRACONNECTOR WIRING CHANGE MODULE
John E. Mitchell, Culver City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed April 28, 1969, Ser. No. 819,903
Int. Cl. H01r 29/00
U.S. Cl. 339—18 R 13 Claims

The module is provided with input and output electrical contacts which are arranged to receive conventional cable terminations. The input and output contacts are respectively brought out from the interior of the module body to exposed connection pins. There are as many exposed connection pins as there are input and output contacts. Connections are made between or among the several connection pins by conven-



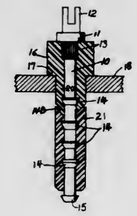
tional means in order to change the scheme or arrangement of wiring connections in an electronic apparatus to another connection scheme. An insulating and sealing cover or permanent potting may be placed over the pins to protect the newly made connections.

3,671,919
PROTECTIVE CLIP AND ELECTRONIC ASSEMBLY USING THE SAME
Samuel L. Kauffman, Newtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Feb. 9, 1971, Ser. No. 113,975
Int. Cl. H01r 31/08
U.S. Cl. 339—19 5 Claims



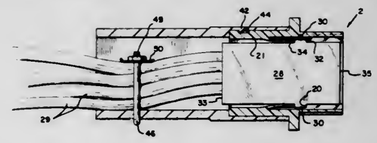
An electronic module which comprises a printed circuit board, on which is mounted an MOS integrated circuit module, utilizes a resilient, stainless steel clip secured to the edge of the board to short out the conductive circuit runs to the integrated circuit module and to mask them from the solder bath in a wave soldering machine through which the printed circuit board is passed.

3,671,920
INSULATED ELECTRIC TERMINAL ASSEMBLY
James F. Iantorno, Mamaroneck; John Wagner, Pleasantville, and Stephen J. Schumacher, Larchmont, all of N.Y., assignors to Sealectro Corporation, Mamaroneck, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,961
Int. Cl. H01r 13/40
U.S. Cl. 339—59 R 6 Claims



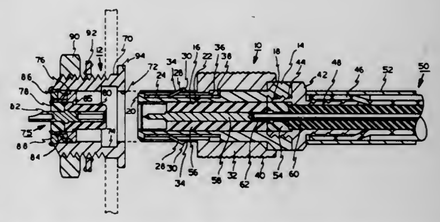
A conductive metal terminal with contact making portions extending above and below a metal panel. A two-piece insulating assembly permits the terminal to be inserted into a hole in the metal panel. Then, upon application of a tool, the bottom half of the insulator assembly is forced toward the panel and locks the terminal into place. The bottom half of the insulator is retained in its locked position by barb-like annular flanges. The top half of the insulator rests against a flanged head on the metal terminal.

3,671,921
MULTI-CONTACT ELECTRICAL CONNECTOR
Charles Edward Baker, III, Middletown, and Albert Casciotti, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 28, 1970, Ser. No. 84,678
Int. Cl. H01r 13/48
U.S. Cl. 339—59 M 1 Claim



Multi-contact Connector Assembly comprises plug and receptacle which contain matable contact terminals. Both plug and receptacle comprise a molded plastic shell member and a molded insert having contact cavities therein, terminals being contained in the insert cavities.

3,671,922
PUSH-ON CONNECTOR
William Max Erich Zerlin, Newtown; Roger Peter Avery, Bethel, and David Hugh Royce, Brookfield, all of Conn., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Aug. 7, 1970, Ser. No. 61,923
Int. Cl. H01r 13/54
U.S. Cl. 339—74 R 6 Claims



A locking push-on, pull-off connector which maintains good electrical contact even under conditions where there is movement in the connector. The contact elements of one of the mating connector members are mounted for axial movement in the member and are normally biased by a resilient means to a forward-most position. Leading surfaces of mating contact elements in the two members are adapted to bear against each other to make electrical contact when the members are mated with the elements which are mounted for movement being adapted to be moved back to a predetermined position in their member by the force applied to them by the other contact element. This movement is against the force of the resilient means. A means is provided for locking the contact members together with the moveable element in the predetermined position. The locking means includes a bore in one of the mating members which is sized to accept a leading portion of the other member, said bore having an enlarged internal counterbore, and a wrap spring mounted on the leading portion of the first member. The wrap spring has tabs projecting at an angle

to the connector axis which tabs are adapted to be compressed by the walls of the bore as a leading portion of the member is fitted into the bore and to expand into the enlarged counterbore to lock the members together. A sleeve is mounted for movement in an axial direction on the spring-containing member. This sleeve has openings through which the tabs normally project, the walls of the sleeve being moved over the tabs to compress them and unlock the members as the sleeve is moved in a rearward direction.

3,671,923
LAMP SOCKET

Lawrence E. Rieth, Springfield, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed May 3, 1971, Ser. No. 139,682
Int. Cl. H01r 33/12
U.S. Cl. 339—93 L 5 Claims

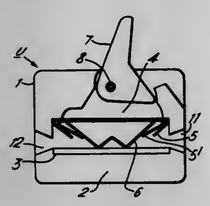


The following specification describes a lamp socket insulator having integrally formed cantilever extension walls for supporting a lamp electrically connected to a pair of wedge type electrical receptacles carried by the socket with a lamp housing engaged with the insulator in turn encircling and supporting the extension walls.

3,671,924
ELECTRIC CONNECTOR

Hideo Nagano, 13-5, 5-chome Shimo-Meguro, Tokyo, Japan

Filed Sept. 23, 1970, Ser. No. 74,742
Claims priority, application Japan, Sept. 24, 1969, 44/90955
Int. Cl. H01r 9/06
U.S. Cl. 339—95 D 8 Claims

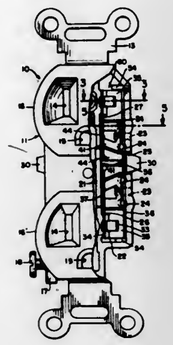


An electric connector for electrically connecting various electric wires and plugs in a very simple manner comprises a housing made of electrically insulating material, an electrically conductive place, a spring means disposed above said electrically conductive plate and consisted of a retaining plate spring having an end turned back inwardly at an angle larger than 90° and a clamping plate spring disposed underneath said retaining plate spring, and an operating member movably disposed above said spring means so as to assume a first position and a second position. In said first position of said operating member a conductor to be connected is allowed to be inserted into said electric connector and in said second position of said operating member, said spring means is depressed to urge said conductor against said electrically conductive plate. The electric connector further comprises a means for supporting said spring means in such a manner that when said operating member is in said first position, there can be formed a spacing between said spring means and said electrically conductive plate sufficient for inserting said conductor therebetween without striking against said spring means so as to connect said conductor electrically and mechanically in a very stable manner.

3,671,925
PRESSURE LOCK AND RELEASE TERMINAL FOR AN ELECTRICAL RECEPTACLE

William Drapkin, Suffolk, N.Y., assignor to Sister Electric Inc., Glen Cove, N.Y.

Filed Jan. 5, 1971, Ser. No. 103,991
Int. Cl. H01r 9/12, 23/04
U.S. Cl. 339—95 D 12 Claims

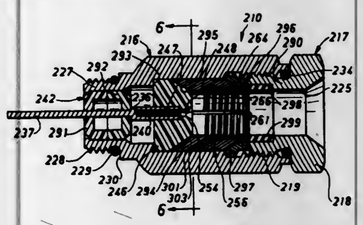


A terminal for an electrical receptacle is provided with a pair of parallel tongues adapted to lock and hold a bare wire conductor without requiring the use of a tool. The wire conductor can be released without opening the receptacle by inserting a tool through a tool access notch and engaging a pair of release tabs on the wire gripping tongues.

3,671,926
COAXIAL CABLE CONNECTOR

Zdenek Nepovim, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

Filed Aug. 3, 1970, Ser. No. 60,410
Int. Cl. H01r 17/04, 7/06
U.S. Cl. 339—177 E 11 Claims

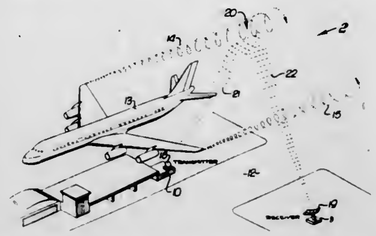


A connector for attachment to the end of a coaxial cable having an axial core electrode and an outer conductive sheath electrode includes a sheath-gripping ferrule and a collet sleeve for gripping an exposed forward end portion of the core electrode. The ferrule and the collet sleeve are disposed within a tubular housing and a plug bolt is threaded into the rearward end of the connector for tightening both the ferrule and the collet sleeve radially inwardly against the electrodes. Forward axial movement of the plug bolt is converted to forward and radially inward movement of the sheath-gripping ferrule through a first pair of co-acting frusto-conical cam surfaces and the resulting movement of the ferrule is operative through at least one second pair of frusto-conical cam surfaces to cause radially inward compression of the collet sleeve onto the exposed forward end portion of the core electrode.

3,671,927
AIRCRAFT VORTEX DETECTION SYSTEM

Andrew Peter Proudian, Chatsworth, and Martin Balser, Covina, both of Calif., assignors to Xonics Inc., Van Nuys, Calif.

Filed Dec. 14, 1970, Ser. No. 97,765
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 10 Claims

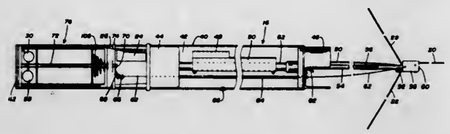


A system for detection and measurement of aircraft wing tip vortices. An acoustic radar with transmitter and receiver spaced from each other in a plane perpendicular to the flight path for illuminating the vortex and picking up scattering of the transmitter signal produced by the vortex, using Doppler frequency spectrum analysis with the maximum and minimum frequencies providing a measure of vortex intensity. A plurality of receivers operating with a common transmitter providing coverage of an area of interest along a flight path.

3,671,928
AUTOMATICALLY ENERGIZABLE SONOBUOY

James F. Schultz, Dallas, Tex., assignor to Aquatronics, Dallas, Tex.

Filed May 21, 1970, Ser. No. 39,362
Int. Cl. H04b 1/59
U.S. Cl. 340—2 11 Claims

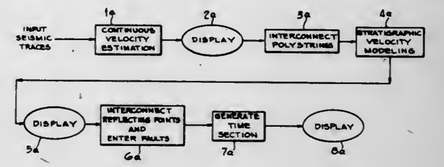


A buoy housing includes flotation structure and an antenna movable from a retracted position inside the housing to an extended position outside the housing. An acoustic transducer is contained within a lower compartment in the housing and is attached to the housing by a flexible line. A transmitter is contained within the buoy housing and is operable to transmit from the antenna radio signals representative of acoustic signals received by the acoustic transducer. Structure is provided in the buoy housing which is responsive to contact with water for moving the antenna to the extended position and for lowering the acoustic transducer from the housing into the water for a preselected depth. A time delay device delays the lowering of the acoustic transducer from the housing for a predetermined time after the housing is placed in the body of water, in order to avoid entanglement of the acoustic transducer with towed streamers and the like.

3,671,929
CONVERSION OF SEISMIC DEPTH SECTIONS TO SEISMIC TIME SECTIONS

William H. Ruehle, Duncanville; John D. Hodge, Jr., Dallas, and William C. Gray, Houston, all of Tex., assignors to Mobil Oil Corporation

Filed Jan. 20, 1970, Ser. No. 4,382
Int. Cl. G01v 1/00
U.S. Cl. 340—15.5 FC 8 Claims

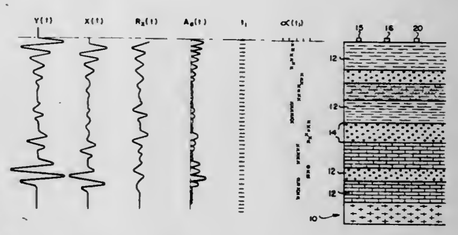


In seismic exploration, a seismic time section is generated in a form which can be compared to the original seismic traces. In the preliminary processing, a seismic depth section is generated to specify the velocity, thickness and depth of each reflecting zone of the subsurface formation. For a particular reflecting zone, the coordinates of sampling points along the interface are generated. The ray path, normal to a sampling point and extending through successive layers to a surface coordinate point, is determined. From the velocity and thickness of each zone, the travel time of seismic energy between the sampling point and the surface coordinates is computed. Travel times are plotted as a function of the surface coordinates to generate a travel time curve. The foregoing procedure is repeated for succeeding reflecting zones to generate a time section which can be compared to the original seismic traces.

3,671,930
METHOD OF SEISMOGRAPHIC EXPLORATION BY MEASURING THE ATTENUATION COEFFICIENT IN GEOLOGIC SECTION

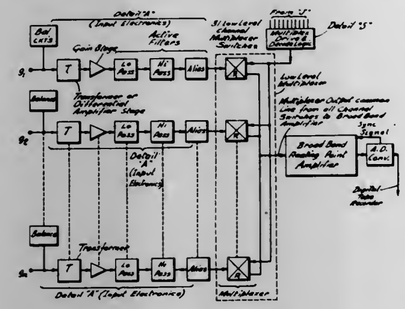
Emil J. Mateker, Jr., Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed June 18, 1970, Ser. No. 47,235
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 4 Claims



This invention pertains to a method of seismographic exploration. At an observation station reflected seismic signals from the reflected interfaces in a geologic section are recorded as an observed amplitude-time recording. At a reference station the reflected seismic signals are recorded as a reference amplitude-time recording. The reference recording is converted to a reflectivity function, and the observed amplitude-time recording is divided by the reflectivity function to obtain a desired amplitude function from which is derived a measure of the attenuation coefficient of the reflected seismic signals in the studied geologic section.

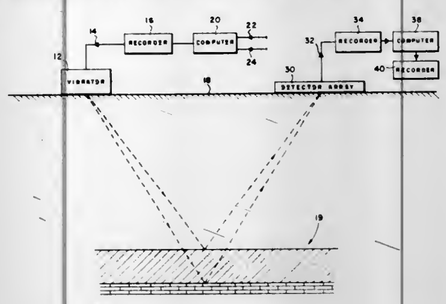
3,671,931
AMPLIFIER SYSTEM
Robert J. Loofbourrow, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Sept. 4, 1969, Ser. No. 855,204
Int. Cl. G01v 1/24
U.S. Cl. 340—15.5 GC 63 Claims



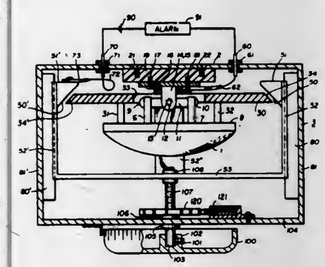
A multi-channel wide dynamic range automatic high speed digital gain ranging amplifier system having a common amplifier network for a plurality of channels together with a low level multiplexer means having a plurality of input circuits corresponding to the respective channels of the amplifier system, a common multiplexer output circuit coupled to the input of the common amplifier network and means for time sequentially switching the respective channels of the amplifier system to the input of the amplifier network during respective channel operating intervals. The common amplifier network contains a plurality of amplifier stages coupled in cascade circuit relationship, wherein improved bandwidth is provided by D.C. coupling between the successive cascaded stages together with a filter in a feedback path from the output of the last cascaded stage to the input of the first cascaded stage. The respective outputs of the amplifier stages are coupled through a common output circuit to a comparator circuit for comparison with a predetermined reference signal. Sequencing means are provided for momentarily closing switch means in timed sequence for sequentially coupling the respective outputs of the successive amplifier stages to the comparator circuit during successive, relatively brief sampling time intervals occuring within the respective channel operating interval. Means are provided for selectively maintaining one of the switch means in its closed position during the respective channel operating interval for a holding time interval of longer duration than the sampling time interval when an output signal coupled through said switch means to the common output circuit during one of the sampling intervals bears a predetermined relationship to the reference signal. In a preferred embodiment of the amplifier system, the common output circuit is coupled to an analog-to-digital converter and thence to digital recording means for recording signals corresponding to both the instantaneous digital value of the signal at the common output circuit and the gain level to which the signal is amplified, as determined by the one of said switch means selectively maintained closed to pass the signal to the analog-to-digital converter.

3,671,932
TWO-SWEEP SIGNAL TRANSMISSION AND RECEPTION IN SEISMIC EXPLORATION
Mark Holzman, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed May 4, 1970, Ser. No. 34,067
Int. Cl. G01v 1/22
U.S. Cl. 340—15.5 CP 4 Claims

This invention contemplates a method of seismic exploration using vibrators which are driven simultaneously by the combination of two distinct sweep signals. The combined signal is obtained, for example, by adding or subtracting the two distinct signals. The reflected seismic signals are detected in the usual fashion and recorded on a recording medium such as magnetic tape. If the number of seismic signals transmitted into the ground is an even number then the reflected seismic signals corresponding to each of said distinct signals can be obtained by summing, which includes adding and/or subtracting, the detected seismic signals.



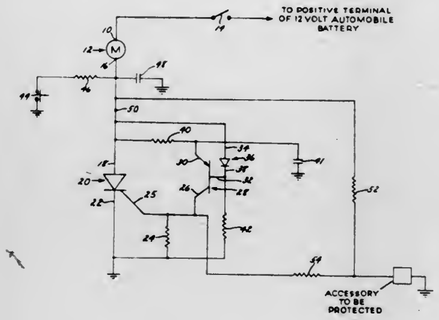
3,671,933
VEHICULAR TILT SENSOR HAVING MARGIN OF SAFETY ADJUSTMENT
Billy W. Barnes, Durham, N.C., assignor to Sperry Rand Corporation
Filed Feb. 2, 1970, Ser. No. 7,616
Int. Cl. H01h 35/02
U.S. Cl. 340—52 H 1 Claim



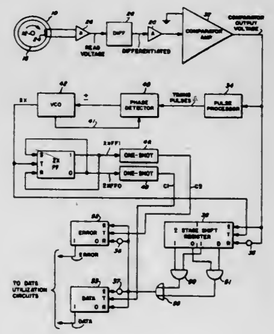
An inclination sensor provides means for detection of dangerous attitudes of vehicles, such as road and off-road vehicles including farm tractors, earth-moving equipment, and the like, whether caused by negligence on the part of the operator or by accident. The sensor provides a warning signal or automatically controls the vehicle so that it does not upset thereby endangering the life of the operator or others in its vicinity.

3,671,934
AUTOMOBILE THEFT ALARM FOR DETECTING UNAUTHORIZED ENERGIZATION OF RESISTIVE LOAD
Rudor M. Teich, 6040 Boulevard East, West New York, N.J.
Filed Nov. 2, 1970, Ser. No. 86,222
Int. Cl. B60r 25/10
U.S. Cl. 340—63 15 Claims

This invention relates to a method and device for detecting and indicating the unauthorized entry into an automobile, the unauthorized use of an automobile, and/or the unauthorized removal of an accessory of an automobile. In this invention, a voltage sensing device designed to operate only when the rate-of-change of a potential being sensed is greater than a predetermined value such as would occur when a resistive load is connected across the terminals of a battery. The rate-of-change voltage sensing device is coupled to monitor the voltage from the battery of a car. The rate-of-change voltage sensing device is not sensitive to and does not indicate the mere physical phenomena of a reduction in the battery terminal voltage. An inductive load such as motor or a coil, while it does result in a drop of battery terminal voltage, does not produce a pulse signal having a substantial rate-of-change and, therefore, will not initiate activation of the voltage sensing device. Thus, the voltage sensing device, when connected to a car battery, is selectively sensitive to the coupling of resistive loads to the battery, and insensitive to the operation of a normally operating accessory such as an electric clock.

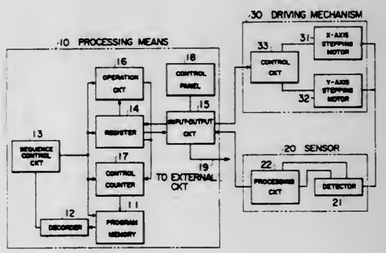


3,671,935
METHOD AND APPARATUS FOR DETECTING BINARY DATA BY POLARITY COMPARISON
James P. Lipp, and William H. Jones, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc.
Filed May 28, 1970, Ser. No. 41,493
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1 AB 2 Claims



An apparatus and a method is disclosed in which binary data is retrieved from a medium on which data is stored. A read signal representative of the binary data is derived, differentiated, and sampled to obtain two sample signals representative of the polarity of the differentiated read signal. The two sample signals are compared to obtain the binary value of the data.

3,671,936
DISCONTINUITY PROCESSING APPARATUS FOR AUTOMATIC CURVE TRACING SYSTEM
Tadashi Takahashi; Masatoshi Miyazaki, both of Sendai; Yasuhiko Ogawa, Natori; Tadashi Sato, and Kazuhiko Kakuta, both of Tokyo, all of Japan, assignors to Iwatsu Electric Company Ltd.
Filed May 28, 1970, Ser. No. 41,296
Claims priority, application Japan, May 31, 1969, 44/42077
Int. Cl. G06k 9/16
U.S. Cl. 340—146.3 AE 2 Claims

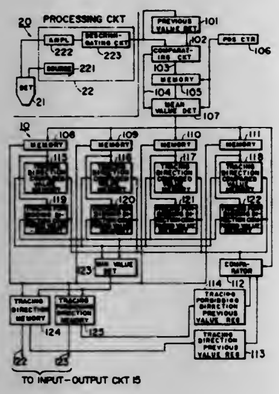


In an automatic curve tracing system comprising a detector for performing a round scanning operation along the periphery of an area containing a curve to be traced to provide an information regarding the presence or absence and the position of the curve, means responsive to the information to move the detector in a predetermined direction and over a predetermined distance to trace the curve and means for repeating above described tracing operation, there is provided a discontinuity processing apparatus comprising means to broaden the scanning area of the detector, means to determine the number of informations generated by the detector when it performs the round scanning operation, means responsive to the number of informations corresponding to a discontinuity of the curve and means to broaden the scanning area of the detector when it reaches the discontinuity to judge the presence or absence of another curve to be traced.

3,671,937
AUTOMATIC PATTERN TRACING SYSTEMS
Tadashi Takahashi; Masatoshi Miyazaki, both of Sendai; Yasuhiko Ogawa, Natori; Tadashi Sato, and Kazuhiko Kakuta, both of Tokyo, all of Japan, assignors to Iwatsu Electric Company, Ltd., Suginamiku, Tokyo, Japan
Filed May 28, 1970, Ser. No. 41,297
Claims priority, application Japan, May 31, 1969, 44/42071; May 31, 1969, 44/42072
Int. Cl. G06k 9/16
U.S. Cl. 340—146.3 AE 2 Claims

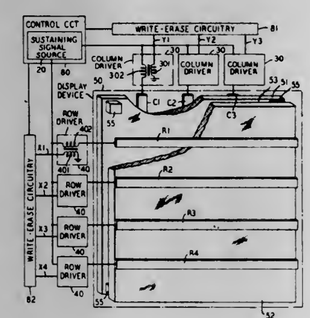
An automatic system for tracing a pattern depicted on a sheet of drawing comprises a detector operative to determine the presence or absence of the pattern to convert it into an electric signal, tracing direction detecting means responsive to the electric signal to judge whether the pattern is to be traced or not so as to provide a signal for moving the detector in the tracing direction, a driving mechanism responsive to the signal from the tracing direction detecting means to relatively move the detector in a predetermined direction by a predetermined distance and means to generate a digital signal corresponding

to the tracing direction or a tracing spot, said detector detecting the information regarding the presence or absence of the



pattern in an area close to the pattern to be traced thus continuously tracing the same.

3,671,938
GASEOUS DISPLAY DEVICE
Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed May 2, 1969, Ser. No. 821,410
Int. Cl. H05b *37/00*; H01j *17/00*
U.S. Cl. 340—166 R **12 Claims**



An improved plasma display device in which the cellular or perforated middle layer of gas-filled holes is replaced with a substantially uniform continuous layer of gas, thereby simplifying manufacture and assembly of the device.

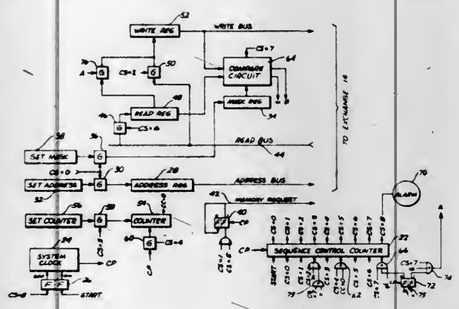
The display driving circuitry includes individual row and column pulse transformers having their secondary windings connected to a common alternating polarity sustaining signal source and having their primary windings connected to respective address signal input leads. An address signal on a selected row lead and column lead initiates discharge breakdown of the gas at the row-column intersection. The sustaining signal thereafter operates in conjunction with charge stored at the intersection by the initial breakdown to periodically break down the gas at the intersection. Initial breakdown is effected advantageously during a different interval than the interval in which periodic breakdown occurs at other intersections.

3,671,939
PER-CYCLE BASIS FREQUENCY SIGNAL RECEIVER
David Carlaw Trimble, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 15, 1970, Ser. No. 81,005
Int. Cl. H04q *1/44*
U.S. Cl. 340—171 **7 Claims**



In a communication system, signal tones are detected with protection against the false recognition of spurious tones by an arrangement that includes the combination of a per-cycle switch and a time delay circuit. Presence of signal tone continuously throughout each cycle or group of cycles is required rather than the conventional test for an "on-the-average" presence of tone throughout a given period.

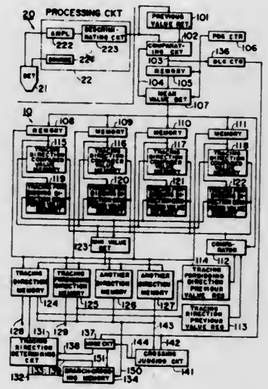
3,671,940
TEST APPARATUS FOR DIGITAL COMPUTER
Reinhard K. Kronies, Glendora, and Iver C. Hansen, Arcadia, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Filed March 19, 1970, Ser. No. 21,044
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **6 Claims**



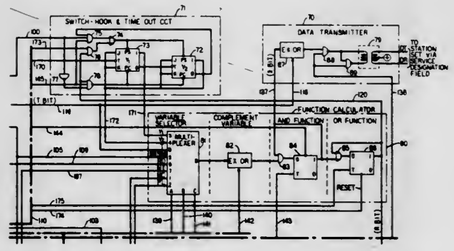
There is described an apparatus for monitoring the contents of any selected location in the main memory of a computer. The contents of an addressed location in memory is read out periodically and compared with the prior contents of the same memory location. On sensing a change in the contents of the memory location, operation of the computer is halted.

3,671,941
APPARATUS FOR JUDGING AND PROCESSING BRANCHES AND OR CROSSINGS FOR USE IN AUTOMATIC CURVE TRACING SYSTEM
Tadashi Takahashi; Masatoshi Miyazaki, both of Sendai; Yasuhiko Ogawa, Natori; Tadashi Sato, and Kazuhiko Kakuta, both of Tokyo, all of Japan, assignors to Iwatsu Electric Company, Ltd., Suginamiku, Tokyo, Japan
Filed May 28, 1970, Ser. No. 41,172
Claims priority, application Japan, May 31, 1969, 44/42073; May 31, 1969, 44/42074; May 31, 1969, 44/42075; May 31, 1969, 44/42076
Int. Cl. G06k *11/02*
U.S. Cl. 340—172.5 **7 Claims**

In an automatic curve tracing system wherein an area containing a curve to be traced is scanned by a detector and the detector is moved successively according to a positional information obtained by the scanning operation, there is provided apparatus for judging a branch and or crossing including means to judge whether the branch and or crossing are included or not in the scanning area and means to store the result of the judgement while the same branch and or crossing are contained in the subsequent scanning area.

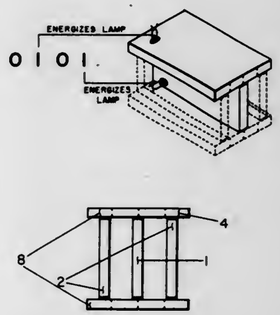


3,671,942
A CALCULATOR FOR A MULTIPROCESSOR SYSTEM
Dieter John Henry Knollman, Guttenberg, N.J., and James Louis Simon, Denver, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed June 5, 1970, Ser. No. 43,812
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **5 Claims**



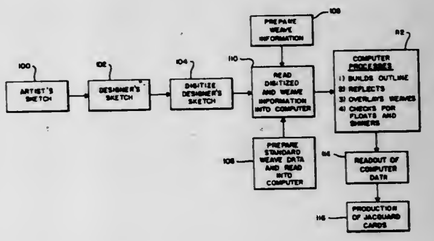
A program controlled multiprocessor system is disclosed. The system includes line modules and station modules which respectively provide the interface circuitry between PBX/CO lines and station set equipment. Modules are connected to a multi-phase clock which generates a reiterative list of binary coded instruction signals for directing circuit operations. Each of the modules acts simultaneously on receipt of the instruction signals to generate independently and dynamically separate work programs for each module. In addition, intermodule signals are exchanged during various subroutines in the program as directed by the simultaneously received instruction signals at each module.

3,671,943
NUMBERS SYMBOLOGY
Harold W. Thompson, Pasadena; Harry W. Smith, West Covina, and Paul A. McCann, Jr., Temple City, all of Calif., assignors to said Thompson, by said Smith and McCann
Continuation-in-part of Ser. No. 680,544, Nov. 3, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,236
Int. Cl. G06f *5/00*
U.S. Cl. 340—172.5 **11 Claims**



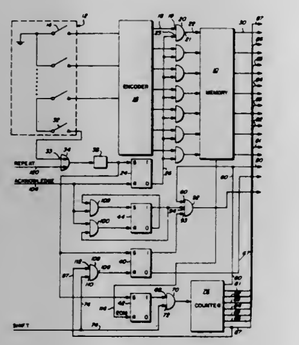
A graphic presentation of numbers in binary coded basimal form in such fashion that the binary encoding of each basimal digit forms a distinctive symbol easily recognizable to the human being as a number. It is also easily entered into a register by automatic means.

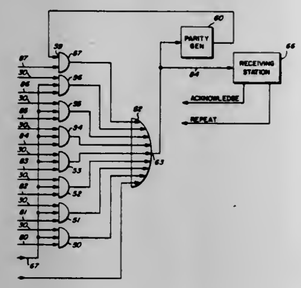
3,671,944
METHOD AND APPARATUS FOR PRODUCING JACQUARD CARDS
Harvey Dubner, Ridgewood, N.J., assignor to The Baxter Corporation
Filed Jan. 31, 1969, Ser. No. 795,657
Int. Cl. D03d *149/00*; G06d *17/00*
U.S. Cl. 340—172.5 **12 Claims**



A method and apparatus for producing Jacquard cards in which the pattern of the artist's sketch is digitized into numerical coordinates corresponding to pattern change on a pick by pick basis and a data carrying medium having this coordinate information thereon is produced. The data carrying medium is supplied to a computer which builds an outline of the pattern in its memory and overlays the outline with the appropriate weaves which are also stored in the computer memory. The finished pattern with overlaid weaves is read out of computer memory in a data format which can be readily converted into the finished Jacquard cards.

3,671,945
DATA MESSAGE CONTROL SYSTEM
Anthony F. Maggio, Jr., Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.
Filed Sept. 2, 1970, Ser. No. 68,868
Int. Cl. G08c 25/02
U.S. Cl. 340—172.5 **14 Claims**



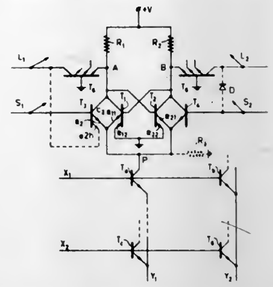


A system for controlling the transmission of data messages from a data handling device having a memory and data input apparatus such as a keyboard to a receiving station such as a central processor, the system (1) controlling the transmission to the receiving station of identifying data and a stored data message in response to transmit signals, (2) preventing input of data to the memory during the period of time between an initial transmit signal and a subsequent message acknowledgement from the receiving station, and (3) changing the message identifying data in response to the message acknowledgement such that successive data messages will be prefaced with different message identifying data.

3,671,946
BINARY STORAGE CIRCUIT ARRANGEMENT
Einar Andreas Aagaard, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,165
Claims priority, application Netherlands, May 29, 1969, 6908154
Int. Cl. G11c 11/40; H03k 3/286
U.S. Cl. 340—173 FF **8 Claims**

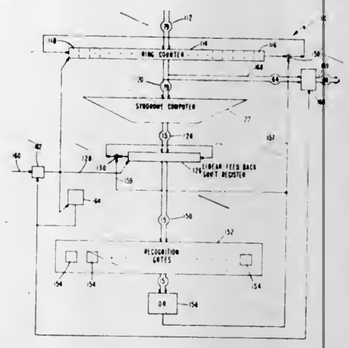
The invention relates to a bistable trigger circuit comprising two transistors and associated with a group of trigger circuits which may be not only in two binary information states in which one transistor is conducting and the other is cut off, but also in a rest position of low dissipation or in a state of higher dissipation for writing or reading information.

According to the invention the trigger circuits can be passed individually into the state of higher dissipation by means of two further transistors, the emitters of which are connected to



a control-point individually associated with the triggers and the collectors of which are connected to the respective collectors of the two first transistors, in which write signals are applied to the bases of the further transistors.

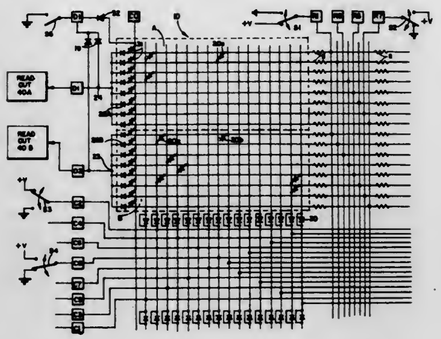
3,671,947
ERROR CORRECTING DECODER
Douglas C. Bossen, Wappingers Falls, and Mu-Yue Hsiao, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 28, 1970, Ser. No. 75,823
Int. Cl. G08c 25/00; G06f 11/12
U.S. Cl. 340—146.1 AL **10 Claims**



In apparatus for correcting an error in a codeword according to a syndrome, means is provided for transforming the computed syndrome through a succession of syndrome sequences or values and for counting the number of syndrome sequences in the succession. The values of each syndrome sequence are sensed to detect a distinct predetermined value and the bit in error is located from the count of the number of syndrome sequences and inverted for correction. The preferred embodiment uses a shortened Bose-Chaudhuri codeword and uses a linear feedback shift register to transform the syndrome values.

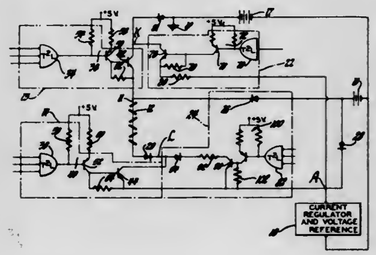
3,671,948
READ-ONLY MEMORY
Quentin C. Cassen, Tustin; James A. Luist, Anaheim, and Naif D. Salman, Orange, all of Calif., assignors to North American Rockwell Corporation
Continuation of Ser. No. 744,719, Nov. 12, 1968. This application Sept. 25, 1970, Ser. No. 75,739
Int. Cl. G11c 17/00, 11/36
U.S. Cl. 340—173 SP **6 Claims**

A microminiature diode array is formed as a high density matrix with at least one diode electrically connecting or not connecting a row of said matrix to a column of said matrix to provide upon electrical interrogation a two-state signal indica-



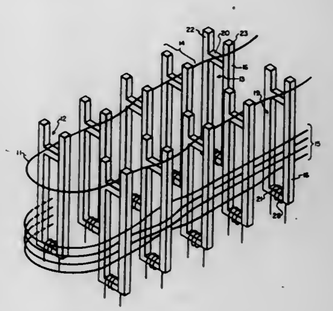
tive of the presence or absence of a diode at a particular row and column, and wherein parallel-coincident selection of rows and columns occurs with a sensing means provided for each independent sub-array of the matrix.

3,671,949
METHOD AND APPARATUS FOR DRIVING MEMORY CORE SELECTION LINES
William E. McLean, Hales Corners, and David E. Ruch, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 713,638, March 18, 1968, Pat. No. 3,544,978. This application April 27, 1970, Ser. No. 32,082
Int. Cl. G11c 11/06, 5/02
U.S. Cl. 340—174 TB **2 Claims**



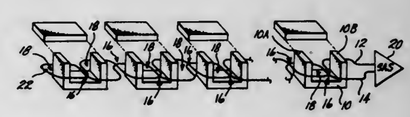
Apparatus for supplying selection lines of a magnetic core memory with drive currents of uniform amplitude and configuration. The apparatus includes a pair of line selection switches at opposite ends of a selection line group for steering current from a source through a selected line and a current regulator that maintains the sum of the currents through the line at a constant level. The lines in the group are terminated by a set of alternately operable termination circuits, which set is common to all of the lines of a coordinate axis of the memory array. The termination circuit serve to damp voltage spikes, ringing oscillations and the inductive energy of the line upon energization and de-energization thereof and to maintain the lines of the memory stack at a fixed potential to prevent the lines from floating due to leakage currents and capacitive voltage build-ups that would establish the lines at different potentials during inactive or memory idle periods.

3,671,950
READILY ALTERABLE WOVEN-WIRE MAGNETIC MEMORY UNIT
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Dec. 3, 1970, Ser. No. 94,710
Int. Cl. G11c 5/04, 17/00
U.S. Cl. 340—174 SP **4 Claims**



Woven-wire, transformer memories that are to be occasionally altered by adding conductors to their braid, have an end of each of the legs of their cores extended past a usual U-shaped portion. The end that is extended is readily moved outward momentarily in opposition to a mounting spring to form between the leg and the rest of the core a gap that is wide enough to permit passage of additional conductors for storing information. The conductors to be added are first braided on the extended portions of the legs, and their coding positions are checked before the memory is interrupted only long enough to move the added conductors a short distance along the legs through the gaps.

3,671,951
SENSE LINE COUPLING STRUCTURES AND CIRCUITS FOR MAGNETIC MEMORY DEVICES
Shi K. Lee, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 15, 1969, Ser. No. 885,227
Int. Cl. G11c 17/00
U.S. Cl. 340—174 SP **18 Claims**

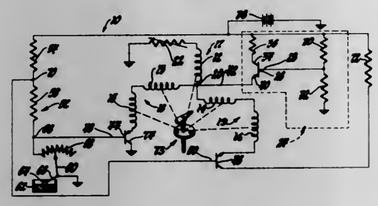


Sense line and sense amplifier configurations and circuits for coupling to magnetic memory elements. A sense line comprising a twisted pair of conductors provides coupling along its length to the memory elements. A pair of sense lines may be connected in series or parallel to provide sense signal output pulses of increased amplitude or provide redundancy in the sensing scheme. Further permutations and combinations of the twisted pair sense line provide sense signal output pulses of different amplitude to also provide, e.g., half select pulses. A sense amplifier system utilizes multiplexing techniques to simplify the sense scheme and reduce the amount of circuitry required between the sense lines and the buffer system.

3,671,952
APPARATUS FOR GENERATING AN ANGULARLY DISPLACEABLE MAGNETIC FIELD

Harold J. Simms, Jr., Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 9, 1970, Ser. No. 87,846
Int. Cl. G08c 19/04
U.S. Cl. 340—177 12 Claims

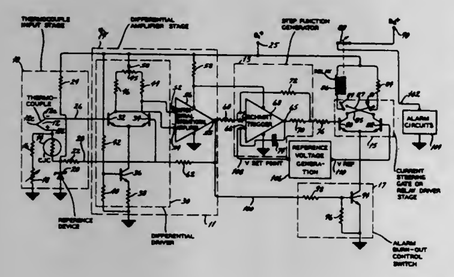


A gauge circuit for producing an angularly displaceable magnetic field in accordance with conditions at a remote location. Three winding networks are connected at a common junction that is held at a predetermined voltage by a voltage regulator. One winding network generates a constant magnetic field while the other winding networks generate variable magnetic fields in accordance with their energization, which is controlled by transistors that are series connected with each of the other winding networks and are responsive to a voltage signal that is generated in accordance with the conditions at a remote location. The magnetic field generated by the winding networks combine to form the angularly displaceable resultant magnetic field oriented in accordance with the conditions being monitored.

3,671,953
HIGH, LOW AND THERMOCOUPLE BURN-OUT ALARM SYSTEM

Jack Goldberg, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 2, 1970, Ser. No. 51,877
Int. Cl. G08b 17/06
U.S. Cl. 340—227 R 8 Claims

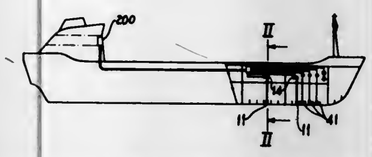


An alarm annunciator having hot, cold and thermocouple burn-out capability without requiring specific resistor connections for the hot and cold alarm modes of operation. An alarm burn-out switch responds to certain voltage variations in the annunciator signal translating circuitry during alarm thermocouple burn-out to provide electrical control of an alarm indicating means. The burn-out switch also serves as a constant current sink during both the hot and cold alarm modes of operation.

3,671,954
SLAMMING INDICATOR SYSTEM FOR MARINE DEVICES

John Armstrong Clay, Bowden, England, assignor to Manchester Liners Limited, Port of Manchester, England

Filed March 13, 1970, Ser. No. 19,452
Claims priority, application Great Britain, March 15, 1969, 13,714/69
Int. Cl. G08b 23/00
U.S. Cl. 340—240 15 Claims

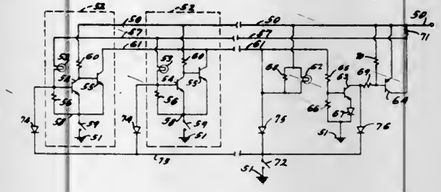


In order to detect the existence of slamming conditions in ocean going vessels a slamming indicator is provided with monitors the water pressure beneath the forefoot of the vessel and which energizes an indicator according to such pressure.

3,671,955
LAMP FAILURE DETECTION CIRCUIT

Ali Asghar Maleknadeh, Costa Mesa, Calif., assignor to Master Specialties Company, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 840,174, July 9, 1969, abandoned. This application March 30, 1970, Ser. No. 23,936
Int. Cl. G08b 5/22
U.S. Cl. 340—251 4 Claims



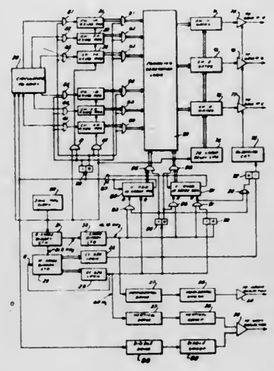
A circuit for monitoring for the failure of one or more lamps in an indicator device, a segment type readout device, or the like. Upon failure of a lamp, a silicon controlled rectifier or a transistor switch is biased into a conducting state to energize either a back-up lamp or a warning lamp. A circuit may be included to flash either the back-up lamp, the warning lamp or a third indicator lamp in response to detecting the failure of a lamp. When the circuit monitors a plurality of lamps, the circuit can be adapted to deactivate all lamps upon detecting the failure of any of the lamps.

3,671,956
DISPLAY SYSTEM

Thomas D. Kegelman, Ridgefield, and Peter R. Williams, Wilton, both of Conn., assignors to Computer Optics, Inc., Bethel, Conn.

Filed March 12, 1969, Ser. No. 806,624
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 22 Claims

A multiple beam alpha-numeric display system wherein a plurality of text lines are formed simultaneously with the top segments of the characters in a text line being formed on a first pass and successively lower segments being formed in subsequent passes. A non linear vertical sweep is used to compress the interline spacing of horizontal traces within a text line and to increase the interline spacing between text lines. To minimize display distortion, the multiple electron beams

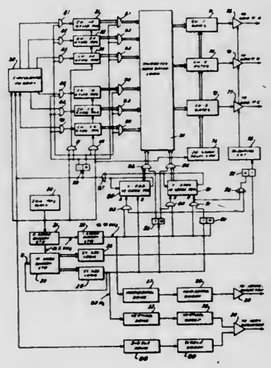


are oriented to cross one another at the center of the deflection yokes.

3,671,957
CHARACTER GENERATION DISPLAY SYSTEM

Thomas D. Kegelman, Ridgefield, and Peter R. Williams, Wilton, both of Conn., assignors to Computer Optics, Inc., Bethel, Conn.

Filed March 12, 1969, Ser. No. 806,455
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 8 Claims

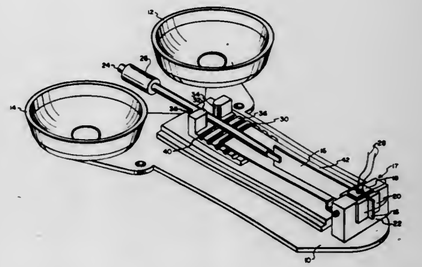


Character generation circuitry for an alpha-numeric cathode ray tube display wherein successive characters appear in successive character slots of a plurality of text lines, the top segments of the characters being formed on a first pass and successively lower segments being formed in subsequent passes. The system includes delay line circuitry for providing pulses corresponding in time to a plurality of horizontal increments for each horizontal trace passing through a character slot, the delay line circuitry working in combination with logic which designate selected ones of the horizontal increments according to designations of the horizontal trace and character then being formed. The logic circuits are so arranged that the same logic is used in forming similar character portions where they appear in different characters.

3,671,958
PIEZOELECTRIC SIGNALING DEVICE

Frederick Storz, Englishtown, N.J., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed April 29, 1971, Ser. No. 138,541
Int. Cl. G10k 1/063
U.S. Cl. 340—392 7 Claims

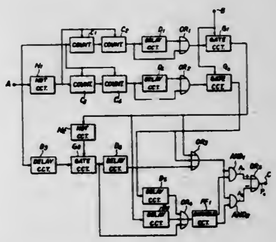


A gong-type signaling device having a pair of metal gongs, a clapper affixed to a clapper shaft which is in turn affixed to an elongate piezoelectric element activated by the application of an a.c. voltage. The device is provided with an adjustable loudness control including a pair of upright members, one disposed on each side of the clapper shaft and movable along the longitudinal axis thereof to restrict the velocity with which the clapper strikes the metal gongs to a preselected level thereby controlling the loudness of the signaling device.

3,671,959
BINARY TO TERNARY CONVERTER

Kitsutaro Amano, Yokohama-shi, Japan, assignor to Kokusai Denshin Denwa Kebushiki Kaisha, Tokyo-to, Japan

Filed Jan. 20, 1970, Ser. No. 4,217
Claims priority, application Japan, Jan. 24, 1969, 44/5135; March 24, 1969, 44/21696
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 3 Claims

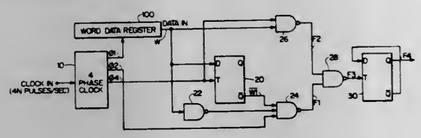


A system for converting two binary pulse trains to a ternary pulse train in which the states of signal elements of a pulse train of bipolar code corresponding to a first binary information train are modified in accordance with the states of signal elements of a second binary information train so as to be against the rule of alternation of polarities "+" and "—" of the bipolar code if at least two signal elements of the pulse train of bipolar code have the same state "1" or "0." The above-mentioned modification is performed, except for the first signal element of the same state "1" or "0," for each signal element or for each pair of adjacent two signal elements.

3,671,960
FOUR PHASE ENCODER SYSTEM FOR THREE FREQUENCY MODULATION

George H. Sollman, Cambridge, and Samuel J. Dixon, Holliston, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 6, 1970, Ser. No. 52,313
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 18 Claims

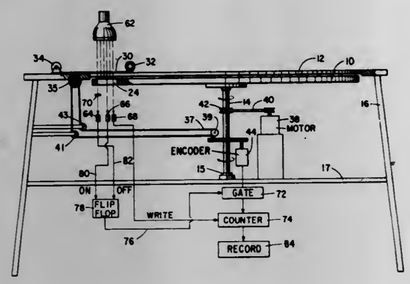


A multiphase encoder translates the bits of a Non-Return-to-Zero digital signal into a three frequency self-clocking signal characterized by having a data transition at the center of a binary ONE bit and a data transition between successive binary ZERO bits.

3,671,961
ANALOG TO DIGITAL CONVERTER FOR WELL LOGS

Ralph H. Lindley, and Richard E. Bickham, both of Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla. and Petroleum Information Corporation, Denver, Colo., part interest to each

Filed April 28, 1969, Ser. No. 819,872
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD 3 Claims



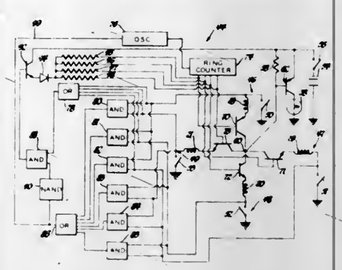
This is an analog to digital converter for use with analog data represented by an opaque curve on a translucent record medium. Means are provided to drive the record medium over an enclosure plate having three slits therein. A rotating disc rotates underneath this plate. Radial slits in this disc let light pass through the various slits in the steel plate when coincidence occurs onto a group of photoelectric cells. The light passage is changed by a base line and the opaque curve; such changes are used to obtain a digital representation of the curve at that point.

3,671,962
MULTIPLE INDICATING TELLTALES HAVING SEQUENTIAL INDICATIONS

Douglas I. Fales, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1970, Ser. No. 91,393
Int. Cl. G08b 5/24, 5/30
U.S. Cl. 340—373 4 Claims

Apparatus for providing information as to a plurality of conditions using a single air core gauge. Each condition being monitored controls a switch that in turn controls the energization of at least one winding, the magnetic fields generated by the windings forming a resultant magnetic field that controls the orientation of an indicia-bearing rotatable disc. When one or more windings are energized a lamp illuminates the indicia

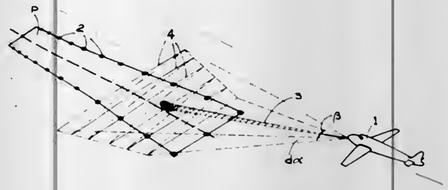


which the disc locates at a certain position so as to indicate the status of the condition which caused energization of the winding. A provision is also made to index the disc between a plurality of positions so as to advise of several conditions which may require attention at the same time.

3,671,963
BLIND LANDING AIDS

George Assouline; Pierre Coujeaud; Pierre Girault, and Eugene Leiba, all of Paris, France, assignors to Thomson-CSF

Filed Dec. 19, 1969, Ser. No. 886,481
Claims priority, application France, Jan. 3, 1969, 6900025
Int. Cl. G01s 9/62
U.S. Cl. 343—6 ND 5 Claims



A blind landing aid system for visualizing on board an aircraft, a runway delimited by responder beacons wherein an infra-red transmitter, located on board the aircraft, emits an infra-red beam scanning the ground according to a television pattern, each responder beacon comprises an infra-red detector controlling a radioelectric transmitter transmitting a pulse when the detector receives the infra-red beam, and a receiver, located on board the aircraft receives the radioelectric pulses and controls the electron beam of a cathode-ray tube whose screen is scanned in synchronism with the scanning of the infra-red beam.

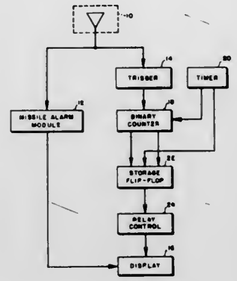
3,671,964
AUTOMATIC RADAR DETECTION DEVICE

Andrew J. Trochanowski, La Mesa, and Steven A. Wicks, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 30, 1970, Ser. No. 85,590
Int. Cl. H04k 3/00; G01s
U.S. Cl. 343—18 E 4 Claims

A shipborne detector for indicating the presence or absence of "search-lighting" or continuous observation by hostile pulsed tracking radars wherein presence is indicated if the

pulse rate of incoming radar pulses exceeds a selectively predetermined rate whereby a radar display is automatically

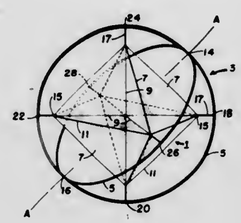


activated and automatically blanked if the pulse rate does not exceed the predetermined rate.

3,671,965
RAPID DEPLOYMENT CORNER REFLECTOR

David W. Rabenhorst, Silver Spring, and Kenneth E. Darnell, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 3, 1970, Ser. No. 25,483
Int. Cl. H01q 1/28, 15/20
U.S. Cl. 343—18 C 1 Claim



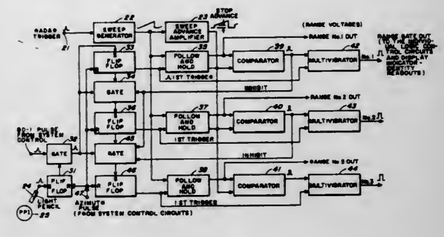
A readily deployable, lightweight radar reflector having a large radar signature, the invention is compactly stowable aboard a carrier vehicle, immediately assuming an erect configuration on ejection from an airborne or surface vehicle. The present reflector is particularly intended to be ejected from aircraft traveling at high speeds, the erection of the reflecting surface being provided by the internal bias of pre-stressed hoops surrounding and supporting the reflecting surface.

3,671,966
MULTIPLE TARGET SEPARATOR

Frederick R. Fluhr, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 27, 1970, Ser. No. 67,328
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R 7 Claims

A system for separating and identifying multiple targets within a PPI positioned gate area on a Radar IFF display. The IFF target separator acts upon the IFF response times within the gate and separates the targets in range order regardless of the order of arrival times of the target responses. The targets

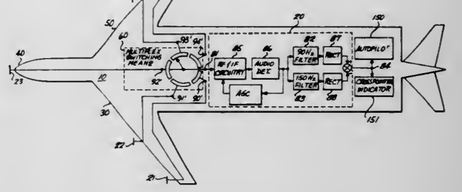


on the PPI can thus be associated with their respective IFF code readouts.

3,671,967
MULTIPLE ANTENNA INSTRUMENT LANDING SYSTEM

James R. Fries, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 11, 1970, Ser. No. 36,223
Int. Cl. G01s 1/16
U.S. Cl. 343—108 R 13 Claims



An instrument landing system (ILS) having distributed localizer receiving antennas and localizer signal information processing to provide a composite guidance signal having reduced localizer beam noise for reduced lateral touchdown dispersion in automatic landing systems. A plurality of conventional localizer antennas are positioned at several laterally displaced points across the approach path along the wings of an aircraft and the corresponding plurality of received localizer beam deviation signals received by each of these antennas is individually processed by a localizer receiver system with the audio course deviation signals developed from the several antennas being averaged to provide the composite guidance signal for use in autopilot or crosspointer indicator.

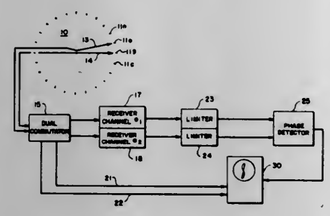
3,671,968
TWO CHANNEL DIRECTION FINDER

John M. Beukers, and Christian B. Williams, both of Stony Brook, N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Jan. 26, 1970, Ser. No. 5,455
Int. Cl. G01s 3/54
U.S. Cl. 343—113 DE 2 Claims

A direction finder including two receiving channels commu-

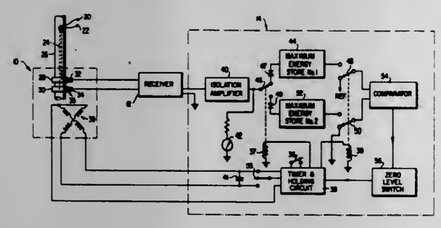
tatively connected to different closely spaced antennas of a receiving antenna array such that the phase difference between the two receiving antennas is always kept below a half wavelength at the highest operating frequency.



3,671,969
AUTOMATIC ANTENNA ALIGNMENT SYSTEM FOR ENABLING MAXIMUM SIGNAL RECEPTION

Vefik A. Basman, 7290 Fosdick Road, Saline, Mich.

Filed Jan. 30, 1970, Ser. No. 7,290
Int. Cl. G01s 3/44
U.S. Cl. 343—117 R 4 Claims



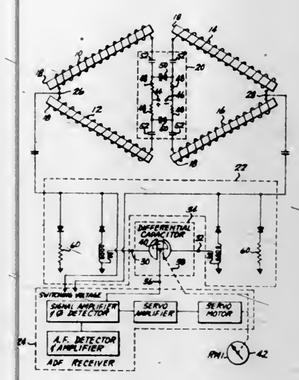
An automatic antenna alignment system for enabling maximum signal reception includes a storage circuit for storing the maximum energy developed by a receiver as a directional antenna is rotated through a first revolution and a comparator for comparing the signal stored during the first revolution with the signal developed by the receiver during a second antenna revolution such that when maximum signal reception occurs during the second revolution, the output of the comparator will trigger a switch and thereby stop the antenna in the direction of optimum alignment for maximum signal reception.

3,671,970
SWITCHED RHOMBIC AUTOMATIC DIRECTION FINDING ANTENNA SYSTEM AND APPARATUS

John E. Layton, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 31, 1970, Ser. No. 68,300
Int. Cl. C01s 5/04
U.S. Cl. 343—120 8 Claims

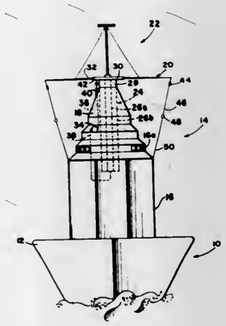
An antenna system which includes a four-element structure composed of inductances wound on high Q ferrite material and arranged in the form of a rhombus in combination with switching and tuning circuits provides both the bi-phase and constant phase signals required for automatic direction finding (ADF) equipment, thus eliminating the sense antenna requirement in these systems.



3,671,971
HF SUPERSTRUCTURE DISCONE ANTENNA

Richard L. Goodbody, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed March 29, 1971, Ser. No. 128,787
Int. Cl. H01q 1/34
U.S. Cl. 343—710 4 Claims

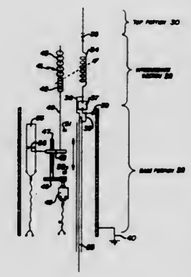


A superstructure discone HF antenna comprising a vertically oriented ship's superstructure and a discone antenna connected to and rigidly supported and mounted upon the top thereof to form a unitary radiating structure. By using a self-supporting superstructure as an integral component of the antenna, the number of possible HF parasitic radiators is reduced and limited topside space available on naval ships is more efficiently utilized.

3,671,972
ADJUSTABLE CENTER LOADED ANTENNA ARRANGEMENT

Ashton James Spilsbury, 6691 Madrona Crescent, West Vancouver, British Columbia, and Oswald Thorkelson, 3182 Tolmie Street, Vancouver, British Columbia, both of Canada

Filed Jan. 7, 1970, Ser. No. 1,141
Int. Cl. H01q 9/00
U.S. Cl. 343—750 9 Claims



A center-loaded antenna arrangement having a fixed loading coil in a whip antenna, and a tuning core mounted for movement through and out of the coil, said core having a ferrous section and an inductor ring section. Suitable connecting means connects an end of the coil to a radio ground and to a radio transmitter or receiver through a R.F. transmission line. This connecting means is preferably connected to the radio ground through an impedance matching device which couples the coil to the transmitter or receiver.

3,671,973
SELECTIVELY POLARIZED ANTENNA EMPLOYING IMPEDANCE MATCHED CROSSED DIPOLES

Gerald H. French, St. Louis, Mo., assignor to Mosley Electronics Company, St. Louis, Mo.

Filed Oct. 24, 1969, Ser. No. 869,159
Int. Cl. H01q 21/26
U.S. Cl. 343—751 9 Claims



A selectively polarized antenna has an antenna element parallel to one axis, has a second antenna element parallel to an angularly displaced second axis, has a selector switch connected to the down lead, has a transmission line extending from the selector switch to a position adjacent the first antenna element, has an impedance-matching means connecting said transmission line to the first antenna element at points on opposite sides of the mid-point of that antenna element, has a second transmission line extending from the selector switch to a position adjacent the second antenna element, and has an impedance-matching means connecting the second transmission line to the second antenna element at points on opposite sides of the mid-point of that antenna element.

DESIGNS

JUNE 20, 1972

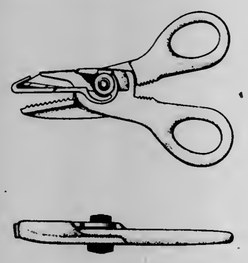
223,891
EXPANDED CEREAL FOOD PRODUCT
Peter A. Cammelot, Streamwood, and Leroy F. Duvall, Barrington, Ill., assignors to The Quaker Oats Company
Filed Sept. 18, 1970, Ser. No. 25,069
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



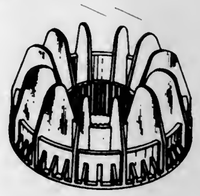
223,892
SOD REMOVER
Charles John Philip Smith, 274 Forest Road, Bexley, New South Wales, Australia
Filed Oct. 12, 1970, Ser. No. 25,427
Claims priority, application Australia Apr. 16, 1970
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—5



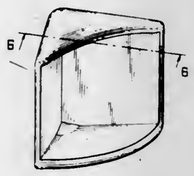
223,893
FLOWER SHEAR
Ronald David Carter, Leamington Spa, England, assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 3, 1970, Ser. No. 26,275
Claims priority, application Great Britain Sept. 3, 1970
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—5



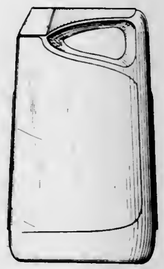
223,894
CORE FOR PAPER ROLLS
Dana B. Bates, Kirkland, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed Apr. 30, 1970, Ser. No. 22,740
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



223,895
PROTECTIVE COVER FOR COUNTER CORNERS
Viola M. Berchert, 3360 Pittsview Drive, Ann Arbor, Mich. 48104
Filed Feb. 18, 1971, Ser. No. 116,731
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—263



223,896
JUG
John S. Frazer, Pequannock, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jan. 20, 1971, Ser. No. 108,258
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



223,897
COMBINED GARMENT AND TRASH BAG
Robert T. Crew, 3871 Gadsden Road 32207, and Odean F. George, 6926 Cherbourg Ave. N. 32205, both of Jacksonville, Fla.
Filed July 6, 1970, Ser. No. 23,848
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—350



223,898
PACKAGING CUP OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill. (8501 W. Higgins Road, Chicago, Ill. 60631)
Filed Mar. 12, 1970, Ser. No. 21,881
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



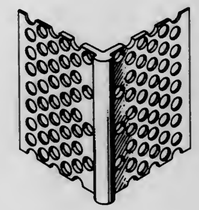
223,899
CAN OR THE LIKE
Arthur P. Zundel, Cary, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Jan. 8, 1970, Ser. No. 20,831
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—218



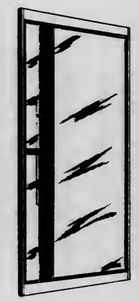
223,900
DISPENSING CLOSURE
Livingston C. Douglas, Leonia, N.J., and Gilbert De Wayne Miles, Ossening, and Russell Park McGhie, Somers, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 7, 1971, Ser. No. 104,837
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—278



223,901
CORNER BEAD
Donald E. Shaeffer, Manheim, Pa., assignor to Rimar Manufacturing, Inc., Manheim, Pa.
Filed Feb. 25, 1970, Ser. No. 21,620
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1



223,902
DOOR
Raymond L. Kuniansky, Atlanta, Ga., assignor to Anaconda Aluminum Company
Filed Sept. 10, 1970, Ser. No. 24,914
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



223,903
BURIAL CASKET
Fred Herricht, Bechtelsville, Pa., assignor to Boyertown Burial Casket Company, Boyertown, Pa.
Filed Oct. 21, 1970, Ser. No. 25,587
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D19—1



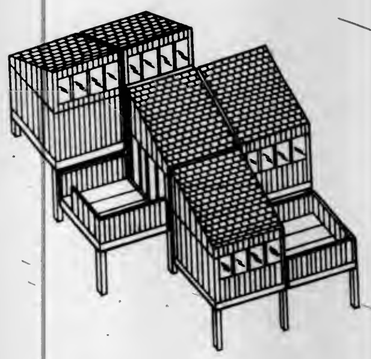
223,904
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,016
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



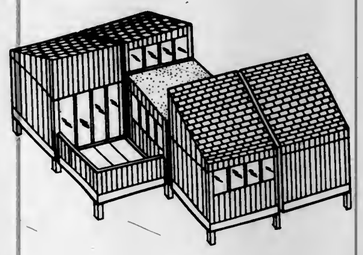
223,905
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,018
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



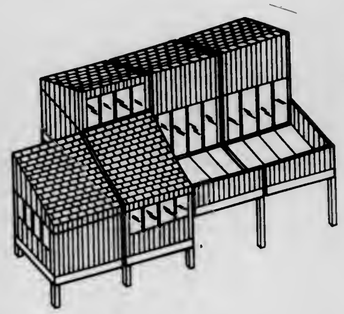
223,906
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,017
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



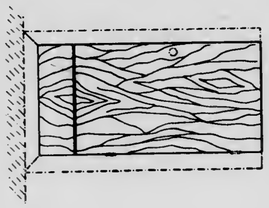
223,907
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,019
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



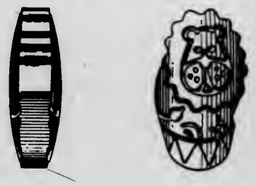
223,908
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y.
(280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed Mar. 16, 1971, Ser. No. 125,019
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



223,909
DOOR-TRANSOM ASSEMBLY
Frederick R. Ashby, Carmel, N.Y., and Leonard A. Ropella, Green Bay, Wis., assignors to U.S. Plywood-Champion Papers Inc.
Filed Aug. 16, 1968, Ser. No. 13,160
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



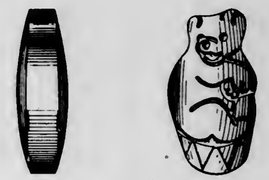
223,910
VITAMIN TABLET OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,862
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D16—3



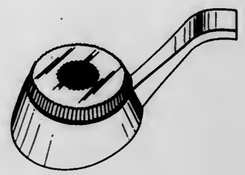
223,911
VITAMIN TABLET OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,864
Term of patent 14 years
Int. Cl. D28—*02*; D1—*02*
U.S. Cl. D16—3



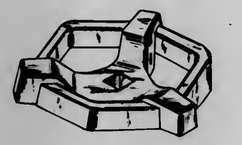
223,912
VITAMIN TABLET OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,865
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D16—3



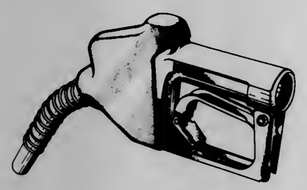
223,913
KITCHEN FAUCET HANDLE
James Edward Niemann, Louisville, Ky., assignor to American Standard, Inc., New York, N.Y.
Continuation-in-part of design application Ser. No. 20,160, Nov. 18, 1969. This application Nov. 2, 1970, Ser. No. 25,974
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—29



223,914
VALVE HANDLE
Masao Okano, Nagano-ken, Japan, assignor to Toyo Valve Company Limited, Tokyo, Japan
Filed Aug. 26, 1970, Ser. No. 24,694
Claims priority, application Japan May 4, 1970
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—30



223,915
COMBINED DISPENSING NOZZLE AND GUARD THEREFOR
George Z. Brown and William F. Babcock, Akron, Ohio, assignors to Dover Corporation, Cincinnati, Ohio
Filed Jan. 27, 1970, Ser. No. 21,108
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—37



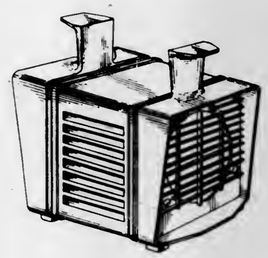
223,916
BATHROOM TOILET UNIT
Myron J. Ament, Bethel Park, Pa., assignor to Wallace-Murray Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1970, Ser. No. 25,199
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



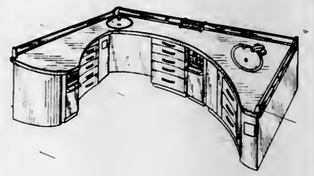
223,917
BATHROOM LAVATORY UNIT
Myron J. Ament, Bethel Park, Pa., assignor to Wallace-Murray Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1970, Ser. No. 25,200
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



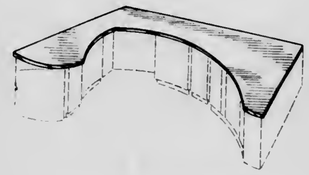
223,918
ELECTRIC HEATER HOUSING
Geoffrey T. Gray, Lambertville, Mich., assignor to Eprad Incorporated, Toledo, Ohio
Filed Jan. 15, 1971, Ser. No. 106,947
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



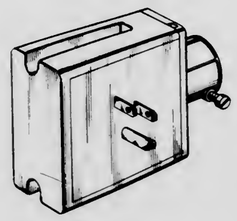
223,919
DENTAL CABINET OR THE LIKE
John J. Valeska, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Oct. 21, 1970, Ser. No. 25,594
Term of patent 14 years
Int. Cl. D24—*03*; D6—*01*
U.S. Cl. D24—1



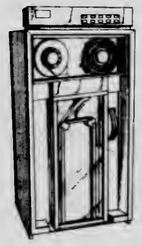
223,920
DENTAL CABINET COUNTER TOP
John J. Valeska, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.
Filed Oct. 21, 1970, Ser. No. 25,595
Term of patent 14 years
Int. Cl. D24—*03*; D6—*01*
U.S. Cl. D24—1



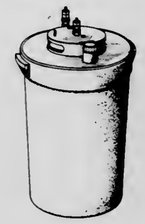
223,921
ELECTRICAL CONNECTOR
Milton Liberman, 65 Seawane Road, East Rockaway, N.Y. 11518
Filed Dec. 22, 1970, Ser. No. 26,619
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



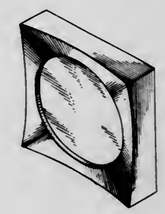
223,922
MAGNETIC TAPE UNIT
Thomas S. Kavanagh, Richard H. Ralston, Ronald R. Campbell, Jesse I. Aweida, and Regomar A. Thurmer, Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.
Filed July 8, 1970, Ser. N. 23,860
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



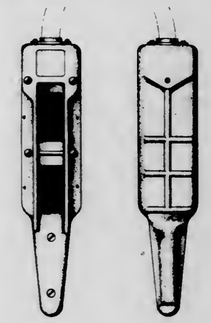
223,923
BATTERY
Keigo Momose, Moriguchi, Koji Ishihara, Hirakata, and Yoshimi Motonaka, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 14, 1970, Ser. No. 24,958
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—6



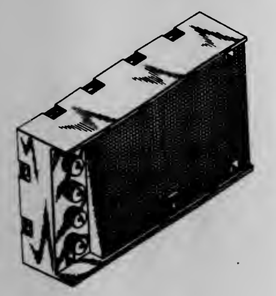
223,924
ELECTRICAL SWITCH HOUSING
Alexander M. Adelson, Elmsford, N.Y., assignor to Wild Rover Corp., Closter, N.Y.
Filed May 21, 1970, Ser. No. 23,093
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



223,925
PENDANT HOIST CONTROL
Harold V. Hawkins and Ralph A. Dick, Williamsville, N.Y., and Edgar A. Bongort, Southfield, Mich., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Aug. 21, 1970, Ser. No. 24,628
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



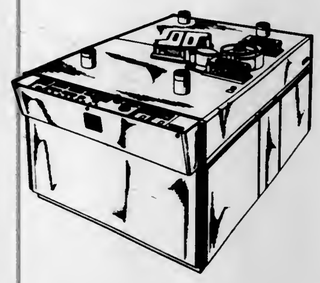
223,926
MASTER CONTROL PANEL FOR ALARM SYSTEMS OR THE LIKE
Robert D. Kalm, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Jan. 22, 1971, Ser. No. 109,094
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



223,927
HEADSET EARPIECE
George T. Patton, Jr., Barrington, R.I., assignor to Textron Inc., Providence, R.I.
Filed Nov. 23, 1970, Ser. No. 26,125
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

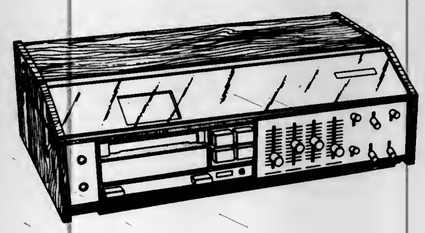


223,928
MAGNETIC TAPE DUPLICATOR
Darrel A. Leuer, San Mateo, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Mar. 29, 1971, Ser. No. 129,298
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

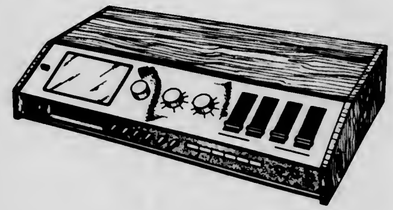


223,929
TELEPHONE INSTRUMENT
Ronald Binks, Chambersburg, Pa., assignor to Global Systems Design Corporation, Chambersburg, Pa.
Filed Apr. 1, 1971, Ser. No. 130,566
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

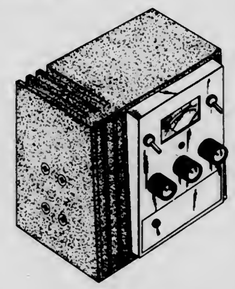
223,930
MAGNETIC TAPE CASSETTE TRANSPORT
Hari K. Matsuda, Evanston, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 3, 1971, Ser. No. 149,881
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



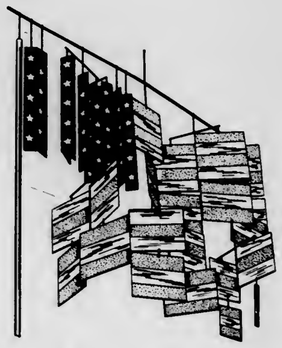
223,931
MAGNETIC TAPE CASSETTE TRANSPORT
Hari K. Matsuda, Evanston, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 3, 1971, Ser. No. 149,882
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



223,932
POWER SUPPLY
Maurice G. Paulson, Huntington, Thomas Kelleher, Farmingdale, Marvin L. Price, Queens, and Monte L. Levin, New York, N.Y., assignors to Lambda Electronics Corporation, Huntington, N.Y.
Filed Mar. 8, 1971, Ser. No. 122,287
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



223,933
MOBILE
Leonard G. Lorch, 470 Roosevelt Ave., Freeport, N.Y. 11520
Filed Jan. 2, 1970, Ser. No. 20,753
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



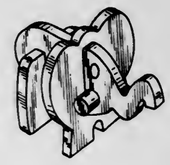
223,934
PLAQUE
Ruppert N. Kohlmaier, Jr., and Joy Wille Kohlmaier, both of 1020 W. William David Parkway, Metairie, La. 70005
Original design application May 22, 1970, Ser. No. 23,098. Divided and this application May 18, 1971, Ser. No. 144,706
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



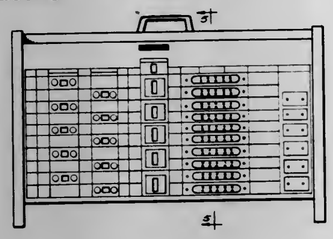
223,935
TOY ANIMAL
Terese Caputo, Otis Road, North Great River, N.Y. 11752
Filed Apr. 24, 1970, Ser. No. 22,637
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



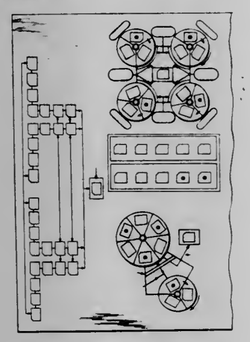
223,936
TOY ELEPHANT FIGURE
Harry Meth and Susan Lake, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,670
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



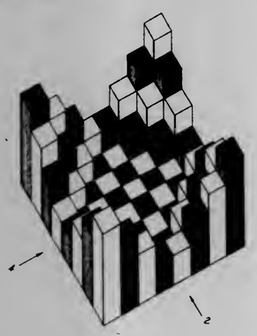
223,937
GAME BOARD
James D. Bissell, Pfafftown, N.C., assignor to Cabitec, Inc., Pfafftown, N.C.
Filed Oct. 20, 1970, Ser. No. 25,567
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



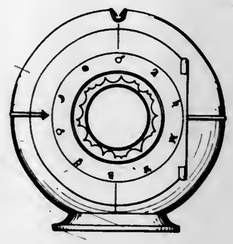
223,938
GAME BOARD OR SIMILAR ARTICLE
Eugene H. Primoff, 15 Whitefield Terrace, New Rochelle, N.Y. 10801
Filed Nov. 25, 1970, Ser. No. 26,156
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,939
GAME BOARD
Thomas P. Palazzolo, 1151 Lakepointe, Grosse Pointe Park, Mich. 48230
Filed Apr. 1, 1971, Ser. No. 130,555
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



223,940
MONEY BOX
William Bryan Whitworth, 18 Kimbarra Road, Pymble, New South Wales 2073, Australia
Filed Nov. 30, 1970, Ser. No. 26,214
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—11



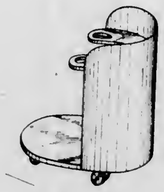
223,941
ILLUMINATING TOY
John R. Parsons, 1425 Lincoln Ave. NE., Renton, Wash. 98055
Filed June 22, 1970, Ser. No. 23,590
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15



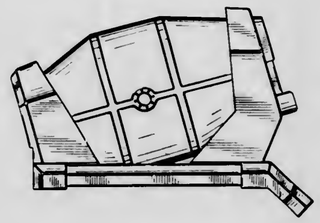
223,942
SNOW SLED
Richard E. Cone, Columbus, Ohio, assignor to The Delphos Bending Company, Delphos, Ohio
Filed Mar. 2, 1971, Ser. No. 120,385
Term of patent 3½ years
Int. Cl. D12—*14*
U.S. Cl. D34—15
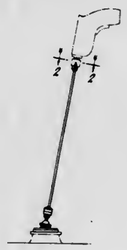


223,943
SCOOTER
Robert B. Soper, 12863 South 1480 East, Draper, Utah 84020
Filed Apr. 28, 1971, Ser. No. 138,406
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



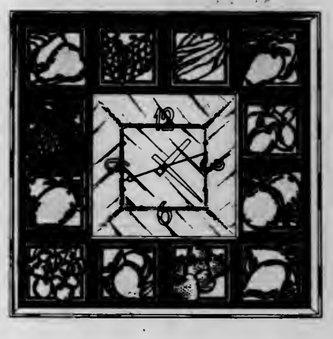
223,944
TOY TRUCK CEMENT MIXER BODY
Theodore H. Zbikowski, Plymouth, and Lee J. Pfeilsticker, Mound, Minn., assignors to Tonka Corporation, Mound, Minn.
Filed May 14, 1971, Ser. No. 143,739
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



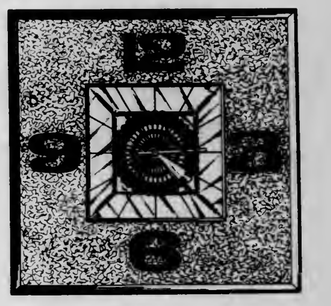
223,945
FLOOR CARE COUPLER
Charles E. Bousquet, 10388 Bassett Drive, Livonia, Mich. 48950
Filed June 22, 1970, Ser. No. 23,610
Term of patent 14 years
Int. Cl. D15—*99*; D8—*05*
U.S. Cl. D37—3



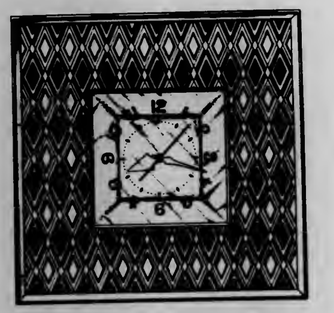
223,946
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Mar. 31, 1971, Ser. No. 130,051
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



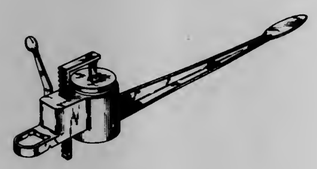
223,947
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Apr. 19, 1971, Ser. No. 135,523
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



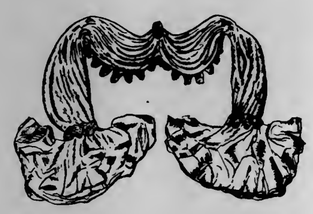
223,948
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Apr. 19, 1971, Ser. No. 135,524
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7



223,949
NOODLE PRESS
Gertrude Eipper, 1706 N. Arlington St., Milwaukee, Wis. 53202
Filed Nov. 5, 1970, Ser. No. 25,836
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—29



223,950
DRAPES
Edith Rodriguez, Washington, D.C. (P.O. Box 292, Contant 72, St. Thomas, U.S. Virgin Islands)
Filed Oct. 19, 1970, Ser. No. 25,548
Term of patent 7 years
Int. Cl. D6—*10*
U.S. Cl. D47—6



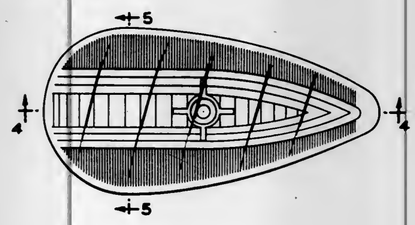
223,951
WALL SCONCE
Andrew J. Wentz, Jr., Hazlet Township, Monmouth County, N.J. (P.O. Box 187, Holmdel, N.J. 07733)
Filed Aug. 24, 1970, Ser. No. 24,654
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2



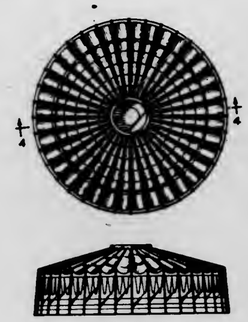
223,952
DESK LAMP
J. Larry Stephens, 216—30 117th Road, Cambria Heights, N.Y. 11411
Filed Oct. 12, 1970, Ser. No. 25,458
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



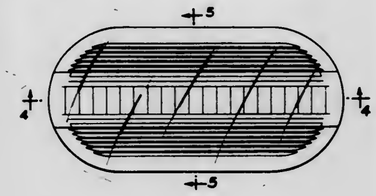
223,953
VEHICLE MARKER LIGHT LENS
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60076
Filed Oct. 5, 1970, Ser. No. 25,331
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



223,954
VEHICLE MARKER LIGHT LENS
Robert I. Nagel, Skokie, Ill., assignor to Triangle Mobile Home Products, Inc., Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 25,340
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



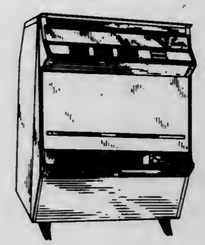
223,955
VEHICLE MARKER LIGHT LENS
Robert I. Nagel, Skokie, Ill., assignor to Triangle Mobile Home Products, Inc., Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 25,341
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



223,956
COMBINED TRASH RECEPTACLE AND ADVERTISING DISPLAY
Richard A. Kenerson, New York, N.Y. (Trinity Pass Road, Poundridge, N.Y. 10576)
Filed Sept. 25, 1970, Ser. No. 25,202
Term of patent 14 years
Int. Cl. O7—*05*
U.S. Cl. D49—35



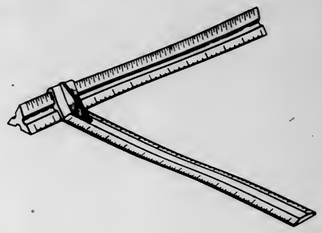
223,957
CIGARETTE VENDING MACHINE
William A. Grau, Independence, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Dec. 28, 1970, Ser. No. 26,668
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3



223,958
GLIDESLOPE INDICATOR
Jon W. Hauser, St. Charles, Ill., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.
Filed Oct. 12, 1970, Ser. No. 25,445
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6



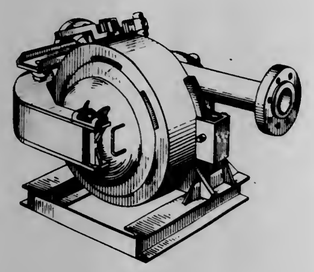
223,959
DRAFTING RULER OR SIMILAR ARTICLE
Mile Vuynovich, Baltimore, and Otto P. Werle, Oxon Hill, Md., assignors to Mile Vuynovich, Baltimore, Md.
Filed Mar. 23, 1971, Ser. No. 127,427
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



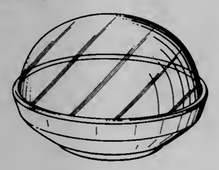
223,960
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to General Mills, Inc.
Filed Nov. 23, 1970, Ser. No. 26,117
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



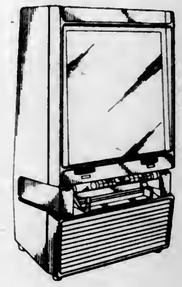
223,961
INSPECTION PRESSURE VESSEL
Henry J. Piegza, Clarence, N.Y., assignor to Welding and Steel Fabrication Co., Inc., Tonawanda, N.Y.
Filed Jan. 25, 1971, Ser. No. 109,732
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



223,962
HOUSING FOR A COMBINED RADIO RECEIVER AND RECORD PLAYER OR SIMILAR ARTICLE
Harvey K. McQuarrie, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed June 15, 1970, Ser. No. 23,476
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



223,963
MICROFORM READER
James C. Kaufman, Dayton, and Richard L. Funkhouser, Kettering, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed Nov. 9, 1970, Ser. No. 25,892
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



223,964
ADDING MACHINE OR THE LIKE
Klaus-Dieter Slama, Bayern, Germany, assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,484
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

223,965
CALCULATING MACHINE
Yutaka Ohtsu, Sagamihara, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Oct. 19, 1970, Ser. No. 25,541
Claims priority, application Japan May 28, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



223,966
PORTABLE SEWING MACHINE HOUSING
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed Aug. 5, 1970, Ser. No. 24,381
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



223,967
SIGNAL LIGHT
Jilio J. Petrucelli, P.O. Box 552, Rosamond, Calif. 93560
Filed June 1, 1970, Ser. No. 23,252
Term of patent 14 years
Int. Cl. D29—*02*; D26—*02*
U.S. Cl. D72—1



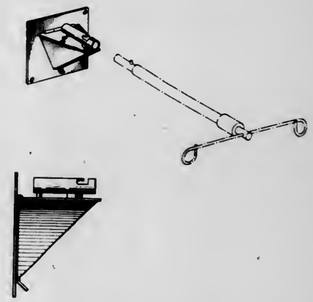
223,968
STAND FOR AN ELECTRICALLY-POWERED ERASER OR THE LIKE
Francesco Collura, New York, N.Y., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed Dec. 22, 1970, Ser. No. 26,615
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



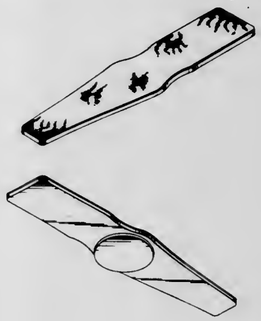
223,969
ELECTRICALLY-POWERED ERASER OR THE LIKE
Francesco Collura, New York, N.Y., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed Dec. 22, 1970, Ser. No. 26,614
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—7



223,970
INTRAVENOUS ROD HOLDER
Joseph P. Saternus, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Mar. 24, 1970, Ser. No. 22,196
Term of patent 14 years
Int. Cl. D24—*02*; D8—*03*
U.S. Cl. D83—1



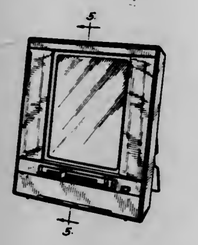
223,971
SUNBATHING DEVICE
Jean L. Wortman, 1513 Juanita St., Boise, Idaho 83706
Filed Apr. 29, 1971, Ser. No. 138,857
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1



223,972
NURSING NIPPLE FOR USE WITH A NURSING BOTTLE
Michael C. Ritsi, 7950 SW. 16th St., Miami, Fla. 33155
Filed Mar. 23, 1970, Ser. No. 22,029
Term of patent 14 years
The portion of the term of the patent subsequent to May 13, 1983, has been disclaimed
Int. Cl. D24—*05*
U.S. Cl. D63—8



223,973
ILLUMINABLE MAKEUP MIRROR OR SIMILAR ARTICLE
Edward A. Irelan, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 9, 1970, Ser. No. 24,219
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



223,974
COMBINED SHOE HORN AND KEY HOLDER
Thomas K. Tsutsui, 16824A Denker Ave., Gardena, Calif. 90247
Filed Aug. 12, 1970, Ser. No. 24,457
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D86—10



223,975
HAIR DRYER
Jurgen Greubel, Schone Aussicht, Germany, assignor to A. G. Braun, Frankfurt am Main, Germany
Filed Nov. 16, 1970, Ser. No. 26,031
Claims priority, application Germany May 26, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



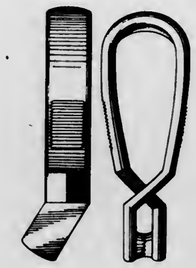
223,976
STEAM HAIR CURLER HOUSING
Clifford E. Grube, Niles, and Richard J. Stern, Glencoe, Ill., assignors to Associated Mills, Incorporated
Filed Dec. 17, 1970, Ser. No. 26,541
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



223,977
COMBINED DOLL AND MIRROR
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., New York, N.Y.
Filed Jan. 8, 1971, Ser. No. 105,146
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



223,978
SURGICAL CLIP
Raymond John, Carpentersville, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Oct. 16, 1970, Ser. No. 25,525
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D63—12



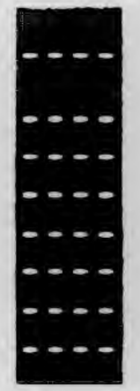
223,979
CARD EJECTOR CASE, OR SIMILAR ARTICLE
Jay Ehrensaal, Forest Hills, N.Y., assignor to Swank, Inc., New York, N.Y.
Filed July 9, 1970, Ser. No. 23,879
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3



223,980
BICYCLE SEAT
Albert J. Fritz, Northbrook, and Anton J. Panzica, Hinsdale, Ill., assignors to Schwinn Bicycle Company, Chicago, Ill.
Filed Dec. 31, 1970, Ser. No. 26,724
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—16



223,981
CURTAIN FABRIC
Heinrich Oelmann, 25 Im Bungert, 7891 Dogern, Germany
Filed June 8, 1970, Ser. No. 23,385
Claims priority, application Germany Dec. 11, 1969
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—1



223,982
CURTAIN FABRIC
Heinrich Oelmann, 25 Im Bungert, 7891 Dogern, Germany
Filed June 8, 1970, Ser. No. 23,388
Claims priority, application Germany Dec. 11, 1969
Term of patent 14 years
Int. Cl. D5—*02*
U.S. Cl. D92—1



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TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JUNE, 1972

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Aarup, Carl P., to Dura Corporation. Coaster vehicle. 3,671,055, Cl. 280-87.010.

Abardovsky, Isaak Pavlovich; and Gertsman, Lev Alexandrovich. Unit for calendering pipes and extracting cores therefrom in a machine for producing fibrocement pipes. 3,671,387, Cl. 162-284.000.

Abbot, Charles G. Unlimited quantity of power from solar radiation secured with zero atmospheric pollution. 3,670,717, Cl. 126-270.

Abbott, Robert Plowden, to Bell Telephone Laboratories, Incorporated. Recovery of horizontal sync pulses from a composite synchronizing format. 3,671,669, Cl. 178-7.30s.

Abbott, Roy W., to General Electric Company. Gas-fired heater means. 3,670,713, Cl. 126-110.00r.

Abe, Isamu; Yashiro, Hideo; Sori, Naoyuki; Hatano, Sotaro; Katsumoto, Tomiyasu; and Suzuki, Tadao, to Tokyo Shibaura Electric Co., Ltd. Method of making a honeycomb block collimator. 3,670,395, Cl. 29-471.100.

Abele, Manfred: *See—*
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Abuel-Haj, Marwan J., to Pfizer, Inc. 2-Heterocyclic substituted quinoxaline-1, 4-dioxides. 3,671,521, Cl. 260-244.00r.

ACF Industries, Incorporated: *See—*
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Ackerman, Daniel Whitney, to Universal Instruments Corporation. Wire wrapping tool. 3,670,784, Cl. 140-118.000.

ACME Maschinenfabrik GmbH: *See—*
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Adachi, Toshio; Onishi, Masayoshi; and Hayashi, Kiyohide, to Daido Seiko Kabushiki Kaisha. Electrical transfer type plasma arc melting furnace. 3,671,655, Cl. 13-1.000.

Adamek, John A.: *See—*
Turner, Lyman H.; and Adamek, John A., 3,671,094.

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Adams, James Ewing: *See—*
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Kumins, Charles A., 3,671,232.

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Aeromarine Corporation: *See—*
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Engel, Herbert; Hartwig, Karl; and Schnall, Gunther, 3,671,119.
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Air Reduction Company, Incorporated: *See—*
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Airco, Inc.: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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Akuta, Tomohiko; Seya, Atsumi; and Hashirizaki, shinya, to Yawata Iron & Steel Co., Ltd. and Mitsubishi Seiko Kabushiki Kaisha. Method for measuring a weighing load rapidly. 3,670,833, Cl. 177-1.000.

Alarm Products International, Inc.: *See—*
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Maher, Philip Kenerick; Albers, Edwin Wolf; and McDaniel, Carl Vance, 3,671,191.

Albers, Walter A., Jr., to General Motors Corporation. Process for making tetragonalgermanium dioxide. 3,671,309, Cl. 117-201.000.

Albert, Donald J., to Eastman Kodak Company. Exposure device for controlling charge on a portion of a charged surface bordering an image frame projected on the charged surface. 3,671,121, Cl. 355-7.000.

Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, to Schering AG. Antimicrobial indanones. 3,671,520, Cl. 260-240.00a.

Alderson, William T. Fluid energy machine. 3,671,146, Cl. 417-243.000.

Alexander, Newton C.; Stark, Herbert; and Thornton, Richard C., to Northrop Corporation. Attitude readout for floated inertial platform. 3,670,585, Cl. 74-5.600.

Ali, Mir Akbar; and Pincus, Alexis G., to IIT Research Institute. UV transmitting borosilicate glass composition and article. 3,671,380, Cl. 161-175.

Alibrandi, Joseph P.: *See—*
Rutherford, Kenneth R.; Hooker, Marvin L., Jr.; and Alibrandi, Joseph P., 3,671,866.

All Products Company: *See—*
Smith, Van Z., 3,670,471.

Allen, Lloyd R., to National Research Corporation. Boron carbide film product. 3,671,306, Cl. 117-138.80n.

Allen, Robert C., Sr., to Atomic Power Development Associates, Inc Heat exchanger. 3,670,810, Cl. 165-70.000.

Allen, Wallace Peyton. Microwave sewage treatment system 3,670,891, Cl. 210-128.000.

Allied Chemical Corporation: *See—*
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Allis-Chalmers Manufacturing Company: *See—*
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Thiele, Tom N.; Gerlach, Lester O.; and Gilmore, Thomas P., 3,671,746.

Allison, Rudolph L., to Paramount Textile Machinery Company. Semiautomatic vending machine including memory circuit. 3,670,860, Cl. 194-1.00j.

Allison, William W., to Armec Corporation. Timing motor with resonant members. 3,671,825, Cl. 318-128.000.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
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Alpert, Arnold L. Food containerization. 3,670,916, Cl. 220-9.00f.

Alsco, Inc.: *See—*
Nash, John J., 3,670,621.

Alt, Gerhard H., to Monsanto Company. Inhibiting the growth of plants with substituted indole derivatives. 3,671,214, Cl. 71-95.000.

Altenburger, Otto, to Stromberg-Carlson Corporation. Ringing control circuit. 3,671,678, Cl. 179-18.0hb.

Altermatt, Rudolf; Entschel, Roland; and Mueller, Curt, to Sandoz Ltd. Basic anthraquinone dyes, with pyridinium 2- or 4-dimethylene groups. 3,671,529, Cl. 260-294.80b.

Altounyan, Roger Edward, to Fisons Pharmaceuticals Limited. Compositions for treating asthma comprising bis-chromonyl compounds and method of employing same. 3,671,625, Cl. 424-45.000.

Amagi, Yasuo; Ohya, Masaki; Shiiki, Zenya; and Yusa, Haruhiko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cross-linked graft copolymer of styrene and methyl methacrylate upon a butadiene polymer. 3,671,610, Cl. 260-880.

Amano, Kitsutaro, to Kokusai Denshin Denwa Kabushiki Kaisha. Binary to ternary converter. 3,671,959, Cl. 340-347.0dd.

Amchem Products, Inc.: *See—*
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American Cyanamid Company: *See—*
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American Home Products Corporation: *See—*
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American Hospital Supply Corporation: *See—*
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Amoco Production Company: *See—*
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Marshall, J. Howard, III; and Harrington, Timothy M., 3,671,740.

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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asal, Jerrold R.; and Piepho, Donald A., to Caterpillar Tractor Company. Power angling bulldozer. 3,670,825, Cl. 172-805.000.

Ashland Oil, Inc.: *See—*
Sedor, Edward A.; and Slagel, Robert C., 3,671,473.

Ashworth, James E., to United States Steel Corporation. Internal coupling for connecting U-shaped rails. 3,671,062, Cl. 287-127.000.

Aske, Charles B., Jr. Vehicle wheel trim. 3,671,076, Cl. 301-37.00r.

Asper, Theodor. Vending system using a value storing key. 3,670,924, Cl. 222-2.000.

Associated Electrical Industries Limited: *See—*
Browning, George William, 3,671,742.

Associated Engineering Limited: *See—*
Bemrose, Colin R., 3,670,812.

Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, to Thomson-CSF. Blind landing aids. 3,671,963, Cl. 343-6.0nd.

ATCO Surgical Supports Co.: *See—*
Johnson, Leona M., 3,670,738.

Ateliers Diderichs: *See—*
Deborde, Albert, 3,670,779.

Ati, Inc.: *See—*
Erb, Gilbert E., 3,671,126.

Atlantic Richfield Company: *See—*
Striegler, John H., 3,670,832.
Yoo, Jin Sun, 3,671,565.

Atlas Chemical Industries, Inc.: *See—*
Moyant, Donald A., 3,670,925.
Rutledge, Thomas F., 3,671,604.
Sherman, Albert H.; and Zech, John D., 3,671,458.
Slawinski, Frank E., 3,671,342.

Atlas Hoist & Body Inc.: *See—*

Gladysz, Wiktor, 3,671,016.

Atomic Power Development Associates, Inc.: *See—*
Allen, Robert C., Sr., 3,670,810.

Aucouturier, Jeanne; and Lacaze, Rene, to Thomson-CSF. Graded field magnets. 3,671,895, Cl. 335-212.000.

Audac Corporation: *See—*
Kuehnle, Manfred R., 3,671,120.

Auphan, Michel Joseph: *See—*
Perilhou, Jean Robert; and Auphan, Michel Joseph, 3,670,715.

Aurnhammer, Robert: *See—*
Schlecht, Helmut; and Aurnhammer, Robert, 3,671,584.

Auto Research Corporation: *See—*
Reeve, Paul H., 3,671,148.

'Automatic' Sprinkler Corporation of America: *See—*
Gould, Bruce Michael, 3,670,534.

Automobiles Peugeot: *See—*
Falay, Bernard; and Froumajou, Armand, 3,670,586.

Avant Industries, Inc.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,670,911.

Avco Corporation: *See—*
Doyle, Brian W., 3,671,171.
Mertens, William J., 3,670,651.
Shank, Wayne C., 3,671,140.
Slayden, James D., 3,671,063.

Averton Gear and Tool Corporation: *See—*
Leming, John C., 3,670,583.

Avery, Roger Peter: *See—*
Zerlin, William Max Erich; Avery, Roger Peter; and Royce, David Hugh, 3,671,922.

Ayers, James E.: *See—*
Fernandez, Jaime B.; and Ayers, James E., 3,671,652.

Ayerst, McKenna and Harrison Limited: *See—*
Bagli, Jehan F.; and Bogri, Tibor, 3,671,570.

Ayukawa, Yaichi; Naruse, Uhei; Itoh, Tadayoshi; and Miyakawa, Tsuneaki, to CPC International, Inc., mesne. Artificial shrimp feed. 3,671,261, Cl. 99-2.00r.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Decker, Martin; Schmidt, Joseph; Hoffmann, Herwig; and Pistor, Hans Joachim, 3,671,566.
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,671,586.
Hagen, Helmut; and Becke, Friedrich, 3,671,522.
Kaufman, Otto; Daeuble, Manfred; Witsch, Heinz-Guenter; Luebcke, Enno; and Bayew, Dimiter, 3,671,176.
Koenig, Karl-Heinz; Steinbrunn, Gustav; Windel, Hermann; and Fischer, Adolf, 3,671,571.
Patsch, Manfred; and Eilingsfeld, Heinz, 3,671,536.
Reicheneder, Franz; and Kropp, Rudolf, 3,671,525.
Schlecht, Helmut; and Aurnhammer, Robert, 3,671,584.
Zschocke, Albrecht; Rohr, Wolfgang; and Fischer, Adolf, 3,671,540.

Baer, Massimo; and Campbell, Joseph O., to Monsanto Company. Glass fiber reinforced composite and method of making same. 3,671,378, Cl. 161-170.000.

Baer, Massimo; and Campbell, Joseph O., to Monsanto Company. Glass concentrate capsules. 3,671,384, Cl. 161-170.000.

Baerg, William; and Saint Guilhem Humber, Pierre. Reverse osmosis apparatus. 3,670,892, Cl. 210-134.000.

Bagli, Jehan F.; and Bogri, Tibor, to Ayerst, McKenna and Harrison Limited. Derivatives of 9-oxo-15-hydroxyprostanoic acid, homologs thereof and their preperation. 3,671,570, Cl. 260-468.00r.

Bahr, William T.; and Lewis, Robert V., to Anaconda American Brass Company. Controlled leakage conduit for delivering a fluid to a heat source. 3,670,774, Cl. 138-178.000.

Bailey, James L.; and Rodgers, Franklin A., to Polaroid Corporation. Coated silicone rubber mold. 3,671,007, Cl. 249-114.000.

Baker, Charles Edward, II; and Casciotti, Albert, to AMP Incorporated. Multi-contact electrical connector. 3,671,921, Cl. 339-59.00m.

Baker, Donal E., to Westinghouse Electric Corporation. DC power controller with static switching elements and common current feedback transformer between direct voltage source and load. 3,671,844, Cl. 321-2.000.

Baker Equipment Engineering Co., Inc.: *See—*
Milner, Edwin Earl, Jr., 3,670,849.

Baker Perkins Inc.: *See—*
Levi, George A., 3,670,665.

Baker, William A.: *See—*
Vieson, John W.; and Baker, William A., 3,670,474.

Bakke, Roger M., to International Business Machines Corporation. Dead time process regulation. 3,671,725, Cl. 235-150.100.

Ball, Rowland E., to Borg-Warner Corporation. Centrifugal pump with hydrostatic bearing. 3,671,137, Cl. 415-104.000.

Ball, Rowland E., to Borg-Warner Corporation. Composite knockdown pump. 3,671,138, Cl. 415-111.000.

Ballou, Richard P., to General Motors Corporation. Vehicle headlight control circuit using an auxiliary contact on the dimmer switch. 3,671,802, Cl. 315-83.000.

Balser, Martin: *See—*
Proudian, Andrew Peter; and Balser, Martin, 3,671,927.

Bara, Edward S., to Warwick Electronics Inc. Record changer. 3,671,045, Cl. 274-10.00r.

Barclay, Kenneth M.: *See—*
Lefrancois, Philip A.; and Barclay, Kenneth M., 3,671,185.

Bargain, Michel, to Rhone-Poulenc S.A. cross-linked polyimides. 3,671,490, Cl. 260-47.0cp.

Barnes, Billy W., to Sperry Rand Corporation. Vehicular tilt sensor having margin of safety adjustment. 3,671,933, Cl. 340-52.00h.

Barnes, Jon F.; and Johnson, James L., to General Tire & Rubber Company, The. Poromeric material having a patent leather-type finish and process for making. 3,671,345, Cl. 156-77.000.

Barnes, Lell E.; and Morris, David, to Singer Company, The, mesne. Saturated core transient current limiter. 3,671,810, Cl. 317-20.000.

Barnes, Robert L.; Block, William M.; and Grafstein, Daniel, to Singer Company, The, mesne. Polysiloxane copolymers derived from the carborane-silicon phthalocyanine monomer. 3,671,489, Cl. 260-46.50e.

Barnett, Jackson Herman, Jr. Method for impregnating wood. 3,671,299, Cl. 117-116.000.

Barnett, James A.: *See—*
Dieterich, Frank L., 3,670,444.

Barnikol-Oettler, Kurt: *See—*
Teichmuller, Gerhard; Barnikol-Oettler, Kurt; and Hartmann, Werner, 3,671,555.

Barrett, Ernest Charles Henry, to London & Scandinavian Metallurgical Co., Limited. Electro-deposition of nickel. 3,671,409, Cl. 204-49.000.

Bartels, Herbert D., to Continental Can Company, Inc. Stress relieved container and method of making same. 3,670,921, Cl. 220-75.000.

Basham, Edward R.; and Smith, William D., to Go International, Inc. Apparatus for attaching a tool to a conduit in a borehole. 3,670,566, Cl. 73-151.000.

Basman, Vefik A. Automatic antenna alignment system for enabling maximum signal reception. 3,671,969, Cl. 343-117.00r.

Bata Shoe Company, Inc.: *See—*
Joosten, Hendrik, 3,670,698.

Bates, Charles E.: *See—*
Burch, Arthur R.; and Bates, Charles E., 3,670,905.

Battelle Development Corporation: *See—*
Radke, Lawrence F.; and Hobbs, Peter V., 3,671,128.

Battelle Development Corporation, The: *See—*
Mc Intire, Hoy C.; and Vanordel, John R., 3,671,228.

Baxter Corporation, The, mesne: *See—*
Dubner, Harvey, 3,671,944.

Baxter Laboratories, Inc.: *See—*
Regan, Bernard M., 3,671,645.

Bayew, Dimiter: *See—*
Kaufman, Otto; Daeuble, Manfred; Witsch, Heinz-Guenter; Luebcke, Enno; and Bayew, Dimiter, 3,671,176.

Beachley, Robert W. Lighting standard or pole with doubly hinged base. 3,671,738, Cl. 240-84.000.

Beaudoin, Benoit R.; Cohen, Joseph D.; Jones, David H.; Marier, Lester J., Jr.; and Raab, Harry F., Jr., to United States of America, Atomic Energy Commission, mesne. Light-water breeder reactor. 3,671,392, Cl. 176-18.000.

Bechtel, John D.: *See—*
Szumila, Anthony D.; Zimnoch, Joseph J.; Bechtel, John D.; and Steinberg, Harvey M., 3,671,865.

Becke, Friedrich: *See—*
Hagen, Helmut; and Becke, Friedrich, 3,671,522.

Becker, John E., to Eclipse Consultants Limited. Hydraulic couplings. 3,670,498, Cl. 60-54.000.

Becker, John E., to Motorola, Inc. Protection circuit for an amplifier. 3,671,878, Cl. 330-207.00p.

Becton, Dickinson and Company, mesne: *See—*
Mahon, Thomas J.; and Cherba, Samuel, 3,670,726.

Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, to Siemens Aktiengesellschaft. Process for the production of capacitors. 3,670,378, Cl. 29-25.420.

Beidler, William F., to Treadline Fastener Corporation. Self-locking tubular insert. 3,670,794, Cl. 151-7.000.

Belcher, Richard A.: *See—*
Kozacka, Frederick J.; and Belcher, Richard A., 3,671,909.

Belew, Herschel W., Jr.: *See—*
Davis, John W.; and Belew, Herschel W., Jr., 3,670,564.

Belke Manufacturing Company: *See—*
Belke, Ralph E., 3,671,416.

Belke, Ralph E., to Belke Manufacturing Company. Bulged sphincteral seals for electroplating racks. 3,671,416, Cl. 204-297.00r.

Bell & Howell Company: *See—*
Hull, Charles W., 3,671,737.

Bell Telephone Laboratories, Incorporated: *See—*
Abbott, Robert Plowden, 3,671,669.
Duguay, Michel Albert, 3,671,747.
Healey, Anthony John, 3,670,753.
Henry, James L.; and Schimpf, Luther G., 3,671,676.
Knollman, Dieter John Henry; and Simon, James Louis, 3,671,942.
Miller, Calvin Max; and Sacks, Robert Charles, 3,671,662.
Ngo, Dinh-Tuan, 3,671,938.
Pento, Frank Louis, 3,671,875.
Pitetti, Raymond Charles; and Worobey, Walter, 3,671,823.
Saltzberg, Burton R., 3,671,670.
Trimble, David Carlaw, 3,671,939.
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,671,853.

Bellis, Harold Edward, to Du Pont de Nemours, E. I., and Company. Low temperature melt chlorination process. 3,671,596, Cl. 260-658.00r.

Bellmann, Alfred, to International Standard Electric Corporation. Contact spring assembly for relays and similar switches. 3,671,701, Cl. 200-166.00j.

Bellsmith, Travis L.; and Fields, Richard W., to Velsicol Chemical Corporation. Silvicidal composition and method. 3,671,215, Cl. 71-97.000.

Belttary, Harold E.; and Palmer, John G., to Zinsco Electrical Products. Circuit breaker. 3,671,908, Cl. 337-54.000.

Bement, Laurence J., to United States of America, National Aeronautics and Space Administration. Linear explosive comparison. 3,670,559, Cl. 73-35.000.

Bemrose, Colin R., to Associated Engineering Limited. Heat exchangers. 3,670,812, Cl. 165-175.

Bender, Lloyd F. Solenoid operated, two way diverter valve for fluid line washing apparatus. 3,670,744, Cl. 134-57.00r.

Bendix Corporation, The: *See—*
McKeown, James E., 3,671,842.
Sanders, Bobby J., 3,671,868.

Benes, Rudolf: *See—*
Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.

Benjamin, Rose Ellen; and Hudis, Ann. Clothes rejuvenator. 3,670,425, Cl. 34-46.000.

Bennett, Alan E. C.; and Bewick, Michael. Transfusion needles. 3,670,729, Cl. 128-214.400.

Bennett, John D., to Sun Oil Company (Delaware). Explosive drilling apparatus. 3,670,828, Cl. 175-4.500.

Benson, John T.: *See—*
Lemkin, Jack L.; Leistikow, Gerard K.; Edmisson, Russell C.; and Benson, John T., 3,670,449.

Bentsen, Louis J., to Honeywell Inc. Diaphragm logic control circuit for electric heating system. 3,670,745, Cl. 137-84.000.

Berg, Max H., to Berg, Peter & Co., Inc. Collapsible carton. 3,670,948, Cl. 229-33.000.

Berg, Peter & Co., Inc.: *See—*
Berg, Max H., 3,670,948.

Berger, John G., to General Electric Company. Riveting device. 3,670,943, Cl. 227-60.000.

Bergman, Robert N. Combination toasting and buttering apparatus. 3,670,642, Cl. 99-329.0rt.

Bergmanis, Karlis Alfredovich; Klotinsh, Erik Ernestovich; and Matis, Imant Gustovich. Device for measuring permittivity of materials. 3,671,857, Cl. 324-61.0qs.

Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Nickel-molybdenum bonded titanium nitride-titanium carbide. 3,671,201, Cl. 29-182.500.

Bergstrom, Berit P. Chairs. 3,671,074, Cl. 297-239.000.

Berkholcs, Gordon, to Continental Machines, Inc. Adjustable traverse control for surface grinder. 3,670,457, Cl. 51-92.00r.

Berkowitz, Irving L., to Kason Hardware Corporation. Refrigerator wall panels with panel fasteners and apparatus for making said panels. 3,671,006, Cl. 249-97.000.

Bernath, Louis; and Facha, Joseph V., to North American Rockwell Corporation. Articulated fuel element housing. 3,671,394, Cl. 176-79.000.

Bernhoft, Gerald W.: *See—*
Matthews, Ralph W.; Bernhoft, Gerald W.; and Schmidt, Michael R., 3,670,823.

Berry, Currie B., Jr., to Ethyl Corporation. Foamed metal. 3,671,221, Cl. 75-20.00f.

Berry, Harry E., 20% to Kerek, Richard, 20% to Kerek, John and 20% to De La Hunt, R. E. Beverage dispensing keg. 3,670,929, Cl. 222-400.700.

Berry, Walter Cunningham, Jr., to Du Pont de Nemours, E. I., and Company. Gas purging of spinning packs. 3,671,653, Cl. 264-39.000.

Bersin, Richard L., to International Plasma Corporation. Method and apparatus for ashing organic substance. 3,671,195, Cl. 23-230.0pc.

Berstorff, Hermann, Maschinenbau GmbH: *See—*
Hoever, Heinz; and Orth, Herbert, 3,670,644.

Bertea Corporation: *See—*
Stevens, Curtis Edgar, 3,671,082.

Bethlehem Steel Corporation: *See—*
Charchalis, Taras I., 3,670,884.
Humphries, Darral V., 3,671,622.

Bettini, Dino: *See—*
Muller, Erwin; and Bettini, Dino, 3,671,791.

Betts, Anson G. Treatment of phosphate rock with acids. 3,671,189, Cl. 23-88.000.

Betts, William M. Marine mufflers. 3,670,845, Cl. 181-57.000.

Beukers, John M.; and Williams, Christian B., to United States of America, Army. Two channel direction finder. 3,671,968, Cl. 343-113.0de.

Bewick, Michael: *See—*
Bennett, Alan E. C.; and Bewick, Michael, 3,670,729.

Bickham, Richard E.: *See—*
Lindley, Ralph H.; and Bickham, Richard E., 3,671,961.

Biernath, Emil; and Burkard, Hans, to Excentra Gesellschaft mit beschrankter Haftung. Radial piston machine. 3,670,629, Cl. 92-72.000.

Biernson, George; Euling, Raymond; and Jones, Paul W., to Sylvania Electric Products, Inc. Optical low-pass spatial filter. 3,671,107, Cl. 350-162.0sf.

Bieser, Albert H. Credit card verification system. 3,671,717, Cl. 235-61.11c.

Bilas, Michael. Tiltable mounting for dump truck bodies. 3,671,073, Cl. 298-17.

Billaz, Rene: *See—*
Faidutti, Michel; Boileau, Jacques; Konrat, Jean-Paul; and Billaz, Rene, 3,671,535.

Billot, Jean, to Rafaut & Cie. Control and safe-starting device for use in a detachable missile. 3,670,654, Cl. 102-70.26a.

Bingham, Bruce N., to Amerock Corporation. Slidable bolt catch. 3,671,065, Cl. 292-175.000.

Bio-Logics, Inc.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,670,386.

Bird & Son, Inc.: *See—*
Weaver, Leonard Wheelock, 3,670,505.

Bischoff Chemical Corporation: *See—*
Nussbaum, Frank J., 3,671,168.

Bissonette, Vernon L.; Miller, Jerry B., deceased (by Miller, Carol K.; executrix), said Bissonette assor. to Eastman Kodak Company. Process for forming dye images. 3,671,244, Cl. 96-54.000.

Bittscheidt, Josef: *See—*
Seifert, Friedrich; and Bittscheidt, Josef, 3,671,663.

Black and Decker Manufacturing Company, The: *See—*
Weber, Edwin J., 3,670,413.

Blackstone, John A. Transfer tail clamping apparatus. 3,670,777, Cl. 139-247.000.

Blain, William A.: *See—*
Griner, Arthur J.; and Blain, William A., 3,671,163.

Blake, Anthony; Halliday, Denis Malcolm; and Woods, Michael Faulkner, to Lever Brothers Company. Ice-cream products. 3,671,268, Cl. 99-136.000.

Blanchard, David L.: *See—*
Donahue, William J.; Blanchard, David L.; and Wack, John M., 3,670,656.

Bland, John: *See—*
Eyre, Brian; and Bland, John, 3,671,075.

Blankenstein, Gunter: *See—*
Kunzel, Hans-Egon; Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,671,614.

Blanshine, Allison W.; and Pucher, Richard A. Two row row crop attachment with lower crop gathering means at the center than at the sides. 3,670,482, Cl. 56-98.000.

Blatter, Herbert Morton: *See—*
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,671,512.

Blaupunkt-Werke GmbH: *See—*
Wellhausen, Heinz, 3,671,870.

Blazer Corporation: *See—*
El-Tahry, Mahmoud S., 3,670,809.

Blazevic, Mikos; and Kohn, Joseph. Magnetic recording and playback instrument and support for magnetic recording. 3,671,044, Cl. 274-4.00j.

Bledsoe, James O., Jr., to SCM Corporation. Myrcene epoxide diels-alder adducts. 3,671,551, Cl. 260-348.00r.

Bleibtreu, Alexander, to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G. Transfer switch for tap-changing regulating transformers including lost motion interconnection driving mechanism. 3,671,687, Cl. 200-11.0tc.

Block, William M.: *See—*
Barnes, Robert L.; Block, William M.; and Grafstein, Danel, 3,671,489.

Blomgren, Oscar C., Jr.: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,670,606.

Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., to Inter-Probe, Inc. Method and apparatus for cooling the workpiece and/or the cutting tools of a machining apparatus. 3,670,606, Cl. 82-1.00c.

Bloom, Roy C.: *See—*
Eldridge, Merle K.; Bloom, Roy C.; and Joseph, Douglas C., 3,671,248.

Blount, George W., to New Century Products, Inc. Hinged cover construction for a water closet. 3,670,441, Cl. 4-236.000.

Blumcraft of Pittsburgh: *See—*
Horgan, William J., Jr., 3,670,537.

Bobb, Paul D., to Armstrong Cork Company. Method of packing chair seats. 3,670,473, Cl. 53-37.000.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Wiedeking, Elmar, 3,671,129.

Boeing Company, The: *See—*
Fries, James R., 3,671,967.
Jenny, Robert W., 3,670,996.
Layton, John E., 3,671,970.
Lee, Shi K., 3,671,951.
Leonard, Donald E., 3,670,988.

Boen Bruk: *See—*
Olsen, Leif T., 3,671,353.

Bogaerts, Leo C.; and Weinberger, George W., to Ammco Tools, Inc. Variable speed ratio transmission. 3,670,584, Cl. 74-199.000.

Bogri, Tibor: *See—*
Bagli, Jehan F.; and Bogri, Tibor, 3,671,570.

Bohm, Friedrich, to Metallschlauchfabrik Joseph Ulbrich & Co. Machine for the production of tubing. 3,670,544, Cl. 72-49.000.

Boileau, Jacques: *See—*
Faidutti, Michel; Boileau, Jacques; Konrat, Jean-Paul; and Billaz, Rene, 3,671,535.

Bolt, Richard Robert; and Wobbe, Delbert Edmond, to American Can Company. Drawing and ironing process. 3,670,543, Cl. 72-41.000.

Boneck, Roger L. Self-contained cable reel. 3,670,977, Cl. 242-54.00r.

Bonteil, Robert C., to Societe d'Etudes et d'Exploitation de Procedes pour l'Industrie Alimentaire Sepial. Installation for freezing a liquid or semi-liquid product. 3,670,520, Cl. 62-314.000.

Boothe, Willis A., to General Electric Company. Fluidic signal detection and prevention of stall in compressors for gas turbine engines. 3,671,134, Cl. 415-13.000.

Borden Company, The: *See—*
Hopermann, Richard Konrad, 3,671,294.

Borden, Inc.: *See—*
Pierce, Andrew Earl, 3,671,382.

Borer, Herbert W.; Cryder, John R.; and Wirtz, Edward A., to Caterpillar Tractor Co. Kickout valve and circuit. 3,670,628, Cl. 91-358.00a.

Borg-Warner Corporation: *See—*
Ball, Rowland E., 3,671,137.
Ball, Rowland E., 3,671,138.
Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., 3,670,801.
Gyory, Emeric J.; and Teichmann, Otmar E., 3,671,048.
Jones, Johnny W., 3,671,786.
Newton, Alwin B., 3,670,519.

Borger, George Frederick. Fish hook guard. 3,670,445, Cl. 43-42.400.

Bormann, Gerhard; Gmunder, John; and Wilkens, Heinrich, to Sandoz Ltd.; a/k/a and Sandoz A.G. 1,2,2a,3,4,5-Hexahydro-1-(2-imidazolin-2-ylmethyl) benz [cd] indoles. 3,671,541, Cl. 260-309.600.

Boroughs, Raymond Milton; and Redman, John Wilson, to British Petroleum Company Limited, The. Method of separation of wax from oil. 3,670,888, Cl. 210-71.000.

Borowski, Bernard J., to Ferro Corporation. Iron-containing titania-opacified porcelain enamels. 3,671,278, Cl. 106-48.000.

Borsi, Jozsef: *See—*
Toldy, Lajos; Borsi, Jozsef; Elek, Sandor; Elekes, Istvan; and Andrasi, Ferenc, 3,671,537.

Bosacco, David N. Prosthetic or fracture device and method. 3,670,724, Cl. 128-92.00d.

Bossen, Douglas C.; and Hsiao, Mu-Yue, to International Business Machines Corporation. Error correcting decoder. 3,671,947, Cl. 340-146.1al.

Bostad, Wayne W.: *See—*
Olson, John E.; Bostad, Wayne W.; and Price, Norman L., 3,670,626.

Bostedt, Jan Olof Gustaf: *See—*
Karlsson, Karl Gosta; and Bostedt, Jan Olof Gustaf, 3,671,029.

Bostrom, Sten-Lennart. Locking device using radiation conducting key. 3,671,752, Cl. 250-220.

Boucherle, Andre L.: *See—*
Carraz, Gilbert L.; and Boucherle, Andre L., 3,671,532.

Bourgeois, Norbert Paul, to Etudes et Bonneterie SA. Circular knitting-machine. 3,670,527, Cl. 66-50.00r.

Bowker, John Kent, to Itek Corporation. Interferometer of the center balance type. 3,671,130, Cl. 356-106.000.

Bowling, Harold F.: *See—*
Hall, Maurice B., 3,670,428.

Boyriven, Paul, to Compagnie Industrielle de Mecanismes. Ball or roller fastening device. 3,671,064, Cl. 292-45.000.

Bozanic, Donald A.; Mergerian, Dickron; and Minarik, Ronald W., to Westinghouse Electric Corporation. Broadband zero field exchange echo system. 3,671,855, Cl. 324-.500.

Brack, Karl, to Hercules Incorporated. Cross-linkable unsaturated polymer compositions. 3,671,475, Cl. 260-22.

Bradley, George M. Electrical fish scaler. 3,670,364, Cl. 17-66.000.

Bradshaw, Christopher Patrick Cadman: *See—*
O'Hara, Joan Irenee; and Bradshaw, Christopher Patrick Cadman, 3,671,462.

Bradshaw, Michael S. Carrier for hook type coat hanger. 3,670,937, Cl. 224-45.00t.

Brantte, Arnold; Frostling, Bengt Harald Ivar; and Lindgren, Per-Henning. Apparatus for a quantitative anaylsis of a gas or gas mixture in respect of its content of organic substances. 3,671,196, Cl. 23-254.00r.

Brazda, Ladislav, deceased (by Brazdova, Drahuska); Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, to Elitex, Zavody testilniho strojrenstvi. Mechanism for withdrawing and winding yarn in spinning units. 3,670,484, Cl. 57-34.00r.

Brazdova: *See—*
Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.

Brazdova, Dagmar; heirs: *See—*
Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.

Breach, Geoffrey D.: *See—*
Levy, Alan A.; Rodger, Mitchell N.; and Breach, Geoffrey D., 3,671,629.

Breiling, Hans Georg, to Dragerwerke Aktiengesellschaft. Expansion temperature sensing means, in particular for medical apparatus. 3,671,024, Cl. 261-39.00r.

Brendgord, Thomas, to American Sterilizer Company. Patient care wall. 3,670,718, Cl. 128-1.00r.

Brenner, Bruce C., to Dow Corning Corporation. Lubricant compositions. 3,671,433, Cl. 252-49.600.

Brent, Albert: *See—*
Teichmann, Charles F.; and Brent, Albert, 3,671,209.

Brepoels, Joseph Rene; and Busschots, Armand August Florent, to S.A. PRB. Plant growth regulants. 3,671,217, Cl. 71-105.000.

Bresin, Adam. Exchanger for cooling fluids. 3,670,522, Cl. 62-333.000.

Breston, Michael P.; and Keilberg, Ray D., to Fluor Corporation. Automatic submarine trencher. 3,670,514, Cl. 61-72.400.

Brien, Andre. Watch display case. 3,670,437, Cl. 40-126.00b.

Briggs & Stratton Corporation: *See—*
Harkness, Joseph R., 3,671,851.

Briggs, Albert Theodore; and Swisher, Eugene Henry, to United Engineering and Foundry Company. Holding shelf apparatus. 3,670,551, Cl. 72-252.000.

Brillion Iron Works, Inc.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.

Briones, Robert A., to TRW Inc. Light intensity calorimeter. 3,670,570, Cl. 73-190.00r.

British Iron and Steel Research Association, The: *See—*
Reed, Geoffrey Ronald, 3,670,877.

British Petroleum Company Limited, The: *See—*
Boroughs, Raymond Milton; and Redman, John Wilson, 3,670,888.
O'Hara, Joan Irenee; and Bradshaw, Christopher Patrick Cadman, 3,671,462.

Britt, James E.; and Hewitt, Robert E., to Xerox Corporation. Development electrode. 3,670,700, Cl. 118-636.000.

Brocato, Samuel C. Dish tray. 3,670,938, Cl. 224-48.00r.

Brock, Jessie O.: *See—*
Fitzgerald, Warren E.; Knudsen, John P.; and Brock, Jessie O., 3,671,619.

Bromer, Heinz; and Meinert, Norbert, to Leitz, Ernst, G.m.b.H. Optical fluorophosphate glass having an anomalous partial dispersion ratio. 3,671,276, Cl. 106-47.00q.

Brooker Leslie G. S.: *See—*
Fumia, Arthur, Jr.; Heseltine, Donald W.; and Brooker Leslie G. S., 3,671,648.

Brooks, Frank W.; and Naismith, Thomas D., to General Motors Corporation. Disc brake with parking brake. 3,670,853, Cl. 188-72.600.

Brooks, James; Drummond, Ralph E.; Heinz, Frank J.; and Chambers, William W., to Robertshaw Controls Company. Thermostat set. 3,671,762, Cl. 307-117.000.

Brooks Products, Inc.: *See—*
Robbins, James L., 3,671,156.

Brown, Albert B.; and Parkhill, Frank J., to Rohm & Haas Company. Method of treating shaped articles with betaine-type polymers and the articles thereby obtained. 3,671,305, Cl. 117-138.80f.

Brown, Carl A.; and Walter, Frederick L., to Parker-Hannifin Corporation. Fluid filter device having bypass and indicator means. 3,670,889, Cl. 210-90.000.

Brown, Cicero C. Well packer. 3,670,815, Cl. 166-136.000.

Brown, Gerald H.; and Mazzarella, Emil D., to National Starch and Chemical Corporation. Paper surface sizing process and product utilizing cationic amylose derivatives. 3,671,310, Cl. 117-156.000.

Brown, Herbert C. Carbonylation of organoboranes. 3,671,585, Cl. 260-545.00r.

Brown, Howard W.: *See—*
Sullivan, Gene F., 3,671,015.

Brown, Joseph: *See—*
Weber, Hans B.; and Brown, Joseph, 3,670,660.

Brown, Perry H.; and Webber, Harold H., to Brunswick Corporation. Method of and apparatus for forming metal fiber textile blend and metal fiber textile product. 3,670,485, Cl. 57-50.000.

Brown, Robert J.: *See—*
Kostur, Robert E.; and Brown, Robert J., 3,671,161.

Browning, George William, to Associated Electrical Industries Limited. Film transfer mechanism for electron microscopes. 3,671,742, Cl. 250-49.0se.

Bruder, Karl. Sheet laminating machine for feeding laminated sets to a press roller. 3,671,363, Cl. 156-556.000.

Bruestle, Carl O. Wire drawing. 3,670,588, Cl. 72-289.000.

Bruhn, Hjalmar D.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.

Brumett, Billy M.: *See—*
Welsh, Clarke T.; and Brumett, Billy M., 3,670,478.

Brungs, Charles A.: *See—*
Sabatelli, Philip M.; Loder, Edwin R.; Brungs, Charles A.; and Sarge, Carmen R., 3,671,440.

Bruniaux, Bernard Jean Pierre Louis Lucien; and Le Corre, Roger Jean, to Etat Francais-Delegation Ministeriello pour l'Armement.

Hulls of the ships and their methods of construction. 3,670,683, Cl. 114-65.00r.

Brunner, Alfred, to Sulzer Brothers, Ltd. Method for irradiating foodstuffs and other consumables, pharmaceuticals and the like, and a package for same. 3,670,874, Cl. 206-46.0pv.

Brunner, Richard G., to Allis-Chalmers Manufacturing Company. Vacuum interrupter shunted with mechanical switch. 3,671,696, Cl. 200-144.00b.

Brunner, Richard G., to Allis-Chalmers Manufacturing Company. Vacuum switch with power fuse. 3,671,907, Cl. 337-4.000.

Brunswick Corporation: *See—*
Brown, Perry H.; and Webber, Harold H., 3,670,485.
Sanders, James W., 3,671,724.

Bryant, William W.; and Groff, Richard T., to United States of America, Navy. Gun blast stripper and diffuser. 3,670,622, Cl. 89-14.00c.

Brzoska, Leonard M. Tool for applying suspension clamps to power lines. 3,670,390, Cl. 29-271.000.

Buchanan, Houston H. Compensation tool bar device. 3,670,824, Cl. 172-449.000.

Bucher, John H.; and Held, John F., to Jones & Laughlin Steel Corporation. High-strength steel having aging properties. 3,671,334, Cl. 148-12.300.

Buckeridge, Roger M., to Westinghouse Air Brake Company. Reverser protective circuit. 3,671,834, Cl. 318-293.

Buckman, John D.; Pera, John D.; and Raths, Fred W., to Buckman Laboratories, Inc. Methods of combatting bacteria and fungi using cyanoalkyl esters of 2-haloacrylic and 2,3- dihalo propionic acids. 3,671,641, Cl. 424-304.000.

Buckman Laboratories, Inc.: *See—*
Buckman, John D.; Pera, John D.; and Raths, Fred W., 3,671,641.

Bud, Hans, to English Numbering Machines Limited. Indexing mechanisms. 3,670,580, Cl. 74-815.000.

Budd Company, The: *See—*
Almond, Elmer C., 3,670,393.
Haas, Charles H., 3,670,392.
Hurlebaus, Richard P., 3,671,713.
Jahnle, Herbert A., 3,671,227.
Mattia, Michael, 3,671,405.
Mattia, Michael; and Van Sciver, Herbert D., II, 3,671,406.

Bunker-Ramo Corporation, The: *See—*
Zerlin, William Max Erich; Avery, Roger Peter; and Royce, David Hugh, 3,671,922.

Burch, Arthur R.; and Bates, Charles E., to Clark Equipment Company. Obstruction detection means for material handling device. 3,670,905, Cl. 214-16.40a.

Burgdorf, Marten: *See—*
Kienzler, Wolfgang; and Burgdorf, Marten, 3,670,554.

Burkard, Hans: *See—*
Biernath, Emil; and Burkard, Hans, 3,670,629.

Burke, Robert F.: *See—*
Mascio, Nicholas E.; and Burke, Robert F., 3,671,197.

Burleson, E Richard; and Davis, Carl H., to Dresser Industries, Inc. Package for flexible products. 3,670,880, Cl. 206-65.00s.

Burlington Industries, Inc.: *See—*
Jinnette, Allen J., 3,671,179.

Burnett, Henry J. Electric induction gas heater. 3,671,715, Cl. 219-374.000.

Burroughs Corporation: *See—*
Funk, John W.; and Lakhani, Kishor M., 3,670,647.
Kauffman, Samuel L., 3,671,919.
Kronies, Reinhard K.; and Hansen, Iver C., 3,671,940.
Maniar, Prakash N., 3,671,287.

Burroughs Wellcome Company: *See—*
Cresswell, Ronald Morton; and Mentha, John William, 3,671,564.

Burton, Paul E.: *See—*
Wiese, Herbert K.; and Burton, Paul E., 3,671,590.

Buschhoff, Max, to Schering AG. Method of making hexaorganodiplumbanes. 3,671,561, Cl. 260-437.00r.

Buschmann, Hans, to Telesco Brophey Limited. Sheath for umbrella. 3,670,749, Cl. 135-33.00c.

Bushman, Bliss M.; and Schultz, William D., to Perkins-Elmer Corporation, The. System for integrating gunsight reticle image and image received by a camera. 3,671,100, Cl. 350-19.000.

Busschots, Armand August Florent: *See—*
Brepoels, Joseph Rene; and Busschots, Armand August Florent, 3,671,217.

Buswell, Wallace H., 1/2 to Anderson, Clare E. Eccentric acting floating-controlled pinch-valve vessel filling assembly. 3,670,751, Cl. 137-1.000.

Butcher, James; Gyllstrom, Richard G.; and Lamb, William Doyle, to Cash, A. W., Valve Manufacturing Corporation. Backflow preventer. 3,670,760, Cl. 137-218.000.

Butler, Albert Q.: *See—*
Tyson, Henry K.; and Butler, Albert Q., 3,670,766.

Butterfield, Boydston Lewis, to American Cyanamid Company. Fluorescent compositions. 3,671,451, Cl. 252-301.200.

Buzzolini, Mario G.: *See—*
Griot, Rudolf G.; and Buzzolini, Mario G., 3,671,583.

Cady, Percy L., Jr., to Houdaille Industries, Inc. Method and means for punching. 3,670,610, Cl. 83-55.000.

Cahill, Robert J. Pilot pin for mounting automobile wheels. 3,670,391, Cl. 29-273.000.

Cairati, Luciano: *See—*
Calcagno, Benedetto; and Cairati, Luciano, 3,671,576.

Cairns, Walter John: *See—*
Fraser, William Milton; Cairns, Walter John; and Mac Donald, Ian Norman, 3,671,149.

Calabrese, Ronald V., to Lumenite Electronic Company. Liquid level control. 3,671,142, Cl. 417-36.000.

Calame, Jean Pierre: *See—*
Siddall, John B.; and Calame, Jean Pierre, 3,671,558.

Calcagno, Benedetto; and Cairati, Luciano, to Societa' Italiana Resine S.p.A. Process for preparing olefin esters. 3,671,576, Cl. 260-497.00a.

Calgon Corporation: *See—*
Hofer, Lawrence John Edward; and Manes, Milton, 3,670,424.

Calhoun, Donald F., to Hughes Aircraft Company. Digital binary multiplier employing sum of cross products technique. 3,670,956, Cl. 235-164.000.

Calor: *See—*
Trouilhet, Maurice Marie Achille, 3,671,357.

Campbell, Billy G. Fireplace log burner. 3,671,175, Cl. 431-328.000.

Campbell, Douglas E.; and Harris, Richard A., to Western Electric Company, Incorporated. Mask registration during continuous photoetching of strip material. 3,671,243, Cl. 96-36.200.

Campbell, Ian D.: *See—*
MacDonald, John M.; and Campbell, Ian D., 3,671,423.

Campbell, Joseph O.: *See—*
Baer, Massimo; and Campbell, Joseph O., 3,671,378.
Baer, Massimo; and Campbell, Joseph O., 3,671,384.

Campbell, Richard D.; and Campbell, Sue Green; executrix. Cuff making method. 3,670,679, Cl. 112-262.000.

Campbell Soup Company: *See—*
Vogel, Leo G., 3,670,694.

Campbell, Sue Green; executrix: *See—*
Campbell, Richard D.; and Campbell, Sue Green; executrix, 3,670,679.

Canadian Industries Limited: *See—*
McCaffrey, Francis Hamnet Garland; McIndoe, Jack Garnett; and Rigg, Herbert, 3,670,650.

Canadian Marconi Company: *See—*
Denoncourt, Gilles J.; and Nejedly, Peter T., 3,671,731.

Canadian Patents and Development Limited: *See—*
Menzies, Robert W., 3,671,789.
Porter, Andrew W.; and Sanders, John L., 3,670,790.

Canon Kabushiki Kaisha: *See—*
Goshima, Takeshi; and Imai, Nobuhiro, 3,670,992.

Caracci, Joseph R., Jr.: *See—*
Germino, Felix J.; and Caracci, Joseph R., Jr., 3,671,269.

Carbo, Jerry A.; and Grady, Dennis F., to Westinghouse Air Brake Company. Sludge retrieval apparatus for air pollution control systems. 3,670,477, Cl. 55-227.000.

Cardwell, Gilbert I., Jr., to United States of America, Air Force, mesne. D. C. converter having control transistor in blocking oscillator feedback. 3,671,773, Cl. 307-275.000.

Carlisle, Richard S. Precise depth cutter. 3,670,733, Cl. 128-305.000.

Carlson, Bernard C.; and Hutchins, Francis E., to Vanderbilt, R. T., Company, Inc. Stable aqueous anti-dandruff shampoo containing captan. 3,671,634, Cl. 424-274.

Carlson, Chesley F., Company: *See—*
Wicker, Ralph C., 3,671,131.

Carpano & Pons. SA.: *See—*
Lemery, Jean-Paul, 3,670,984.

Carraz, Gilbert L.; and Boucherle, Andre L., to Societe de Recherches Industrielles S.O.R.I. Composition and method for lowering the blood sugar content of diabetic mammals. 3,671,532, Cl. 424-305.000.

Carrier Corporation: *See—*
O'Mara, Raymond D.; and Griffin, Charles K., 3,671,136.

Carroll, Francis Emery; and Seebold, Walter Charles, to Lever Brothers Company. Halogenated phenolic germicidal compositions containing terpene color stabilizers. 3,671,630, Cl. 424-174.000.

Carroll, John Robert; Kiniry, John Michael; and Finazzo, Anthony. Auto travel trouble sign. 3,670,438, Cl. 40-129.00c.

Carter, John Henry, to Aeromarine Corporation. Winch. 3,670,589, Cl. 74-325.000.

Casavant, George D., to International Paper Company. Process of forming an electrophotographic element. 3,671,234, Cl. 96-1.800.

Casciotti, Albert: *See—*
Baker, Charles Edward, II; and Casciotti, Albert, 3,671,921.

Casco, Ernest L.: *See—*
Devereux, Robert F.; and Casco, Ernest L., 3,670,572.

Case, J. I., Company: *See—*
Dubinsky, Terence N., 3,671,155.

Case, Leslie C. Rigid polyurethane compositions with improved properties. 3,671,470, Cl. 260-2.5ap.

Cash, A. W., Valve Manufacturing Corporation: *See—*
Butcher, James; Gyllstrom, Richard G.; and Lamb, William Doyle, 3,670,760.

Cass, Robert A.: *See—*
Ray, James D.; Steingiser, Samuel; and Cass, Robert A., 3,671,411.

Cassen, Quentin C.; Luisi, James A.; and Salman, Naif D., to North American Rockwell Corporation. Read-only memory. 3,671,948, Cl. 340-173.0sp.

Castrillon, Jose P. A., to United States of America, Atomic Energy Commission. Nitriles as scintillation solvents and solutes. 3,671,455, Cl. 252-301.2ac.

Caterpillar Tractor Co.: *See—*

Borer, Herbert W.; Cryder, John R.; and Wirtz, Edward A., 3,670,628.
Wait, John D., Jr., 3,670,808.

Caterpillar Tractor Company: *See—*
Asal, Jerrold R.; and Piepho, Donald A., 3,670,825.

Cavella, James J., to Datadyne Corporation. Self-reversing ribbon drive. 3,670,981, Cl. 242-67.4.

Cavitt, Roy L.: *See—*
Miller, Richard G.; and Cavitt, Roy L., 3,671,291.

Cebal GP: *See—*
Prayer, Gerard; and Perrat, Jean-Marie, 3,670,919.

Cecere, Andrew P.: *See—*
Cohn, Eugene; Cecere, Andrew P.; and Frezza, Robert, 3,670,375.

Cekoric, Thomas, Jr.; Evans, George; and Searcy, Ronald. Polyanionic compounds in culture media. 3,671,399, Cl. 195-100.000.

Cekoric, Thomas, Jr.; and Evans, George, to Hoffmann-La Roche Inc. Bacterial controls and preparation thereof. 3,671,400, Cl. 195-100.000.

Celanese Corporation: *See—*
Jamison, Saunders E., 3,671,471.
Loft, John T.; Conciatori, Anthony B.; and Chenevey, Edward C., 3,671,491.
Stuetz, Dagobert E., 3,671,488.

Chabardes, Pierre; Gandilhon, Pierre; Grard, Charles; and Thiers, Michel, to Rhone-Poulenc S.A. Process for the preparation of aliphatic dinitriles. 3,671,569, Cl. 260-465.80d.

Chambers, William W.: *See—*
Brooks, James; Drummond, Ralph E.; Heinz, Frank J.; and Chambers, William W., 3,671,762.

Chambers, William W., to Robertshaw Controls Company. Control apparatus. 3,670,960, Cl. 236-11.000.

Charbonnages de France: *See—*
Valantin, Alfred, 3,670,627.

Charchalis, Taras I., to Bethlehem Steel Corporation. Nail separator. 3,670,884, Cl. 209-80.000.

Charleville, Joseph L.; De Tienne, Mart E.; and Lammert, Charles W., to United States of America, Air Force. Severance of polycarbonate material canopy transparency. 3,670,998, Cl. 244-121.000.

Charns, Norman, to General Motors Corporation. Heated blower motor for defrosting windows. 3,671,714, Cl. 219-203.000.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J.; and Belcher, Richard A., 3,671,909.
Kozacka, Frederick J., 3,671,910.
Kozacka, Frederick J., 3,671,911.

Chausse, Burnette P.; and Konrad, Charles E., to General Electric Company. Induction motor speed control. 3,671,831, Cl. 318-227.000.

Chedaille, Jacques; and Koopmans, Gerben, to Midland-Ross Corporation. Multi-fuel burner. 3,671,172, Cl. 431-174.

Cheek, Edward E., to McDowell-Wellman Engineering Company. Conveyor belt structure. 3,670,870, Cl. 198-193.000.

Cheers, Ronald M., to Euclid, Inc. Vehicle suspension. 3,671,057, Cl. 280-124.00r.

Chemed Corporation: *See—*
Sabatelli, Philip M.; Loder, Edwin R.; Brungs, Charles A.; and Sarge, Carmen R., 3,671,440.

Chemiebau Dr. A. Zieren GmbH & Co. K.G.: *See—*
Gelderblom, Horst-Dieter; and Morsdorf, Manfred, 3,670,769.

Chemische Werke Huels, A.G.: *See—*
Seifert, Friedrich; and Bittscheidt, Josef, 3,671,663.

Chen, Philip L.: *See—*
Mason, Lawrence J.; Simpson, George R.; Paradysz, Louis F.; and Chen, Philip L., 3,670,633.

Chenevert, Martin E., to Esso Production Research Company. Oil recovery process. 3,670,816, Cl. 166-252.000.

Chenevey, Edward C.: *See—*
Loft, John T.; Conciatori, Anthony B.; and Chenevey, Edward C., 3,671,491.

Cherba, Samuel: *See—*
Mahon, Thomas J.; and Cherba, Samuel, 3,670,726.

Chery, Walter Valdemar. Variable speed automatic transmission. 3,670,595, Cl. 74-688.000.

Chevron Research Company: *See—*
Jaffe, Joseph; and Kittrell, James R., 3,671,425.
Stevick, Lawrence E., 3,671,547.

Cheze, Bernard J., to Portain Poclain Materiel. Telescopic jibs. 3,670,465, Cl. 52-115.

Chiang, John S. C.; and Hogya, Bernard J., to FMC Corporation. Process of etching metal with ammonium persulfate with recovery and recycling. 3,671,344, Cl. 156-19.000.

Chiba, Minoru, to Nichicon Capacitor Ltd. Semiconductive ceramic capacitor. 3,671,818, Cl. 317-230.000.

Chicago Switch, Inc.: *See—*
Farrell, Guy M., 3,671,693.

Chick, David Michael: *See—*
Draper, James Krishen; and Chick, David Michael, 3,671,779.

Chiddix, Max E.: *See—*
Wynn, Robert W.; and Chiddix, Max E., 3,671,594.

Chikata, Masaru: *See—*
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Chikata, Masaru, 3,670,957.

Childers, Thomas W., to Esso Production Research Company. Underwater pollution control. 3,670,814, Cl. 166-.500.

Chin, Wesley S. C.; and Yao, Kou C., said Yao assor. to said Chin. Elongated decorative plastic strip having a greenery topping simulating foliage. 3,671,367, Cl. 161-27.000.

Christensen, Donald W., to Young Radiator Company. Protection-sleeve for finned-tubes of heat-exchanger core-unit. 3,670,811, Cl. 165-144.000.

Christian, Warren E., to Norton Company. Coated abrasive cones. 3,670,463, Cl. 51-394.000.

Christie, John B., to National Cash Register Company, The. Transition code recognition system. 3,671,722, Cl. 235-61.12n.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Tsuda, Minoru; Yosida, Akio; and Yuki, Takamitsu, 3,671,468.

Church, Richard D., to American Standard Linear Systems, Inc. Variable duty cycle switching circuit. 3,671,804, Cl. 315-127.000.

Ciba Limited: *See—*
Nachbur, Hermann; and Maeder, Arthur, 3,671,611.

Ciba-Geigy AG: *See—*
Artz, Klaus; Desai, Nalin Binduprasad; and Liechti, Hans Wilhelm, 3,671,177.
Froehlich, Alfred; Piller, Bernhard; and Stauner, Thomas, 3,671,253.

Ciba-Geigy Corporation: *See—*
Keenan, John Francis Edmund, 3,671,581.
Knell, Martin; and Klemchuk, Peter P., 3,671,574.
Marand, Jean, 3,670,965.
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,671,512.

Cilia, Paolo. Soap and container therefor. 3,671,438, Cl. 252-90.000.

Cillichemie Ernst Vogelmann: *See—*
Seid, Volker, 3,670,893.

Citizen Watch Co., Ltd.: *See—*
Takamune, Hirotoki; and Mochizuki, Yoshifumi, 3,670,492.

Clark Equipment Company: *See—*
Burch, Arthur R.; and Bates, Charles E., 3,670,905.
Gaylor, Richard P., 3,670,631.
Reinhardt, Robert L., 3,670,822.
Williamson, William A., 3,670,838.

Clark, Hubert M., to TRW Inc. Flat side valve for pressure balanced power steering pump with improved aspirator action. 3,671,143, Cl. 417-79.000.

Clark, Marion. Internal resistance fluid clutch. 3,670,857, Cl. 192-60.000.

Clarke, Gordon J.: *See—*
Crosby, Nobel W.; Walker, Robert C.; and Clarke, Gordon J., 3,670,372.

Claussen, Robert P. Apparatus for alining asparagus spears. 3,670,792, Cl. 146-81.00a.

Clawson, Arthur R.; Davis, Neil M.; Wieder, Harry H.; and Collins, David A., to United States of America, Navy. Lamellar eutectic InSB SB films as infrared polarizers. 3,671,102, Cl. 350-147.000.

Clay, John Armstrong, to Manchester Liners Limited. Slamming indicator system for marine devices. 3,671,954, Cl. 340-240.000.

Clement, Clyde H.: *See—*
Larson, Leland B.; and Clement, Clyde H., 3,670,959.

Clifford, Daniel. Audio-visual concentration drill and puzzle process. 3,670,472, Cl. 35-8.

Clift, Charles E., to Sperry Rand Corporation. Permanent magnet detent means for a rotary solenoid. 3,671,899, Cl. 335-253.000.

Cliftronics, Inc.: *See—*
Ganowsky, Raymond J., 3,671,898.

Coast, John B., to Coast Machinery, Inc. Machine and method for folding plastic bags and the like. 3,671,033, Cl. 270-83.000.

Coast Machinery, Inc.: *See—*
Coast, John B., 3,671,033.

Coats, John H.: *See—*
Argoudelis, Alexander D.; and Coats, John H., 3,671,647.

Coats, William M. Horseshoe fastener. 3,670,619, Cl. 85-9.000.

Cobb, James W.: *See—*
Rovin, Herman; Cobb, James W.; Opuszenski, Theodore; Willard, Richard H.; Rigat, Raymond, Jr.; and Pellicano, Joseph, 3,670,675.

Cohen, Hyman L.: *See—*
Minsk, Louis Morton; Cohen, Hyman L.; and Frauenglass, Elliott, 3,671,256.

Cohen, Joseph D.: *See—*
Beaudoin, Benoit R.; Cohen, Joseph D.; Jones, David H.; Marier, Lester J., Jr.; and Raab, Harry F., Jr., 3,671,392.

Cohn, Eugene; Cecere, Andrew P.; and Frezza, Robert, to Samcoe Holding Corporation. Apparatus and method for tenter processing of open width fabric. 3,670,375, Cl. 26-57.00a.

Coilcraft, Inc.: *See—*
Renskers, John O., 3,671,905.

Cole, Edward L.: *See—*
Hess, Howard V.; and Cole, Edward L., 3,671,403.
Schwager, Irving; Leak, Robert J.; and Cole, Edward L., 3,671,591.

Cole, James K.; Coonce, Carroll A.; and Post, Harold N., to United States of America, Atomic Energy Commission. Linear structure capturing and cutting apparatus. 3,670,648, Cl. 102-4.000.

Coleman Company, Inc., The: *See—*
McCain, Lawrence G., 3,671,739.

Colgan, Joseph Dennis, to American Cyanamid Company. Process for extruded catalyst and catalyst supports. 3,671,463, Cl. 252-448.000.

Colin, Pierre; and Merle, Roger, to Melle-Bezons. Process for producing polysaccharides by fermentation. 3,671,398, Cl. 195-31.00p.

Collet, Marc Norbert: *See—*
Pilato, Maurice J. M., 3,671,730
Collins and Aikman Corporation: *See—*
Hayes, John T.; and Currier, Robert G., 3,670,504.
Collins, David A.: *See—*
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Kennedy, Ralph C.; La Violette, Paul A.; and Stromberg, Henry M., 3,670,442.
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Eberle, Arthur C.; and Darby, Lee H., 3,671,815.
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Comet Industries, Inc.: *See—*
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Paymal, Jean, 3,671,355.
Compagnie Industrielle de Mecanismes: *See—*
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Compagnie Italiana Westinghouse Freni e Segnali: *See—*
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Ferber, Martin Emile; and Wintenberger, Michel Georges, 3,671,229.
Compbell Manufacturing Company Limited: *See—*
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Kegelman, Thomas D.; and Williams, Peter R., 3,671,957.
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Connelly, Gordon F.: *See—*
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Conner, Charles J., to United States of America, Agriculture. Single bath process for orange to brown mineral dyeings, with and without fungicide, using iron, manganese, and zirconium (zirc-ox process). 3,671,178, Cl. 8-52.000.
Conner, William R., Jr., to Kellwood Company. Automatic feeder for workpieces of fabric or the like. 3,670,674, Cl. 112-121.290.
Conrad, Ludas J.; and Pope, Raymond C., to Reynolds, J. R., Tobacco Company. Apparatus for separating meat and bones including bone elevator. 3,670,882, Cl. 209-2.000.
Consolidated Coal Company: *See—*
Gorin, Everett, 3,671,401.
Consolidation Coal Company: *See—*
Laufer, Robert J., 3,671,593.
Constantine, Nikiforos, to Minnesoto Mining and Manufacturing Company. Digital differential emission x-ray gauge. 3,671,744, Cl. 250-51.500.
Contaldo, Joseph; and Pripeton, George, to United Engineering and Foundry Company. Method and apparatus for controlling shearing of metallic workpieces. 3,670,609, Cl. 83-37.000.
Continental Can Company, Inc.: *See—*
Bartels, Herbert D., 3,670,921.
Keinanen, Henry J., 3,671,356.
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Rossi, Harry J., 3,670,950.
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Sanderson, Charles L.; and Sauer, Earl S., 3,671,601.
Scott, William P.; and Rogers, Lynn C., 3,671,012.
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Contois, Lawrence E., to Eastman Kodak Company. Photoconductive elements containing alkali-release materials. 3,671,233, Cl. 96-16.000.
Contraves AG: *See—*
Meier, Ghert, 3,670,778.
Cool, Terrill A., to United States of America, Navy. Apparatus for mixing gas in a fluid mixing laser. 3,671,882, Cl. 331-94.500.
Coombs, Ivan G., to Stephens, John A. Welding stud and method. 3,671,710, Cl. 219-99.000.
Coonce, Carroll A.: *See—*
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Cooper, Herbert T.: *See—*
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Cooper, Irwin; Parker, Wilbur Allen; and Melnick, Daniel, to CPC International Inc. Process for making hexitol coated nuts. 3,671,266, Cl. 99-126.000.
Cooper, Kenneth G.; Cooper, Herbert T.; and Rowland, Colin M. Silicone release coatings. 3,671,484, Cl. 260-33.6sb.
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Corben, Leo D.; Kammerer, William T.; and Shepp, Allan, to United States of America, Air Force. Extended dynamic range photographic processing. 3,671,246, Cl. 96-66.000.
Corco, Inc.: *See—*
Croley, Thomas E., 3,670,946.
Cordell Hubert, Sr. Wedge and support for a temporary fence. 3,670,468, Cl. 52-298.000.
Corey, Garland G.; and Weinstein, Bernard, to American Home Products Corporation. Oxygen bleach-activator systems stabilized with puffed borax. 3,671,439, Cl. 252-99.000.
Corey, Philip D., to Gates Learjet Corporation. Regulated polyphase inverter system. 3,671,846, Cl. 321-9.00a.
Corlite Corporation: *See—*
Fredericks, Carl K., 3,670,555.
Corning Glass Works: *See—*
Wise, Warren M., 3,671,413.
Corringer, Jean, to Esso Research and Engineering Company. High alkalinity additives for lubricating oil compositions. 3,671,430, Cl. 252-32.70e.
Corry, Stuart E. Temperature compensator for a pressure gauge. 3,670,576, Cl. 73-393.000.
Cory Corporation: *See—*
Seil, Lewis W., 3,671,023.
Cory, Victor W.; Williams, Edgar E.; and Howard, Robert J., to Moorman Manufacturing Company. Hinge mechanism for a cover plate in an animal feeder. 3,670,702, Cl. 119-52.00r.
Cosp, Enrique A. Toy and delayed release propelling mechanism therefore. 3,670,453, Cl. 46-202.000.
Cossar, Bernard C.; and Reynolds, Delbert D., to Eastman Kodak Company. Photographic bleaching and antifogging agents. 3,671,259, Cl. 96-109.000.
Cossor, A. C., Limited: *See—*
Gay, Frank Munro, 3,671,327.
Cover, Lloyd W., Jr.; and Webb, Charles C., to Du Pont de Nemours, E. I., and Company. Apparatus for compressing and cooling fiber batts. 3,671,365, Cl. 156-580.000.
Cox, Charles D.; and Liggett, Thomas, to United States of America, Navy. Production of small spherical particle nitrocellulose. 3,671,515, Cl. 260-223.000.
Cox, Frederick L.; and Krumreich, Jack E., to Tri-Industries, Inc. Honeycomb ribbon pad manufacturing apparatus. 3,671,711, Cl. 219-117.0hd.
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Creswell, Samuel J., Iron Works, The: *See—*
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Croley, Thomas E., to Corco, Inc. Drum-like container of telescoping type set-up from folded flats of sheet material. 3,670,946, Cl. 229-4.500.
Cropp, David I. Assembly machine. 3,670,385, Cl. 29-203.00r.
Crosby, Nobel W.; Walker, Robert C.; and Clarke, Gordon J., to Lacal Industries Limited. Cable clamp. 3,670,372, Cl. 24-125.00n.
Crosswy, Frank L.: *See—*
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Crowell, Jack R.; Tomashek, James R.; and Ward, Donald H., to Borg-Warner Corporation. Continuous casting mold level control. 3,670,801, Cl. 164-154.000.
Crowley, Richard P. Embossed plastic surface covering and method of preparing same. 3,671,283, Cl. 117-10.
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Crum, Robert L.: *See—*
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Cryder, John R.: *See—*
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Cuculo, John Anthony, to Du Pont de Nemours, E. I., and Company. Modifying cellulosic fabric with dicarboxylic acids to impart water-dispersibility. 3,671,184, Cl. 8-120.000.
Cuevas, Ephraim A., to PPG Industries, Inc. Removal of dissolved lead from alkali metal chloride containing solutions. 3,671,187, Cl. 23-89.000.
Cunningham, Frank W. Power cutter. 3,670,412, Cl. 30-276.000.
Cunningham, Robert G.: *See—*
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Cunningham, William G. Underwater welding device. 3,671,707, Cl. 219-74.000.
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Curry, Robert E. Controllable key lock. 3,670,538, Cl. 70-271.000.
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Cutler-Hammer, Inc.: *See—*
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Cutter, Robert C. Aircraft hangars. 3,670,464, Cl. 52-30.000.
Dabney, William C., to Cutter Laboratories, Inc. Apparatus for intravenous administration of a fluid from a dual-chamber flask having an internal upset-table septum normally separating two axially-inline chambers and having a pierceable end stopper. 3,670,728, Cl. 128-214.00c.
Daeuble, Manfred: *See—*
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Dahl, David A., to Teletype Corporation. Energy conserving intermittent motion device and method. 3,670,940, Cl. 226-8.000.
Dahl, Rolf, to Continental Tapes, Incorporated. High temperature pressure-sensitive adhesives made by reinforcement with polyurethane polymers. 3,671,301, Cl. 117-122.00p.
Daido Metal Company Ltd.: *See—*
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Daido Seiko Kabushiki Kaisha: *See—*
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Daikin Kogyo Co., Ltd.: *See—*
Kometani, Yutaka; Tatemoto, Masayoshi; and Nakamura, Masanori, 3,671,510.
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D'Amato, Anthony Salvatore: *See—*
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Spangler, Myrtle Joanne, 3,671,307.
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D'Angelo, Antonio Joseph, to Pennwalt Corporation. Peroxy compounds containing a haloformate group. 3,671,651, Cl. 260-463.
Daniel assor. to said Hawes: *See—*
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Daniel, Milton P.: *See—*
Hawes, Roland J., Jr.; and Daniel, Milton P., 3,670,923.
Daniels, Hendricus Petrus Cornelis; Van Der Ven, Theodorus Johannes; and Tates, Hans Gerard Karel, to U.S. Philips Corporation. Method of connecting metal contact areas of electric components to metal conductors of flexible substrate. 3,670,394, Cl. 29-470.100.
Danly Machine Corporation: *See—*
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Darby, Lee H.: *See—*
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Tyson, Henry K.; and Wikelski, Karl W., 3,670,630.
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Dasch, Lawrence, to Diamond Shamrock Corporation. Dry cleaning detergent. 3,671,441, Cl. 252-153.000.
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Date, Tasuku; and Hashimoto, Eiichi, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus and methods for controlling the amount of fuel injected into an internal combustion engine. 3,670,710, Cl. 04/13/72.
Dauben, Dwight L.; Froning, H. R.; and Jones, Loyd W., to Amoco Production Company. Process for treatment of water injection wells. 3,670,819, Cl. 166-305.00r.
David, Reginald; and Estienne, Jean, to Rhone-Poulenc S.A. Process for the preparation of carbonyl derivatives and carboxylic acids. 3,671,582, Cl. 260-533.00r.
David, Richard F.: *See—*
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Davis, Carl H.: *See—*
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Davis, Chester P., to Dow Chemical Company, The. Bag closure means. 3,670,876, Cl. 206-58.000.
Davis, John W.; and Belew, Herschel W., Jr., to United States of America, National Aeronautics and Space Administration. Altitude simulation chamber for rocket engine testing. 3,670,564, Cl. 73-117.100.
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., to Bio-Logics, Inc. Encoding and verifying information. 3,670,386, Cl. 29-211.00r.
Davis, Neil M.: *See—*
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Dawdy, Jack A., to National Gypsum Company. Gypsum board fastener. 3,671,061, Cl. 287-20.92w.
Day, Albert J., mesne: *See—*
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De More, Louis A.: *See—*
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de Ridder, Gerardus Johannes, to Ingenieurbureau de Ridder N.V. Apparatus for stacking sheets. 3,671,034, Cl. 271-68.000.
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De Tienne, Mart E.: *See—*
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De Vos, Jacques, to United States Pipe and Foundry Company. Casting process for rolls. 3,670,800, Cl. 164-95.000.
Deborde, Albert, to Ateliers Diderichs. Device for the recovery and removal of a false selvedge in a shuttleless loom. 3,670,779, Cl. 139-304.000.
Decatur Foundry & Machine Co., Inc.: *See—*
Johnston, Douglas, 3,670,962.
Decker, Martin; Schmidt, Joseph; Hoffmann, Herwig; and Pistor, Hans Joachim, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of adiponitrile. 3,671,566, Cl. 260-465.200.
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Ingham, Robert M., Jr., 3,670,367.
Sink, James A., Jr.; and Watson, Richard J., 3,671,170.
Dega, Fred W., to General Motors Corporation. Fluidic system for evaluating physical characteristics. 3,670,560, Cl. 73-37.000.
Degremont, Societe Generale d'Epuration et d'Assainissement: *See—*
Louboutin, Robert, 3,671,417.
Dehnhard, Willi. Chill casting machines. 3,670,803, Cl. 164-267.000.
Del Mastro, Ludwig E.: *See—*
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Delano, Roger A.: *See—*
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Delta Manufacturing and Engineering Corporation: *See—*
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Denki Onkyo Co., Ltd.: *See—*
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Denny, John H., Jr., to General Electric Company. Amplifying circuit. 3,671,884, Cl. 332-16.00t.
Denoncourt, Gilles J.; and Nejedly, Peter T., to Canadian Marconi Company. Pythagoreas adder or solid state resolver. 3,671,731, Cl. 235-192.000.
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Kroder, Ernst A., 3,670,416.
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Devereux, Robert F.; and Casco, Ernest L., to United States of America, Navy. Air-sea interface temperature measuring apparatus. 3,670,572, Cl. 73-342.000.
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Diamond Shamrock Corporation: *See—*
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Diapulse Corporation: *See—*
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Dick, Heinrich, to Voith Getriebe KG. Electromagnet with a field-responsive control system. 3,671,814, Cl. 317-123.000.
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Diery, Helmut; Kiefer, Bernhard; Rittner, Siegbert; and Seidel, Manfred, to Farbwerke Hoechst Aktiengesellschaft vormals and Meister Lucius & Bruning. Textile softening agents. 3,671,308, Cl. 117-139.0sa.
Dieterich, Frank L., 50% to Barnett, James A. Folding hand trout net. 3,670,444, Cl. 43-12.000.
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Dirks, Chauncey L., to General Motors Corporation. Multi-station machine for automatic performance of sequential operations. 3,670,402, Cl. 29-563.000.
Dixon, David Rodney; Rose, John Brewster; and Turton, Cecil Nigel, to Imperial Chemical Industries Limited. Filled fusible aromatic prepolymer composition. 3,671,486, Cl. 260-37.00n.
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Dixon, William Paul; and Kendall, David N., to McDonnell Douglas Corporation. Semi-conductor temperature sensitive means. 3,671,328, Cl. 136-230.000.
Doane, Frank: *See—*
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Dochterman, Richard W., to General Electric Company. Method of making a dynamoelectric machine having improved housing, bearing and support structure. 3,670,405, Cl. 29-596.000.
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Dominick, George G.; Sciacero, Rinaldo; Wimpffen, George I.; and Kardos, Theodore L. Exact fare system. 3,670,955, Cl. 232-7.000.
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Donahue, William J.; Blanchard, David L.; and Wack, John M., to United States of America, Navy. Fuze arming device. 3,670,656, Cl. 102-81.000.
Doorenbos, Harold E., to Dow Chemical Company, The. Method of preparing halogen-containing polymers. 3,671,469, Cl. 260-2.
Dopheide, Otto Walter, to Northern Electric Company Limited. Magnetic sensor. 3,671,759, Cl. 307-88.00r.
Dorn, Conrad P., Jr.: *See—*
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Doscher, Mary Ehlers, to American Cyanamid Company. Method for control of helminths in warm-blooded animals using phosphinyldithiocarbamates. 3,671,631, Cl. 424-205.000.
Doss, Nagib A., to GAF Corporation. pyrazolone red pigment and process therefor. 3,671,281, Cl. 106-288.00q.
Dostes, Claude Guy, to Eastman Kodak Company. Radiographic elements, compounds and processes. 3,671,254, Cl. 96-101.000.
Douthitt Corporation: *See—*
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Doyle, George Mitchel; Humphreys, Robert Eric; and Moring, Peter Lothar Ernst, to Dunlop Holding Limited. Rubber compositions. 3,671,478, Cl. 260-23.70m.
Dragerwerke Aktiengesellschaft: *See—*
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Dragisich, Myron, to Warner & Swasey Company, The. Twister device. 3,670,487, Cl. 57-77.300.
Dragisich, Myron, to Warner & Swasey Company, The. Compensator device. 3,670,978, Cl. 242-54.400.
Draper, James Krishen; and Chick, David Michael, to International Computers Limited. Field effect transistor switching arrangement for amplifying only low level signals. 3,671,779, Cl. 307-251.000.
Drapkin, William, to Slater Electric Inc. Pressure lock and release terminal for an electrical receptacle. 3,671,925, Cl. 339-95.00d.
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Nell, David J.; and Lewis, Thomas W., II, 3,671,302.
Drews, Harvey J.; and Raffensperger, Stanley P., to White Lily Foods Company, The, mesne. Packaged mixes for flavored food products and the process of making them. 3,671,264, Cl. 99-94.000.
Driscoll, Gary L., to Sun Oil Company. Unsaturated polyesters prepared from α,α, dimethyl muconic acids. 3,671,572, Cl. 160-485.00g.
Driskell, Carl R., to United States of America, Navy. Periscope stadimeter simulator with camera sweep delay. 3,671,391, Cl. 178-6.800.
Drummond, Ralph E.: *See—*
Brooks, James; Drummond, Ralph E.; Heinz, Frank J.; and Chambers, William W., 3,671,762.
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Dubner, Harvey, to Baxter Corporation, The, mesne. Method and apparatus for producing jacquard cards. 3,671,944, Cl. 340-172.500.
Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Methods of printing stereoscopic integral photograph from pseudoscopic original. 3,671,122, Cl. 355-22.000.
Dudley Optical Laboratories, Inc.: *See—*
Dudley, Leslie Peter, 3,671,122.
Duguay, Michel Albert, to Bell Telephone Laboratories, Incorporated. Picosecond optical apparatus utilizing optically induced birefringence in solids. 3,671,747, Cl. 250-199.000.
Duke, Bernard; and Levensohn, David Z., to Miracle Pet Products, Inc. Combination aquarium pump and gang valve. 3,671,151, Cl. 417-411.000.
Dun-Hot, Incorporated: *See—*
Jehn, David H., 3,671,270.
Dunbar, Glenn G. Container handling apparatus. 3,670,912, Cl. 214-313.000.
Duncan, Floyd R., to Pan American Petroleum Corporation. Pontoon structures in man-made lake for arctic operations. 3,670,813, Cl. 166-.500.
Dunlop Holding Limited: *See—*
Doyle, George Mitchel; Humphreys, Robert Eric; and Moring, Peter Lothar Ernst, 3,671,478.
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Aarup, Carl P., 3,671,055.
Duron, Paul P.; and Rich, Harold T., to Air Reduction Company, Incorporated. Machine for making dry ice pellets. 3,670,516, Cl. 62-35.000.
Dushkes, Sherman Z.; and Surty, Rohinton J., to International Business Machines Corporation. Miniature ultrasonic bonding device. 3,670,944, Cl. 228-1.000.
Dutcher, Daniel P., to Hoerner Waldorf Corporation. Display carton. 3,670,881, Cl. 206-45.340.
Dwyer, Howard I., Jr., to Amsted Industries Incorporated. Precompressed spring package. 3,670,873, Cl. 206-46.00h.
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Eberle, Arthur C.; and Darby, Lee H., to Columbia Gas System Service Corporation. Flame detection apparatus. 3,671,815, Cl. 317-133.500.
Echlin Manufacturing Corporation, The: *See—*
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Eckert, Clarence J.; and Moulds, John W., to General Motors Corporation. Idle air control. 3,670,709, Cl. 123-124.00r.
Eckrich, Peter, & Sons, Inc.: *See—*
Flesch, Keith E., 3,670,793.
Eclipse Consultants Limited: *See—*
Becker, John E., 3,670,498.
Ede, Ainsley Neville, to Hudswell Yates Developments Limited. Mole plough depth control mechanism. 3,670,431, Cl. 37-193.000.
Edgar, Robert F.; Martzloff, Francois D.; and Tompkins, Russell E., to General Electric Company. Magnetic latch and switch using cobalt-rare earth permanent magnets. 3,671,893, Cl. 335-179.000.
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Edwards, William R., to United States of America, Navy. Force gaging gloves. 3,670,574, Cl. 73-379.003.
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Eilingsfeld, Heinz: *See—*
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El-Tahry, Mahmoud S., to Blazer Corporation. Environment conditioning apparatus. 3,670,809, Cl. 165-60.
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Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.
Elliott, Ernest A.; Kane, John W.; and Pasen, Randolph A., to Detroit Edison Company, The. Triple arrestor mount. 3,671,002, Cl. 248-300.000.
Elliott, Perry R. Fluid mixing device. 3,671,025, Cl. 161-76.000.
Emerick, Bruce D. Indicating device for continuously indicating time to depletion of pressure tanks in use. 3,670,575, Cl. 73-388.000.
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Engel, Herbert; Hartwig, Karl; and Schnall, Gunther, to Agfa-Gevaert Aktiengesellschaft. Electrostatic copying apparatus. 3,671,119, Cl. 355-3.000.
Engelbart, Wilhelm, to Rheem International Inc. Pressing machine for garments. 3,670,432, Cl. 38-22.000.
Engelhard Minerals & Chemicals Corporation: *See—*
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Engler, Louis C. Gate placer for levee. 3,670,508, Cl. 61-63.000.
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Esposito, John J., to United States of America, Navy. Garment cooling system. 3,670,518, Cl. 62-167.000.
Esposito, John J., to United States of America, Navy. Self-heated protective garment. 3,670,716, Cl. 126-204.000.
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Childers, Thomas W., 3,670,814.
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Guerre, Robert P.; and Ruland, Ross R., 3,671,173.
Iarossi, Frank J., 3,671,315.
Kroll, Wolfram R., 3,671,597.
MacDonald, John M.; and Campbell, Ian D., 3,671,423.
Metro, Stephen J.; and Shaub, Harold, 3,671,434.
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Berry, Currie B., Jr., 3,671,221.
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Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., to Avant Industries, Inc. Silverware loading apparatus. 3,670,911, Cl. 214-312.000.
Etudes et Bonneterie SA: *See—*
Bourgeois, Norbert Paul, 3,670,527.
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Euling, Raymond: *See—*
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Evans, Evan Franklin; and Pierce, Norwin Caley, to Du Pont de Nemours, E. I., and Company. Composite polyester textile fibers. 3,671,379, Cl. 161-173.000.

Evans, George: *See—*
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Everson, Kirke B., Jr.; and Eisen, Stefan F. Aircraft hangaring support. 3,671,013, Cl. 254-8.
Evinrude, Ralph S., to Outboard Marine Corporation. Convertible golf car. 3,671,071, Cl. 296-69.000.
Excentra Gesellschaft mit beschrankter Haftung: *See—*
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Eyges, Leonard. Fireplace grate. 3,670,714, Cl. 126-165.000.
Eyre, Brian; and Bland, John, to Padley & Venables Limited and McAlpin, Robert, Sir, & Sons Limited. Cutter picks. 3,671,075, Cl. 299-79.000.
Ezaki, Joichiro, to TDK Electronics Company, Limited. Diode matrix card. 3,671,811, Cl. 317-101.00d.
Ezekiel, Herbert M., to United States of America, Air Force. Method of stabilizing acrylic polymer fibers prior to graphitization. 3,671,192, Cl. 23-209.100.
Fabbro, Dario: *See—*
Lo Monaco, Sergio; Guerrato, Alfredo; Fabbro, Dario; and Donadello, Graziello, 3,671,493.
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Fahey, Darryl R., to Phillips Petroleum Company. Manufacture of palladium or platinum-containing compounds. 3,671,560, Cl. 260-429.00r.
Fahlin, James R.; and Hagfors, Gerald D., to Graco Inc. Sanitary spray gun. 3,670,967, Cl. 239-412.000.
Faidutti, Michel; Boileau, Jacques; Konrat, Jean-Paul; and Billaz, Rene, to Etat Francais, represente par le Ministre des Armees Delegation Ministerielle pour l'Armement Direction des Poudres. 4-Imino-oxazolidin-2-ones and process of preparation. 3,671,535, Cl. 260-307.00c.
Falay, Bernard; and Froumajou, Armand, to Automobiles Peugeot and Regie Nationale des Usines Renault. Speed variator with friction elements. 3,670,586, Cl. 74-199.000.
Falcon Safety Products, Inc.: *See—*
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Fales, Douglas I., to General Motors Corporation. Multiple indicating telltales having sequential indications. 3,671,962, Cl. 340-373.000.
Falk, David O.: *See—*
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Farbenfabriken Bayer Aktiengesellschaft: *See—*
Kunzel, Hans-Egon; Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, 3,671,614.
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Farkas, Robert D. Supply reel for banding apparatus. 3,670,986, Cl. 242-107.100.
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Farley, Vincent P., Jr.: *See—*
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Farrell, Guy M., to Chicago Switch, Inc. Rocker switch. 3,671,693, Cl. 200-67.00g.
Faure, Robert, to ACME Maschinenfabrik GmbH. Programmed contouring machine for machining, by tool heads, irregularly shaped work pieces. 3,670,458, Cl. 04/12/72.
Faurholdt, Bent. Incinerator for the combustion of waste products, particularly plastic materials. 3,670,667, Cl. 110-8.00a.
Favors, Hollice A. Broadband composite filter circuit. 3,671,889, Cl. 333-76.000.
Federal-Mogul Corporation: *See—*
Smythe, John W.; and Karp, Philip I., 3,671,230.
Federline, Richard G., 1/2 to Webb, Don Eugene. Alarm holder for fishing rods. 3,670,443, Cl. 43-17.000.
Feess, Erich; and Ong, Sienling, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the production of prints and pad-dyeings fast to rubbing without requiring an after-treatment on nitrogen-containing fibrous materials. 3,671,181, Cl. 8-165.000.
Felger, Carl B., to Gillette Company, The. Inhibiting dental plaque. 3,671,626, Cl. 424-49.
Fell, Ferol S.: *See—*
Long, William D.; Fell, Ferol S.; and Wells, Bernard L., 3,670,590.
Ferag AG: *See—*
Reist, Walter, 3,671,035.
Ferber, Martin Emile; and Wintenberger, Michel Georges, to Compagnie Pechiney. Process for purification of metals. 3,671,229, Cl. 75-211.000.
Fernandez, J. De Jesus. Door lock. 3,670,540, Cl. 70-421.000.
Fernandez, Jaime B.; and Ayers, James E., to Dow Chemical Company, The. Coreacted salts of polychlorocarboxylic acids. 3,671,652, Cl. 260-539.
Ferro Corporation: *See—*
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Fiber Controls Corporation: *See—*
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Figas, Vincent J.: *See—*
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Fihn, Kurt W., to Esso Research and Engineering Company. Method for treatment of discharged solids from a liquid stream. 3,670,643, Cl. 100-37.000.
Filipak, Edmund H. Dispenser for clothes washing additives. 3,670,530, Cl. 68-17.00a.
Fillion, Stanley H., to Dresser Industries, Inc. Car body bolster center plate assembly. 3,670,662, Cl. 105-199.00c.
Finazzo, Anthony: *See—*
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Finch, Dan M. Light control material. 3,671,101, Cl. 350-109.
Findley, Anthony W.; and Rogers, Jesse M., to Anchor-Wate Company. Coating apparatus for tubular objects. 3,670,696, Cl. 118-320.000.
Firestone, Max. Crossbow cocking device. 3,670,711, Cl. 124-25.000.
Firey, Joseph C. Engine exhaust gas separating devices. 3,670,502, Cl. 60-324.000.
Firma Borsig GmbH: *See—*
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Zschocke, Albrecht; Rohr, Wolfgang; and Fischer, Adolf, 3,671,540.
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-Phenyl-N'-ester urea derivatives. 3,671,586, Cl. 260-545.00r.
Fischer, Georg, Aktiengesellschaft: *See—*
Marzy, Otto, 3,670,608.
Fisher, Sidney L., to Spider Staging, Inc. Suspended staging type welding machine. 3,671,712, Cl. 219-125.00r.
Fisons Pharmaceuticals Limited: *See—*
Altounyan, Roger Edward, 3,671,625.
Fitzgerald, Warren E.; Knudsen, John P.; and Brock, Jessie O., to Monsanto Company. Crimp reservation process. 3,671,619, Cl. 264-168.000.
Fives Lille-Cail: *See—*
Lucas, Robert, 3,670,973.
Fleetman, Hobart H.; and Wohlbach, Harry E., to Electro-Mechanical Instrument Company, Inc., mesne. Calibration device for electric meter including a control magnet mounted on a flexible arm. 3,671,861, Cl. 324-146.000.
Flesch, Keith E., to Eckrich, Peter, & Sons, Inc. Weight controlled slicing system including variable synchronization control. 3,670,793, Cl. 146-94.00r.
Flo-Tech Corporation, mesne: *See—*
Rosenberg, Karl Moses, 3,671,288.
Fluchter, Werner: *See—*
Thies, Alfred F. B.; Ameling, Bernhard; Reuther, Albert R.; and Fluchter, Werner, 3,670,531.
Fluhr, Frederick R., to United States of America, Navy. Multiple target separator. 3,671,966, Cl. 343-6.50r.
Fluor Corporation: *See—*
Breston, Michael P.; and Keilberg, Ray D., 3,670,514.
Gibson, Robert G.; Mackin, John G., Jr.; Johnson, Paul K.; and Koop, Francis D., Jr., 3,670,511.
Flynn, Thomas E. Photosensitive cuprous nitrate compositions and process for preparing and using same. 3,671,249, Cl. 96-88.000.
FMC Corporation: *See—*
Chiang, John S. C.; and Hogya, Bernard J., 3,671,344.
Traube, Robert J., 3,670,867.
Fogt, Thomas H.; Steiner, William R.; and Murphy, John M., to General Motors Corporation. Flexible plastic ice tray and storage container. 3,670,523, Cl. 62-344.000.
Foley, Alan J.; and Gardner, Madison J., to Ormet Corporation. Interlocking ingot. 3,671,204, Cl. 29-187.000.
Foley, Richard G.; and Murray, James E., to Harris-Intertype Corporation. Direction reversing control for a machine control system. 3,671,827, Cl. 318-162.000.

Fonden, Per Borje; and Walander, Karl Ove Torgny. Aircraft arresting device. 3,670,997, Cl. 244-110.00c.
Food Equipment, Inc.: *See—*
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Foote Mineral Company: *See—*
Smith, William Novis, Jr., 3,671,605.
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Jania, Zbigniew J.; and Vanderberg, Lawrence J., 3,671,081.
Ojala, William K., 3,670,708.
Forman, William E. Multi-purpose stopper. 3,670,915, Cl. 215-48.000.
Forter, Willy; Henrard, Armand; Kehrer, Fritz; Keller, Urs Martin; and Wasem, Hans, to Sandoz Ltd. Phenyl-azo-naphthol compounds of low solubility. 3,671,514, Cl. 260-203.
Foss, Richard L.: *See—*
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Fouquart, John, to Photosystems Corporation. Three dimensional and/or time sequence X-ray apparatus. 3,671,745, Cl. 250-61.000.
Fournier, Eugene. Filter having a flexible wall for filtering liquids. 3,670,898, Cl. 210-356.000.
Fowke, Ronald T.: *See—*
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Frank, Bruce S. Desalination of sea water. 3,670,897, Cl. 210-321.000.
Frans, Robert D., to Hanna Mining Company, The. Heat processing of minerals. 3,671,027, Cl. 263-32.00r.
Fraser, William Milton; Cairns, Walter John; and Mac Donald, Ian Norman, to Howden, James, & Company Limited. Cooling-gas circulators for nuclear-power stations. 3,671,149, Cl. 417-360.
Frauenglass, Elliott: *See—*
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Frederiksen, Thomas M., to Motorola, Inc. Temperature compensated bias circuit. 3,671,770, Cl. 307-310.000.
Freeman, Peter A. Vacuum controlled fluidic regulator. 3,670,754, Cl. 137-81.500.
Fregeolle, Oscar, to Pilot Research Corporation. Apparatus and method for slitting fabric on a circular knitting machine. 3,670,528, Cl. 66-147.000.
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Friedman, David, to Computervision Corporation. Method and apparatus for positioner calibration system. 3,671,748, Cl. 250-201.000.
Fries, James R., to Boeing Company, The. Multiple antenna instrument landing system. 3,671,967, Cl. 343-108.00r.
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Fromell, Rolf Ivar. Variable hexagon spanner. 3,670,604, Cl. 81-98.000.
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Fukuoka, Tatsuo. Injection molding method for sandals. 3,671,621, Cl. 264-244.000.
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Fumia, Arthur, Jr.; Heseltine, Donald W.; and Brooker Leslie G. S., to Eastman Kodak Company. Carbocyanine filter dyes and sensitizers for silver halide emulsions. 3,671,648, Cl. 260-240.00r.
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Galeano, Sergio F., to Owens-Illinois, Inc. System and process for recovery of cellulosic fibrous material from refuse. 3,670,968, Cl. 241-21.000.
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Gattus, Jean; and Mallet, Maurice, to Rhone-Poulenc S.A. Trimellamide-imides solutions. 3,671,481; Cl. 260-30.20r.
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Gavrun, Michael T., to Curtiss-Wright Corporation. Method of manufacture of an oil seal ring having dual scrapper elements for rotary piston mechanisms. 3,670,383, Cl. 29-156.600.
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Gay, Frank Munro, to Cossor, A. C., Limited. Multi-junction thermocouples. 3,671,327, Cl. 136-225.000.
Gaylor, Richard P., to Clark Equipment Company. Rotating vibrator. 3,670,631, Cl. 94-50.00v.
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Gebhard, Harold C.; and Schueren, William B., to Ford Motor Company. Vertical drop vent window system. 3,670,454, Cl. 49-103.000.
Geffken, John H., to Westinghouse Electric Corporation. Method and control system for D.C. electric motor drive means. 3,671,828, Cl. 318-164.000.
Gehrmann, Hasso, to Elektra-Bregenz GmbH. Combination dishwashing machine and oven. 3,670,746, Cl. 134-107.000.
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Guerrato, Alfredo: *See—*
Lo Monaco, Sergio; Guerrato, Alfredo; Fabbro, Dario; and Donadello, Graziello, 3,671,493.
Guerre, Robert P.; and Ruland, Ross R., to Esso Research and Engineering Company. Chamberless high intensity burner employing auxiliary air flow. 3,671,173, Cl. 431-182.000.
Guerster, Rene L., to Ametek, Inc. Tube. 3,670,773, Cl. 138-155.000.
Guggi, Walter Bernhard. Stabilized sine wave inverter. 3,671,845, Cl. 321-20.000.
Guido, Jurgen. Clearance compensating mechanism, especially for valve drives of internal combustion engines. 3,670,707, Cl. 123-90.570.
Guinan, Joseph C., to Norton Company. Foam tape applicator. 3,671,364, Cl. 156-574.000.
Guinard, Paul Andre, to Etablissements Pompes Guinard. Electric pump assembly for use in pumping explosive or dangerous liquids. 3,671,152, Cl. 417-422.000.
Gulf & Western Industries, Inc.: *See—*
Seipp, William H., 3,671,817.
Gulf Research & Development Company: *See—*
Joyce, Thomas P., Jr.; Lagally, Ralph W.; and Schulz, Johann G. D., 3,671,579.
Porter, Warren K., Jr., 3,671,457.
Gulton Industries, Inc.: *See—*
Herman, Bernard B.; and Farley, Vincent P., Jr., 3,671,320.
Herman, Bernard B.; and Farley, Vincent P., 3,671,321.
Gundlach, Richard P., to Industries, Inc., mesne. Film training projector. 3,671,736, Cl. 240-47.000.
Gundlach, William J., to Geo Space Corporation. Flexible seismic gas exploder. 3,670,840, Cl. 181-.5nc.
Gunter, Alec C. Apparatus for preparing a cocoa concentrate. 3,671,273, Cl. 99-236.0cc.
Gunther, Wolfgang H. H., to Xerox Corporation. Selenium containing polymers. 3,671,467, Cl. 260-2.00m.
Guptill, Frank E., Jr.: *See—*
Wilson, Raymond F.; Peck, Reese A.; and Guptill, Frank E., Jr., 3,671,420.
Gyllstrom, Richard G.: *See—*
Butcher, James; Gyllstrom, Richard G.; and Lamb, William Doyle, 3,670,760.
Gyogyszerkutato Intezet: *See—*
Toldy, Lajos; Borsi, Jozsef; Elek, Sandor; Elekes, Istvan; and Andrasi, Ferenc, 3,671,537.
Gyory, Emeric J.; and Teichmann, Otmar E., to Borg-Warner Corporation. Lip type seal. 3,671,048, Cl. 277-227.000.
Haas, Charles H., to Budd Company, The. Method of making flexible brake bands. 3,670,392, Cl. 29-411.000.
Haas, Guenther; and Reinhardt, Dieter, to Siemens Aktiengesellschaft. Circuit arrangement for generation timing pulses. 3,671,873, Cl. 328-63.000.
Haas, Werner E. L.; and Adams, James E., to Xerox Corporation. Imaging system. 3,671,231, Cl. 96-1.000.
Haas, Werner Erwin Louis; Adams, James Ewing; and Mechlowitz, Blea, to Xerox Corporation. Method for producing images. 3,671,237, Cl. 96-27.000.
Hack, Helmuth: *See—*

Westphal, Kurt; Meiser, Werner; Fue, Ludwig; and Hack, Helmuth, 3,671,523.

Haering, Rudolph R.; and O'Hanlon, John F. High voltage thin-film transistor. 3,671,820, Cl. 317-235.00r.

Hafeli, Hans-Rudolf: *See—*
Genzel, Hans-Ulrich Werner; Hafeli, Hans-Rudolf; and Steiner, Hans Robert, 3,671,718.

Haga, Teruhide; Yamaguchi, Hisashi; and Hirao, Yotaro, to Konishiroku Photo Industry Co., Ltd. Silver halide emulsion fog inhibited with quaternary ammonium, triazole and tetrazaindene compounds. 3,671,255, Cl. 96-109.000.

Hagemeyer, Hugh J., Jr.; and Robinson, Alfred G., III, to Eastman Kodak Company. Hexahydro-3,3,6,6-tetra alkylfuro(3,2-b)furan-2,5-diol. 3,671,550, Cl. 260-347.800.

Hagemeyer, Hugh J., Jr.; and Goss, Harry F., to Eastman Kodak Company. Butene recovery. 3,671,603, Cl. 260-677.00a.

Hagen, Helmut; and Becke, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-carbamyl-tetrahydropyrimidines. 3,671,522, Cl. 260-247.500.

Hagfors, Gerald D.: *See—*
Fahlin, James R.; and Hagfors, Gerald D., 3,670,967.

Hagino, Hiroshi: *See—*
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,671,396.

Hagiwara, Yasuhira: *See—*
Kumai, Ko; Motoyoshi, Minoru; Tanaka, Kiyoshi; and Hagiwara, Yasuhira, 3,671,337.

Hagmann, Foster M. Ring seal for stationary members. 3,671,046, Cl. 277-170.

Haid, Hans: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,670,378.

Haile, Ernest. Vacuum pump operated musical instrument. 3,670,617, Cl. 84-330.000.

Halcon International, Inc.: *See—*
Onsager, Olav Torgeir, 3,671,567.
Onsager, Olav Torgeir, 3,671,568.

Hale, Frank E., Jr.; and Hale, Frank E., Sr. Apparatus for removing oil from a body of water. 3,670,896, Cl. 210-242.000.

Hale, Frank E., Sr.: *See—*
Hale, Frank E., Jr.; and Hale, Frank E., Sr., 3,670,896.

Hall, Clark J.: *See—*
Grinnell, Fred I.; and Hall, Clark J., 3,670,941.

Hall, Con C., IV: *See—*
Leavitt, Clyde M.; Johnson, Walter C.; and Hall, Con C., IV, 3,670,682.

Hall, Harold H., Sr. Fishing rod holder for boats. 3,671,001, Cl. 248-43.000.

Hall, John B., Jr.; Tung, Yi; and Winn, Lavern E., to United States of America, National Aeronautics and Space Administration. Liquid waste feed system. 3,670,890, Cl. 210-104.000.

Hall, Maurice B., 1/3 to Bowling, Harold F.; and and 1/3 to Gitlin, Edward E. Clock scale demonstrator. 3,670,428, Cl. 35-39.000.

Hall, Robert N., to General Electric Company. Removal of acceptor impurities from high purity germanium. 3,671,330, Cl. 148-1.600.

Halliday, Denis Malcolm: *See—*
Blake, Anthony; Halliday, Denis Malcolm; and Woods, Michael Faulkner, 3,671,268.

Halpern, Alfred, to Synergistics, Inc. Polyvinylpyrrolidone-iodine compounds. 3,671,545, Cl. 260-326.5fl.

Hamilton, Colin B.; and Oles, Edward J., Jr., to United States Steel Corporation. Method for preventing high-temperature blistering of copper coatings electro-deposited on copper substrates. 3,671,407, Cl. 204-32.00r.

Hamilton, David G., Jr. Angularly adjustable square holder. 3,670,418, Cl. 33-75.00r.

Hamilton, Otis L., 1/2 to Doane, Frank. Skid inverting device. 3,670,903, Cl. 214-1.00q.

Hamm, Philip C., to Monsanto Company. Chemosterilant compositions for flies and method of use. 3,671,635, Cl. 424-319.000.

Hampel, Daniel; and Lerch, Joseph Bryan, to United States of America, Air Force, mesne. Sample and hold circuit. 3,671,783, Cl. 307-238.000.

Hanchett, George D., to RCA Corporation. Switching circuits. 3,671,778, Cl. 307-252.00b.

Hanke, Horst: *See—*
Rotter, Friedrich; and Hanke, Horst, 3,670,550.

Hanna Mining Company, The: *See—*
Frans, Robert D., 3,671,027.

Hansen, Clarence M.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.

Hansen, Gerhard. Apparatus for filling a chamber. 3,670,787, Cl. 141-250.000.

Hansen, Iver C.: *See—*
Kronies, Reinhard K.; and Hansen, Iver C., 3,671,940.

Hansen, John Edward, to Du Pont de Nemours, E. I., and Company. Etched and ridged polyamide monofilament. 3,671,381, Cl. 161-180.000.

Hanson, Laurence B.; and Arthur, Wallace W., to Gardner-Denver Company. Control system for drills. 3,670,826, Cl. 173-4.000.

Hanson, Roy R. Powder metering device for loading ammunition. 3,670,928, Cl. 222-288.000.

Hara, Ei; and Suzuki, Shohachi, to Tamagawa Kikai Kinzoku Kabushiki Kaisha. Core rod stopping and releasing device in a powder material forming press. 3,671,164, Cl. 425-414.000.

Harata, Mituo: *See—*
Imai, Atsuo; Harata, Mituo; Ogawa, Yoshitaka; and Hasegawa, Shoji, 3,671,324.

Harcourt Brace Jovanovich, Inc.: *See—*
Rock, Edward M.; Loughman, Joseph F., Jr.; and Mc Manus, Ann, 3,670,872.

Hardtl, Karl Heinz, to U.S. Philips Corporation. Electromechanical resonator employing piezoelectric ceramic consisting of lead zirconate-titanate containing manganese monoxide. 3,671,765, Cl. 310-9.500.

Hardwick, Peter D.; and Trombetta, John J. Aerosol cartridge for pressing irons. 3,670,433, Cl. 38-77.300.

Hardy, Thomas G., Jr. Apparatus for removing skin sections. 3,670,734, Cl. 128-305.000.

Harkness, Joseph R., to Briggs & Stratton Corporation. Electrical system for tractor powered by magneto ignition engine. 3,671,851, Cl. 322-90.000.

Harlow, Norman E., to Image Systems, Inc. Selector for edge notch coded card-type items. 3,670,885, Cl. 209-80.500.

Harmon, Carlyle, to Johnson & Johnson. Absorbent product containing a hydrocolloidal composition. 3,670,731, Cl. 128-284.000.

Harnden, John D., Jr., to General Electric Company. Flexible electronic integrated circuit camera control assembly. 3,670,639, Cl. 95-11.001.

Harnden, John D., Jr., to General Electric Company. Simultaneous light triggering of thyristor arrays. 3,671,749, Cl. 250-208.000.

Harner Robert H.; and Meister, Otto, to S&C Electric Company. Switch construction with load break device having a movable slat, a gas expansion chamber and a gas muffler. 3,671,697, Cl. 200-144.00r.

Harnisch, Heinz: *See—*
Roszinski, Hilmar; and Harnisch, Heinz, 3,671,612.

Harratt, Anthony James, to Hi-Ton Machine Tools Limited. Honing tool arrangements. 3,670,456, Cl. 51-34.00d.

Harrington, Timothy M.: *See—*
Marshall, J. Howard, III; and Harrington, Timothy M., 3,671,740.

Harris Company, Inc.: *See—*
Downing, James H., 3,670,907.

Harris, Richard A.: *See—*
Campbell, Douglas E.; and Harris, Richard A., 3,671,243.

Harris-Intertype Corporation: *See—*
Foley, Richard G.; and Murray, James E., 3,671,827.
Littrell, Luther W., 3,671,706.
Morrison, Walter C., 3,671,361.
Stanton, Arthur J.; Kolb, Edwin R.; and Roberts, Webster C., 3,670,632.

Hartlein, Robert C.; Kiles, James D.; Larson, Willard D.; and Olson, Carl R., to Dow Corning Corporation. Combustible cartridges. 3,670,649, Cl. 102-38.000.

Hartmann, Werner: *See—*
Teichmuller, Gerhard; Barnikol-Oettler, Kurt; and Hartmann, Werner, 3,671,555.

Hartwig, Karl: *See—*
Engel, Herbert; Hartwig, Karl; and Schnall, Gunther, 3,671,119.

Hasegawa, Shoji: *See—*
Imai, Atsuo; Harata, Mituo; Ogawa, Yoshitaka; and Hasegawa, Shoji, 3,671,324.

Hasegawa, Yoshihumi: *See—*
Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Horiguchi, Shojiro; Nakamura, Michiei; Kimata, Shizuo; and Suzuki, Tadanobu, 3,671,476.

Hashiguchi, Takeshi: *See—*
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Hashimoto, Eiichi: *See—*
Date, Tasuku; and Hashimoto, Eiichi, 3,670,710.

Hashimoto, Yasuo: *See—*
Komata, Toranosuke; Ishihara, Katsumi; and Hashimoto, Yasuo, 3,671,226.

Hashirizaki, shinya: *See—*
Akuta, Tomohiko; Seya, Atsumi; and Hashirizaki, shinya, 3,670,833.

Haskell, Robert A.: *See—*
Lunt, Wilbur B.; and Haskell, Robert A., 3,670,653.

Hatakeyama, Toshikatsu: *See—*
Usui, Yoshito; Shiojima, Kenji; and Hatakeyama, Toshikatsu, 3,671,891.

Hatano, Sotaro: *See—*
Abe, Isamu; Yashiro, Hideo; Sori, Naoyuki; Hatano, Sotaro; Katsumoto, Tomiyasu; and Suzuki, Tadao, 3,670,395.

Hatori, Minoru: *See—*
Koga, Koichi; Hatori, Minoru; and Akamatsu, Takashi, 3,671,543.

Haun, John W.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.

Hause, Gilbert K., to General Motors Corporation. Torque converter transmission. 3,670,596, Cl. 74-710.500.

Hauser, Raimund: *See—*
Pammer, Gottfried; and Krob, Erwin, 3,670,990.

Hawaiian Sugar Planters' Association: *See—*

Nickell, Louis G., 3,671,219.

Hawes, Roland J., Jr.; and Daniel, Milton P., said Daniel assor. to said Hawes. Control system for multiple ingredient dispensing apparatus. 3,670,923, Cl. 222-2.000.

Hawkins, Harold R. Oil well tool positioning and coupling starting apparatus. 3,670,603, Cl. 81-53.000.

Hayashi, Kiyohide: *See—*
Adachi, Toshio; Onishi, Masayoshi; and Hayashi, Kiyohide, 3,671,655.

Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Sin-Ichi, 3,670,496.

Hayes, John R.; Eckart, Francis H.; and Peck, Donald E., to General Motors Corporation. Rammer head. 3,670,624, Cl. 89-47.000.

Hayes, John T.; and Currier, Robert G., to Collins and Aikman Corporation. Fabric containment constructions. 3,670,504, Cl. 61-3.000.

Hayes, Thomas J., Jr., to Anbeck Corporation. Double acting slips. 3,670,374, Cl. 24-263.0ad.

Haynes, Joel E. Liquid level sensor incorporating pulse techniques. 3,670,765, Cl. 137-392.000.

Hazlewood, Lewis F., to Walter & Kidde Company, Inc. Disposable inflatable tourniquet. 3,670,735, Cl. 128-327.000.

Heady, Orville E.; Towell, John F.; and Standifer, Richard L., to United States of America, Atomic Energy Commission. Plutonium hexafluoride reduction. 3,671,199, Cl. 23-284.000.

Healey, Anthony John, to Bell Telephone Laboratories, Incorporated. Multiple output fluidic gate. 3,670,753, Cl. 137-81.500.

Health Systems, Inc.: *See—*
Panico, Joseph J., 3,670,736.

Heath & Sherwood Drilling Limited: *See—*
Hokanson, Lyle W., and; and Fowke, Ronald T., 3,670,827.

Heim, Kenneth J.; and Rimmler, Fred F., to Doering, A. L., Mfg. Corporation. Spark plug wrench. 3,670,605, Cl. 81-125.000.

Heinemann Electric Company, mesne: *See—*
Lefferts, Peter, 3,671,780.

Heinz, Frank J.: *See—*
Brooks, James; Drummond, Ralph E.; Heinz, Frank J.; and Chambers, William W., 3,671,762.

Heiss, Frederick H.; and Lindblom, Carl E., to Valspar Corporation, The. Method and apparatus for tinting paint. 3,670,785, Cl. 141-9.000.

Heitmann, Knut; and Schneider, Eckart, to Leitz, Ernst, G.m.b.H. Method of synchronizing the change of digits in absolute-value measuring devices and apparatus therefor. 3,671,750, Cl. 250-237.00r.

Held, John F.: *See—*
Bucher, John H.; and Held, John F., 3,671,334.

Helker, George J. Power driven vehicle for surface travel on a body of water. 3,670,684, Cl. 114-66.05p.

Hell, Rudolf, Kommanditgesellschaft: *See—*
Henning, Eberhard, 3,671,666.

Heller, Horst A.: *See—*
Mehnert, Walter E.; and Heller, Horst A., 3,671,850.

Hellerbach, Joseph; Szente, Andre; and Walser, Armin, to Hoffmann-La Roche Inc. Benzodiazepin-2-ones and processes for their preparation. 3,671,518, Cl. 260-239.30d.

Hellermann, Paul, G.m.b.H.: *See—*
Kabel, Heinrich, 3,670,782.

Hemsath, Klaus H., to Midland-Ross Corporation. Quench system for pipes. 3,671,027, Cl. 266-6.00s.

Henkel & Cie G.m.b.H.: *See—*
Nosler, Heinz Gunter; and Schnegelberger, Hararld, 3,671,654.

Henle, Robert A., to International Business Machines Corporation. Difference amplifier. 3,671,772, Cl. 307-291.000.

Henley, Virgil E.; and Lauer, Walter W., to General Tire & Rubber Company, The. Inflatable ply turn up bladder for a tire building machine. 3,671,358, Cl. 156-401.000.

Henning, Eberhard, to Hell, Rudolf, Kommanditgesellschaft. Apparatus for producing corrected photographic color rastered reproductions. 3,671,666, Cl. 178-6.70r.

Henrard, Armand: *See—*
Forter, Willy; Henrard, Armand; Kehrer, Fritz; Keller, Urs Martin; and Wasem, Hans, 3,671,514.

Henry, Daniel: *See—*
Lienemann, Darlo; and Henry, Daniel, 3,670,671.

Henry, James L., to National Cash Register Company, The. Film canister. 3,670,982, Cl. 242-71.200.

Henry, James L.; and Schimpf, Luther G., to Bell Telephone Laboratories, Incorporated. Subscriber loop range extender. 3,671,676, Cl. 179-16.00f.

Hensel, Dwight L.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.

Henson, Samuel H. Camper hold-down bracket. 3,671,003, Cl. 248-361.00r

Herckelbout et Fils Societe Anonyme: *See—*
Llouville, Roger, 3,670,781.

Hercules Incorporated: *See—*
Brack, Karl, 3,671,475.

Herman, Bernard B.; and Farley, Vincent P., Jr., to Gulton Industries, Inc. Battery plate treatment process. 3,671,320, Cl. 136-75.000.

Herman, Bernard B.; and Farley, Vincent P., to Gulton Industries, Inc. Process for production and treatment of battery plates. 3,671,321, Cl. 136-75.000.

Herman, James A., to Prenco Manufacturing Co. Flow control and damping means. 3,670,666, Cl. 110-7.00r.

Herose, Hans, to Anciens Ets., T.M.B.-J. Tobler S.A. Positioning device. 3,670,582, Cl. 74-88.000.

Herron, Christopher C., to International Business Machines Corporation. Laminated dynamoelectric machine having nonmagnetic lamina for structural support. 3,671,787, Cl. 310-154.000.

Herzog, Ellwood P.: *See—*
Mawhinney, Albert B.; and Herzog, Ellwood P., 3,670,407.

Heseltine, Donald W.: *See—*
Fumia, Arthur, Jr.; Heseltine, Donald W.; and Brooker Leslie G. S., 3,671,648.

Hess, Grace A.: *See—*
Hess, Marlin F.; and Hess, Grace A., 3,670,798.

Hess, Howard V.; and Cole, Edward L., to Texaco Inc. Process for coking pumpable animal and dairy wastes. 3,671,403, Cl. 201-25.000.

Hess, Marlin F.; and Hess, Grace A. Vehicle screen. 3,670,798, Cl. 160-354.000.

Heaston Corporation; and: *See—*
Long, William D.; Fell, Ferol S.; and Wells, Bernard L., 3,670,590.

Hewitt, Robert E.: *See—*
Britt, James E.; and Hewitt, Robert E., 3,670,700.

Hewlett-Packard Company: *See—*
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Szente, Pedro A.; and Joly, Robert, 3,671,888.

Hi-Ton Machine Tools Limited: *See—*
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Higashinakagawa, Iwao: *See—*
Murakami, Yoshio; Higashinakagawa, Iwao; Yasuda, Nobuaki; and Takeno, Syozo, 3,671,312.

Hill, Charles C., to Power Technology Corporation. Intravenous feeding apparatus. 3,670,926, Cl. 222-47.000.

Hill, D. Brian R., to Westvaco Corporation. Decurling method and apparatus. 3,670,645, Cl. 101-181.000.

Hillman, Juanita J.; and Horowitz, Raymond H., to United States of America, Interior. Reverse-osmosis membranes. 3,671,516, Cl. 260-229.000.

Hinkley, David F., to Merck & Co., Inc. Process for preparing ascorbyl-3-phosphate and salts thereof. 3,671,549, Cl. 260-343.700.

Hinkston, Paul R. Collapsible cycle carrier. 3,670,935, Cl. 224-42.03.

Hirao, Yotaro: *See—*
Haga, Teruhide; Yamaguchi, Hisashi; and Hirao, Yotaro, 3,671,255.

Hirayama, Tetsuro, to Tokyo Juki Kogyo Kabushiki Kaisha. Looper drive mechanism. 3,670,677, Cl. 112-199.000.

Hirooka, Masaaki: *See—*
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 3,671,492.
Oshima, Teruo; Wada, Takeshi; Nagase, Tsuneyuki; Masuko, Fujio; Hirooka, Masaaki; and Taniguchi, Isoji, 3,671,506.

Hirshfeld, Julian J.; and Reuben, Bertie J., to Monsanto Company. Zirconium anti-soil treatment of synthetic fibers and resultant article. 3,671,292, Cl. 117-62.000.

Hitachi, Ltd.: *See—*
Shima, Seiya, 3,670,851.
Uchida, Atsuyoshi; and Miyata, Yoshihiko, 3,670,376.

Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Nishimaki, Ko; and Yoshikawa, Isamu, 3,670,917.

Hoad, John G., to Hoad, John G., & Associates. Process for disposal of combustible waste. 3,670,669, Cl. 110-8.

Hoad, John G., & Associates: *See—*
Hoad, John G., 3,670,669.

Hobbs, Peter V.: *See—*
Radke, Lawrence F.; and Hobbs, Peter V., 3,671,128.

Hodge, John D., Jr.: *See—*
Ruehle, William H.; Hodge, John D., Jr.; and Gray, William C., 3,671,929.

Hodges, John Barry; and Maybury, Gordon Howard. Winding formers for use in the manufacture of rotor assemblies for dynamo electric machines. 3,671,906, Cl. 336-208.000.

Hodogaya Chemical Co., Ltd.: *See—*
Kado, Masaru; Kimura, Ichiro; and Sugiyama, Hironari, 3,671,216.

Hodogaya Kagaku Kabushiki Kaisha: *See—*
Ozutsumi, Minoru; Kawakami, Kazuo; Ishizaki, Sumio; and Kurosawa, Masatoshi, 3,671,182.

Hoerner Waldorf Corporation: *See—*
Dutcher, Daniel P., 3,670,881.

Hoever, Heinz; and Orth, Herbert, to Berstorff, Hermann, Maschinenbau GmbH. Calender roll adjustment apparatus. 3,670,644, Cl. 100-168.000.

Hofer, Lawrence John Edward; and Manes, Milton, to Calgon Corporation. Recovery of adsorbate from activated carbon. 3,670,424, Cl. 34-9.000.

Hoffman, Paul. Laminated paper with reinforcing scrim. 3,671,372, Cl. 161-58.000.

Hoffmann, Gottfred O., to Tri-Tech, Inc., mesne. Stepper motor with stator biasing magnets. 3,671,841, Cl. 318-696.000.

Hoffmann, Herwig: *See—*
Decker, Martin; Schmidt, Joseph; Hoffmann, Herwig; and Pistor, Hans Joachim, 3,671,566.

Hoffmann-La Roche Inc.: *See—*
Cekoric, Thomas, Jr.; and Evans, George, 3,671,400.
Hellerbach, Joseph; Szente, Andre; and Walser, Armin, 3,671,518.

Saucy, Gabriel, 3,671,539.
Weinstock, Marcel, 3,671,575.

Hofgesang, Edwin M., to Continental Oil Company. Defoaming compositions and methods of producing same. 3,671,460, Cl. 252-358.000.

Hofmann, Gottfried; and Stull, James T., to United States Steel Corporation. Trap door to prevent water from descending into starter bar pit. 3,670,804, Cl. 164-274.000.

Hogan, Elmer R.; and Simpson, John L., to Smith-Berger Manufacturing Corporation. Fish-beheading and cleaning apparatus. 3,670,363, Cl. 17-55.000.

Hogel, John J., to General Electric Company. Fast initial response nuclear reactor control system. 3,671,390, Cl. 176-24.000.

Hogya, Bernard J.: *See—*
Chiang, John S. C.; and Hogya, Bernard J., 3,671,344.

Hojo, Katsuo: *See—*
Kurita, Takaji; Motoki, Masaya; Emoto, Kazuhiro; and Hojo, Katsuo, 3,671,646.

Hokanson, Lyle W., and; and Fowke, Ronald T., to Heath & Sherwood Drilling Limited. Underground drilling machine. 3,670,827, Cl. 173-146.000.

Holland, Eldie H. Space motion simulator system. 3,670,581, Cl. 74-86.000.

Holland, J. H., Company, The: *See—*
Holland, John H., 3,670,909.

Holland, John H., to Holland, J. H., Company, The. Aggregate handling method and system. 3,670,909, Cl. 214-43.000.

Holle, Werner; and Kessler, Arthur, to Leitz, Ernst, G.m.b.H. Apparatus for controlling the shutter speed of photographic cameras. 3,670,636, Cl. 95-10.0ct.

Hollison, Ronald B.: *See—*
Stettner, Dennis; and Hollison, Ronald B., 3,670,535.

Holmes, Oliver W. Condition monitoring apparatus. 3,671,760, Cl. 307-116.000.

Holt, Chester H. Folding rocking chair with folding seat support. 3,671,072, Cl. 297-32.000.

Holzman, Mark, to Western Geophysical Company of America. Two-sweep signal transmission and reception in seismic exploration. 3,671,932, Cl. 340-15.5cp.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Date, Tasuku; and Hashimoto, Eiichi, 3,670,710.

Honeywell Inc.: *See—*
Bentsen, Louis J., 3,670,745.
Hron, Roland L.; and Jannink, Franciscus A., 3,671,169.
Soltman, George H.; and Dixon, Samuel J., 3,671,960.
Stauffer, Norman L., 3,671,681.

Honeywell Information Systems Inc., mense: *See—*
Lipp, James P.; and Jones, William H., 3,671,935.

Honeywell Information Systems, Inc., mesne: *See—*
Maggio, Anthony F., Jr., 3,671,945.

Honnen, Lewis R.; Andrewsen, Harry W.; Lindstrom, Eddie G., deceased (by Lindstrom, Jean H.; special administratrix). Process for preparing polyolefin-substituted amines. 3,671,511, Cl. 260-93.7.

Hooker Chemical Corporation: *See—*
Murphy, Donald P., 3,671,465.
Rausch, Werner; Oei, Hans Young; and Moller, Siegfried, 3,671,332.

Hooker, Marvin L., Jr.: *See—*
Rutherford, Kenneth R.; Hooker, Marvin L., Jr.; and Alibrandi, Joseph P., 3,671,866.

Hopermann, Richard Konrad, to Borden Company, The. Moisture resistant packaging material. 3,671,294, Cl. 117-76.

Horgan, William J., Jr., to Blumcraft of Pittsburgh. Lock for a glass door. 3,670,537, Cl. 70-120.000.

Hori, Kikuo: *See—*
Fukushima, Takaaki; Takizawa, Haruki; Hori, Kikuo; Sato, Yoshito; and Mizumori, Haruhiko, 3,671,623.

Hori, Takashi, to Osaka Seiki Works, Ltd. Feeding device for machine tools. 3,670,461, Cl. 51-215.0hm.

Horiguchi, Shojiro: *See—*
Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Horiguchi, Shojiro; Nakamura, Michiei; Kimata, Shizuo; and Suzuki, Tadanobu, 3,671,476.

Horowitz, Donald J., to Lockheed Aircraft Corporation. Optical probe. 3,670,426, Cl. 35-12.00n.

Horowitz, Raymond H.: *See—*
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Hosey, William F., to Old Hickory Mfg. Co. Garment form retainer. 3,670,931, Cl. 223-71.000.

Hosokawa Funtaikogaku Kenkyusho Osaka: *See—*
Hosokawa, Masuo; Yokoyama, Tohei; and Nakagawa, Fumio, 3,670,886.

Hosokawa, Masuo; Yokoyama, Tohei; and Nakagawa, Fumio, to Hosokawa Funtaikogaku Kenkyusho Osaka. Powder classifier. 3,670,886, Cl. 209-139.00a.

Houdaille Industries, Inc.: *See—*
Cady, Percy L., Jr., 3,670,610.

Houle, Conrad G.; and Masseth, Thomas J., to Eastman Kodak Company. Sensitized pyrylium photobleachable dye in gelatin. 3,671,251, Cl. 96-89.000.

Houlihan, William J.; and Manning, Robert E., to Sandoz-Wander, Inc. 2,3,5,6-Tetrahydroimidazo[2,1-b] thiazoles. 3,671,533, Cl. 260-306.700.

Houlihan, William J.; and Manning, Robert E., to Sandoz-Wander, Inc. 6,6-Di-lower alkyl-2,3,5,6-tetrahydroimidazo [2,1-b] thiazoles. 3,671,534, Cl. 260-306.700.

Houston, Robert D., to Xerox Corporation. Digital signal synchronizing system. 3,671,776, Cl. 307-269.000.

Hovius, Eerenst Frans, to U.S. Philips Corporation. Apparatus for aligning two objects which comprises a source of light, a photosensitive detection system and two pattern carriers. 3,671,755, Cl. 250-237.00r.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. Copolymers of fluoroketone imines with polymerizable unsaturated compounds. 3,671,509, Cl. 260-87.500.

Howard, Robert J.: *See—*
Cory, Victor W.; Williams, Edgar E.; and Howard, Robert J., 3,670,702.

Howden, James, & Company Limited: *See—*
Fraser, William Milton; Cairns, Walter John; and Mac Donald, Ian Norman, 3,671,149.

Howe, Spencer D., to Hughes Aircraft Company. Oscillating mechanism. 3,671,766, Cl. 310-39.000.

Howell, Elgan Neville: *See—*
Hunn, Bernard Albert; and Howell, Elgan Neville, 3,671,721.

Hoxsie, Frank E. Portable self-starting fluorescent lamp. 3,671,803, Cl. 315-99.000.

Hoyler, Gerhard: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,670,378.

Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., to Brillion Iron Works, Inc. Forage blower. 3,671,077, Cl. 302-8.000.

Hron, Roland L.; and Jannink, Franciscus A., to Honeywell Inc. Delayed fuel and post ignition timed burner control system. 3,671,169, Cl. 431-67.000.

Hsiao, Mu-Yue: *See—*
Bossen, Douglas C.; and Hsiao, Mu-Yue, 3,671,947.

Hubbard, Alan M. Method and means providing dosages of oral hygienic substance. 3,670,927, Cl. 222-107.000.

Huber, William W.; and Dana, Richard L., to United States Ceramic Tile Company. Method for dry pressing ceramic tile. 3,671,618, Cl. 264-120.000.

Huck, Rainer F.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,670,386.

Hudis, Ann: *See—*
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Hudson, H. D., Manufacturing Company: *See—*
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Hudswell Yates Developments Limited: *See—*
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Huff, Ronald G., to United States of America, National Aeronautics and Space Administration. Apparatus for sensing temperature. 3,671,329, Cl. 136-233.000.

Huffaker, Walter D., to Ma-Tran Corporation. Method and apparatus for handling material. 3,671,079, Cl. 32-29.000.

Hughes Aircraft Company: *See—*
Calhoun, Donald F., 3,670,956.
Day, Richard A.; and French, William E., 3,671,728.
Gates, Louis E., Jr.; and Lent, William E., 3,671,275.
Gentile, Anthony L.; and Stafsudd, Oscar M., 3,671,203.
Howe, Spencer D., 3,671,766.
Kaspaul, Alfred F.; and Kaspual, Erika E., 3,671,238.
Mitchell, John E., 3,671,918.

Hughes, Gordon A.: *See—*
Tokolics, Joseph; Hughes, Gordon A.; and Smith, Herchel, 3,671,519.

Hull, Charles W., to Bell & Howell Company. Method for focusing a double focusing mass spectrometer. 3,671,737, Cl. 250-41.9me.

Humphreys, Robert Eric: *See—*
Doyle, George Mitchel; Humphreys, Robert Eric; and Moring, Peter Lothar Ernst, 3,671,478.

Humphries, Darral V., to Bethlehem Steel Corporation. Method of forming seal for multi-wire strand. 3,671,622, Cl. 264-263.000.

Hundere, Alf. Apparatus for determining the thermal stability of fluids. 3,670,561, Cl. 73-61.200.

Hunn, Bernard Albert; and Howell, Elgan Neville, to Revenue Systems Limited. Data reading systems. 3,671,721, Cl. 235-61.11h.

Hunt, George H., to Simplex Wire and Cable Company. Cross-linked polyolefin composition. 3,671,513, Cl. 260-93.700.

Hunter, William D., Jr.: *See—*
Esterhoy, Charles J., Jr.; Hunter, William D., Jr., 3,671,202.

Huntzinger, Gerald O.; and Sheldrake, Leonard J., to General Motors Corporation. Dual voltage charging system. 3,671,843, Cl. 320-15.000.

Hurlebaus, Richard P., to Budd Company, The. Arc spot weld control and power supply. 3,671,713, Cl. 219-127.000.

Hutchins, Francis E.: *See—*
Carlson, Bernard C.; and Hutchins, Francis E., 3,671,634.

Huttemann, Thomas J., Jr.: *See—*
Oftedahl, Edwin N.; Huttemann, Thomas J., Jr.; and Goffe, Charles A., 3,671,260.

Hwang, Paul Y., to Ampex Corporation. Cobalt doped gamma ferric oxide. 3,671,435, Cl. 252-62.560.

Hydril Company: *See—*

Lerouax, Robert K., 3,670,761.

Hyster Company: *See—*
Olson, John E.; Bostad, Wayne W.; and Price, Norman L., 3,670,626.

Iantorno, James F.; Wagner, John; and Schumacher, Stephen J., to Sealectro Corporation. Insulated electric terminal assembly. 3,671,920, Cl. 339-59.00r.

Iarossi, Frank J., to Esso Research and Engineering Company. Thermal transition design for vessels carrying liquid cargoes at nonambient temperatures. 3,671,315, Cl. 114-74.00a.

Ichimura, Hirohisa: *See—*
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IIT Research Institute: *See—*
Ali, Mir Akbar; and Pincus, Alexis G., 3,671,380.

Ikeda, Hirosaka: *See—*
Kawakita, Takao; Ikeda, Hirosaka; Matsumura, Shigeru; and Taniguchi, Kunichiko, 3,671,300.

Illinois Railway Equipment Company: *See—*
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Image Systems, Inc.: *See—*
Harlow, Norman E., 3,670,885.

Imai, Atsuo; Harata, Mituo; Ogawa, Yoshitaka; and Hasegawa, Shoji, to Tokyo Shibaura Electric Co., Ltd. Solid electrolyte. 3,671,324, Cl. 136-153.000.

Imai, Nobuhiro: *See—*
Goshima, Takeshi; and Imai, Nobuhiro, 3,670,992.

Imperial Chemical Industries Limited: *See—*
Andrews, Timothy Douglas; Short, Glyn David; and Thomas, Ieuan, 3,671,250.
Dixon, David Rodney; Rose, John Brewster; and Turton, Cecil Nigel, 3,671,486.
King, John Howliston; and Smith, Frank, 3,671,415.
Knight, Michael Horace, 3,671,498.
White, Brian Graham, 3,671,213.

Inacker, Frederick T.: *See—*
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Industries, Inc., mesne: *See—*
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Ingalls, Jeffrey D.: *See—*
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Ingenieurbureau de Ridder N.V.: *See—*
de Ridder, Gerardus Johannes, 3,671,034.

Ingham, Robert M., Jr., to Deering Milliken Research Corporation. Drafting apparatus. 3,670,367, Cl. 19-255.

Inland Systems, Inc.: *See—*
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Innocenti Societa Generale per l'Industria Metallurgica: *See—*
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Inoue, Tadahiko: *See—*
Nishimura, Tatsumi; Inoue, Tadahiko; Tsuboi, Takeo; and Kado, Masaru, 3,671,640.

Inoue, Taiichi; and Ueda, Toshimasa, to Tokyo Shibaura Electric Co., Ltd. Germanium and silicon substituted manganese activated magnesium gallate phosphor. 3,671,452, Cl. 252-301.40f.

Inoue, Taiichi; and Ueda, Toshimasa, to Tokyo Shibaura Electric Co., Ltd. Silicon and/or germanium dioxide substituted manganese activated magnesium aluminate gallate phosphor. 3,671,454, Cl. 252-301.40f.

Inoue, Takehisa; Sato, Masaki; and Hashiguchi, Takeshi, to Toray Industries, Inc. Transalkylation of aromatic hydrocarbons. 3,671,602, Cl. 260-672.00t.

Inoue, Takeshi, to Kurashiki Rayon Co., Ltd. Process for the manufacture of composite filaments and yarns. 3,671,620, Cl. 264-171.000.

Inspection Engineering and Equipment, Inc.: *See—*
Kiewicz, Frank M.; and Zink, Paul R., 3,670,420.
Kiewicz, Frank M.; and Zink, Paul R., 3,670,421.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
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Inta-Roto, Inc.: *See—*
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Inter-Probe, Inc.: *See—*
Blomgren, Oscar C., Sr.; and Blomgren, Oscar C., Jr., 3,670,606.

International Business Machines Corporation: *See—*
Bakke, Roger M., 3,671,725.
Bossen, Douglas C.; and Hsiao, Mu-Yue, 3,671,947.
Dushkes, Sherman Z.; and Surty, Rohinton J., 3,670,944.
Henle, Robert A., 3,671,772.
Herron, Christopher C., 3,671,787.
Johnson, Robert L.; and Leach, David W., 3,670,612.
Maley, Gerald A.; and Walsh, James L., 3,671,763.
Maley, Gerald A.; and Walsh, James L., 3,671,764.
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International Computers Limited: *See—*
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International Harvester Company: *See—*
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Lienemann, Darlo; and Henry, Daniel, 3,670,671.
Nelson, Vaughn A., 3,670,770.
Tufts, Guy O.; Scarnato, Thomas J.; and Peacock, Peter J., 3,670,483.

International Paper Company: *See—*
Casavant, George D., 3,671,234.
Galanes, Hector J., 3,670,949.

International Plasma Corporation: *See—*
Bersin, Richard L., 3,671,195.

International Standard Electric Corporation: *See—*
Bellmann, Alfred, 3,671,701.
Knauer, Hans Ulrich, 3,671,679.

International Telephone and Telegraph Corporation: *See—*
Scarlett, Robert M., 3,671,793.
Waltermire, Clayton L., 3,671,792.

Irani, Riyad R.; and Roberts, H. Evan, to Monsanto Chemical Company. Antiseptic compositions containing phenolic bactericides potentiated with phosphonic acid derivatives. 3,671,644, Cl. 424-346.000.

Ireland, Henry R.; and Snyder, Paul W., Jr., to Mobil Oil Corporation. Upgrading of crude oil by combination processing. 3,671,419, Cl. 208-57.000.

Irie, Toshiaki; Sato, Katsuo; and Nanko, Yoshiyuki, to Nippon Electric Company, Limited. Transistor device with plateau emitter and method for making the same. 3,671,340, Cl. 148-187.000.

Irie, Yoshihiko; and Kimura, Fumio, to Tokoco Ltd. Overhead traveling type fuel supplying apparatus. 3,670,930, Cl. 222-527.000.

Ironflex AG: *See—*
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Ishihara, Katsumi: *See—*
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Ishikawa, Hajime: *See—*
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Ishizaki, Sumio: *See—*
Ozutsumi, Minoru; Kawakami, Kazuo; Ishizaki, Sumio; and Kurosawa, Masatoshi, 3,671,182.

Ishizuka, Hiroshi. Method for preparing zirconium tetrachloride and hafnium tetrachloride. 3,671,186, Cl. 23-24.00z.

Islip, Peter John, to Parke, Davis & Company. 5-Nitro-4-thiazoline-2-ylidene-3-acetamide compounds and derivatives thereof. 3,671,650, Cl. 260-294.8.

Itami, Kazuo: *See—*
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Saskai, Toshio, 3,671,279.

Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Okuno, Yositosi; and Fujimoto, Keimei, to Sumitomo Chemical Company, Ltd. 5-Prorargylthenyl cyclorropane-carboxylates. 3,671,548, Cl. 260-332.20r.

Itek Corporation: *See—*
Bowker, John Kent, 3,671,130.

Ito, Riyokichi, to Katsukawa Kogyo Kabushiki Kaisha. Low-deck truck for carrying an article to be treated. 3,670,900, Cl. 212-14.000.

Itoh, Kunio: *See—*
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Itoh, Tadayoshi: *See—*
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Ivanhoe Research Corporation: *See—*
Rovin, Herman; Cobb, James W.; Opuszenski, Theodore; Willard, Richard H.; Rigat, Raymond, Jr.; and Pellicano, Joseph, 3,670,675.

Iversen, Svend Erik: *See—*
Knudsen, Erik Stenberg; Iversen, Svend Erik; Lund, Svend Aage; and Northeved, Allan, 3,671,858.

Iwano, Haruhiko: *See—*
Yoneyama, Masakazu; Shimamura, Isao; Iwano, Haruhiko; and Ohi, Reiichi, 3,671,247.

Iwasaki, Hiroshi: *See—*
Uchida, Naoya; Ohmachi, Yoshiro; Niizeki, Nobukazu; Miyazawa, Shintaro; and Iwasaki, Hiroshi, 3,671,103.

Iwasaki Tsushinki Kaisha: *See—*
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Iwatani & Co., Ltd.: *See—*
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Iwatsu Electric Company Ltd.: *See—*
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,936.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,937.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,941.

Izuta, Tadao, to Nippon Gakki Seizo Kabushiki Kaisha. Stabilizer for archery bow. 3,670,712, Cl. 124-30.00r.

Jack, Ronald H., to Teletype Corporation. Self-testing insertion tool and methods of inserting workpieces. 3,670,388, Cl. 29-244.000.

Jackson, Billy G., to Lilly, Eli, and Company. Cephalosporin compositions. 3,671,449, Cl. 252-182.000.

Jackson, David L. Underwater dye-marker release mechanism. 3,670,692, Cl. 116-124.00b.

Jackson, George W.; and Whelan, James E., to General Motors Corporation. Engine cam operated air compressor for vehicle leveling system. 3,671,150, Cl. 417-395.000.

Jackson, Winston J., Jr.; and Watson, Marshall T., to Eastman Kodak Company. Textile yarn. 3,670,489, Cl. 57-140.000.

Jacobs, Herbert V.: *See—*

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Jacobs Machine Corporation: *See—*
Winston, Eric; and Jacobs, Herbert V., 3,670,673.
Jacobsen Manufacturing Company: *See—*
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Jaffe, Joseph; and Kittrell, James R., to Chevron Research Company. Hydrotreating process using a catalyst comprising a fluorine-containing layered crystalline aluminosilicate. 3,671,425, Cl. 208-216.000.
Jahnle, Herbert A., to Budd Company, The. Low temperature Zn-Al-Cu casting alloy. 3,671,227, Cl. 75-178.0ac.
Jakobsen, Kjell Moswoll; and Eriksson, Hanslivar, to Aktiebolaget Platmanufaktur. Producing tubular members of lignocellulose material by compression within an annular chamber. 3,671,386, Cl. 162-224.000.
Jamison, Saunders E., to Celanese Corporation. Diacid-diol based foams and process of making same. 3,671,471, Cl. 260-2.50r.
Janelid, Ingvar. Method of preventing leakage during storage of a gas or a liquid in a rock chamber by artifically supplying a gas or a liquid to the rock surrounding the rock chamber. 3,670,503, Cl. 61-.5.
Jania, Zbigniew J.; and Vanderberg, Lawrence J., to Ford Motor Company. Electronic control system for antiskid vehicle brakes. 3,671,081, Cl. 303-21.0be.
Jannink, Franciscus A.: *See—*
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Janowak, John F.: *See—*
Ryntz, Edward F., Jr.; Janowak, John F.; and Watton, John F., 3,670,558.
Jarman, David J. Shear discharge conveying system. 3,670,611, Cl. 83-81.000.
Jaskolski, Stanley V.; and Seitz, Martin A. Zinc oxide crystal bulk-effect oscillator and method of preparing the same. 3,671,193, Cl. 23-148.000.
Jaworski, Ernest G., to Monsanto Company. Growth-promoting compositions and methods. 3,671,212, Cl. 71-77.000.
Jeffries, Lester A., to Northrop Corporation. High contrast display for electron beam scanner. 3,671,795, Cl. 313-109.000.
Jehn, David H., to Dun-Hot, Incorporated. Popcorn package. 3,671,270, Cl. 99-171.00a.
Jellison, Paul J., to Textron, Inc. Composite washer. 3,670,618, Cl. 85-1.0jp.
Jenny, Robert W., to Boeing Company, The. Landing gear gravel and water deflector. 3,670,996, Cl. 244-103.
Jensen, Billy M.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,670,386.
Jinnette, Allen J., to Burlington Industries, Inc. Bleaching procedure for fiberglass fabrics. 3,671,179, Cl. 8-101.000.
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Johnson, Donald L. Method of jet breaking veneer to narrow wood flakes. 3,670,791, Cl. 144-326.00a.
Johnson, Edward B. Silver recovery from photographic wastes. 3,671,222, Cl. 75-83.000.
Johnson, Herbert E., to Union Carbide Corporation. Lactam polymerization with N,N'-dialkyl-azetidinedione initiators. 3,671,500, Cl. 260-78.00l.
Johnson, Herbert E., to Union Carbide Corporation. Lactam polymerization with substituted biuret initiators. 3,671,501, Cl. 260-78.00l.
Johnson, James L.: *See—*
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Johnson, Leona M., to ATCO Surgical Supports Co. Foundation garment providing orthopedic support. 3,670,738, Cl. 128-549.000.
Johnson, Paul K.: *See—*
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Johnson, Randall W. Enclosure for heat exchange device. 3,671,095, Cl. 312-352.000.
Johnson, Robert B., to Eastman Kodak Company. Film feeding mechanism for motion picture projectors. 3,671,113, Cl. 352-173.000.
Johnson, Robert L.; and Leach, David W., to International Business Machines Corporation. Card cutting apparatus. 3,670,612, Cl. 83-99.000.
Johnson, Robert W.; and Karpiel, Harvey B., to International Harvester Company. Combination fuel tank and operator's seat for tractors. 3,671,070, Cl. 296-65.00r.
Johnson, Walter C.: *See—*
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Johnson Welding & Equipment Co., Inc.: *See—*
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Johnston, Douglas, to Decatur Foundry & Machine Co., Inc. Flow control assembly and method. 3,670,962, Cl. 239-62.000.
Johnston, Edward W. Sun cot. 3,670,750, Cl. 135-5.100.
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Jones, Allen J., to Michel Lumber Company. Hanging walls for furnace. 3,670,469, Cl. 52-285.000.
Jones, Charles E. Tape reel container. 3,670,875, Cl. 206-52.00f.
Jones, Cherry E. Person money container. 3,670,933, Cl. 224-28.00b.
Jones, David H.: *See—*
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Jones, Johnny W., to Borg-Warner Corporation. Motor and seal section utilizing a fluorinated ether as a single, homogenous, blocking cooling and lubricating fluid. 3,671,786, Cl. 310-87.000.
Jones, Lorin M. Escape mechanism. 3,670,846, Cl. 182-20.000.
Jones, Loyd W.: *See—*
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Jones, Paul W.: *See—*
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Jones, Stanley W.: *See—*
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Jones, William H.: *See—*
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Jonsson, Kurt Alfred, to Rederiaktiebolaget Nordstjernan. Process for the production of powdered metals. 3,671,220, Cl. 75-.50b.
Joosten, Hendrik, to Bata Shoe Company, Inc. Apparatus for immersing lasted boots in a liquid bath. 3,670,698, Cl. 118-425.000.
Joseph, Douglas C.: *See—*
Eldridge, Merle K.; Bloom, Roy C.; and Joseph, Douglas C., 3,671,248.
Joyce, Thomas P., Jr.; Lagally, Ralph W.; and Schulz, Johann G. D., to Gulf Research & Development Company. Process for oxidizing a 1,1-bis(alkylphenyl) alkane. 3,671,579, Cl. 260-517.000.
Judd, Joseph H.: *See—*
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K-D Manufacturing Company: *See—*
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Kabel, Heinrich, to Hellermann, Paul, G.m.b.H. Apparatus for tieing a bundle of cables. 3,670,782, Cl. 140-93.2.
Kabel- und Gutekoffnungshutte Aktiengesellschaft: *See—*
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Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
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Kam, George H., to Sylvania Electric Products, Inc. Pulse shaping circuit with multiplier application. 3,671,775, Cl. 307-271.000.
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Karlsson, Gote Sixten. Device for fastening of load. 3,671,014, Cl. 254-51.
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Karstedt, Bruce D.; and Razzano, John S., to General Electric Company. Fluorinated aliphatic acids as processing aids for silicone rubber compositions. 3,671,546, Cl. 260-37.0sb.
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Kaspaul, Alfred F.; and Kaspual, Erika E., to Hughes Aircraft Company. High constrast image development method and article. 3,671,238, Cl. 96-27.000.
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Keehan, Donald J. Method for producing a reinforced resinous impeller and product. 3,670,382, Cl. 29-156.8cf.
Keenan, John Francis Edmund, to Ciba-Geigy Corporation. Production of certain carboxylic acids. 3,671,581, Cl. 260-527.000.
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Kegelman, Thomas D.; and Williams, Peter R., to Computer Optics, Inc., mesne. Character generation display system. 3,671,957, Cl. 340-324.00a.
Kehrer, Fritz: *See—*
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Kelly, John C.; and Moore, Christopher J., to Rolls-Royce Limited. Sandwich structure. 3,670,843, Cl. 181-33.00g.
Kemppinen, Auvo I.; and Strum, Bobbie W., to Reynolds Metals Company. Extrusion method and apparatus. 3,670,542, Cl. 72-8.000.
Kemsey-Bourne, Kenneth, to English Calico Limited. Production of tubular articles. 3,671,348, Cl. 156-187.000.
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Kent, Miles L. Roll out step for pick up trucks. 3,671,058, Cl. 280-166.000.
Kent, Ronald E.; and Rothenberger, Alvin C., to McDonnell Douglas Corporation. Bulge-forming apparatus. 3,670,545, Cl. 72-58.000.
Kerek, John: *See—*
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Kerek, Richard: *See—*
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Kerr, James Richard, to Morvue, Inc. Electro-optical apparatus for precise on-line measurement of the thickness of moving strip material. 3,671,726, Cl. 235-151.300.
Kessler, Arthur: *See—*
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Kessler, Hans-Joachim: *See—*
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Kienzler, Wolfgang; and Burgdorf, Marten, to Kabel- und Gutekoffnungshutte Aktiengesellschaft. Forming hollow blanks. 3,670,554, Cl. 72-347.000.
Kiewicz, Frank M.; and Zink, Paul R., to Inspection Engineering and Equipment, Inc. Gaging head construction. 3,670,420, Cl. 33-174.00l.
Kiewicz, Frank M.; and Zink, Paul R., to Inspection Engineering and Equipment, Inc. Gaging device. 3,670,421, Cl. 33-174.00l.
Kijima, Katsumi: *See—*
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Kiles, James D.: *See—*
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Kilgus, Alfred. Temperature compensating device and lens system including same. 3,671,108, Cl. 350-253.000.
Kim, Chung Sul Youn, to Georgia-Pacific Corporation. Lignin derivative. 3,671,428, Cl. 252-8.50m.
Kimata, Shizuo: *See—*
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Kindl, Erwin; and Riegler, Ernst, to Kalle Aktiengesellschaft. Apparatus for coating a tube of fiber material with viscose by extrusion. 3,670,697, Cl. 118-408.000.
King, Charles S. Lighting fixture. 3,671,735, Cl. 240-41.100.
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King, Henry L.; Ringwald, Eugene L.; and Randall, James C., Jr., to Monsanto Company. Thermally stable polyester fibers having inherent disperse dye uptake and superior oil stain release properties. 3,671,495, Cl. 260-77.000.
King, John Howliston; and Smith, Frank, to Imperial Chemical Industries Limited. Continuous lead-in core for an electrode assembly. 3,671,415, Cl. 204-284.000.
King, Lowell A.; and Seegmiller, David W. Electrochemical cell with aluminum electrodes and different electrolyte concentrations in two compartments. 3,671,322, Cl. 136-83.00r.

Kingston, Floyd E. Three phase power controller. 3,671,849, Cl. 323-24.000.

Kiniry, John Michael: *See—*
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Kirwan, James: *See—*
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Kishida, Soichiro: *See—*
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Kiti, Hidehiko, to Nippon Gakki Seizo Kabushiki Kaisha. Bamboo organ pipe assembly. 3,671,660, Cl. 84-349.000.

Kitamura, Hajime: *See—*
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Kito, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Safety devices for entrance and exit for moving handrail. 3,670,862, Cl. 198-16.000.

Kittrell, James R.: *See—*
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Kizilos, Apostolos P., to United States of America, Navy. Variable deflection thrusters for jets. 3,670,994, Cl. 244-42.0cc.

Klaassen, Anne: *See—*
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Klanatsky, John J., to Emerson Electric Co. Transistor protection circuit. 3,671,879, Cl. 330-207.00p.

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Klein & Anderson Ltd.: *See—*
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Klein, John Ray, to Klein & Anderson Ltd. Tractor trailer lighting systems. 3,671,757, Cl. 307-10.0ls.

Klein, Keith W.; and Dimond, Herbert M., to General Electric Company. Manually operable molded case circuit breaker with special trip testing means. 3,671,890, Cl. 335-22.000.

Klemchuk, Peter P.: *See—*
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Klotinsh, Erik Ernestovich: *See—*
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Knapp, Russell Daniel: *See—*
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Knapsack Aktiengesellschaft: *See—*
Roszinski, Hilmar; and Harnisch, Heinz, 3,671,612.

Knauer, Hans Ulrich, to International Standard Electric Corporation. Arrangement for the recognition of loop closure in subscriber stations having semiconductor amplifiers fed via the connecting trunk. 3,671,679, Cl. 179-81.00b.

Kneafsey, Adrian W., to Scragg, Ernest, & Sons Limited. Processing of flax derived yarns. 3,670,490, Cl. 57-156.000.

Knell, Martin; and Klemchuk, Peter P., to Ciba-Geigy Corporation. Preparation of polyfluoroalkyl esters of fumaric and other acids. 3,671,574, Cl. 260-485.00f.

Knight, Bruce L., to Marathon Oil Company. Mobility control in oil recovery processes. 3,670,818, Cl. 166-273.000.

Knight, Michael Horace, to Imperial Chemical Industries Limited. Copolyamides from bisaminophenylsulfone. 3,671,498, Cl. 260-78.00r.

Knob, Richard W.: *See—*
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Knollman, Dieter John Henry; and Simon, James Louis, to Bell Telephone Laboratories, Incorporated. Calculator for a multiprocessor system. 3,671,942, Cl. 340-172.500.

Knomi, Katsutoshi: *See—*
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Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Repellant composition comprising certain cyclohexyl ureas and thioureas. 3,671,637, Cl. 424-322.000.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Animal repellant methods using substituted cyclohexyl ureas. 3,671,638, Cl. 424-322.000.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. N-Acylcyclohexyl amine repellants and methods of use. 3,671,642, Cl. 424-320.000.

Knudsen, Erik Stenberg; Iversen, Svend Erik; Lund, Svend Aage; and Northeved, Allan, to Slagteriernes Forskningsinstitut. Method and apparatus for measuring the thickness of layers of fat and flesh in carcasses utilizing the difference in electrical. 3,671,858, Cl. 324-65.

Knudsen, John P.: *See—*
Fitzgerald, Warren E.; Knudsen, John P.; and Brock, Jessie O., 3,671,619.

Knudson, Louis I.; Frink, Richard C.; and White, Charles H., to General Laboratory Associates, Inc. Regulatable alternator. 3,671,788, Cl. 310-156.000.

Kobayashi, Tetsuji; and Tabayanagi, Seiichi, to Tokyo Shibaura Electric Co., Ltd. Catheter type semiconductor radiation detector. 3,670,719, Cl. 128-2.00a.

Kobayashi, Tunekazu, to Denki Onkyo Co., Ltd. Contactless rotary switching apparatus. 3,671,874, Cl. 323-94.00h.

Koch, Bent. Method of dyeing or impregnating textiles and an apparatus for carrying the method into effect. 3,671,180, Cl. 8-149.000.

Kodama, Takashi: *See—*
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Koenig, Karl-Heinz: *See—*
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Koenig, Karl-Heinz; Steinbrunn, Gustav; Windel, Hermann; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Biscarbamates. 3,671,571, Cl. 260-471.00c.

Koga, Koichi; Hatori, Minoru; and Akamatsu, Takashi, to Sumitomo Chemical Company, Ltd. Imidomethyl derivatives of 1,3,3-trimethylindolino-spiropyran. 3,671,543, Cl. 260-326.00d.

Kohn, Joseph: *See—*
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Koiwa, Yoichi: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,671,482.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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Kolarik, Robert V., to Goodyear Aerospace Corporation. Composite armor. 3,671,374, Cl. 161-93.000.

Kolatorowicz, Edwin E.; and Volkmann, Werner K., to General Electric Company. Power conversion control system. 3,671,836, Cl. 318-345.000.

Kolb, Edwin R.: *See—*
Stanton, Arthur J.; Kolb, Edwin R.; and Roberts, Webster C., 3,670,632.

Kolbe, William H.; Sagady, Alexander J.; and Suzuki, Taro, to General Motors Corporation. Epitrochoidal compressor. 3,671,154, Cl. 418-61.000.

Koltz, Lawrence D.: *See—*
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Komata, Toranosuke; Ishihara, Katsumi; and Hashimoto, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Superconductive alloys. 3,671,226, Cl. 75-175.500.

Komatsu, Noboru; Arai, Tohur; and Mizutani, Masayoshi, to Kabushiki Kaisha. Method of chromizing in a fused salt bath. 3,671,297, Cl. 117-113.000.

Komeda, Hiromu: *See—*
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Kometani, Yutaka; Tatemoto, Masayoshi; and Nakamura, Masanori, to Daikin Kogyo Co., Ltd. Method for polymerization of fluorine-containing halolefins. 3,671,510, Cl. 260-87.50a.

Komisako, Tetuji: *See—*
Mori, Kazuhiro; Nakamura, Abio; Nakai, Miyoji; and Komisako, Tetuji, 3,670,548.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konrad, Charles E.: *See—*
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Konrat, Jean-Paul: *See—*
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Koop, Francis D., Jr.: *See—*
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Koopmans, Gerben: *See—*
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Korchynsky, Michael; Grozier, John David; and Mihelich, John L., to Jones & Laughlin Steel Corporation. High-strength plain carbon steels having improved formability. 3,671,336, Cl. 148-36.000.

Korda, Gerhard F., to Hudson, H. D., Manufacturing Company. Spray control valve. 3,670,966, Cl. 239-337.000.

Korovin, Ivan Stepanovich: *See—*
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna, 3,671,125.

Kortge, Jerry W.; and Rodaer, James A., to General Motors Corporation. Photon energy detector generating signal in which durations of 1st and 2nd half cycles are responsive to photon energy and diode continuity respectively. 3,671,751, Cl. 250-211.00j.

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Kovacs, Lloyd: *See—*
Pomper, Anthony W.; and Kovacs, Lloyd, 3,671,021.

Kovacs, Lloyd, to Midland-Ross Corporation. Extruder comprising a screw having pegs. 3,671,141, Cl. 416-176.000.

Kowalski, Xavier, to Monsanto Company. Methods of scale inhibition using substoichiometer amounts of amino alcohols. 3,671,447, Cl. 252-180.000.

Kowalski, Xavier, to Monsanto Company. Methods of scale inhibition using substoichiometric amounts of amino alcohol and phosphonic acids. 3,671,448, Cl. 252-18.00d.

Koyanagi, Shunichi; Kitamura, Hajime; and Tajima, Shigenobu, to Shimetsu Chemical Company. Method for preparing polyvinyl chloride. 3,671,508, Cl. 260-87.100.

Kozacka, Frederick J.; and Belcher, Richard A., to Chase-Shawmut Company, The. High-voltage fuse with one piece fuse links. 3,671,909, Cl. 337-160.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Compact polyphase fuse. 3,671,910, Cl. 337-146.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. System of fluid cooled fuses. 3,671,911, Cl. 337-166.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Michel, Rupprecht, 3,670,703.

Krakauer, C. Leonard, to Kay Manufacturing Corporation. Furniture spring clip and assembly. 3,671,031, Cl. 267-110.

Kralowetz, Bruno. Tool for use in a swaging machine. 3,670,556, Cl. 72-402.000.

Kramer, Wilhelm, to Aktiengesellschaft Brown, Boveri & Cie. Switch contact chamber for electrical circuit breakers of the gas blast type. 3,671,698, Cl. 200-148.

Kranz, Raymond E.: *See—*
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Kraselsky, Maurice A. Budget carrier. 3,670,934, Cl. 224-42.10e.

Krasny, Carl, & Associates, Inc.: *See—*
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Kratky, Raymond H.: *See—*
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Kreider, Franklin M.: *See—*
Levin, Howard J.; and Kreider, Franklin M., 3,670,786.

Krellner, Walter G.; and Shobert, Erle I., II, to Stackpole Carbon Company. Self-aligning bearing. 3,671,092, Cl. 308-72.000.

Krenzer, John, to Velsicol Chemical Corporation. Potassium 4-methyl-1,2,4-oxadiazolidine-3,5-dione and sodium 4-methyl-1,2,4-oxadiazolidine-3,5-dione. 3,671,538, Cl. 260-307.00b.

Kreptseva, Valentina Nikolaevna: *See—*
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna, 3,671,125.

Krick, David M.; Koltz, Lawrence D.; and Williams, Warren C., to Wisconsin Centrifugal, Inc. Vacuum casting apparatus. 3,670,802, Cl. 164-258.

Kriedt, Frederick A. Water expulsion system. 3,670,680, Cl. 114-16.00r.

Krimmel, Carl Peter, to Searle, G. D., & Co. Dialkylaminoalkyl esters of adamantanethiocarboxylic acids. 3,671,527, Cl. 260-268.

Krob, Erwin: *See—*
Pammer, Gottfried; and Krob, Erwin, 3,670,990.

Kroder, Ernst A., to Dentsply Research & Development Corporation, mesne. Connecting metal elements and products thereof. 3,670,416, Cl. 32-48.000.

Kroemer, Karl Heinrich Eberhard, to United States of America, Air Force. Apparatus for measuring thumb and finger force. 3,670,573, Cl. 73-379.000.

Kroll, Wolfram R., to Esso Research and Engineering Company. Isomerization process employing a novel heterogeneous catalyst. 3,671,597, Cl. 260-666.0py.

Kronenberg, Hans; and Gmur, Dionys, to Swiss Aluminum Ltd. Rail connection. 3,670,899, Cl. 211-182.000.

Kronies, Reinhard K.; and Hansen, Iver C., to Burroughs Corporation. Test apparatus for digital computer. 3,671,940, Cl. 340-172.500.

Kropp, Rudolf: *See—*
Reicheneder, Franz; and Kropp, Rudolf, 3,671,525.

Krumreich, Jack E.: *See—*
Cox, Frederick L.; and Krumreich, Jack E., 3,671,711.

Krup, Donald E., to Karma Division of Brandt Automatic Cashier Company. Apparatus for producing a beverage by mixing a powdered base including sugar and a cold liquid. 3,671,020, Cl. 259-10.000.

Krupa, Thomas J., to Delaware Valley Armaments, Inc. Timing mechanism. 3,670,655, Cl. 102-79.000.

Kruper, Andrew P., to Westinghouse Electric Corporation. Single phase motor starting control apparatus. 3,671,830, Cl. 318-221.00e.

Kubo, Moritada, to Tokyo Shibaura Electric Co., Ltd. System of measuring the distribution of reduction rate of metal stripes. 3,670,568, Cl. 73-159.000.

Kuchta, Frank J.: *See—*
Groves, Sydney L.; Kuchta, Frank J.; Lewis, J. Stephen; Maurer, Donald J.; May, Richard L.; Ryan, John W.; and Vowles, Colin, 3,670,451.

Kuck, Lloyd L., to General Motors Corporation. Tailgate window washer mechanism. 3,671,144, Cl. 417-231.000.

Kudingo, Kenneth F.: *See—*
Grazier, Robert L.; and Kudingo, Kenneth F., 3,670,512.

Kuehnle, Manfred R., to Audac Corporation. System for processing large xerographic prints. 3,671,120, Cl. 355-8.000.

Kuhn, Vladimir: *See—*
Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.

Kuiper, Wilhelmus Gerardus; and Klaassen, Anne, to U.S. Philips Corporation. Device for generating a plurality of sinusoidal oscillations in a carrier telephony system. 3,671,880, Cl. 331-51.000.

Kumai, Ko; Motoyoshi, Minoru; Tanaka, Kiyoshi; and Hagiwara, Yasuhira, to Nippon Steel Corporation. Process for producing grain oriented electromagnetic steel sheets having excellent magnetic characteristics. 3,671,337, Cl. 148-111.000.

Kumaiai Chemical Industry Co., Ltd.; and: *See—*
Kado, Masaru; Kimura, Ichiro; and Sugiyama, Hironari, 3,671,216.

Kumashiro, Izumi: *See—*
Yamada, Yoshitaka; Sakurai, Moritaro; and Kumashiro, Izumi, 3,671,649.

Kumial Chemical Industry Co., Ltd.: *See—*
Nishimura, Tatsumi; Inoue, Tadahiko; Tsuboi, Takeo; and Kado, Masaru, 3,671,640.

Kumins, Charles A., to Addressograph-Multigraph Corporation. Electrophotographic member useful as a lithographic master. 3,671,232, Cl. 96-1.800.

Kunzel, Hans-Egon; Wolf, Gerhard Dieter; Blankenstein, Gunter; and Nischk, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Aromatic polyamides containing the quinazolone ring. 3,671,614, Cl. 260-47.0cz.

Kupfrian, Wilbur J., to Wright, Barry, Corporation, mesne. Self locking fastener. 3,670,795, Cl. 151-29.

Kurashiki Rayon Co., Ltd.: *See—*
Inoue, Takeshi, 3,671,620.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Amagi, Yasuo; Ohya, Masaki; Shiiki, Zenya; and Yusa, Haruhiko, 3,671,610.

Kurita, Takaji; Motoki, Masaya; Emoto, Kazuhiro; and Hojo, Katsuo, to Mitsubishi Paper Mills, Ltd. Liquid developers for electrostatic photography. 3,671,646, Cl. 252-62.100.

Kurosawa, Masatoshi: *See—*
Ozutsumi, Minoru; Kawakami, Kazuo; Ishizaki, Sumio; and Kurosawa, Masatoshi, 3,671,182.

Kuyper, William, to United States of America, Navy. Ammunition container for aircraft. 3,670,623, Cl. 89-34.000.

Kvalheim, Andrew M.; and Wassem, Howard M., to Aim Products, Inc. Universal molding strip for trimming. 3,671,369, Cl. 161-40.000.

Kwantes, Arien; and Stouthamer, Bernhard, to Shell Oil Company. Process for carbonylating alkanols. 3,671,559, Cl. 260-413.000.

Kwolek, Stephanie Louise, to Du Pont de Nemours, E. I., and Company. Optically anisotropic aromatic polyamide dopes. 3,671,542, Cl. 260-308.00r.

Kyburz, Hans. Insulating fitting and method for manufacturing. 3,671,060, Cl. 285-54.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,671,482.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Nakayama, Kiyoshi; and Hagino, Hiroshi, 3,671,396.

La Salle Machine Tool, Inc.: *See—*
Skrentner, Frank C., 3,670,607.

La Sota, Leo S., to McGraw-Edison Company. Liquid moisture detector. 3,671,912, Cl. 338-34.000.

La Violette, Paul A.: *See—*
Kennedy, Ralph C.; La Violette, Paul A.; and Stromberg, Henry M., 3,670,442.

LaBar, Dale H.: *See—*
Watson, Edward J.; and LaBar, Dale H., 3,671,589.

Lacal Industries Limited: *See—*
Crosby, Nobel W.; Walker, Robert C.; and Clarke, Gordon J., 3,670,372.

Lacaze, Rene: *See—*
Aucouturier, Jeanne; and Lacaze, Rene, 3,671,895.

Lagally, Ralph W.: *See—*
Joyce, Thomas P., Jr.; Lagally, Ralph W.; and Schulz, Johann G. D., 3,671,579.

Laird, William Burton; Williams, Roy L.; and Muska, Allen V., to Air Reduction Company, Incorporated. Method and apparatus for the microdispersion of oxygen in water. 3,671,022, Cl. 261-29.

Lake Center Industries: *See—*
Quain, Wilbur C., 3,670,757.

Lakhani, Kishor M.: *See—*
Funk, John W.; and Lakhani, Kishor M., 3,670,647.

Lamb, William Doyle: *See—*
Butcher, James; Gyllstrom, Richard G.; and Lamb, William Doyle, 3,670,760.

Lammert, Charles W.: *See—*
Charleville, Joseph L.; De Tienne, Mart E.; and Lammert, Charles W., 3,670,998.

Land, Edwin H., to Polaroid Corporation. Diffusion transfer image receiving sheet with hydrolyzed polymer layer. 3,671,241, Cl. 96-29.000.

Lanier Electronic Laboratory, Inc., mesne: *See—*
Nye, William M.; and Jones, Stanley W., 3,671,680.

Laporte Industries Limited: *See—*
Neumann, Barbara Susan, 3,671,190.

Larkin, Sam. Audio-video system employing sound track tape belts movably mounted on projection slides. 3,671,115, Cl. 353-19.000.

Larson, Floyd L.: *See—*
Davis, Louis E.; Jensen, Billy M.; Larson, Floyd L.; Huck, Rainer F.; and Stumph, Stephen L., 3,670,386.
Larson, Leland B.; and Clement, Clyde H., 33 1/3 to Shaheen, Eugene G. Key operated meter monitor. 3,670,959, Cl. 235-94.00r.
Larson, Willard D.: *See—*
Hartlein, Robert C.; Kiles, James D.; Larson, Willard D.; and Olson, Carl R., 3,670,649.
Laucks, F. Michael; and Vaughn, Robert S. Hermetic compressor. 3,671,147, Cl. 417-286.000.
Lauer, Walter W.: *See—*
Henley, Virgil E.; and Lauer, Walter W., 3,671,358.
Laufer, Robert J., to Consolidation Coal Company. Process for making thiophenol. 3,671,593, Cl. 260-609.00d.
Lawrence, Benjamin: *See—*
Wolfson, Alan B.; Patel, Jayantilal M.; and Lawrence, Benjamin, 3,671,262.
Lawrence, Howard; and Schaefer, Peter C., to General Electric Company. Three masking step process for fabricating insulated gate field effect transistors. 3,670,403, Cl. 29-571.000.
Layton, John E., to Boeing Company, The. Switched rhombic automatic direction finding antenna system and apparatus. 3,671,970, Cl. 343-120.000.
Le Bris, Louis; Michelet, Daniel; and Rakoutz, Michel, to Rhone-Poulenc S.A. Process for the preparation of quinones and hydroquinones. 3,671,552, Cl. 260-369.000.
Le Corre, Roger Jean: *See—*
Bruniaux, Bernard Jean Pierre Louis Lucien; and Le Corre, Roger Jean, 3,670,683.
Leach, David W.: *See—*
Johnson, Robert L.; and Leach, David W., 3,670,612.
Leak, Robert J.: *See—*
Schwager, Irving; Leak, Robert J.; and Cole, Edward L., 3,671,591.
Lear Siegler, Inc.: *See—*
Skalsey, Lily G., 3,670,625.
Leavitt, Clyde M.; Johnson, Walter C.; and Hall, Con C., IV, to Litton Systems, Inc. Method and apparatus for handling ships. 3,670,682, Cl. 114-45.000.
Leber, Don. Vehicle backing guidance device. 3,670,423, Cl. 33-46.0as.
Lebrun, Guy: *See—*
Furstenberger, Jean; Lebrun, Guy; and Girault, Denis, 3,670,945.
Lee, Ernest O., Jr.; and Adams, John A., Jr., to Stromberg-Carlson Corporation. Outgoing register sender system. 3,671,677, Cl. 179-18.0da.
Lee, Shi K., to Boeing Company, The. Sense line coupling structures and circuits for magnetic memory devices. 3,671,951, Cl. 340-174.0sp.
Lee, Yoon Chai, to Monsanto Company. Method for impact modification of ethylenically unsaturated nitril polymers and polymer blends produced thereby. 3,671,607, Cl. 260-876.00r.
Lees, Wayne L., to United States of America, National Aeronautics and Space Administration. Method and apparatus for limiting field-emission current. 3,671,798, Cl. 313-336.000.
Leesona Corporation: *See—*
Richter, Hans H., 3,670,488.
Leffert, Charles B., to General Motors Corporation. Closed cycle vapor engine. 3,670,495, Cl. 60-25.000.
Lefferts, Peter, to Heinemann Electric Company, mesne. Control circuits. 3,671,780, Cl. 307-252.0ua.
Lefrancois, Philip A.; and Barclay, Kenneth M., to Pullman Incorporated. Purification of waste gases. 3,671,185, Cl. 23-2.00r.
Leger, James E., to United States of America, Air Force. Parachute force transfer mechanism with built-in open link. 3,670,999, Cl. 244-137.000.
Leiba, Eugene: *See—*
Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, 3,671,963.
Leistikow, Gerard K.: *See—*
Lemkin, Jack L.; Leistikow, Gerard K.; Edmisson, Russell C.; and Benson, John T., 3,670,449.
Leitz, Ernst, G.m.b.H.: *See—*
Bromer, Heinz; and Meinert, Norbert, 3,671,276.
Heitmann, Knut; and Schneider, Eckart, 3,671,750.
Holle, Werner; and Kessler, Arthur, 3,670,636.
Kessler, Arthur; and Loseries, Peter, 3,670,634.
Lemery, Jean-Paul, to Etablissements Carpano & Pons. Releasable pawl and ratchet mechanisms. 3,670,855, Cl. 188-82.300.
Lemery, Jean-Paul, to Carpano & Pons. SA. Line pick-up for fishing reels. 3,670,984, Cl. 242-84.20g.
Leming, John C., to Averton Gear and Tool Corporation. Long span screw and nut drives. 3,670,583, Cl. 74-89.15.
Lemkey, Franklin D.: *See—*
Thompson, Earl R.; and Lemkey, Franklin D., 3,671,223.
Lemkin, Jack L.; Leistikow, Gerard K.; Edmisson, Russell C.; and Benson, John T., to Mattel, Inc. Construction element toy. 3,670,449, Cl. 46-23.000.
Lemper, Herbert, to Mesta Machine Company. Vertical mill. 3,670,587, Cl. 72-239.000.
Lennert, Andrew E.; Crossley, Frank L.; and Kalb, Henry T., to United States of America, Air Force. Reference time scale application to high speed film at high pulse repetition rates. 3,671,112, Cl. 352-84.000.
Leno, Theodore, to Teletype Corporation. Variable capacitive apparatus. 3,671,822, Cl. 317-249.00r.
Lent, William E.: *See—*
Gates, Louis E., Jr.; and Lent, William E., 3,671,275.
Leonard, Donald E., to Boeing Company, The. Winch apparatus for faired towline. 3,670,988, Cl. 242-158.00r.
Leopold, Richard F.: *See—*
Meier, Otto H.; and Leopold, Richard F., 3,670,863.
Lerch, Joseph Bryan: *See—*
Hampel, Daniel; and Lerch, Joseph Bryan, 3,671,783.
Lerouax, Robert K., to Hydril Company. Blowout preventer with resistance means between the body and the piston. 3,670,761, Cl. 137-315.000.
Leskovskaya, Nina Petrovna: *See—*
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna, 3,671,125.
Lesli Co.: *See—*
Muller, John T., 3,670,807.
Leutwein, Manfred; and Streicher, Heinz, to Eastman Kodak Company. Reader for information carriers in sheet form. 3,671,116, Cl. 353-27.000.
Levensohn, David Z.: *See—*
Duke, Bernard; and Levensohn, David Z., 3,671,151.
Leventhal, Howard L., to Ethyl Corporation. Bag. 3,670,953, Cl. 229-57.000.
Leventhal, Howard L., to Ethyl Corporation. Bag. 3,670,954, Cl. 229-57.000.
Lever Brothers Company: *See—*
Blake, Anthony; Halliday, Denis Malcolm; and Woods, Michael Faulkner, 3,671,268.
Carroll, Francis Emery; and Seebold, Walter Charles, 3,671,630.
Levi, George A., to Baker Perkins Inc. Layering device for cake. 3,670,665, Cl. 99-92.000.
Levin, Howard J.; and Kreider, Franklin M., to American Home Products Corporation. Container filling apparatus. 3,670,786, Cl. 141-92.
Levy, Alan A.; Rodger, Mitchell N.; and Breach, Geoffrey D., to Richardson-Merrell Limited. Sterilizing composition comprising potassium monopersulphate and sodium chloride coated with an edible oil and magnesium stearate. 3,671,629, Cl. 424-153.000.
Lewis, Herbert O.: *See—*
Rorick, William G.; and Lewis, Herbert O., 3,670,693.
Lewis, J. Stephen: *See—*
Groves, Sydney L.; Kuchta, Frank J.; Lewis, J. Stephen; Maurer, Donald J.; May, Richard L.; Ryan, John W.; and Vowles, Colin, 3,670,451.
Lewis, Joseph C., to North American Rockwell Corporation. Method of fabricating a laminated metal member. 3,670,397, Cl. 29-472.300.
Lewis, Robert V.: *See—*
Bahr, William T.; and Lewis, Robert V., 3,670,774.
Lewis, Thomas W., II: *See—*
Nell, David J.; and Lewis, Thomas W., II, 3,671,302.
Liard, Maurice. Stick for ice ball game. 3,671,038, Cl. 273-67.00r.
Liebe, Werner; Petersen, Siegfried; and von Konig, Anita, to Agfa-Gevaert Aktiengesellschaft. Silver salt diffusion process. 3,671,242, Cl. 96-29.000.
Liechti, Hans Wilhelm: *See—*
Artz, Klaus; Desai, Nalin Binduprasad; and Liechti, Hans Wilhelm, 3,671,177.
Lienemann, Darlo; and Henry, Daniel, to International Harvester Company. Planter. 3,670,671, Cl. 111-77.000.
Lietar, Christian: *See—*
Odone, Giovanni; and Lietar, Christian, 3,671,127.
Liggett, Thomas: *See—*
Cox, Charles D.; and Liggett, Thomas, 3,671,515.
Light, David J., to United States of America, National Aeronautics and Space Administration. Fixture for supporting articles during vibration tests. 3,670,563, Cl. 73-71.600.
Lilly, Eli, and Company: *See—*
Jackson, Billy G., 3,671,449.
Lindberg, Frank A., to United States of America, Navy, mesne. Method of making a circuit assembly. 3,670,396, Cl. 29-471.300.
Lindblom, Carl E.: *See—*
Heiss, Frederick H.; and Lindblom, Carl E., 3,670,785.
Lindgren, Per-Henning: *See—*
Brantte, Arnold; Frostling, Bengt Harald Ivar; and Lindgren, Per-Henning, 3,671,196.
Lindley, Ralph H.; and Bickham, Richard E., 1/2 to Pan American Petroleum Corporation; and and 1/2 to Petroleum Information Corporation. Analog to digital converter for well logs. 3,671,961, Cl. 340-347.0ad.
Lindsay, Douglas J., to Eastman Kodak Company. Means for indicating the length of roll film in a film cartridge for processing purposes. 3,670,638, Cl. 95-31.0ca.
Lindsay Specialty Products Limited: *See—*
Nepovim, Zdenek, 3,671,926.
Pennypacker, Frank C., 3,671,885.
Lindstrom, Eddie G., deceased: *See—*
Honnen, Lewis R.; Andrewsen, Harry W.; Lindstrom, Eddie G., deceased, 3,671,511.

Lion Fat & Oil Co., Ltd.: *See—*
Marumo, Hideo; Ninomiya, Morio; and Watanabe, Shinro, 3,671,504.
Liouville, Roger, to Herckelbout et Fils Societe Anonyme. Machine for the alternate cambering of a metallic thread. 3,670,781, Cl. 140-71.00r.
Lipp, James P.; and Jones, William H., to Honeywell Information Systems Inc., mense. Method and apparatus for detecting binary data by polarity comparison. 3,671,935, Cl. 340-146.1ab.
Littell, Harry E., Jr., to PPG Industries, Inc. Integral transparent safety glass armor unit. 3,671,370, Cl. 161-43.000.
Litton Systems, Inc.: *See—*
Leavitt, Clyde M.; Johnson, Walter C.; and Hall, Con C., IV, 3,670,682.
Littrell, Luther W., to Harris-Intertype Corporation. Sheet-gripper post formed by EDM. 3,671,706, Cl. 219-69.00m.
Lloyd, Adam J., deceased (by Lloyd, Leona A.; executrix). Plunger for bottle making machine. 3,671,211, Cl. 65-234.000.
Lloyd, James R., to Esso Production Research Company. Articulated structural support linkage. 3,670,515, Cl. 61-46.500.
Lloyd, Leona A.: *See—*
Lloyd, Adam J., deceased, 3,671,211.
Lo Monaco, Sergio; Guerrato, Alfredo; Fabbro, Dario; and Donadello, Graziello. Fluorocarbon-containing compounds and method of imparting oil-and water-repellency to textiles, paper, leather and the like. 3,671,493, Cl. 260-75.0nh.
Lockheed Aircraft Corporation: *See—*
Horowitz, Donald J., 3,670,426.
Loder, Edwin R.: *See—*
Sabatelli, Philip M.; Loder, Edwin R.; Brungs, Charles A.; and Sarge, Carmen R., 3,671,440.
Loft, John T.; Conciatori, Anthony B.; and Chenevey, Edward C., to Celanese Corporation. Random benzimidazole-benzoxazole copolymers and methods of preparation. 3,671,491, Cl. 260-47.0cp.
Lohmann, Albert, to Mannesmann-Meer Aktiengesellschaft. Nozzle construction for injection molding machines. 3,671,162, Cl. 18-30.0ns.
Lohr, James E., to Du Pont de Nemours, E. I., and Company. Process for the removal of ionic contaminants from an electrocoating bath. 3,671,412, Cl. 204-181.000.
London & Scandinavian Metallurgical Co., Limited: *See—*
Barrett, Ernest Charles Henry, 3,671,409.
Long, John A. Wood splitting apparatus. 3,670,789, Cl. 144-193.00d.
Long, William D.; Fell, Ferol S.; and Wells, Bernard L., 1/2 to Hesston Corporation; and and 1/2 to Field Queen Incorporated. Transmission for forage harvesters and the like. 3,670,590, Cl. 74-353.000.
Longacre, Andrew, Jr.: *See—*
Shapiro, Sidney; and Longacre, Andrew, Jr., 3,671,848.
Loofbourrow, Robert J., to Texaco Inc. Amplifier system. 3,671,931, Cl. 340-15.5gc.
Los, Marinus, to American Cyanamid Company. Substituted D-homoestra tetraene and pentaene compounds. 3,671,573, Cl. 260-488.0cd.
Loseries, Peter: *See—*
Kessler, Arthur; and Loseries, Peter, 3,670,634.
Louboutin, Robert, to Degremont, Societe Generale d'Epuration et d'Assainissement. Dielectrics for ozone-generating apparatuses. 3,671,417, Cl. 204-320.000.
Loughman, Joseph F., Jr.: *See—*
Rock, Edward M.; Loughman, Joseph F., Jr.; and Mc Manus, Ann, 3,670,872.
Loughran, Eugene F., Jr., to North American Philips Corporation. Rotary actuator and indicator. 3,671,900, Cl. 335-272.
Lovely, Walter G.: *See—*
Hoyt, Charles T.; Haun, John W.; Hensel, Dwight L.; Hansen, Clarence M.; Lovely, Walter G.; and Bruhn, Hjalmar D., 3,671,077.
Low, George M., Acting Administrator of the; National Aeronautics and Space Administration with (respect to an invention of); Stump, Eugene C., Jr.; and Rochow, Stephen Eugene, to N/A. Polyurethane resins from hydroxy terminated perfluoro ethers. 3,671,497, Cl. 260-77.5ap.
Lucas, Raymond L. R. Stack sensing sheet feed conveyor control means. 3,671,753, Cl. 250-222.00r.
Lucas, Robert, to Fives Lille-Cail. Crusher. 3,670,973, Cl. 241-188.00r.
Lucerne Products, Inc.: *See—*
Matthews, Benjamin H., 3,671,699.
Lucifer S.A.: *See—*
Stampfli, Harald, 3,671,009.
Luck, Friedrich, to Firma Wankel GmbH, and and Firma Borsig GmbH. Rotary piston compressor. 3,671,153, Cl. 418-61.000.
Luebcke, Enno: *See—*
Kaufman, Otto; Daeuble, Manfred; Witsch, Heinz-Guenter; Luebcke, Enno; and Bayew, Dimiter, 3,671,176.
Luisi, James A.: *See—*
Cassen, Quentin C.; Luisi, James A.; and Salman, Naif D., 3,671,948.
Lumenite Electronic Company: *See—*
Calabrese, Ronald V., 3,671,142.
Lummus Company, The: *See—*
Mascio, Nicholas E.; and Burke, Robert F., 3,671,197.
Lund, Svend Aage: *See—*
Knudsen, Erik Stenberg; Iversen, Svend Erik; Lund, Svend Aage; and Northeved, Allan, 3,671,858.
Lunt, Wilbur B.; and Haskell, Robert A., to United States of America, Navy, mesne. Self-powered fuze firing system. 3,670,653, Cl. 102-70.20r.
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna. Device for aligning prefabricated circuit with a photographic plate to make printed circuits. 3,671,125, Cl. 355-133.000.
Lutz, Karl-Anton, to Siemens Aktiengesellschaft. Circuit arrangement for the reception and forwarding of message signals in time division multiplex exchange stations. 3,671,674, Cl. 179-15.0at.
Lux, Foss Britton, to United States of America, Air Force. Obscuration delineation circuitry. 3,671,729, Cl. 235-186.000.
Lynch, Earl D., to Metal Products Corporation. Insulated panel. 3,670,466, Cl. 52-204.000.
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., to Marco-Development Co., Inc. Alloy, fusion overlay and process. 3,671,206, Cl. 29-196.600.
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., to Marco Development Co., Inc. Alloy, fusion overlay and process. 3,671,207, Cl. 29-196.600.
Lys, Jacques Francois Marie-Joseph. Anti-harmonic transformer. 3,671,901, Cl. 336-5.000.
Ma-Tran Corporation: *See—*
Huffaker, Walter D., 3,671,079.
Mac Donald, Ian Norman: *See—*
Fraser, William Milton; Cairns, Walter John; and Mac Donald, Ian Norman, 3,671,149.
MacDonald, John M.; and Campbell, Ian D., to Esso Research and Engineering Company. Stabilizing hydrocracked lubricating oils. 3,671,423, Cl. 208-97.000.
Maci, Raymond J., to General Motors Corporation. Brake pump air valve and cooling means. 3,670,854, Cl. 188-71.600.
Mack, Arthur F., Jr. Combined platform and step for boat transoms. 3,670,847, Cl. 182-92.000.
Mackin, Arthur S., to United States of America, Navy. Erasable holographic recording. 3,671,096, Cl. 350-3.500.
Mackin, John G., Jr.: *See—*
Gibson, Robert G.; Mackin, John G., Jr.; Johnson, Paul K.; and Koop, Francis D., Jr., 3,670,511.
Maeda, Tomosuke: *See—*
Masuda, Hiromasa; Nishigaki, Eiiti; and Maeda, Tomosuke, 3,671,496.
Maeder, Arthur: *See—*
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Maekawa assor. to Giichi Okuno: *See—*
Maekawa, Hiroshi; and Yamauchi, Choji, 3,671,274.
Maekawa, Hiroshi; and Yamauchi, Choji, said Maekawa assor. to Giichi Okuno. Baths for activating the surface of plastics to be chemically metal-plated. 3,671,274, Cl. 106-1.
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Maguire, Eileen; and Kadison, Leon A., to Crown City Plating Co. Pre-etch treatment of acrylonitrile-butadiene-styrene resins for electroless plating. 3,671,289, Cl. 117-47.00a.
Maher, Philip Kenerick; Albers, Edwin Wolf; and McDaniel, Carl Vance, to Grace, W. R., & Co. Preparation of high silica synthetic faujasite. 3,671,191, Cl. 023/113/000.
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Malekzadeh, Ali Asghar, to Master Specialties Company. Lamp failure detection circuit. 3,671,955, Cl. 340-251.000.
Maley, Gerald A.; and Walsh, James L., to International Business Machines Corporation. Ternary latches. 3,671,763, Cl. 307-209.000.
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Marwitz, Heinrich; and Nitzsche, Siegfried, to Wacker-Chemie G.m.b.H. Adhesive coatings comprising polysiboxanes. 3,671,485, Cl. 260-33.4sb.
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Millman, Sidney E., to TRW Inc. Zero recovery time two transistor multivibrator. 3,671,774, Cl. 307-273.000.

Mills, Frank J.; Sadowski, John T.; Squires, Harwood H.; and Uebelhart, James J., to Sinclair-Koppers Company. Device for expansion of expandable polymer beads. 3,671,026, Cl. 263-21.00b.

Milner, Edwin Earl, Jr., to Baker Equipment Engineering Co., Inc. Aerial personnel platform with proximity sensing system. 3,670,849, Cl. 182-19.000.

Milo, August. Bracket for centering capped pipe in manholes. 3,670,384, Cl. 29-200.00j.

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Minsk, Louis Morton; Cohen, Hyman L.; and Frauenglass, Elliott, to Eastman Kodak Company. Polymeric hardeners containing aziridinyl units on the side chain. 3,671,256, Cl. 96-111.000.

Minton, Carl H. Method and apparatus for joining strip ends employing a stitcher assembly. 3,670,398, Cl. 29-505.000.

Miracle Pet Products, Inc.: *See—*
Duke, Bernard; and Levensohn, David Z., 3,671,151.

Mischutin, Vladimir, to Arkansas Company, Inc. Process for flameproofing and resultant product. 3,671,304, Cl. 117-136.000.

Mitchell, John E., to Hughes Aircraft Company. Intraconnector wiring change module. 3,671,918, Cl. 339-18.00r.

Mitchell, Kenneth A. Thermal container assembly. 3,670,918, Cl. 220-20.000.

Mitchell, Richard Frank, to U.S. Philips Corporation. Piezoelectric transducers having variable sensitivity between the boundaries of the piezoelectric crystal. 3,671,784, Cl. 310-9.500.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kito, Katsumi, 3,670,862.
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Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Petrochemical Co., Ltd.: *See—*
Nagase, Sadao, 3,671,617.
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Mitsubishi Seiko Kabushiki Kaisha: *See—*
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Mitsuhishi Denki Kabushiki Kaisha: *See—*
Nakata, Josuke; and Denda, Ryuji, 3,671,821.

Mittelstadt, Robert A. Releasable binding mechanism for skis. 3,671,054, Cl. 280-11.35m.

Mixon, Forest O.: *See—*
Orcutt, John C.; and Mixon, Forest O., 3,671,426.

Mixon, George A., to Mol-Pak Corporation. Frozen meat package. 3,671,272, Cl. 99-194.000.

Miyakawa, Tsuneaki: *See—*
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Miyamura, Tadao: *See—*
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Miyata, Yoshihiko: *See—*
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Miyawaki, Saburo: *See—*
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Miyazaki, Masatoshi: *See—*
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,936.
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Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,941.

Miyazawa, Shintaro: *See—*
Uchida, Naoya; Ohmachi, Yoshiro; Niizeki, Nobukazu; Miyazawa, Shintaro; and Iwasaki, Hiroshi, 3,671,103.

Mizumori, Haruhiko: *See—*
Fukushima, Takaaki; Takizawa, Haruki; Hori, Kikuo; Sato, Yoshito; and Mizumori, Haruhiko, 3,671,623.

Mizutani, Kazunori: *See—*
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Mizutani, Masayoshi: *See—*
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Mizutani, Toshio: *See—*
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Okuno, Yositosi; and Fujimoto, Keimei, 3,671,548.

Mizzoni, Renat Herbert; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. 6-Amino-3-pyridinesulfonamides. 3,671,512, Cl. 260-294.80f.

Mlynar, Lubomir: *See—*
McNamee, Raymond W.; Mlynar, Lubomir; and Schachat, Norman, 3,671,472.

Mobil Oil Corporation: *See—*
Ireland, Henry R.; and Snyder, Paul W., Jr., 3,671,419.
Morrow, Terry R., 3,671,422.
Ruehle, William H.; Hodge, John D., Jr.; and Gray, William C., 3,671,929.

Mocas, Verlin A., to Richardson Company, The. Sealing assembly for storage batteries. 3,671,325, Cl. 136-178.000.

Mochizuki, Yoshifumi: *See—*
Takamune, Hirotoki; and Mochizuki, Yoshifumi, 3,670,492.

Moe, George, to McDonnell Douglas Corporation. Method for producing a water activatable battery. 3,671,318, Cl. 136-6.000.

Moeller & Neumann G.m.b.H.: *See—*
Grandmontagne, Walter, 3,670,864.

Mohir, Yoichi; and Ichimura, Hirohisa, to Nissan Motor Company, Limited. Control system for an automotive automatic power transmission. 3,670,598, Cl. 74-866.

Mol-Pak Corporation: *See—*
Mixon, George A., 3,671,272.

Molina, Orlando G., to North American Rockwell Corporation. Manufacturing a sensitive non-flammable dye penetrant. 3,671,183, Cl. 8-85.000.

Moller, Siegfried: *See—*
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Monier Research & Development Pty. Ltd.: *See—*
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Monsanto Chemical Company: *See—*
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Monsanto Company: *See—*
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Baer, Massimo; and Campbell, Joseph O., 3,671,384.
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Moore, Arthur Ivan Walter; Porter, John Howard; Vearncombe, Richard Frank; and Reiher, Edward Karl. Face milling tool. 3,670,380, Cl. 29-105.000.

Moore, Christopher J.: *See—*
Kelly, John C.; and Moore, Christopher J., 3,670,843.

Moore, Robert E., to Sun Oil Company. Isomerization of cyclic hydrocarbons. 3,671,598, Cl. 260-666.00m.

Moore, Robert E., to Sun Research and Development Co. Oxidative dehydrogenation of multicyclic hydrocarbons. 3,671,599, Cl. 260-666.0py.

Moore, Robert E., to Sun Research and Development Co. Ethylation of adamantane nucleus with BF etherate. 3,671,600, Cl. 260-666.00m.

Moore, Werton Dewitt, to Delta Manufacturing and Engineering Corporation. Vehicle wheel washing apparatus. 3,670,743, Cl. 134-45.000.

Moorman Manufacturing Company: *See—*
Cory, Victor W.; Williams, Edgar E.; and Howard, Robert J., 3,670,702.

Moravsky, Vladislav Eduardovich; Vorona, David Solomonovich; and Shinkarenko, Boris Pavlovich. Apparatus for electric contact spot welding, preferably of small-size parts. 3,671,708, Cl. 219-78.000.

Mori, Chiharu; and Nakajima, Toru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic timing network for camera shutters. 3,670,637, Cl. 95-10.0ct.

Mori, Kazuhiro; Nakamura, Abio; Nakai, Miyoji; and Komisako, Tetuji, to Matsushita Electric Industrial Co., Ltd. Apparatus for producing open-topped hollow articles. 3,670,548, Cl. 72-187.000.

Mori, Toshiyuki: *See—*
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Morin, Louis George: *See—*
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Moring, Peter Lothar Ernst: *See—*
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Morisaki, Nobukazu, to Daido Metal Company Ltd. Top roller for spinning machine. 3,671,089, Cl. 308-20.000.

Morishita, Yasomatsu, to Kabushiki Kaisha Ryobi Seisakusho. Fishing reel. 3,670,985, Cl. 242-84.430.

Morley, Frederick William Walton; and Watts, Wilfred Thomas, to Rolls-Royce Limited. Improvements in or relating to bearings. 3,671,145, Cl. 417-247.000.

Morosawa, Teruo; to Tomy Kogyo co., Ltd. Toy assembly plant for vehicle. 3,670,450, Cl. 46-40.

Morris, David: *See—*
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Morris, Philip, Incorporated: *See—*
Stahr, Henry M., 3,671,410.

Morrison, Walter C., to Harris-Intertype Corporation. Low sound level single facer machine. 3,671,361, Cl. 156-472.000.

Morrow, Terry R., to Mobil Oil Corporation. Water pollution abatement in a petroleum refinery. 3,671,422, Cl. 208-79.000.

Morsdorf, Manfred: *See—*
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Morvue, Inc.: *See—*
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Mosier, Benjamin, to Esquire, Inc. Coated reflective surface and method of making same. 3,671,333, Cl. 148-6.270.

Mosley Electronics Company: *See—*
French, Gerald H., 3,671,973.

Moss, Harold S.: *See—*
Vogel, Ralph A.; and Moss, Harold S., 3,670,799.

Motoki, Masaya: *See—*
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Motorola, Inc.: *See—*
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Frederiksen, Thomas M., 3,671,770.
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Motoyoshi, Minoru: *See—*
Kumai, Ko; Motoyoshi, Minoru; Tanaka, Kiyoshi; and Hagiwara, Yasuhira, 3,671,337.

Mott, George F.; and Ziober, Johnnie J., to Texaco Inc. Marine drilling structure with curved drill conductor. 3,670,507, Cl. 61-46.500.

Moulds, John W.: *See—*
Eckert, Clarence J.; and Moulds, John W., 3,670,709.

Moulin, Louis: *See—*
Aronica, Claude S.; and Moulin, Louis, 3,671,632.

Moyant, Donald A., to Atlas Chemical Industries, Inc. Explosively activated glass valve. 3,670,925, Cl. 222-3.000.

Moyer, Charles E., Jr., to Union Carbide Corporation. Lactam polymerization with allophanoyl halide initiators. 3,671,499, Cl. 260-78.00l.

Mueller, Arthur R., Jr. Stripping machine. 3,670,939, Cl. 225-99.

Mueller, Curt: *See—*
Altermatt, Rudolf; Entschel, Roland; and Mueller, Curt, 3,671,529.

Mukai, Hideo; and Wada, Kimihiro, to Nishimura Seisakusho Co., Ltd. Apparatus for controlling the contact pressure between a contact roller and a winding up roll in winders. 3,670,980, Cl. 242-67.100.

Muller, Erwin; and Bettini, Dino, to Siemens Aktiengesellschaft. Wiper and slip ring assembly. 3,671,791, Cl. 310-219.000.

Muller, Gerhard: *See—*
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Muller, John T., to Lesli Co. Storage type hot water heating system. 3,670,807, Cl. 165-39.000.

Muller, Willy; and Robra, Helmut, to Schloemann Aktiengesellschaft. Ring-forging press. 3,670,557, Cl. 72-421.000.

Mulligan, William R. Magnetic sex-denoting ornament which attracts or repells respective similar ornaments denoting unlike or like sex. 3,670,525, Cl. 63-23.000.

Mundkur, Balaji, to University of Connecticut. Scanning apparatus for biological microdensitometry. 3,671,754, Cl. 250-236.000.

Murakami, Yoshio; Higashinakagawa, Iwao; Yasuda, Nobuaki; and Takeno, Syozo, to Tokyo Shibaura Electric Co., Ltd. method for manufacturing magnetic thin film element. 3,671,312, Cl. 117-212.000.

Murakami, Yukinobu: *See—*
Suzuki, Masaru; and Murakami, Yukinobu, 3,671,691.

Murata, Tomoji; and Tanaka, Atsuyuki, to Minolta Camera Kabushiki Kaisha. Device for insuring registration of the picture frame with the printing station in making prints from a film. 3,671,123, Cl. 355-97.000.

Murdock, John E., Jr. Golf tee setter-positioner. 3,671,037, Cl. 273-33.000.

Murphree, Francis J., to United States of America, Navy. Echo synthesizing apparatus. 3,671,657, Cl. 35-10.400.

Murphy, Donald P., to Hooker Chemical Corporation. Composition and process for stripping paint. 3,671,465, Cl. 252-548.000.

Murphy, John M.: *See—*
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Murray, Edward J.; and Winstrom, Leon O., to Allied Chemical Corporation. Oxidation of cyclohexane. 3,671,588, Cl. 260-586.00b.

Murray, George L., Jr., to North American Rockwell Corporation. Electrostatic spinning head funnel. 3,670,486, Cl. 57-58.890.

Murray, James E.: *See—*
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Muska, Allen V.: *See—*
Laird, William Burton; Williams, Roy L.; and Muska, Allen V., 3,671,022.

Muto, Iwao; Matsumura, Yutaka; Nishifjui, Katsuyuki; and Matsuura, Kenji, to Nippon Kokan Kabushiki Kaisha. Holding and follow-up mechanism for ultrasonic flaw detector. 3,670,562, Cl. 73-71.500.

N L Industries, Inc.: *See—*
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Nabisco, Inc.: *See—*
Griner, Arthur J.; and Blain, William A., 3,671,163.

Nachbur, Hermann; and Maeder, Arthur, to Ciba Limited. Phosphorus acid esters. 3,671,611, Cl. 260-932.000.

Nadherny, Rudolph E. Stop block assembly for railway car roller bearing journal box. 3,671,091, Cl. 308-40.000.

Nagamatsu, Hiroaki, to Toyo Kogyo Co., Ltd. Automatic transmission controls. 3,670,599, Cl. 74-869.000.

Nagano, Hideo. Electric connector. 3,671,924, Cl. 339-95.00d.

Nagao, Tetsuya. Nut and washer feeding device. 3,670,387, Cl. 29-211.00r.

Nagaoka, Koichi: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; Tatsukawa, Keizo; and Koiwa, Yoichi, 3,671,482.

Nagase, Sadao, to Mitsubishi Petrochemical Co., Ltd. Method of drawing thermoplastic synthetic resin film over a polyangular mandrel. 3,671,617, Cl. 264-89.000.

Nagase, Tsuneyuki: *See—*
Oshima, Teruo; Wada, Takeshi; Nagase, Tsuneyuki; Masuko, Fujio; Hirooka, Masaaki; and Taniguchi, Isoji, 3,671,506.

Nagumo, Sin-Ichi: *See—*
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Naismith, Thomas D.: *See—*
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Nakagawa, Fumio: *See—*
Hosokawa, Masuo; Yokoyama, Tohei; and Nakagawa, Fumio, 3,670,886.

Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, to Sumitomo Chemical Company, Ltd. 1:1 Alternating copolymers of carbonyl or thiocarbonyl-containing non-conjugated compounds and conjugated compounds and method of preparation. 3,671,492, Cl. 260-85.5.

Nakai, Miyoji: *See—*
Mori, Kazuhiro; Nakamura, Abio; Nakai, Miyoji; and Komisako, Tetuji, 3,670,548.

Nakajima, Toru: *See—*
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Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Sin-Ichi, to Nisan Motor Company, Limited. Exhaust gas fater-burning system. 3,670,496, Cl. 60-29.00a.

Nakamura, Abio: *See—*
Mori, Kazuhiro; Nakamura, Abio; Nakai, Miyoji; and Komisako, Tetuji, 3,670,548.

Nakamura, Hiroto; Sato, Akira; and Doi, Ken-Ichi, to Matsushita Electronics Corporation. Shadow mask support mechanism for a color television image tube. 3,671,794, Cl. 313-85.00a.

Nakamura, Masanori: *See—*
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Nakamura, Michiei: *See—*
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Nakano, Satoru, to Iwatani & Co., Ltd. Incinerator for waste oil and the like. 3,671,167, Cl. 431-190.000.

Nakao, Suekiti: *See—*
Shikata, Kazuo; Nakao, Suekiti; and Knomi, Katsutoshi, 3,671,466.

Nakata, Fusahide: *See—*
Nakata, Tozaburo, deceased, 3,671,616.

Nakata, Joeuke; and Denda, Ryuji, to Mitsuhishi Denki Kabushiki Kaisha. Semiconductor controlled rectifier including two emitter regions. 3,671,821, Cl. 317-235.000.

Nakata, Toyozo. Flat armature moving coil electric meter. 3,671,862, Cl. 324-150.000.

Nakata, Tozaburo, deceased (by Nakata, Fusahide; heir). Method of manufacturing ball pens. 3,671,616, Cl. 264-68.000.

Nakayama, Kiyoshi; and Hagino, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Preparation of L-isoleucine by fermentation. 3,671,396, Cl. 195-28.00r.

Nanko, Yoshiyuki: *See—*
Irie, Toshiaki; Sato, Katsuo; and Nanko, Yoshiyuki, 3,671,340.

Nardi, Giancarlo, to Compagnie Italiana Westinghouse Freni e Segnali. Fluid flow control device. 3,670,755, Cl. 137-81.500.

Naruse, Uhei: *See—*
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Nash, John J., to Alsco, Inc. Rocket launcher fairing. 3,670,621, Cl. 89-1.800.

National Aeronautics and Space Administration with: *See—*
Low, George M., Acting Administrator of the; National Aeronautics and Space Administration with; Stump, Eugene C., Jr.; and Rochow, Stephen Eugene, 3,671,497.

National Cash Register Company, The: *See—*
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National Gypsum Company: *See—*
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National Nail Pty. Ltd.: *See—*
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National Research Corporation: *See—*
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National Research Development Corporation: *See—*
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National Starch and Chemical Corporation: *See—*
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Nederlandsche Maatschappij voor Werken Buitengaats: *See—*
Van Der Wijden, Franciscus Theodorus Maria, 3,670,830.

Neff, Marten I. Method of adjusting a speaker of an electrical sound producing instrument. 3,670,841, Cl. 181-31.00r.

Nejedly, Peter T.: *See—*
Denoncourt, Gilles J.; and Nejedly, Peter T., 3,671,731.

Nell, David J.; and Lewis, Thomas W., II, to Dresser Industries, Inc. Impregnating porous ceramics with noncolloidal solids. 3,671,302, Cl. 117-123.00a.

Nelson, Vaughn A., to International Harvester Company. Fluid line coupling. 3,670,770, Cl. 137-614.040.

Nemoto, Kuniharu: *See—*
Tateno, Hideo; and Nemoto, Kuniharu, 3,671,339.

Nepovim, Zdenek, to Lindsay Specialty Products Limited. Coaxial cable connector. 3,671,926, Cl. 339-177.00e.

Nesbitt, Robert Dennis, to Compbell Manufacturing Company Limited. Composition comprising unsaturated elastomer, epoxy resin polycarboxylic acid or anhydride, cross-linking catalyst and filler and golf ball made therefrom. 3,671,477, Cl. 260-23.50a.

Neumann, Barbara Susan, to Laporte Industries Limited. Synthetic clay-like minerals of the smaltite type and method of preparation. 3,671,190, Cl. 23-111.000.

Neumann, Wolfram; Muller, Gerhard; Ranz, Erwin; Von Rintelen, Harald; and Schutz, Heinz Dieter, to Agfa-Gevaert Aktiengesellschaft. Photosensitive cyclic polyimides composition. 3,671,252, Cl. 96-90.000.

New Century Products, Inc.: *See—*
Blount, George W., 3,670,441.

Newell, Harold R., to Mesur-Matic Electronics Corporation. Fast rise time pulse generator. 3,671,777, Cl. 307-268.000.

Newell, Harold R., to Mesur-Matic Electronics Corporation. Stepping motor driver. 3,671,826, Cl. 318-138.000.

Newton, Alwin B., to Borg-Warner Corporation. Capacity control for multiple-phase ejector refrigeration systems. 3,670,519, Cl. 62-116.000.

Ngo, Dinh-Tuan, to Bell Telephone Laboratories, Incorporated. Gaseous display device. 3,671,938, Cl. 340-166.00r.

Nichicon Capacitor Ltd.: *See—*
Chiba, Minoru, 3,671,818.

Nickell, Louis G., to Hawaiian Sugar Planters' Association. Ripening of sugarcane by use of certain quaternary ammonium halides. 3,671,219, Cl. 71-121.000.

Nielsen, Hans, to Vald. Henriksen A/S. Apparatus for dyeing skeins of yarn. 3,670,532, Cl. 68-188.000.

Nielsen Hardware Corporation, The: *See—*
Swanson, Gunnar E., 3,670,371.

Niewolak, Ronald A. Bat and sphere game pieces. 3,671,039, Cl. 273-95.00r.

Niizeki, Nobukazu: *See—*
Uchida, Naoya; Ohmachi, Yoshiro; Niizeki, Nobukazu; Miyazawa, Shintaro; and Iwasaki, Hiroshi, 3,671,103.

Ninomiya, Morio: *See—*
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Nippon Air Brake Company, Ltd.: *See—*
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Nippon Cloth Industry Co., Ltd.: *See—*
Takenaka, Sadao; Kishida, Soichiro; and Yamazaki, Yoichi, 3,670,740.

Nippon Electric Co., Ltd.: *See—*
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Nippon Electric Company, Limited: *See—*
Irie, Toshiaki; Sato, Katsuo; and Nanko, Yoshiyuki, 3,671,340.
Kamoshida, Mototaka, 3,670,404.
Tateno, Hideo; and Nemoto, Kuniharu, 3,671,339.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Kita, Hidehiko, 3,671,660.
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Petroleum Refining Company: *See—*
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Nippon Piston Ring Kabushiki Kaisha: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Telegraph and Telephone Public Corporation: *See—*
Uchida, Naoya; Ohmachi, Yoshiro; Niizeki, Nobukazu; Miyazawa, Shintaro; and Iwasaki, Hiroshi, 3,671,103.

Nippon Yushi Kabushiki Kaisha: *See—*
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Nippondenso Kabushiki Kaisha: *See—*
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Nischk, Gunther: *See—*
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Nishifjui, Katsuyuki: *See—*
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Nishigaki, Eiiti: *See—*
Masuda, Hiromasa; Nishigaki, Eiiti; and Maeda, Tomosuke, 3,671,496.

Nishimaki, Ko; and Yoshikawa, Isamu, to Hitachi Shipbuilding and Engineering Co., Ltd. Storage tanks for ultra low temperature liquids. 3,670,917, Cl. 220-10.000.

Nishimura Seisakusho Co., Ltd.: *See—*
Mukai, Hideo; and Wada, Kimihiro, 3,670,980.

Nishimura, Tatsumi; Inoue, Tadahiko; Tsuboi, Takeo; and Kado, Masaru, to Kumial Chemical Industry Co., Ltd. 2-Methoxy-4-methylphenyl-N-methylcarbamate and insecticidal compositions containing the same. 3,671,640, Cl. 424-300.000.

Nishitani, Masaki: *See—*
Funakoshi, Yoshiro; Kajiura, Takehiko; Fujii, Kiyoshi; Kanamaru, Toshihiko; Nishitani, Masaki; and Komeda, Hiromu, 3,671,296.

Nissan Chemical Industries, Ltd.: *See—*
Okazaki, Takayoshi; Tashiro, Kiroku; and Yanagida, Koichiro, 3,671,376.

Nissan Motor Company, Limited: *See—*
Mohir, Yoichi; and Ichimura, Hirohisa, 3,670,598.
Nakajima, Yasuo; Hayashi, Yoshimasa; and Nagumo, Sin-Ichi, 3,670,496.

Nissho-Iwai Company Limited: *See—*
Terada, Manzo, 3,670,969.

Nitta, Yoshio, to Fuji Denki Seizo Kabushiki Kaisha. Power circuit breaker. 3,671,688, Cl. 200-48.00r.

Nitto Electric Industrial Co., Ltd.: *See—*
Yoshihara, Mitsuo; and Mizutani, Kazunori, 3,671,592.

Nitzsche, Siegfried: *See—*
Marwitz, Heinrich; and Nitzsche, Siegfried, 3,671,485.

Nixon, William Charles. Electron microscopy. 3,671,743, Cl. 250-49.50a.

Nonnecke, Ernst A., to McMullen, John J., mesne. Apparatus for cooling and filling liquefied gas transport and storage tanks and improvements in said tanks. 3,670,517, Cl. 62-45.000.

Norgren, C. A., Co.: *See—*
Dewberry, Albert W., 3,670,771.

Norris, Max E., to SCM Corporation. Hydrated emulsifier. 3,671,459, Cl. 252-356.000.

North American Philips Corporation: *See—*
Loughran, Eugene F., Jr., 3,671,900.

North American Rockwell Corporation: *See—*
Bernath, Louis; and Facha, Joseph V., 3,671,394.
Cassen, Quentin C.; Luisi, James A.; and Salman, Naif D., 3,671,948.
Lewis, Joseph C., 3,670,397.
Marion, John P., 3,671,030.
McMenamy, Frederick; De More, Louis A.; and Del Mastro, Ludwig E., 3,671,835.
Molina, Orlando G., 3,671,183.
Murray, George L., Jr., 3,670,486.
Robinson, John F., 3,670,462.
Roper, Daniel W., 3,670,594.

North American Rockwell Corporation, mesne: *See—*
Stamm, Alex F., 3,671,049.

North, Donald F., Jr.; Thomas, Jerry D.; and Worth, Gerald W., to Republic Steel Corporation. Methods of producing leaded steel. 3,671,224, Cl. 75-129.000.

Northern Electric Company Limited: *See—*
Dopheide, Otto Walter, 3,671,759.
Miller, Hugh L., 3,671,366.

Northeved, Allan: *See—*
Knudsen, Erik Stenberg; Iversen, Svend Erik; Lund, Svend Aage; and Northeved, Allan, 3,671,858.

Northrop Corporation: *See—*
Alexander, Newton C.; Stark, Herbert; and Thornton, Richard C., 3,670,585.
Jeffries, Lester A., 3,671,795.
Malm, Robert E., 3,671,871.

Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Oil recovery method using dispersion of clays in aqueous polyacrylamide solutions. 3,670,820, Cl. 166-305.00r.

Norton Company: *See—*
Christian, Warren E., 3,670,463.
Guinan, Joseph C., 3,671,364.

Nosal, Vsevolod Vladimirovich: *See—*
Tselikov, Alexandr Ivanovich; Nosal, Vsevolod Vladimirovich; and Verderevsky, Vadim Anatolievich, 3,670,549.

Nosler, Heinz Gunter; and Schnegelberger, Hararld, to Henkel & Cie G.m.b.H. Synergistic antibacterial and antifungal compositions of DMSO, ethanol or methanol and diester of 2,2,4-trimethylpentanediol-1,3. 3,671,654, Cl. 424-312.000.

Nothum, Andrew; Thomas, Billy W.; and White, Abram L., to Grover Machine Company. Tube bending machine. 3,670,553, Cl. 72-307.000.

Nussbaum, Frank J., to Bischoff Chemical Corporation. Low heat capacity mold for injection molding. 3,671,168, Cl. 425-242.000.

Nyberg, Philip E.: *See—*
Maxwell, Donald L.; and Nyberg, Philip E., 3,671,265.

Nye, William M.; and Jones, Stanley W., to Lanier Electronic Laboratory, Inc., mesne. Privacy of dictate stations using a recorder and selection of recorders by dictate stations while maintaining privacy. 3,671,680, Cl. 179-100.10r.

Nykopp, Erik A., to Oy Tampella AB. Paper machine including a horizontal suction forming cylinder having multiple dewatering areas thereon. 3,671,388, Cl. 162-304.000.

Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Chikata, Masaru, to Tokyo Electric Co., Ltd. Adding, subtracting and totaling calculator. 3,670,957, Cl. 235-60.0tn.

Oba, Shunzo: *See—*
Sasaki, Nobuyuki; Oba, Shunzo; and Yano, Tadashi, 3,671,915.

Oberhart, George S.: *See—*
White, James E.; and Oberhart, George S., 3,671,720.

Ochi, Takashi, to Yayo Plastic Yoki Co., Ltd. Apparatus for forming hollow tube. 3,671,360, Cl. 156-466.000.

O'Connor, John J.: *See—*
Armington, Alton F.; and O'Connor, John J., 3,671,200.

Odone, Giovanni; and Lietar, Christian, to Paillard S.A. Light beam range-finder. 3,671,127, Cl. 356-4.000.

Oei, Hans Young: *See—*
Rausch, Werner; Oei, Hans Young; and Moller, Siegfried, 3,671,332.

Oftedahl, Edwin N.; Huttemann, Thomas J., Jr.; and Goffe, Charles A., to Eastman Kodak Company. Organic thioether or selenoether silver complexes as emulsion sensitizers. 3,671,260, Cl. 96-122.000.

Ogata, Kazuo; and Shimosato, Kazuo, to Teijin Limited. Process for the preparation of naththalene-2, 6-dicarboxylic acid. 3,671,578, Cl. 260-515.00p.

Ogawa, Yasuhiko: *See—*
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,936.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,937.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,941.

Ogawa, Yoshitaka: *See—*
Imai, Atsuo; Harata, Mituo; Ogawa, Yoshitaka; and Hasegawa, Shoji, 3,671,324.

Ogua, Yukihiro, to Nippon Gakki Seizo Kabushiki Kaisha. Valve assembly for cornets, trumpets and like instruments. 3,671,011, Cl. 251-323.000.

O'Hanlon, John F.: *See—*
Haering, Rudolph R.; and O'Hanlon, John F., 3,671,820.

O'Hara, Joan Irenee; and Bradshaw, Christopher Patrick Cadman, to British Petroleum Company Limited, The. Disproportionation catalyst. 3,671,462, Cl. 252-429.00a.

Ohi, Reiichi: *See—*
Yoneyama, Masakazu; Shimamura, Isao; Iwano, Haruhiko; and Ohi, Reiichi, 3,671,247.

Ohmachi, Yoshiro: *See—*
Uchida, Naoya; Ohmachi, Yoshiro; Niizeki, Nobukazu; Miyazawa, Shintaro; and Iwasaki, Hiroshi, 3,671,103.

Ohno, Junji, to Nippon Gakki Seizo Kabushiki Kaisha. Key switch assembly for electronic musical instruments. 3,671,658, Cl. 84-1.010.

Ohno, Masao; and Kijima, Katsumi, to Nippon Kogaku K.K. Ultraviolet ray cutting pink glass for color photography. 3,671,277, Cl. 106-47.00q.

Ohya, Masaki: *See—*
Amagi, Yasuo; Ohya, Masaki; Shiiki, Zenya; and Yusa, Haruhiko, 3,671,610.

Ojala, William K., to Ford Motor Company. Integrated anti-stall and idle-speed adjustment mechanism. 3,670,708, Cl. 123-103.00e.

Okazaki, Takayoshi; Tashiro, Kiroku; and Yanagida, Koichiro, to Nisan Chemical Industries, Ltd. Method for producing flame-retardant plywoods. 3,671,376, Cl. 161-165.000.

Okner, Luke, to Standard Optical Mfg. Company. Biased hinge for spectacle frames. 3,671,111, Cl. 351-113.000.

Okuno, Yositosi: *See—*
Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Okuno, Yositosi; and Fujimoto, Keimei, 3,671,548.

Old Hickory Mfg. Co.: *See—*
Hosey, William F., 3,670,931.

Oldfield, Andrew H.; and Trott, Arthur F., to Senoptics, Inc. Tool positioning means for lens grinder. 3,670,460, Cl. 51-165.710.

Oles, Edward J., Jr.: *See—*
Hamilton, Colin B.; and Oles, Edward J., Jr., 3,671,407.

Olin Corporation: *See—*
McLain, Charles D., 3,671,225.

Olivotto, Vanfrido. Conveyor devices. 3,670,866, Cl. 198-33.0ac.

Olivotto, Vanfrido. Apparatus for collecting glass tubes at the end of a production line. 3,670,904, Cl. 214-1.00p.

Olofsson, Sten: *See—*
Ekdahl, Hans; and Olofsson, Sten, 3,670,842.

Olsen, Leif T., to Boen Bruk. Process for the continuous production of laminated wood of the parquet type. 3,671,353, Cl. 156-302.000.

Olson, Carl R.: *See—*
Hartlein, Robert C.; Kiles, James D.; Larson, Willard D.; and Olson, Carl R., 3,670,649.

Olson, John E.; Bostad, Wayne W.; and Price, Norman L., to Hyster Company. Jet pipe fluid control. 3,670,626, Cl. 91-3.000.

Olson, Peter B. Anti-theft apparatus for a motor vehicle. 3,670,837, Cl. 180-114.000.

Olympus Optical Co., Ltd.: *See—*
Fukami, Masaharu; and Mori, Toshiyuki, 3,670,721.
Kosaka, Shinya, 3,670,722.

O'Mara, Raymond D.; and Griffin, Charles K., to Carrier Corporation. Multicompartment pump structure. 3,671,136, Cl. 415-89.000.

Omark Industries, Inc.: *See—*
Pomeroy, Raymond Visher, 3,670,942.

Ong, Sienling: *See—*
Feess, Erich; and Ong, Sienling, 3,671,181.

Onishi, Masayoshi: *See—*
Adachi, Toshio; Onishi, Masayoshi; and Hayashi, Kiyohide, 3,671,655.

Ono, Isao; Fukabori, Kentaro; and Shimomura, Seiichi, to Toyo Soda Manufacturing Co., Ltd. Process for producing 1,4-diacyloxy-2-butene. 3,671,577, Cl. 260-497.00a.

Onsager, Olav Torgeir, to Halcon International, Inc. Production of adiponitrile. 3,671,567, Cl. 260-465.80d.

Onsager, Olav Torgeir, to Halcon International, Inc. Production of adiponitrile. 3,671,568, Cl. 260-465.80d.

Opalenik, John J. Single spring wire ground clip. 3,671,916, Cl. 339-14.00r.

Opuszenski, Theodore: *See—*
Rovin, Herman; Cobb, James W.; Opuszenski, Theodore; Willard, Richard H.; Rigat, Raymond, Jr.; and Pellicano, Joseph, 3,670,675.

Orcutt, John C.; and Mixon, Forest O., to Research Triangle Institute. Continuous filtering process. 3,671,426, Cl. 210-20.000.

Ormet Corporation: *See—*
Foley, Alan J.; and Gardner, Madison J., 3,671,204.

Ort, Wolfgang, to Eastman Kodak Company. Automatic shutter-speed control. 3,670,635, Cl. 95-10.00c.

Orth, Herbert: *See—*
Hoever, Heinz; and Orth, Herbert, 3,670,644.

Osaka Seiki Works, Ltd.: *See—*
Hori, Takashi, 3,670,461.

Osaka Soda Co., Ltd.: *See—*
Takikawa, Toshio; Satomo, Kouji; and Kodama, Takashi, 3,671,354.

Osburn, Myron E., deceased (by McDowell, Lennie; administratrix). Hold down clamp. 3,670,983, Cl. 242-74.200.

Oshima, Teruo; Wada, Takeshi; Nagase, Tsuneyuki; Masuko, Fujio; Hirooka, Masaaki; and Taniguchi, Isoji, to Sumitomo Chemical Company, Ltd. Sulfur curable copolymers of olefins. 3,671,506, Cl. 260-80.780.

Oshiro, George S. Pulse-phase comparators. 3,671,876, Cl. 328-134.000.

Oster Corporation: *See—*
Fuchs, Richard C.; Sukow, Daniel L.; and Wilke, Dennis P., 3,671,785.

Ott, Wolfgang: *See—*
Schilling, Werner; and Ott, Wolfgang, 3,671,166.

Ottinger, August F.; and Graham, Paul R., to Monsanto Company. Barrier coatings. 3,671,479, Cl. 260-29.6rw.

Otto, Rigobert; Pankow, Gerrit; De Cat, Artur Henri; Puschel, Walter; and Pelz, Willibald, to Agfa-Gevaert Aktiengesellschaft. Color silver halide photographic material containing yellow-colored magenta-forming color coupler. 3,671,257, Cl. 96-100.000.

Outboard Marine Corporation: *See—*
Arff, Uwe F., 3,670,600.
Evinrude, Ralph S., 3,671,071.

Overton, Harold L. Method for determining pressure conditions in a well bore from shale samples. 3,670,829, Cl. 175-50.000.

Owens-Illinois, Inc.: *See—*
Galeano, Sergio F., 3,670,968.
Phillips, Julius, 3,670,922.

Oy Tampella AB: *See—*
Nykopp, Erik A., 3,671,388.

Ozdian, Josef: *See—*
Brazda, Ladislav, deceased; Brazdova, Dagmar; heirs; Prochazka, Miloslav; Kuhn, Vladimir; Ozdian, Josef; and Benes, Rudolf, 3,670,484.

Ozutsumi, Minoru; Kawakami, Kazuo; Ishizaki, Sumio; and Kurosawa, Masatoshi, to Hodogaya Kagaku Kabushiki Kaisha. Process for the dyeing of cellulose diacetate fibers from basic dye baths containing sulfuric ester salts. 3,671,182, Cl. 8-170.000.

Padley & Venables Limited: *See—*
Eyre, Brian; and Bland, John, 3,671,075.

Paillard S.A.: *See—*
Odone, Giovanni; and Lietar, Christian, 3,671,127.

Pale Corporation: *See—*
Gandelman, Morris D., 3,670,373.

Palm, Bert E.: *See—*
Malkin, Irving; Palm, Bert E.; De Ridder, Jon A.; and Germano, Victor V., 3,671,331.

Palmer, John G.: *See—*
Belttary, Harold E.; and Palmer, John G., 3,671,908.

Pammer, Gottfried; and Krob, Erwin, to Vockenhuber, Karl; and and Hauser, Raimund. Strip-handling appliance for processing information. 3,670,990, Cl. 242-192.000.

Pan American Petroleum Corporation: *See—*
Duncan, Floyd R., 3,670,813.

Pan American Petroleum Corporation; and: *See—*
Lindley, Ralph H.; and Bickham, Richard E., 3,671,961.

Pangalila, Frans V. A., to McMullen, John J., Associates, Inc. Resilient roll controlling railway car side bearings. 3,670,661, Cl. 105-199.00a.

Panico, Joseph J., to Health Systems, Inc. Therapeutic instrumentation electrode. 3,670,736, Cl. 128-404.000.

Pankow, Gerrit: *See—*
Otto, Rigobert; Pankow, Gerrit; De Cat, Artur Henri; Puschel, Walter; and Pelz, Willibald, 3,671,257.

Panzer, Norman. Power-assisted inflation assembly for sphygmomanometers. 3,670,720, Cl. 128-2.05g.

Paoletti, Alfred J.: *See—*
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., 3,671,206.
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., 3,671,207.

Papenfuss, Theodor; and Spietschka, Ernst, to Farbewerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of very pure monosulfonic acids of triphenylmethane dyestuffs. 3,671,553, Cl. 260-392.000.

Papp, Josef, to Environetics, Inc. Method and means of converting atomic energy into utilizable kinetic energy. 3,670,494, Cl. 60-23.

Pappas, Michael, to Falcon Safety Products, Inc. Tilt-operated hand held gas powered acoustic device. 3,670,689, Cl. 116-112.000.

Paradysz, Louis F.: *See—*
Mason, Lawrence J.; Simpson, George R.; Paradysz, Louis F.; and Chen, Philip L., 3,670,633.

Paramount Textile Machinery Company: *See—*
Allison, Rudolph L., 3,670,860.

Paraskewik, William, to United States of America, Navy. Automatic sway brace device. 3,670,620, Cl. 89-1.50b.

Parke, Davis & Company: *See—*
Garland, Carl C., 3,670,865.
Islip, Peter John, 3,671,650.

Parker Pen Company, The: *See—*
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Parker, Wilbur: *See—*
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Parker, Wilbur Allen: *See—*
Cooper, Irwin; Parker, Wilbur Allen; and Melnick, Daniel, 3,671,266.

Parker-Hannifin Corporation: *See—*
Brown, Carl A.; and Walter, Frederick L., 3,670,889.

Parkhill, Frank J.: *See—*
Brown, Albert B.; and Parkhill, Frank J., 3,671,305.

Parlato, Philip J., to Alarm Products International, Inc. Vibrating switch. 3,671,690, Cl. 200-61.45r.

Parry, James W. Bridle bit having improved mouthpiece mounting. 3,670,476, Cl. 54-8.000.

Partzsch, Peter, to Dornier A.G. Flight measuring apparatus. 3,670,569, Cl. 73-180.000.

Pasek, James E.; and Woodward, Charles D., to General Motors Corporation. Anti-lock brake modulator. 3,671,085, Cl. 303-21.00f.

Pasen, Randolph A.: *See—*
Elliott, Ernest A.; Kane, John W.; and Pasen, Randolph A., 3,671,002.

Passamante, Anthony P., to United States of America, Navy. Plasma arc flash source. 3,671,796, Cl. 313-204.000.

Patel, Jayantilal M.: *See—*
Wolfson, Alan B.; Patel, Jayantilal M.; and Lawrence, Benjamin, 3,671,262.

Patel, Jayantilal M.; and Wolfson, Anal B., to Procter & Gamble Company, The. Semi-continuous countercurrent decaffeination process. 3,671,263, Cl. 99-70.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Schilling, Werner; and Ott, Wolfgang, 3,671,166.

Patsch, Manfred; and Eilingsfeld, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Anthraquinone dyes. 3,671,536, Cl. 260-307.500.

Patterson, Robert W., to United States Steel Corporation. Apparatus for controlling weight and distribution of a coating. 3,670,695, Cl. 118-63.000.

Paulson, Allen E. Cycle counter for jet engines. 3,670,565, Cl. 73-117.300.

Pauly, Donald E., to Telemation, Inc. High frequency multiple phase signal generator. 3,671,872, Cl. 328-55.000.

Pavlik, Norman M., to Westinghouse Electric Corporation. Non-reactive refractory separating coatings for electrical steels. 3,671,335, Cl. 148-28.000.

Pavlov, Gely Georgievich: *See—*
Shalyt, German Mikhailovich; Sidorchuk, Svetlana Efimovna; and Pavlov, Gely Georgievich, 3,671,856.

Paymal, Jean, to Compagnie de Saint-Gobain. Continuous production of composite panels, particularly for buildings. 3,671,355, Cl. 156-324.000.

Peacock, Peter J.: *See—*
Tufts, Guy O.; Scarnato, Thomas J.; and Peacock, Peter J., 3,670,483.

Pearlman, Robert I.; executors: *See—*
Granirer, Louis W., deceased; Granirer, Samuel; and Pearlman, Robert I.; executors, 3,671,627.

Pearo, Joseph J., to Diapulse Corporation. Thermapeutic apparatus ultra-short wave. 3,670,737, Cl. 128-422.000.

Pechiney-Progil: *See—*
Aronica, Claude S.; and Moulin, Louis, 3,671,632.

Peck, Donald E.: *See—*
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Peck, Reese A.: *See—*
Wilson, Raymond F.; Peck, Reese A.; and Guptill, Frank E., Jr., 3,671,420.

Peck, Reese A.; and Wilson, Raymond F., to Texaco Inc. Process for increasing the yield of lower boiling hydrocarbons. 3,671,421, Cl. 208-68.000.

Peddinghaus, Carl Ullrich. Bending machine. 3,670,541, Cl. 72-8.000.

Pedersen, George H., to General Motors Corporation. Jet nozzle. 3,670,964, Cl. 239-265.019.

Pekrul, Ewald, to Westinghouse Bremsen-und Apparatebau G.m.b.H. Variable load relay valve with Belleville spring type lock for exhaust valve seat positioned according to load. 3,671,087, Cl. 303-60.000.

Pellicano, Joseph: *See—*
Rovin, Herman; Cobb, James W.; Opuszenski, Theodore; Willard, Richard H.; Rigat, Raymond, Jr.; and Pellicano, Joseph, 3,670,675.

Peloschek, Hans Peter; and Perduijn, David Jacob, to U.S. Philips Corporation. Method of manufacturing a sintered oxidic ferromagnetic body. 3,671,436, Cl. 252-62.580.

Peluso, Raymond F.; and David, Richard F., to Martin-Marietta Corporation. High density packaging of electronic components in three-dimensional modules. 3,671,812, Cl. 317-118.000.

Pelz, Willibald: *See—*
Otto, Rigobert; Pankow, Gerrit; De Cat, Artur Henri; Puschel, Walter; and Pelz, Willibald, 3,671,257.

Penczek, Edward S., to Stromberg-Carlson Corporation. Electrical contact structure for a switch reed comprising gold and palladium layers. 3,671,702, Cl. 200-166.00c.

Penfold, Addison E., Jr., to Triple 'A' Accessories. Engine exhaust header construction. 3,670,844, Cl. 181-40.000.

Penning, Hans: *See—*
Wenzel, Werner; and Penning, Hans, 3,671,402.

Pennwalt Corporation: *See—*
D'Angelo, Antonio Joseph, 3,671,651.

Pennypacker, Frank C., to Lindsay Specialty Products Limited. High frequency signal routing devices for use in CATV systems. 3,671,885, Cl. 333-8.000.

Pento, Frank Louis, to Bell Telephone Laboratories, Incorporated. Digitally operated signal regenerator and timing circuit. 3,671,875, Cl. 328-129.

Pepe, Enrico J.; and Marsden, James G., to Union Carbide Corporation. Urea silicon product and the preparation thereof. 3,671,562, Cl. 260-448.80r.

Pera, John D.: *See—*
Buckman, John D.; Pera, John D.; and Raths, Fred W., 3,671,641.

Perduijn, David Jacob: *See—*
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Perilhou, Jean Robert; and Auphan, Michel Joseph, to U.S. Philips Corporation. Device for measuring the flow of blood. 3,670,715, Cl. 128-2.05v.

Peripheral Systems Corporation: *See—*
Milligan, Lee J., 3,671,807.

Perkins-Elmer Corporation, The: *See—*
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Perrat, Jean-Marie: *See—*
Prayer, Gerard; and Perrat, Jean-Marie, 3,670,919.

Peters, Edwin F.; and Juveland, Omar O., to Standard Oil Company (Indiana). Preparation of supported transition metal oxide polymerization catalysts. 3,671,432, Cl. 252-46.

Peters, Rudolph W. Pin cutter. 3,670,411, Cl. 30-180.000.

Petersen, Ross K. Cleaner. 3,670,480, Cl. 55-430.000.

Petersen, Siegfried: *See—*
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Petro-Tex Chemical Corporation: *See—*
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Petroleum Information Corporation: *See—*
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Pfaff Industriemashinen GmbH: *See—*
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Pfeiffer, Francis R.; and Weisbach, Jerry A., to Smith Kline & French Laboratories, Inc. 1,2-diacylglycerol 3-2,2,2-trichloroethyl carbonates. 3,671,557, Cl. 260-408.000.

Pfeiffer, Francis R.; and Weisbach, Jerry A., to Smith Kline & French Laboratories, Inc. Glycerol 3-(2,2,2-trichloroethyl) carbonate. 3,671,563, Cl. 260-463.000.

Pfizer, Inc.: *See—*
Abuel-Haj, Marwan J., 3,671,521.

Phillips, Julius, to Owens-Illinois, Inc. Nestable cup. 3,670,922, Cl. 220-97.00c.

Phillips Petroleum Company: *See—*
Fahey, Darryl R., 3,671,560.
Smith, Ernest L., 3,670,951.

Phillips, William A., to Granco Equipment, Inc. Incinerator with extended heat exchange surface. 3,670,668, Cl. 110-8.

Photosystems Corporation: *See—*
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Piepho, Donald A.: *See—*
Asal, Jerrold R.; and Piepho, Donald A., 3,670,825.

Pierce, Andrew Earl, to Borden, Inc. Water and heat resistant adhesive. 3,671,382, Cl. 161-214.000.

Pierce, Edwin A.; Knob, Richard W.; Roth, Samuel O.; and McKinney, Emery L., to Inland Systems, Inc. Wall covering applicator. 3,671,362, Cl. 156-552.000.

Pierce, Norwin Caley: *See—*
Evans, Evan Franklin; and Pierce, Norwin Caley, 3,671,379.

Pierno, Michael C.; and Figas, Vincent J. Small engine service center. 3,670,762, Cl. 137-342.000.

Pilato, Maurice J. M., to Collet, Marc Norbert. Electronic device for plane graphical representation with perspective effect. 3,671,730, Cl. 235-189.000.

Piller, Bernhard: *See—*
Froehlich, Alfred; Piller, Bernhard; and Stauner, Thomas, 3,671,253.

Pilot Research Corporation: *See—*
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Fregeolle, Oscar, 3,670,529.

Pincus, Alexis G.: *See—*
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Piolot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
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Pioneer Electronic Corporation: *See—*
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Pistor, Hans Joachim: *See—*
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Pitetti, Raymond Charles; and Worobey, Walter, to Bell Telephone Laboratories, Incorporated. Thin film capacitor including an aluminum underlay. 3,671,823, Cl. 317-258.000.

Plate, Dr., GmbH: *See—*
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Pless, Uwe, to U.S. Philips Corporation. Etchant for selectively etching patterns in thin silicon dioxide layers and method of preparing such an etchant. 3,671,437, Cl. 252-79.300.

Plowman, James S., to United Aircraft Corporation. Composite blade construction. 3,671,139, Cl. 416-61.000.

Pohl, Harold J.; and Kratky, Raymond H., to Kellwood Company. Tent with permanently attached fly. 3,670,747, Cl. 135-1.00r.

Polaroid Corporation: *See—*
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Pollak, Henry M.; and Pollak, Robert S. Arbor saw. 3,670,788, Cl. 143-36.00r.

Pollak, Robert S.: *See—*
Pollak, Henry M.; and Pollak, Robert S., 3,670,788.

Pomeroy, Raymond Visher, to Omark Industries, Inc. Automatic feeding of fasteners. 3,670,942, Cl. 227-10.000.

Pomper, Anthony W.; and Kovacs, Lloyd, to Midland-Ross Corporation. Extruder and screw therefor with undercut melt conducting channel. 3,671,021, Cl. 259-109.000.

Pope, Raymond C.: *See—*
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Portain Poclain Materiel: *See—*
Cheze, Bernard J., 3,670,465.

Porter, Allan William Henry, to Adolph Saurer Ltd. Braking shuttles in loom shuttle box. 3,670,775, Cl. 139-185.000.

Porter, Andrew W.; and Sanders, John L., to Canadian Patents and Development Limited. Veneer machine roller pressure bar assembly. 3,670,790, Cl. 144-213.000.

Porter, John Howard: *See—*
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Porter, Warren K., Jr., to Gulf Research & Development Company. Method of making stable, low viscosity wax-in-water emulsions. 3,671,457, Cl. 252-311.500.

Post, Harold N.: *See—*
Cole, James K.; Coonce, Carroll A.; and Post, Harold N., 3,670,648.

Potter, Jack D.; and Reams, Bernard W., to Warren Petroleum Corporation. Rising stem valve remote position indicator. 3,671,692, Cl. 200-61.860.

Poulsen, Stephen D., Jr., to Airco, Inc. Break seal. 3,670,914, Cl. 215-32.000.

Power Technology Corporation: *See—*
Hill, Charles C., 3,670,926.

PPG Industries, Inc.: *See—*
Cuevas, Ephraim A., 3,671,187.
Littell, Harry E., Jr., 3,671,370.
Miller, Richard G.; and Cavitt, Roy L., 3,671,291.
Tarnopol, Milton S.; and Snyder, Thomas P., 3,671,311.

Prangley, Dale L.: *See—*
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Prayer, Gerard; and Perrat, Jean-Marie, to Cebal GP. Easy opening lid for cans. 3,670,919, Cl. 220-54.000.

Prenco Manufacturing Co.: *See—*
Herman, James A., 3,670,666.

Prescott, Roger, to Great Lakes Carbon Corporation. Composites and intermediates therefor. 3,671,285, Cl. 117-75.000.

Price, Herbert K., to Reynolds Metals Company. Method of making a composite board product from scrap materials. 3,671,615, Cl. 264-39.000.

Price, Norman L.: *See—*
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Prill, Erhard J., to Monsanto Company. Method of inhibiting growth of unwanted vegetation. 3,671,218, Cl. 71-115.000.

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Prochazka, Miloslav: *See—*
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Pronovost, Charles F.; and Prangley, Dale L. Automobile accessory holder. 3,670,936, Cl. 224-42.420.

Proudian, Andrew Peter; and Balser, Martin, to Xonics Inc. Aircraft vortex detection system. 3,671,927, Cl. 340-1.00r.

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Rabenhorst, David W.; and Darnell, Kenneth E., to United States of America, Navy. Rapid deployment corner reflector. 3,671,965, Cl. 343-18.00c.

Radke, Lawrence F.; and Hobbs, Peter V., to Battelle Development Corporation. Automatic cloud condensation nuclei counter. 3,671,128, Cl. 356-37.000.

Radosavljevic, Svetislav M.; and Maniotes, John. Slide rule. 3,670,958, Cl. 235-70.00a.

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Raffensperger, Stanley P.: *See—*
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Rahenkamp, Robert A.; and Stewart, William R., Jr., to International Business Machines Corporation. Sentence oriented dictation system featuring random accessing of dictation segments. 3,671,683, Cl. 179-100.2md.
Raiguel, William M., Jr., to Creswell, Samuel J., Iron Works, The. Prefabricated metal stairway. 3,670,848, Cl. 182-115.000.
Rakes, Rodney G., to Sperry Rand Corporation. Bi-level electronic switch in a brushless motor. 3,671,833, Cl. 318-254.000.
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Rausch, Werner; Oei, Hans Young; and Moller, Siegfried, to Hooker Chemical Corporation. Metal treating process. 3,671,332, Cl. 148-6.17.
Ravve, Abraham; and Khamis, Joseph T., to Continental Can Company, Inc. Process for preparing carboxyl acid containing olefin polymer surface coatings using high energy ionizing radiation. 3,671,295, Cl. 117-93.310.
Ray, James D.; Steingiser, Samuel; and Cass, Robert A., to United States of America, Air Force. Treatment of carbon or graphite fibers and yarns for use in fiber reinforced composites. 3,671,411, Cl. 204-130.000.
Raznitsyn, Mikhail Alexeevich. Method of electroerosion machining of parts and device for effecting same. 3,671,705, Cl. 219-69.00c.
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Redman, John Wilson: *See—*
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Reed, Geoffrey Ronald, to British Iron and Steel Research Association, The. Packaging coils. 3,670,877, Cl. 206-59.00f.
Reeve, Paul H., to Auto Research Corporation. Pump priming and flow control valve for pumping two different fluids. 3,671,148, Cl. 417-295.000.
Regan, Bernard M., to Baxter Laboratories, Inc. Method for inducing anethesia. 3,671,645, Cl. 424-351.000.
Regie Nationale des Usines Renault: *See—*
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Reicheneder, Franz; and Kropp, Rudolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Pyridazonium compounds. 3,671,525, Cl. 260-250.00a.
Reid, Edward A., Jr., to Columbia Gas System Service Corporation. Deep fat fryer. 3,671,174, Cl. 431-326.000.
Reiffel, Leonard. Teaching system employing a television receiver. 3,671,668, Cl. 178-6.800.
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Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Planar receptacle. 3,670,409, Cl. 29-625.000.
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Reiterman, Donald R., to American Hospital Supply Corporation. Medical infusion set. 3,670,727, Cl. 128-214.00r.
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Republic Industries Inc.: *See—*
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Rienzi, Dominick. Punch stripper. 3,670,613, Cl. 83-139.000.
Rieth, Lawrence E., to Stewart-Warner corporation. Lamp socket. 3,671,923, Cl. 339-93.00l.
Rietz Manufacturing Co.: *See—*
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Ritzow, Gerald R., to Cutler-Hammer, Inc. Time delay control system for directional relays with electrical interlock. 3,671,816, Cl. 317-136.000.
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Roberts, Edward S., to Treadwell Corporation. Sulfur dioxide conversion. 3,671,194, Cl. 23-176.000.
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Robinson, Ralph R. Vacuum curette. 3,670,732, Cl. 128-297.000.
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Rose, Anthony T. Surgical instrument. 3,670,415, Cl. 30-349.000.
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Ross, Ray C.; and Crum, Robert L., to Allis-Chalmers Manufacturing Company. Hinged closure for vehicle bottom guard structure. 3,670,835, Cl. 180-691.000.
Rossi, Harry J., to Continental Can Company, Inc. Tubular carton with axially closed ends. 3,670,950, Cl. 229-40.000.
Roszinski, Hilmar; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Process for the manufacture of ammonium dialkyldithiophosphates. 3,671,612, Cl. 260-987.000.
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Rotter, Johann. Optical device having two parts producing fixed intermedial image. 3,671,098, Cl. 350-8.
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Rowley, Ernest W. Boat having pivotally mounted steering mechanism. 3,670,687, Cl. 115-18.000.
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Ruehle, William H.; Hodge, John D., Jr.; and Gray, William C., to Mobil Oil Corporation. Conversion of seismic depth sections to seismic time sections. 3,671,929, Cl. 340-15.500.
Ruland, Ross R.: *See—*
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Rutherford, Kenneth R.; Hooker, Marvin L., Jr.; and Alibrandi, Joseph P., to Collins Radio Company. Pulse processing circuit having improved range resolution. 3,671,866, Cl. 325-322.000.
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Ryan, John T.; and Ingalls, Jeffrey D., to GTE Sylvania Incorporated. Ground fault detector including magnetic amplifier bridge means. 3,671,809, Cl. 317-18.00d.
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Sabatelli, Philip M.; Loder, Edwin R.; Brungs, Charles A.; and Sarge, Carmen R., to Chemed Corporation. Process of cleaning. 3,671,440, Cl. 252-103.000.
Sachs, Roger Norman, to National Nail Pty. Ltd. Fence dropper. 3,671,017, Cl. 256-47.000.
Sacks, Robert Charles: *See—*
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Sadogierski, Walter C., to Guardian Electric Manufacturing Company. Push button switch assembly with improved discrete and identical geometric shaped interlocking slider means. 3,671,686, Cl. 200-5.0ea.
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Samcoe Holding Corporation: *See—*

Cohn, Eugene; Cecere, Andrew P.; and Frezza, Robert, 3,670,375.

Samour, Carlos M.; and Falxa, Martin L., to Kendall Company, The. Betaine copolymers with hydroxyalkylacrylates and hydroxyalkylmethacrylates. 3,671,502, Cl. 260-79.3mu.

Sampson Corporation, The: *See—*
White, Norman S., 3,670,730.

Sanchez, Moises G.: *See—*
Triggiani, Leonard V.; and Sanchez, Moises G., 3,671,453.

Sanders, Bobby J., to Bendix Corporation, The. Superregenerative microwave receiver. 3,671,868, Cl. 325-445.000.

Sanders, James W., to Brunswick Corporation. Golf game computer including means for approximating the effects of backspin on range. 3,671,724, Cl. 235-151.000.

Sanders, John L.: *See—*
Porter, Andrew W.; and Sanders, John L., 3,670,790.

Sanderson, Charles L.; and Sauer, Earl S., to Continental Oil Company. Process for the purification of alkylate. 3,671,601, Cl. 260-671.00b.

Sandler, Yehuda L., to Westinghouse Electric Corporation. Hydrophobic layers for gas diffusion electrodes. 3,671,323, Cl. 136-86.00d.

Sandoz A.G.: *See—*
Bormann, Gerhard; Gmunder, John; and Wilkens, Heinrich, 3,671,541.

Sandoz Ltd.: *See—*
Altermatt, Rudolf; Entschel, Roland; and Mueller, Curt, 3,671,529.
Forter, Willy; Henrard, Armand; Kehrer, Fritz; Keller, Urs Martin; and Waaem, Hans, 3,671,514.
Troxler, Franz; and Seemann, Fritz, 3,671,587.

Sandoz Ltd.; a/k/a: *See—*
Bormann, Gerhard; Gmunder, John; and Wilkens, Heinrich, 3,671,541.

Sandoz-Wander, Inc.: *See—*
Griot, Rudolf G.; and Buzzolini, Mario G., 3,671,583.
Houlihan, William J.; and Manning, Robert E., 3,671,533.
Houlihan, William J.; and Manning, Robert E., 3,671,534.
Manning, Robert E., 3,671,526.

Sangster, Frederik Leonard Johan, to U.S. Philips Corporation. Charge amplifier for a bucket brigade capacitor store. 3,671,771, Cl. 307-293.000.

Sarge, Carmen R.: *See—*
Sabatelli, Philip M.; Loder, Edwin R.; Brungs, Charles A.; and Sarge, Carmen R., 3,671,440.

Sargent, Jerald P., to Minnesota Mining and Manufacturing Company. Electrostatically-charged fluidized bed apparatus. 3,670,699, Cl. 118-629.000.

Sasaki, Nobuyuki; Oba, Shunzo; and Yano, Tadashi, to Matsushita Electric Industrial Co., Ltd. Sliding type variable resistor. 3,671,915, Cl. 338-183.000.

Saskai, Toshio: *See—*
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Saskai, Toshio, 3,671,279.

Sassano, John H., to Weather Control Shutters, Inc. Folding closure construction. 3,670,797, Cl. 160-118.000.

Sasse, Klaus; Scheinpflug, Hans; and Grews, Ferdinand. 1-Phenyl-4,4-di-substituted-thiosemicarbazide fungicidal and acaricidal agents. 3,671,639, Cl. 424-323.

Sassmanshausen, Knut Otto. Lamp. 3,671,732, Cl. 240-8.3.

Sato, Akira: *See—*
Nakamura, Hiroto; Sato, Akira; and Doi, Ken-Ichi, 3,671,794.

Sato, Ituzo: *See—*
Tajiri, Hisao; Sato, Ituzo; Takemura, Yasuo; and Tsuji, Shigeo, 3,671,664.

Sato, Katsuo: *See—*
Irie, Toshiaki; Sato, Katsuo; and Nanko, Yoshiyuki, 3,671,340.

Sato, Masaki: *See—*
Inoue, Takehisa; Sato, Masaki; and Hashiguchi, Takeshi, 3,671,602.

Sato, Tadashi: *See—*
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,936.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,937.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, 3,671,941.

Sato, Yoshito: *See—*
Fukushima, Takaaki; Takizawa, Haruki; Hori, Kikuo; Sato, Yoshito; and Mizumori, Haruhiko, 3,671,623.

Satomo, Kouji: *See—*
Takikawa, Toshio; Satomo, Kouji; and Kodama, Takashi, 3,671,354.

Saucier, Randolph J., to Shell Oil Company. Method of gravel-packing production well borehole. 3,670,817, Cl. 166-252.000.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Preparation of amino-ethyl isoxazolyl substituted tetrahydropyrans and intermediates therefor. 3,671,539, Cl. 260-307.00h.

Sauer, Earl S.: *See—*
Sanderson, Charles L.; and Sauer, Earl S., 3,671,601.

Sautter, Gerhard: *See—*
Meyer, Jurgen; and Sautter, Gerhard, 3,671,839.
Meyer, Jurgen; and Sautter, Gerhard, 3,671,840.

Savit, Carl H., to Western Geophysical Company of America. Extended area acoustic impulse generator. 3,670,839, Cl. 181-.50h.

Sawada, Eiji, to Denki Onkyo Company, Limited. Deflection yokes for cathode ray tubes. 3,671,894, Cl. 335-210.000.

Sawada, Hiroyuki; Miyawaki, Saburo; and Ishikawa, Hajime. Apparatus for continuously making a hose. 3,671,359, Cl. 156-436.000.

Sawada, Toshio, to Aisin Seiki Kabushiki Kaisha. Control means for buttonhole zigzag sewing machine. 3,670,676, Cl. 112-158.00b.

Sawazu, Toshihiko: *See—*
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Chikata, Masaru, 3,670,957.

Sawyer, Joseph A.: *See—*
Tibbetts, George C.; and Sawyer, Joseph A., 3,671,684.

Saxton, Arthur L., to Esso Research and Engineering Company. Two stage fluid coking. 3,671,424, Cl. 208-127.000.

Scaramucci, Domer. Valve assembly with drop-type stem. 3,671,010, Cl. 251-151.000.

Scarlett, Robert M., to International Telephone and Telegraph Corporation. High frequency transistor structure having an impedance transforming network incorporated on the semiconductor chip. 3,671,793, Cl. 317-235.00r.

Scarnato, Thomas J.: *See—*
Tufts, Guy O.; Scarnato, Thomas J.; and Peacock, Peter J., 3,670,483.

Schachat, Norman: *See—*
McNamee, Raymond W.; Mlynar, Lubomir; and Schachat, Norman, 3,671,472.

Schaefer, Peter C.: *See—*
Lawrence, Howard; and Schaefer, Peter C., 3,670,403.

Schatz, Friedrich: *See—*
Ziemek, Gerhard; and Schatz, Friedrich, 3,670,772.

Scheinpflug, Hans: *See—*
Sasse, Klaus; Scheinpflug, Hans; and Grews, Ferdinand, 3,671,639.

Schering AG: *See—*
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,671,520.
Buschhoff, Max, 3,671,561.

Schering Aktiengesellschaft: *See—*
Wiechert, Rudolf, 3,671,554.

Schiefer Manufacturing Company: *See—*
Schiefer, Paul J.; and McFarland, James D., Jr., 3,670,859.

Schiefer, Paul J.; and McFarland, James D., Jr., to Schiefer Manufacturing Company. Clutch and clutch cover. 3,670,859, Cl. 192-112.000.

Schilling, Werner; and Ott, Wolfgang, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Flashbulb with percussion ignition and pre-formed ignition tube. 3,671,166, Cl. 431-93.000.

Schimpf, Luther G.: *See—*
Henry, James L.; and Schimpf, Luther G., 3,671,676.

Schlecht, Helmut; and Aurnhammer, Robert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the continuous production of [3-chloropropionic acid. 3,671,584, Cl. 260-539.00r.

Schloemann Aktiengesellschaft: *See—*
Kaspers, Josef, 3,670,552.
Muller, Willy; and Robra, Helmut, 3,670,557.

Schmidt, Joseph: *See—*
Decker, Martin; Schmidt, Joseph; Hoffmann, Herwig; and Pistor, Hans Joachim, 3,671,566.

Schmidt, Michael R.: *See—*
Matthews, Ralph W.; Bernhoft, Gerald W.; and Schmidt, Michael R., 3,670,823.

Schnall, Gunther: *See—*
Engel, Herbert; Hartwig, Karl; and Schnall, Gunther, 3,671,119.

Schnegelberger, Hararld: *See—*
Nodler, Heinz Gunter; and Schnegelberger, Hararld, 3,671,654.

Schneider, Eckart: *See—*
Heitmann, Knut; and Schneider, Eckart, 3,671,750.

Schneider, Paul Adrian, to A/S Ardal og Sunndal Verk. Crushing machine for coarse crushing of brittle materials. 3,670,971, Cl. 241-69.000.

Schoenberg, Jules Ernest: *See—*
Schrage, Albert; and Schoenberg, Jules Ernest, 3,671,505.

Schoerner, Roger J., to Southwire Company. Method of fabricating aluminum alloy rod. 3,670,401, Cl. 29-527.7.

Schoffmann, Rudolf, to Vereinigt Osterreichesche Eisen-und Stahlwerke Aktiengesellschaft. Rolls and rollers particularly for continuous casting plants, bar deformation plants and for hot rolling mills operated at low rolling speeds. 3,670,381, Cl. 29-124.000.

Schofield, J. Allan; and Delano, Roger A., to Union Carbide Corporation. Azeotropic composition. 3,671,442, Cl. 252-171.000.

Schofield, J. Allan; and Delano, Roger A., to Union Carbide Corporation. Azeotropic composition. 3,671,443, Cl. 252-171.000.

Schofield, J. Allan; and Delano, Roger A., to Union Carbide Corporation. Azeotropic composition. 3,671,444, Cl. 252-171.000.

Schofield, J. Allan; and Delano, Roger A., to Union Carbide Corporation. Azeotropic composition. 3,671,445, Cl. 252-171.000.

Schofield, J. Allan; and Delano, Roger A., to Union Carbide Corporation. Azeotropic composition. 3,671,446, Cl. 252-171.000.

Scholl, Robert F., to Monsanto Company. Web marking device. 3,670,615, Cl. 83-367.000.

Schrage, Albert; and Schoenberg, Jules Ernest, to Dart Industries Inc. Suspension polymerization method for preparing elastomeric hydrocarbon interpolymers. 3,671,505, Cl. 260-80.780.

Schreiber, David D.: *See—*
Gramza, Eugene P.; and Schreiber, David D., 3,671,240.

Schroder, Eberhard: *See—*
Albrecht, Rudolf; Kessler, Hans-Joachim; and Schroder, Eberhard, 3,671,520.

Schubart, Rudiger; Roos, Ernst; and Abele, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Vulvanization retarders. 3,671,503, Cl. 260-79.50b.

Schueren, William B.: *See—*
Gebhard, Harold C.; and Schueren, William B., 3,670,454.

Schuette, Gunter G., to Motorola, Inc. Ignition system. 3,671,805, Cl. 315-209.000.

Schulte, Louis T., to TRW Inc. Current pulse generator. 3,670,578, Cl. 74-5.600.

Schultz, Arthur H. Thermodynamic power system and methods. 3,670,500, Cl. 60-57.00r.

Schultz, Forrest O. E., to Midland-Ross Corporation. Compressor governor. 3,670,756, Cl. 137-102.000.

Schultz, James F., to Aquatronics. Automatically energizable sonobuoy. 3,671,928, Cl. 340-2.000.

Schultz, Odetta B. Side mounted rear view automotive mirror assembly and mounting bracket therefor. 3,671,005, Cl. 248-480.000.

Schultz, William D.: *See—*
Bushman, Bliss M.; and Schultz, William D., 3,671,100.

Schulz, Johann G. D.: *See—*
Joyce, Thomas P., Jr.; Lagally, Ralph W.; and Schulz, Johann G. D., 3,671,579.

Schumacher, Stephen J.: *See—*
Iantorno, James F.; Wagner, John; and Schumacher, Stephen J., 3,671,920.

Schurch, Eugen, to Von Roll AG. Transportation installation. 3,670,659, Cl. 104-101.000.

Schutz, Heinz Dieter: *See—*
Neumann, Wolfram; Muller, Gerhard; Ranz, Erwin; Von Rintelen, Harald; and Schutz, Heinz Dieter, 3,671,252.

Schwager, Irving; Leak, Robert J.; and Cole, Edward L., to Texaco Inc. Dehydrogenation of alcohols to ketones. 3,671,591, Cl. 260-596.000.

Schwartz, John L.: *See—*
Spanel, Abram N.; and Schwartz, John L., 3,670,672.

Schwartz, John L., assor. to said Spanel, Abram N.: *See—*
Spanel, Abram N.; and Schwartz, John L., 3,670,672.

Schwarz, Hans G., to United States of America, Navy, mesne. Noise suppression arrangement for communication receivers. 3,671,867, Cl. 325-410.000.

Schwellenbach, Donald D. Apparatus for making concrete blocks. 3,671,165, Cl. 425-445.000.

Sciacero, Rinaldo: *See—*
Dominick, George G.; Sciacero, Rinaldo; Wimpffen, George L.; and Kardos, Theodore L., 3,670,955.

SCM Corporation: *See—*
Bledsoe, James O., Jr., 3,671,551.
Gilchrist, Allan E., 3,671,464.
Norris, Max E., 3,671,459.

Scott, Daniel G., to Westinghouse Air Brake Company. Empty-load changeover apparatus. 3,671,086, Cl. 303-23.

Scott, William Bryson: *See—*
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., 3,671,206.
Lynch, John F.; Scott, William Bryson; and Paoletti, Alfred J., 3,671,207.

Scott, William P.; and Rogers, Lynn C., to Continental Oil Company. Grease compositions containing polymers. 3,671,012, Cl. 252-33.400.

Scragg, Ernest, & Sons Limited: *See—*
Kneafsey, Adrian W., 3,670,490.

Seaberg, Lewis A. Composite valve stem. 3,670,688, Cl. 116-34.000.

Sealectro Corporation: *See—*
Iantorno, James F.; Wagner, John; and Schumacher, Stephen J., 3,671,920.

Searcy, Ronald: *See—*
Cekoric, Thomas, Jr.; Evans, George; and Searcy, Ronald, 3,671,399.

Searle, G. D., & Co.: *See—*
Krimmel, Carl Peter, 3,671,527.

Seay, Philip B., to Inta-Roto, Inc. Web handling apparatus and spindle chuck therefor. 3,670,979, Cl. 242-64.

Sebek, Oldrich K.; and Meyer, Curtis E., to Upjohn Company, The. Tirandamycin and process for making same. 3,671,628, Cl. 424-120.000.

Sedor, Edward A.; and Slagel, Robert C., to Ashland Oil, Inc. Polymers formed from the reaction of a mixture of a polyepoxide and a polyester and an unsymmetrical disubstituted hydrazine. 3,671,473, Cl. 260-18.0pf.

Seebold, Walter Charles: *See—*
Carroll, Francis Emery; and Seebold, Walter Charles, 3,671,630.

Seegmiller, David W.: *See—*
King, Lowell A.; and Seegmiller, David W., 3,671,322.

Seemann, Fritz: *See—*
Troxler, Franz; and Seemann, Fritz, 3,671,587.

Segawa, Takashi. Inter housing multi-speed transmission hub provided with a coaster brake. 3,670,856, Cl. 192-6.00a.

Seid, Volker, to Cillichemie Ernst Vogelmann. Control arrangement for a swimming pool filter. 3,670,893, Cl. 210-138.000.

Seidel, Manfred: *See—*
Diery, Helmut; Kiefer, Bernhard; Rittner, Siegbert; and Seidel, Manfred, 3,671,308.

Seifert, Friedrich; and Bittscheidt, Josef, to Chemische Werke Huels, A.G. Conductive thermoplastic composition useful for high tension cables. 3,671,663, Cl. 174-120.0sc.

Seil, Lewis W., to Cory Corporation. Humidifier. 3,671,023, Cl. 261-26.000.

Seiler, Martin W. Apparatus for shipment and storage of magnetic memory discs and the like. 3,670,878, Cl. 206-62.00p.

Seino, Kuniki, to Minolta Camera Kabushiki Kaisha. Method and apparatus for masking images by polarization light regulator. 3,671,104, Cl. 350-157.000.

Seipp, William H., to Gulf & Western Industries, Inc. High accuracy solid state timer. 3,671,817, Cl. 317-141.00s.

Seitz, Martin A.: *See—*
Jaskolski, Stanley V.; and Seitz, Martin A., 3,671,193.

Sel-Rex Corporation: *See—*
Martini, Albert Michael, 3,671,408.

Semsel, Andrew Milo: *See—*
Rauhut, Michael McKay; and Semsel, Andrew Milo, 3,671,450.

Senft, Hervert; and Rinnergschwentner, Hans, to Daimler-Benz Aktiengesellschaft. Steering installation, especially for commercial-type vehicles. 3,670,592, Cl. 74-493.000.

Senoptics, Inc.: *See—*
Oldfield, Andrew H.; and Trott, Arthur F., 3,670,460.

Seragnoli, Ariosto, to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Seragnoli. Machine for forming and wrapping up individual articles such as candies. 3,670,475, Cl. 53-234.000.

Service Dynamics, Inc.: *See—*
Grazier, Robert L.; and Kudingo, Kenneth F., 3,670,512.

Seya, Atsumi: *See—*
Akuta, Tomohiko; Seya, Atsumi; and Hashirizaki, shinya, 3,670,833.

Shaheen, Eugene G.: *See—*
Larson, Leland B.; and Clement, Clyde H., 3,670,959.

Shalyt, German Mikhailovich; Sidorchuk, Svetlana Efimovna; and Pavlov, Gely Georgievich. Pulse reflection type fault location device utilizing a dark-trace tube display. 3,671,856, Cl. 324-52.000.

Shank, Wayne C., to Avco Corporation. Damped turbomachine rotor assembly. 3,671,140, Cl. 416-183.000.

Shapiro, Sidney; and Longacre, Andrew, Jr., to United States of America, Navy. Frequency conversion with Josephson junctions. 3,671,848, Cl. 321-69.0nl.

Shaub, Harold: *See—*
Metro, Stephen J.; and Shaub, Harold, 3,671,434.

Shaw, Clarence W., to McDermott, J. Ray, & Co., Inc. Propeller wash diversion apparatus for pipe barge. 3,670,510, Cl. 61-72.100.

Shaw, Donald George, 1/2 to Shaw, Trew & Smith Limited. Mobile load handling or lifting machines. 3,670,910, Cl. 214-141.000.

Shaw, Trew & Smith Limited: *See—*
Shaw, Donald George, 3,670,910.

Sheers, Edward Helmut; and Encke, Frederick Ludwig, to Arizona Chemical Company, mesne. Process for controlling foams in aqueous systems and composition therefor. 3,671,461, Cl. 252-358.000.

Shekhodanov, Mikhail Petrovich: *See—*
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna, 3,671,125.

Sheldon, Donald E., to United Aircraft Corporation. Combustion chamber support. 3,670,497, Cl. 60-39.320.

Sheldrake, Leonard J.: *See—*
Huntzinger, Gerald O.; and Sheldrake, Leonard J., 3,671,843.

Shell Oil Company: *See—*
Kwantes, Arien; and Stouthamer, Bernhard, 3,671,559.
Saucier, Randolph J., 3,670,817.
Van Westrenen, William J., 3,671,474.

Shelley, Shelley W. Insulated reinforced building panel. 3,671,368, Cl. 161-38.000.

Shen, Tsung-Ying; and Dorn, Conrad P., Jr., to Merck & Co., Inc. Substituted biphenyl acetic acids and ester derivatives thereof. 3,671,580, Cl. 260-520.000.

Shepanski, Joseph F. Tool for removing fuel injectors. 3,670,389, Cl. 29-256.000.

Shepp, Allan: *See—*
Corben, Leo D.; Kammerer, William T.; and Shepp, Allan, 3,671,246.

Sherman, Albert H.; and Zech, John D., to Atlas Chemical Industries, Inc. Mixtures of fatty ethers of polyhydric alcohols and their anhydrides and process for producing said mixtures. 3,671,458, Cl. 252-351.000.

Sheth, Prabhakar Ranchhordas; and Wiley, James Henry, to American Cyanamid Company. Process for tabletting acetazolamide. 3,671,633, Cl. 424-273.000.

Shibano, Takashi, to Matsushita Electric Industrial Co., Ltd. Power supply for driving magnetron. 3,671,847, Cl. 321-32.000.

Shibata, Ryoji; and Shibata, Seiichi. Adhesive device. 3,670,434, Cl. 40-104.180.

Shibata, Seiichi: *See—*
Shibata, Ryoji; and Shibata, Seiichi, 3,670,434.

Shibuya, Koji; and Takano, Teruhi, to Nippon Electric Co., Ltd. Single pulse generating circuit. 3,671,761, Cl. 307-106.000.

Shiiki, Zenya: *See—*
Amagi, Yasuo; Ohya, Masaki; Shiiki, Zenya; and Yusa, Haruhiko, 3,671,610.

Shikata, Kazuo; Nakao, Suekiti; and Knomi, Katsutoshi, to Tokuyama Soda Kabushiki Kaisha. Process for polymerizing three-membered heterocyclic compounds. 3,671,466, Cl. 260-2.00a.

Shima, Seiya, to Hitachi, Ltd. Speed pattern generator for elevator control system. 3,670,851, Cl. 187-29.00r.

Shimamura, Isao: *See—*
Yoneyama, Masakazu; Shimamura, Isao; Iwano, Haruhiko; and Ohi, Reiichi, 3,671,247.

Shimetsu Chemical Company: *See—*
Koyanagi, Shunichi; Kitamura, Hajime; and Tajima, Shigenobu, 3,671,508.

Shimizu, Akira, to Piolot Man-Nen-Hitsu Kabushiki Kaisha. Device for fixing articles in frame structures. 3,670,439, Cl. 40-156.000.

Shimizu, Sakae: *See—*
Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, 3,671,235.

Shimomura, Seiichi: *See—*
Ono, Isao; Fukabori, Kentaro; and Shimomura, Seiichi, 3,671,577.

Shimosato, Kazuo: *See—*
Ogata, Kazuo; and Shimosato, Kazuo, 3,671,578.

Shinetsu Chemical Company: *See—*
Wada, Tadashi; and Itoh, Kunio, 3,671,480.

Shinkarenko, Boris Pavlovich: *See—*
Moravsky, Vladislav Eduardovich; Vorona, David Solomonovich; and Shinkarenko, Boris Pavlovich, 3,671,708.

Shiojima, Kenji: *See—*
Usui, Yoshito; Shiojima, Kenji; and Hatakeyama, Toshikatsu, 3,671,891.

Shobert, Erle I., II: *See—*
Krellner, Walter G.; and Shobert, Erle I., II, 3,671,092.

Shoemaker, Arthur H.; and Sussman, Milton H., to American Optical Corporation. Zoom optical system for a microscope. 3,671,099, Cl. 350-43.000.

Short, Glyn David: *See—*
Andrews, Timothy Douglas; Short, Glyn David; and Thomas, Ieuan, 3,671,250.

Shove, Gordon William: *See—*
Gackstetter, Henry Clinton; Anderson, Harold Francis; Shove, Gordon William; and Morin, Louis George, 3,671,314.

Showa Kagaku Kogyo Kabushiki Kaisha: *See—*
Suzuki, Kazuaki, 3,671,524.

Shute, Donald W., to Spacetac Incorporated. Waveform restorer circuit. 3,671,781, Cl. 307-252.00w.

Siddall, John B.; and Calame, Jean Pierre, to Zoecon Corporation. Novel esters and derivatives. 3,671,558, Cl. 260-410.90r.

Sidorchuk, Svetlana Efimovna: *See—*
Shalyt, German Mikhailovich; Sidorchuk, Svetlana Efimovna; and Pavlov, Gely Georgievich, 3,671,856.

Siegelin, Werner: *See—*
Gawlick, Heinz; Marondel, Gunther; and Siegelin, Werner, 3,671,343.

Siegener Maschinenbau G.m.b.H.: *See—*
Rotter, Friedrich; and Hanke, Horst, 3,670,550.

Siemens Aktiengesellschaft: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,670,378.
Grassmann, Hans-Christian; and Walther, Emil, 3,671,704.
Haas, Guenther; and Reinhardt, Dieter, 3,671,873.
Keller, Wolfgang, 3,671,703.
Lutz, Karl-Anton, 3,671,674.
Meyer, Jurgen; and Sautter, Gerhard, 3,671,839.
Meyer, Jurgen; and Sautter, Gerhard, 3,671,840.
Muller, Erwin; and Bettini, Dino, 3,671,791.

Sih, Charles J., to Wisconsin Alumni Research Foundation. Method for preparing L-dopa. 3,671,397, Cl. 195-29.000.

Simjian, Luther G. Massaging device driven by exercise apparatus. 3,670,723, Cl. 128-64.000.

Simmons, John Ernest: *See—*
Rand, Walter Leslie; and Simmons, John Ernest, 3,671,158.

Simms, Harold J., Jr., to General Motors Corporation. Apparatus for generating an angularly displaceable magnetic field. 3,671,952, Cl. 340-177.000.

Simon, James Louis: *See—*
Knollman, Dieter John Henry; and Simon, James Louis, 3,671,942.

Simplex Wire and Cable Company: *See—*
Hunt, George H., 3,671,513.

Simpson, George R.: *See—*
Mason, Lawrence J.; Simpson, George R.; Paradysz, Louis F.; and Chen, Philip L., 3,670,633.

Simpson Industries, Inc.: *See—*
Troyer, William J., 3,670,593.

Simpson, John I.: *See—*
Hogan, Elmer R.; and Simpson, John I., 3,670,363.

Sims, Marion W., to General Electric Company. Method of maintaining a laminated article under compression during a part of its manufacture. 3,670,408, Cl. 29-602.

Sinclair-Koppers Company: *See—*
Mills, Frank J.; Sadowski, John T.; Squires, Harwood H.; and Uebelhart, James J., 3,671,026.

Singer, Alfred Richard Eric, to National Research Development Corporation. Process and apparatus for fabricating a hot worked metal layer from atomized metal particles. 3,670,400, Cl. 29-527.500.

Singer Company, The, mesne: *See—*
Barnes, Lell E.; and Morris, David, 3,671,810.
Barnes, Robert L.; Block, William M.; and Grafstein, Danel, 3,671,489.

Singer, Ernst. Fluid sampling apparatus. 3,670,577, Cl. 73-423.

Sink, James A., Jr.; and Watson, Richard J., to Deering Milliken Research Corporation. Safety control. 3,671,170, Cl. 431-88.000.

Siyanov, Sergei Alexandrovich: *See—*
Lutchenkov, Anatoly Matveevich; Shekhodanov, Mikhail Petrovich; Siyanov, Sergei Alexandrovich; Korovin, Ivan Stepanovich; Kholstova, Nonna Alexandrovna; Kreptseva, Valentina Nikolaevna; and Leskovskaya, Nina Petrovna, 3,671,125.

Skalsey, Lily G., to Lear Siegler, Inc. Pot broaching machine. 3,670,625, Cl. 90-86.000.

Skonare, Per: *See—*
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Skrentner, Frank C., to La Salle Machine Tool, Inc. Method for machining spaced surfaces. 3,670,607, Cl. 82-1.00c.

Slagel, Robert C.: *See—*
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Slagteriernes Forskningsinstitut: *See—*
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Slater Electric Inc.: *See—*
Drapkin, William, 3,671,925.

Slawinski, Frank E., to Atlas Chemical Industries, Inc. Dynamite composition containing expanded thermoplastic beads. 3,671,342, Cl. 149-21.000.

Slaybaugh, Loren E., to Republic Industries Inc. Sliding door operator. 3,670,455, Cl. 49-360.000.

Slayden, James D., to Avco Corporation. Connector. 3,671,063, Cl. 287-189.36c.

Slutsky, Arthur Samuel. Method and apparatus of digitizing analog records. 3,671,716, Cl. 235-61.60a.

Smars, Erik Algot, to AGA Aktiebolag. Process and apparatus for effecting high gas flow in discharge tube of gas laser. 3,671,883, Cl. 331-94.500.

Smith, Arthur E., to Union Carbide Corporation. Electrode contact device. 3,671,656, Cl. 13-14.000.

Smith, David F. Plaster of Paris bandages to make casts of improved strength, water-resistance and physiological properties. 3,671,280, Cl. 106-116.000.

Smith, Ernest L., to Phillips Petroleum Company. Container and lid. 3,670,951, Cl. 229-43.000.

Smith, Frank: *See—*
King, John Howliston; and Smith, Frank, 3,671,415.

Smith, Harry W.: *See—*
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Smith, Herchel: *See—*
Tokolics, Joseph; Hughes, Gordon A.; and Smith, Herchel, 3,671,519.

Smith International Inc.: *See—*
Winter, Henry A., Jr.; Williams, Arthur M., Jr.; and Foss, Richard L., 3,670,831.

Smith, Joseph E., to Wolverine-Pentronix, Inc. Die and punch assembly for compacting powder material. 3,671,157, Cl. 425-78.000.

Smith Kline & French Laboratories, Inc.: *See—*
Pfeiffer, Francis R.; and Weisbach, Jerry A., 3,671,557.
Pfeiffer, Francis R.; and Weisbach, Jerry A., 3,671,563.

Smith, Van Z., to All Products Company. Sectional tower structure. 3,670,471, Cl. 52-638.000.

Smith, William D.: *See—*
Basham, Edward R.; and Smith, William D., 3,670,566.

Smith, William Novis, Jr., to Foote Mineral Company. Isomerization of allenes into their corresponding terminal acetylenic isomers. 3,671,605, Cl. 260-678.000.

Smith-Berger Manufacturing Corporation: *See—*
Hogan, Elmer R.; and Simpson, John I., 3,670,363.

Smolka, Thomas G., to Wiener Metallwarenfabrik Smolka and Company. Ski binding. 3,671,053, Cl. 280-11.35t.

Smythe, John W.; and Karp, Philip I., to Federal-Mogul Corporation. Method of making superalloys. 3,671,230, Cl. 75-213.000.

Snijders, Wilfred Andre Maria: *See—*
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Snyder, Paul W., Jr.: *See—*
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Snyder, Thomas P.: *See—*
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Sobrevin Soc. de Brevets Industriels, Firma: *See—*
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Societa' Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; and Cairati, Luciano, 3,671,576.

Societe Alsacienne de Constructions Atomiques, de Telecommunications et d'Electronique alcatel: *See—*
Furstenberger, Jean; Lebrun, Guy; and Girault, Denis, 3,670,945.

Societe Anonyme dite: L'Oreal: *See—*
Kalopissis, Gregoier, 3,671,643.

Societe de Recherches Industrielles S.O.R.I.: *See—*
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Societe d'Etudes et d'Exploitation de Procedes pour l'Industrie Alimentaire Sepial: *See—*
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Societe Les Piles Wonder: *See—*
Angibaud, Rene M., 3,671,734.

Societe Rhodiaceta: *See—*
Gaudard, Yves, 3,670,506.

Sola Basic Industries, Inc.: *See—*
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Sollman, George H.; and Dixon, Samuel J., to Honeywell Inc. Four phase encoder system for three frequency modulation. 3,671,960, Cl. 340-347.0dd.

Solvay & Cie: *See—*
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Sori, Naoyuki: *See—*
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Southwire Company: *See—*
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Spacetac Incorporated: *See—*
Shute, Donald W., 3,671,781.

Spanel, Abram N.; and Schwartz, John L., said Schwartz, John L., assor. to said Spanel, Abram N. Tufting machines for manufacture of tufted fabrics, tufted carpets, rugs, drapes, heavy fabrics, and the like. 3,670,672, Cl. 112-79.

Spangler, Myrtle Joanne, to Dan River Inc. Crease-proofing compositions containing glyoxal modified uron resins and processes for making same. 3,671,307, Cl. 117-139.400.

Sperry Rand Corporation: *See—*
Barnes, Billy W., 3,671,933.
Clift, Charles E., 3,671,899.
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Spietschka, Ernst: *See—*
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Spilsbury, Ashton James; and Thorkelson, Oswald. Adjustable centre loaded antenna arrangement. 3,671,972, Cl. 343-750.000.

Squires, Harwood H.: *See—*
Mills, Frank J.; Sadowski, John T.; Squires, Harwood H.; and Uebelhart, James J., 3,671,026.

Stackpole Carbon Company: *See—*
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Stafsudd, Oscar M.: *See—*
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Stahl, Nils Evert Johan; and Skonare, Per. Arrangement in optical character reading. 3,671,097, Cl. 350-7.000.

Stahr, Henry M., to Morris, Philip, Incorporated. Method for making metal oxide membranes. 3,671,410, Cl. 204-56.000.

Stallings, Leon; Devine, Martin J.; Maerker, Gerhard; and Eisner, Abner, to United States of America, Navy. Lubricating grease compositions. 3,671,431, Cl. 252-33.600.

Stamm, Alex F., to North American Rockwell Corporation, mesne. Friction welding apparatus. 3,671,049, Cl. 279-4.000.

Stampfli, Harald, to Lucifer S.A. Fluid-controlling valve. 3,671,009, Cl. 251-129.000.

Standard Oil Company (Indiana): *See—*
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Standard Optical Mfg. Company: *See—*
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Standifer, Richard L.: *See—*
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Stanton, Arthur J.; Kolb, Edwin R.; and Roberts, Webster C., to Harris-Intertype Corporation. Phototypesetting apparatus. 3,670,632, Cl. 95-4.50r.

Stark, Daniel J., to Eastman Kodak Company. Cartridge mounting structure for a cartridge loading motion picture projector or the like. 3,670,991, Cl. 242-197.000.

Stark, Herbert: *See—*
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Stauffer, Norman L., to Honeywell Inc. Magnetostrictive recording assembly. 3,671,681, Cl. 179-100.2ch.

Stauner, Thomas: *See—*
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Stebbins, Herve A.; and Stebbins, John A. Multiple sight for archer's bow. 3,670,422, Cl. 33-265.000.

Stebbins, John A.: *See—*
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Stecker, Merrick C. Paint scraper. 3,670,414, Cl. 30-338.000.

Steinberg, Harvey M.: *See—*
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Steinbrunn, Gustav: *See—*
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Steingiser, Samuel: *See—*
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Stelling, Mogens. Transportation system. 3,670,658, Cl. 104-22.

Stephens, John A.: *See—*
Coombs, Ivan G., 3,671,710.

Sternbach, Henryk: *See—*
Archer, Giles Allan; and Sternbach, Henryk, 3,671,517.

Stetson, Earl W., to General Electric Company. Sparkgap chamber with arc stretching teeth embodying optimum heat sink means. 3,671,797, Cl. 313-325.000.

Stetson, Earl W., to General Electric Company. Self-supporting load bearing voltage grading resistors for a lightning arrester. 3,671,800, Cl. 315-36.000.

Stettner, Dennis; and Hollison, Ronald B. Ski equipment lock assembly. 3,670,535, Cl. 70-58.000.

Stevens, Curtis Edgar, to Bertea Corporation. Anti-skid system. 3,671,082, Cl. 303-21.00p.

Stevenson, James F., to Emhart Corporation. Glass furnace with triple batch charging and method. 3,670,908, Cl. 214-24.000.

Stevick, Lawrence E., to Chevron Research Company. Dialkyl dihydrothienyl phosphates. 3,671,547, Cl. 260-329.00p.

Steward, William A., to Steward, Wm. A. Magnetic in and out board. 3,670,435, Cl. 40-106.450.

Steward, Wm. A.: *See—*
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Stewart, William R., Jr.: *See—*
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Stewart-Warner corporation: *See—*
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Stewert, Robert M., to General Motors Corporation. Boiler control system. 3,670,704, Cl. 122-448.00a.

Sto, Masamichi: *See—*
Matsumoto, Seiji; Tamai, Yasuo; and Sto, Masamichi, 3,671,290.

Stolpen, Beulah Harris. Language teaching apparatus and method. 3,670,427, Cl. 35-35.00j.

Stone, Glenn Duane, to Du Pont de Nemours, E. I., and Comany. Imagewise hardening direct writing photodeveloped silver halide emulsions. 3,671,245, Cl. 96-64.000.

Storz, Frederick G., to GTE Automatic Electric Laboratories Incorporated. Piezoelectric signaling device. 3,671,958, Cl. 340-392.000.

Stout, Beauford F., to Worth Well Surveys, Inc. Measuring borehole temperatures employing diode junction means. 3,670,567, Cl. 73-154.000.

Stouthamer, Bernhard: *See—*
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Streckert, Ernest H. Automatic veneer measuring and clipping control system. 3,670,614, Cl. 83-208.000.

Streicher, Heinz: *See—*
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Striegler, John H., to Atlantic Richfield Company. Slim hole drilling method. 3,670,832, Cl. 175-57.000.

Strobl, Frederick P., Jr.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,670,911.

Stroebel, Maurice G.; Stroebel, Terryl T.; and Stroebel, Merle J. Liquid fertilizer applying apparatus. 3,670,963, Cl. 239-77.000.

Stroebel, Merle J.: *See—*
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Stroebel, Terryl T.: *See—*
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Stromberg, Henry M.: *See—*
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Sugano, Shigeaki; and Uesugi, Kyozo, to Minolta Camera Co., Ltd. Focusing mechanism for catadioptric objective. 3,671,109, Cl. 350-299.000.

Sugiyama, Hironari: *See—*
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Sukow, Daniel L.: *See—*
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Sullivan, Gene F., to Brown, Howard W. Portable hoisting unit. 3,671,015, Cl. 254-142.000.

Sullivan, Harold G., to United States of America, Air Force. Automatic channel equalization apparatus with data equalization mode adaptor. 3,671,672, Cl. 178-69.00a.

Sulzer Brothers, Ltd.: *See—*
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Sumino, Yasuhiro: *See—*
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Sumitomo Chemical Company, Ltd.: *See—*
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Koga, Koichi; Hatori, Minoru; and Akamatsu, Takashi, 3,671,543.
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Sussman, Milton H.: *See—*
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Suzuki, Henry K., to Velsicol Chemical Corporation. Process for the production of 1,2,4,5,6,7,8,8- octachloro-3a,4,7,7a-tetranydro-4,7-methanoindane. 3,671,595, Cl. 260-648.00c.
Suzuki, Kazuaki, to Showa Kagaku Kogyo Kabushiki Kaisha. Triazinylcoumarins. 3,671,524, Cl. 260-249.800.
Suzuki, Masaru; and Murakami, Yukinobu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Multiple switch construction. 3,671,691, Cl. 200-61.540.
Suzuki, Masaru, to Kabushiki Kaisha Tokai Rika Denik Seisakusho. Steering structure capable of simultaneously completing a horn circuit in a motor-car. 3,671,758, Cl. 307-10.00r.
Suzuki, Shohachi: *See—*
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Suzuki, Syoichi, to Nippon Gakki Seizo Kabushiki Kaisha. Plural tone selector for an electronic musical instrument. 3,671,659, Cl. 84-1.170.
Suzuki, Tadanobu: *See—*
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Suzuki, Tsutomu, to Pioneer Electronic Corporation. Automatic cartridge playing system. 3,671,682, Cl. 179-100.20z.
Swanson, Gunnar E., to Nielsen Hardware Corporation, The. Catch with anti-release latch. 3,670,371, Cl. 24-68.00t.
Swanson, John G., to Westinghouse Electric Corporation. Metal-insulator structures and method for forming. 3,671,819, Cl. 317-234.000.
Swanson, Robert E. Aerosol operated horn. 3,670,690, Cl. 116-112.000.
Swearingen Aviation Corporation, mesne: *See—*
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Swearingen, Edward J., to Swearingen Aviation Corporation, mesne. Longitudinal stability control device for fixed wing aircraft. 3,670,995, Cl. 244-80.000.
Swearingen, Judson S. Removal of dispersed gas from lubricating fluids. 3,670,850, Cl. 184-6.230.
Sweger, Theodore J., to Illinois Railway Equipment Company. Device for automatically latching a container to a railway car or the like and for automatically unlatching it therefrom. 3,670,663, Cl. 105-366.00c.
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Swiss Aluminum Ltd.: *See—*
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Szegvari, Andrew. Method and apparatus for comminuting and reacting solids. 3,670,970, Cl. 241-27.000.
Szente, Andre: *See—*
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Szente, Pedro A.; and Joly, Robert, to Hewlett-Packard Company. Wide band stop band filter including a ferrite region biased by a graded magnetic field. 3,671,888, Cl. 333-73.00r.
Szumila, Anthony D.; Zimnoch, Joseph J.; Bechtel, John D.; and Steinberg, Harvey M., to United States of America, Navy. Automatic net participant synchronizer. 3,671,865, Cl. 325-58.000.
Tabayanagi, Seiichi: *See—*
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Taber, Robert C., to Eastman Kodak Company. Speed increasing combination of stabilizers for radiographic elements. 3,671,258, Cl. 96-107.000.
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Tajiri, Hisao; Sato, Ituzo; Takemura, Yasuo; and Tsuji, Shigeo, to Tokyo Shibaura Electric Co., Ltd. Color television image pick-up device. 3,671,664, Cl. 178-5.4.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, to Iwatsu Electric Company Ltd. Discontinuity processing apparatus for automatic curve tracing system. 3,671,936, Cl. 340-146.3ae.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, to Iwatsu Electric Company, Ltd. Automatic pattern tracing systems. 3,671,937, Cl. 340-146.3ae.
Takahashi, Tadashi; Miyazaki, Masatoshi; Ogawa, Yasuhiko; Sato, Tadashi; and Kakuta, Kazuhiko, to Iwatsu Electric Company, Ltd. Apparatus for judging and processing branches and or crossings for use in automatic curve tracing system. 3,671,941, Cl. 340-172.500.
Takamune, Hirotoki; and Mochizuki, Yoshifumi, to Citizen Watch Co., Ltd. Balance wheel assembly. 3,670,492, Cl. 58-28.00a.
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Takenaka, Sadao; Kishida, Soichiro; and Yamazaki, Yoichi, to Nippon Cloth Industry Co., Ltd. Cigarette filter materials. 3,670,740, Cl. 131-261.00r.
Takeno, Syozo: *See—*
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Takikawa, Toshio; Satomo, Kouji; and Kodama, Takashi, to Osaka Soda Co., Ltd. Method of making resin-impregnated sheet laminated to a substrate. 3,671,354, Cl. 156-306.000.
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Tamplen, Jack W. Locking device and method and apparatus for emplacing same. 3,670,821, Cl. 166-315.000.
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Tanaka, Tetsuo; Masumura, Masao; Toguchi, Akihiro; and Yamaguchi, Mario, to Kabushiki Kaisha Ricoh. Method for polymerization of N-vinylcarbazole. 3,671,507, Cl. 260-88.30r.
Tangredi, Albert Joseph; and Zuckerman, Marc Robert, to Grace, W. R., & Co. Hanger bag with flap closure. 3,670,947, Cl. 229-54.00r.
Taniguchi, Isoji: *See—*
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Tapscott, Jesse J.; and Andersen, Harold T., to Rietz Manufacturing Co. Apparatus for material fluffins. 3,671,019, Cl. 259-8.
Tarnopol, Milton S.; and Snyder, Thomas P., to PPG Industries, Inc. Applying electroconductive heating circuits to glass. 3,671,311, Cl. 117-211.000.
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Tateno, Hideo; and Nemoto, Kuniharu, to Nippon Electric Company, Limited. Method of fabricating semiconductor devices having alloyed junctions. 3,671,339, Cl. 148-179.000.
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Terai, Shiro; Suzuki, Toshio; Hasegawa, Yoshihumi; Horiguchi, Shojiro; Nakamura, Michiei; Kimata, Shizuo; and Suzuki, Tadanobu, to Sumitomo Light Metal Industries, Ltd.,, Dainichiseika Color & Chemicals Mfg., Co., Ltd. and Toagosei Chemical Industry Co., Ltd. Electrodeposition color coating composition and method for electrodeposition color coating of metal therewith. 3,671,476, Cl. 260-23.0ar.
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Thomas, Michael D.; and Milovac, Sidney. Eccentric drive film advancing system. 3,671,114, Cl. 352-185.000.
Thomas, Thomas. Holder for windblown reeds. 3,670,871, Cl. 206-13.000.
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Thompson, Harold W.; Smith, Harry W.; and McCann, Paul A., Jr. Numbers symbology. 3,671,943, Cl. 340-172.500.
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Trimble, David Carlaw, to Bell telephone Laboratories, Incorporated. Per-cycle basis frequency signal receiver. 3,671,939, Cl. 340-171.000.
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Uchida, Kozo; and Tsuji, Toshiyuki, to Iwasaki Tsushinki Kaisha. Signal switching circuit operable in response to a voice signal. 3,671,673, Cl. 179-1.0cv.
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Usui, Yoshito; Shiojima, Kenji; and Hatakeyama, Toshikatsu, to Matsushita Electric Works, Ltd. Small type electro-magnetic contactor. 3,671,891, Cl. 335-126.000.
Utsunomiya, Jitsuo. Method of making artificial hair pieces. 3,670,741, Cl. 132-5.000.
Valantin, Alfred, to Charbonnages de France. Device for driving a shaft in rotation. 3,670,627, Cl. 91-167.
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Van Buskirk, Edward C., to Uniroyal, Inc. Leather-like three layer laminate. 3,671,375, Cl. 161-159.000.
Van Den Plassche, Rudy Johan, to U.S. Philips Corporation. Push-pull amplifier. 3,671,877, Cl. 330-30.00d.
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Van Dyke, John William, Jr.; and Van Laecke, Margaret Jo, to Miles Laboratories, Inc. Certain subetituted 1,3-bisdilower- alkylaminoethoxy-indans. 3,671,530, Cl. 260-295.00f.
Van Hoose, William E. Torque limiting wrench. 3,670,602, Cl. 81-52.400.
Van Horn, Russell F. Segmental friction member for brake or clutch. 3,670,858, Cl. 192-107.00r.
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Van Westrenen, William J., to Shell Oil Company. Water-thinnable condensation products and their use as paint binders. 3,671,474, Cl. 260-20.000.
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Venuti, Richard Joseph; Golner, Jerold Julius; and D'Amato, Anthony Salvatore. Egg carton. 3,670,952, Cl. 229-44.00r.
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Villanueva, Juan T.; and Villanueva, Jesus T. Automatic stripping machine for abaca and allied fiber bearing plants. 3,670,366, Cl. 19-12.000.
Vischiani, Giuseppe, to Sobrevin Soc. de Brevets Industriels, Firma. Delivery device for threads on weaving machines, knitting machines, or the like. 3,670,976, Cl. 242-47.120.
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Wallace, Bruce Alden, to Pullman Incorporated. Cracking furnace having thin, straight single pass reaction tubes. 3,671,198, Cl. 23-277.000.
Walle, Leonard A., to Du Pont de Nemours, E. I., and Company. Thermosetting acrylic enamel containing minor amounts of cellulose acetate butyrate. 3,671,293, Cl. 117-74.000.
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Wellhausen, Heinz, to Blaupunkt-Werke GmbH. Tuning system for communication receivers storing predetermined tuning positions within the receiver frequency band. 3,671,870, Cl. 325-470.000.
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Wenzel, Werner; and Penning, Hans, to Rheinische Braunkohlenwerke AG. Fluidizing bed coking method of brown coal. 3,671,402, Cl. 201-15.000.
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Westlake, Edward B., Jr. Method of producing a plastic shopping bag. 3,671,350, Cl. 156-250.000.
Westphal, Kurt; Meiser, Werner; Fue, Ludwig; and Hack, Helmuth, to Farbenfabriken Bayer Aktiengesellschaft. Herbicidal agents. 3,671,523, Cl. 260-248.0as.
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Wolfram, Adolf Egmont, to General Electric Company. Television channel indicator common to VHF and UHF and easily programmable to locally available channels. 3,671,869, Cl. 325-455.000.
Wolfson, Alan B.; Patel, Jayantilal M.; and Lawrence, Benjamin, to Procter & Gamble Company, The. Decaffeination process. 3,671,262, Cl. 99-70.000.
Wolfson, Anal B.: *See*—
Patel, Jayantilal M.; and Wolfson, Anal B., 3,671,263.
Wolverine-Pentronix, Inc.: *See*—
Smith, Joseph E., 3,671,157.
Wood, William, to French, Thomas, & Sons Limited. Curtain heading tapes. 3,670,780, Cl. 139-387.000.
Woodbridge, David D.; and Mann, Leland A., to Energy Systems, Inc. Irradiator apparatus with a fluid communicating core and casting baffles. 3,671,741, Cl. 250-44.000.
Woods, Michael Faulkner: *See*—
Blake, Anthony; Halliday, Denis Malcolm; and Woods, Michael Faulkner, 3,671,268.
Woodward, Charles D.: *See*—
Pasek, James E.; and Woodward, Charles D., 3,671,085.
Woodward, Charles D., to General Motors Corporation. Anti-lock modulator with mechanically resettable control valve. 3,671,084, Cl. 303-21.00f.
Woolley, William P. Flexible wheel. 3,671,088, Cl. 305-7.000.
Wormser, Hans H., to Markite Corporation. Rotary potentiometer. 3,671,914, Cl. 338-131.
Worobey, Walter: *See*—
Pitetti, Raymond Charles; and Worobey, Walter, 3,671,823.
Worst, Joseph C., to General Electric Company. Liquid fill control. 3,670,533, Cl. 68-207.
Worth, Gerald W.: *See*—
North, Donald F., Jr.; Thomas, Jerry D.; and Worth, Gerald W., 3,671,224.
Worth Well Surveys, Inc.: *See*—
Stout, Beauford F., 3,670,567.
Wright, Barry, Corporation, mesne: *See*—
Kupfrian, Wilbur J., 3,670,795.
Wright, John B., to Upjohn Company, The. 5-Phenyl-1,2,4-benzothiadiazepine-1,1-dioxides. 3,671,528, Cl. 260-268.0bc.
Wright, John H., to General Electric Company. Grease-like silicone compound. 3,671,429, Cl. 252-25.000.
Wuthrich, Paul, to Timex Corporation. Indexing mechanism for electric/electronic timepieces. 3,670,493, Cl. 58-116.000.
Wynn, Robert W.; and Chiddix, Max E., to General Anilin & Film Corporation. Preparation of 2, 3-dibromo-2-butene-1,4- diol. 3,671,594, Cl. 260-633.000.
Xerox Corporation: *See*—
Britt, James E.; and Hewitt, Robert E., 3,670,700.
Fantuzzo, Joseph; and Punnett, Frazer D., 3,671,118.
Goffe, William L., 3,671,282.
Gunther, Wolfgang H. H., 3,671,467.
Haas, Werner E. L.; and Adams, James E., 3,671,231.
Haas, Werner Erwin Louis; Adams, James Ewing; and Mechlowitz, Blea, 3,671,237.
Houston, Robert D., 3,671,776.
Mason, Lawrence J.; Simpson, George R.; Paradyaz, Louis F.; and Chen, Philip L., 3,670,633.
Matsumoto, Seiji; Tamai, Yasuo; and Sto, Masamichi, 3,671,290.
Turner, Lyman H.; and Adamek, John A., 3,671,094.
Weiler, Ernest A., 3,670,701.
Xonics Inc.: *See*—
Proudian, Andrew Peter; and Balser, Martin, 3,671,927.
Yabuuchi, Hiroshi: *See*—
Nakaguchi, Kohei; Kawasumi, Shohachi; Hirooka, Masaaki; Yabuuchi, Hiroshi; and Takao, Hiroyoshi, 3,671,492.
Yajima, Ryoichiro: *See*—
Mamiya, Shigeo; and Yajima, Ryoichiro, 3,671,913.
Yamada, Yoshitaka; Sakurai, Moritaro; and Kumashiro, Izumi, to Ajinomoto Co., Inc. Production of a heterocyclic compound having an imidazole ring. 3,671,649, Cl. 260-252.000.
Yamaguchi, Hisashi: *See*—
Haga, Terubide; Yamaguchi, Hisashi; and Hirao, Yotaro, 3,671,255.
Yamaguchi, Mario: *See*—
Tanaka, Tetsuo; Masumura, Masao; Toguchi, Akihiro; and Yamaguchi, Mario, 3,671,507.
Yamaguchi, Nario; Shimizu, Sakae; and Tubuko, Kazuo, to Kabushiki Kaisha Ricoh. C_8 to C_{18} aliphatic alcohols used as defoaming agents in zinc oxide-resin dispersions. 3,671,235, Cl. 96-1.800.
Yamamoto, Kazuo: *See*—
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Saskai, Toshio, 3,671,279.
Yamauchi, Choji: *See*—
Maekawa, Hiroshi; and Yamauchi, Choji, 3,671,274.
Yamazaki, Yoichi: *See*—
Takenaka, Sadao; Kishida, Soichiro; and Yamazaki, Yoichi, 3,670,740.
Yanagida, Koichiro: *See*—
Okazaki, Takayoshi; Tashiro, Kiroku; and Yanagida, Koichiro, 3,671,376.
Yano, Tadashi: *See*—
Sasaki, Nobuyuki; Oba, Shunzo; and Yano, Tadashi, 3,671,915.
Yao assor. to said Chin: *See*—
Chin, Wesley S. C.; and Yao, Kou C., 3,671,367.
Yao, Kou C.: *See*—
Chin, Wesley S. C.; and Yao, Kou C., 3,671,367.
Yarm, Jay Martin, to United Aircraft Corporation. Frangible tension shock absorber. 3,670,852, Cl. 188-1.00c.
Yashiro, Hideo: *See*—
Abe, Isamu; Yashiro, Hideo; Sori, Naoyuki; Hatano, Sotaro; Katsumoto, Tomiyasu; and Suzuki, Tadao, 3,670,395.
Yasuda, Nobuaki: *See*—
Murakami, Yoshio; Higashinakagawa, Iwao; Yasuda, Nobuaki; and Takeno, Syozo, 3,671,312.
Yasui, Koichi; Yamamoto, Kazuo; Itami, Kazuo; Fujisawa, Kiyoshi; and Saskai, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the continuous xanthation and solution of alkali cellulose. 3,671,279, Cl. 106-165.000.
Yawata Iron & Steel Co., Ltd.: *See*—
Akuta, Tomohiko; Seya, Atsumi; and Hashirizaki, shinya, 3,670,833.
Yayo Plastic Yoki Co., Ltd.: *See*—
Ochi, Takashi, 3,671,360.
Yee, John W., to General Motors Corporation. Steerable lamp system for motor vehicles. 3,671,733, Cl. 240-8.250.
Yokogawa Electric Works, Ltd.: *See*—
Watanabe, Kazutaka, 3,671,671.
Yokoyama, Tohei: *See*—
Hosokawa, Masuo; Yokoyama, Tohei; and Nakagawa, Fumio, 3,670,886.
Yoneyama, Masakazu; Shimamura, Isao; Iwano, Haruhiko; and Ohi, Reiichi, to Fuji Photo Film Co., Ltd. Development of silver halide photographic materials. 3,671,247, Cl. 96-663.000.
Yoo, Jin Sun, to Atlantic Richfield Company. Process for hydrogenating acrylonitrile to propionitrile. 3,671,565, Cl. 260-465.100.
Yorganjian, John James, to RCA Corporation. Resettable logic gate multivibrator. 3,671,881, Cl. 331-57.000.
Yoshibayashi, Tsutomu: *See*—
Fudemotc, Isao; Yoshibayashi, Tsutomu; and Miyamura, Tadao, 3,671,886.
Yoshida, Ei. Method of determining pitch names in various keys and pitch name determining slide rule. 3,671,661, Cl. 84-473.
Yoshida Kogyo Kabushiki Kaisha: *See*—
Yoshieda, Keiichi, 3,671,347.
Yoshieda, Keiichi, to Yoshida Kogyo Kabushiki Kaisha. Method and apparatus for attaching a reinforcing material to a slide fastener chain. 3,671,347, Cl. 156-160.000.
Yoshihara, Mitsuo; and Mizutani, Kazunori, to Nitto Electric Industrial Co., Ltd. Modification of alicyclic or aliphatic diepoxy compounds. 3,671,592, Cl. 260-2.0ep.
Yoshikawa, Isamu: *See*—
Nishimaki, Ko; and Yoshikawa, Isamu, 3,670,917.
Yosida, Akio: *See*—
Tsuda, Minoru; Yosida, Akio; and Yuki, Takamitsu, 3,671,468.
Yost, Paul E. Inflatable display. 3,670,440, Cl. 40-215.000.
Young, Donald G., to Dow Corning Corporation. Primer composition for adhering silicone elastomer to substrates. 3,671,483, Cl. 260-32.8sb.
Young Radiator Company: *See*—
Christensen, Donald W., 3,670,811.
Yuki, Takamitsu: *See*—
Tsuda, Minoru; Yosida, Akio; and Yuki, Takamitsu, 3,671,468.
Yusa, Haruhiko: *See*—
Amagi, Yasuo; Ohya, Masaki; Shiiki, Zenya; and Yusa, Haruhiko, 3,671,610.
Zech, John D.: *See*—
Sherman, Albert H.; and Zech, John D., 3,671,458.
Zegers, Eduard; and Snijders, Wilfred Andre Maria, to U.S. Philips Corporation. Transmission system for measuring time of transmission. 3,671,864, Cl. 325-38.00a.
Zelenz, Martin L., to Sylvania Electric Products, Inc. Method for fabricating multilayer electrical components. 3,670,379, Cl. 29-25.920.
Zeller, Helen D. Check book holder having master check. 3,671,059, Cl. 283-7.000.
Zellweger Ltd.: *See*—
Genzel, Hans-Ulrich Werner; Hafeli, Hans-Rudolf; and Steiner, Hans Robert, 3,671,718.

Zenner, Walter J.; and Kranz, Raymond E., to Extel Corporation. Carriage drive for high speed printer. 3,670,861, Cl. 197-64.000.
Zerlin, William Max Erich; Avery, Roger Peter; and Royce, David Hugh, to Bunker-Ramo Corporation, The. Push-on connector. 3,671,922, Cl. 339-74.00r.
Ziegler, Hans, to Pfaff Industriemashinen GmbH. Roller-foot for sewing machines. 3,670,678, Cl. 112-235.000.
Ziemba, Richard T., to General Electric Company. Controlled range proximity fuze. 3,670,652, Cl. 102-70.20p.
Ziemek, Gerhard; and Schatz, Friedrich, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Spacing in coaxial tubes system. 3,670,772, Cl. 138-114.000.
Zimmermann, Joseph James, to GTE Automatic Electric Laboratories Incorporated. Device for positioning a magnetic head to a selected track of a multi-track recording tape. 3,671,043, Cl. 274-4.00a.
Zimnoch, Joseph J.: *See*—
Szumila, Anthony D.; Zimnoch, Joseph J.; Bechtel, John D.; and Steinberg, Harvey M., 3,671,865.
Zink, Paul R.: *See*—
Kiewicz, Frank M.; and Zink, Paul R., 3,670,420.
Kiewicz, Frank M.; and Zink, Paul R., 3,670,421.
Zinsco Electrical Products: *See*—
Belttary, Harold E.; and Palmer, John G., 3,671,908.
Ziober, Johnnie J.: *See*—
Mott, George F.; and Ziober, Johnnie J., 3,670,507.
Zoecon Corporation: *See*—
Siddall, John B.; and Calame, Jean Pierre, 3,671,558.
Zschocke, Albrecht: *See*—
Fischer, Adolf; Koenig, Karl-Heinz; Steinbrunn, Gustav; and Zschocke, Albrecht, 3,671,586.
Zschocke, Albrecht; Rohr, Wolfgang; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted hydantoins. 3,671,540, Cl. 260-309.500.
Zuckerman, Marc Robert: *See*—
Tangredi, Albert Joseph; and Zuckerman, Marc Robert, 3,670,947.
Zweig, Arnold, to American Cyanamid Company. Photodecomposition of oxazolidinediones and similar anhydrides. 3,671,239, Cl. 96-27.00r.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF JUNE, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allen, Perry E. Electric lock release. Re. 27,390, 6–20–72, Cl. 292—201.

A.M.I.S. Apparecchi e Macchine Idrauliche-Speciali S.p.A.: *See*—
D'Urso, Nicola. Re. 27,399.

Aselman, Edward C., Jr., to T.N.E. Inc. Control apparatus for an electrically operable device. Re. 27,393, 6–20–72. Cl. 317—13 R.

Azonic Products, Inc.: *See*—
Brown, Maurice H. Re. 27,398.

Babigan, Raymond. Electrical conductor containing an ionizable gas and radioactive material to ionize the gas. Re. 27,397, 6–20–72, Cl. 174—9 F.

Bergman, Robert J., and L. R. Prohofsky, to Sperry Rand Corp. Solid stack memory. Re. 27,395, 6–20–72, Cl. 340—174 BC.

Brown, Maurice H., to Azonic Products, Inc. Apparatus for forming wire control elements. Re. 27,398, 6–20–72, Cl. 156—510.

Ceskoslovenska Akademie Ved: *See*—
Wichterle, Otto, and Lim. Re. 27,401.

Columbia Gas System Service Corp.: *See*—
Hemmert, Raymond A. Re. 27,396.

Dennison Mfg. Co.: *See*—
Merser, Francis G. Re. 27,391.

D'Urso, Nicola, to A.M.I.S. Apparecchi e Macchine Idraulicha-Speciali S.p.A. Nonreturn valves. Re. 27,399, 6–20–72, Cl. 137—512.

Heimbigner, Gary L., to North American Rockwell Corp. Closed loop logic gate multiple phase clock signal generator. Re. 27,394, 6–20–72, Cl. 331—57.

Hemmert, Raymond A., to Columbia Gas System Service Corp. Warm air furnace with radiant burner. Re. 27,396, 6–20–72, Cl. 263–20.

Lim, Drahoslav: *See*—
Wichterle, Otto, and Lim. Re. 27,401.

Merser, Francis G., to Dennison Mfg. Co. Connector for holding articles together. Re. 27,391, 6–20–72, Cl. 24—16 PB.

Mobil Temp, Inc.: *See*—
Robinson, Donald E. Re. 27,392.

Nickola, Anne D. Mounting pedestal for utilities. Re. 27,400, 6–20–72, Cl. 317—99.

North American Rockwell Corp.: *See*—
Heimbigner, Gary L. Re. 27,394.

Plaven, Erik. Apparatus for extracting starch and gluten from a dough of wheat flour. Re. 27,402, 6–20–72, Cl. 127—25.

Prohofsky, Le Roy A.: *See*—
Bergman, Robert J., and Prohofsky. Re. 27,395.

Robinson, Donald E., to Mobil Temp, Inc. Heater construction. Re. 27,392, 6–20–72, Cl. 126—91 A.

Sperry Rand Corp.: *See*—
Bergman, Robert J., and Prohofsky. Re. 27,395.

T.N.E. Inc.: *See*—
Aselman, Edward C., Jr. Re. 27,393.

Wichterle, Otto, and D. Lim., to Ceskoslovenska Akademie Ved. Cross-linked hydrophilic polymers and articles made therefrom. Re. 27,401, 6–20–72, Cl. 260—2.5 R.

LIST OF PLANT PATENTEES

Cerro Gordo Nursery, Inc.: *See*—
Pennock, Charles F. 3,219.

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,212.
Jessel, Walter H., Jr., and Duffett. 3,213.
Jessel, Walter H., Jr., and Duffett. 3,214.
Jessel, Walter H., Jr., and Duffett. 3,215.
Jessel, Walter H., Jr., and Duffett. 3,216.

Hancock, M. Leslie, to Monrovia Nursery Co. Euonymus fortunei shrub. 3,211, 6–20–72, Cl. 63.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,215, 6–20–72, Cl. 77.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,213, 6–20–72, Cl. 78.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,214, 6–20–72, Cl. 79.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemom plant. 3,215, 6–20–72, Cl. 77.

Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,216, 6–20–72, Cl. 79.

Manatee, Inc.: *See*—
Vogel, Paul A. 3,218.

Monrovia Nursery Co.: *See*—
Hancock, M. Leslie. 3,211.

Pennock, Charles F., to Cerro Gordo Nursery, Inc. Dracaena celles. 3,219, 6–20–72, Cl. 88.

Pratt, Lester P., to Van Mell Nursery, Inc. Peach tree. 3,217, 6–20–72, Cl. 43.

Van Mell Nursery, Inc.: *See*—
Pratt, Lester P. 3,217.

Vogel, Paul A., to Manatee, Inc. Chrysanthemum plant. 3,218, 6–20–72, Cl. 82.

Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,212.
Jessel, Walter H., Jr., and Duffett. 3,213.
Jessel, Walter H., Jr., and Duffett. 3,214.
Jessel, Walter H., Jr., and Duffett. 3,215.
Jessel, Walter H., Jr., and Duffett. 3,216.

LIST OF DESIGN PATENTEES

Adelson, Alexander M., to Wild Rover Corp. Electrical switch housing. 223,924, 6–20–72, Cl. D26—13.

Ament, Myron J., to Wallace-Murray Corp. Bathroom toilet unit. 223,916, 6–20–72, Cl. D23—49.

Ament, Myron J., to Wallace-Murray Corp. Bathroom lavatory unit. 223,917, 6–20–72, Cl. D23—49.

American Hospital Supply Corp.: *See*—
John, Raymond. 223,978.

American Standard, Inc.: *See*—
Niemann, James E. 223,913.

Ampex Corp.: *See*—
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Matsuda, Hari K. 223,930.
Matsuda, Hari K. 223,931.

Anaconda Aluminum Co.: *See*—
Kuniansky, Raymond L. 223,902.

Ashby, Frederick R., and L. A. Ropella, to U.S. Plywood-Champion Papers, Inc. Door-transom assembly. 223,909, 6–20–72, Cl. D13—1.

Associated Mills, Inc.: *See*—
Grube, Clifford E., and Stern. 223,976.

Aweida, Jesse I.: *See*—
Kavanagh, Thomas S., Ralston, Campbell, Aweida, and Thurmer. 223,922.

Babcock, William F.: *See*—
Brown, George Z., and Babcock. 223,915.

Bates, Dana B., to Simpson Timber Co. Core for paper rolls. 223,894, 6–20–72, Cl. D8—220.

Berchert, Viola M. Protective cover for counter corners. 223,895, 6–20–72, Cl. D8—263.

Binks, Ronald, to Global Systems Design Corp. Telephone instrument. 223,929, 6–20–72, Cl. D26—14.

Bissell, James D., to Cabitec, Inc. Game board. 223,937, 6–20–72, Cl. D34—5.

Bongort, Edgar A.: *See*—
Hawkins, Harold V., Dick, and Bongort. 223,925.

Borg-Warner Corp.: *See*—
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Bousquet, Charles E. Floor care coupler. 223,945, 6–20–72, Cl. D37—3.

Boyertown Burial Casket Co.: *See*—
Herricht, Fred. 223,903.

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Greubel, Jurgen. 223,975.

Brown, George Z., and W. F. Babcock, to Dover Corp. Combined dispensing nozzle and guard therefor. 223,915, 6–20–72. Cl. D23—37.

Cabitec, Inc.: *See*—
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Cammelot, Peter A., and L. F. Duvall, to The Quaker Oats Co. Expanded cereal food product. 223,891, 6–20–72, Cl. D1—1.

Campbell, Ronald R.: *See*—
Kavanagh, Thomas S., Ralston, Campbell, Aweida, and Thurmer. 223,922.

Caputo, Terese. Toy animal. 223,935, 6–20–72, Cl. D34—2.

Carter, Ronald D., to The Stanley Works. Flower shear. 223,893, 6–20–72, Cl. D8—5.

Citizen Watch Co., Ltd.: *See*—
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Colgate-Palmolive Co.: *See*—
Douglas, Livingston C. Miles, and McGhie. 223,900.

Collura, Francesco, to Keuffel & Esser Co. Stand for an electrically-powered eraser or the like. 223,968, 6–20–72, Cl. D74—5.

Collura, Francesco, to Keuffel & Esser Co. Electrically-powered eraser or the like. 223,969, 6–20–72, Cl. D74—7.

Columbus McKinnon Corp.: *See*—
Hawkins, Harold V., Dick, and Bongort. 223,925.

Cone, Richard E., to The Delphos Bending Co. Snow sled. 223,942, 6–20–72, Cl. D34—15.

Creative Creations, Inc.: *See*—
Feuer, Perry. 223,977.

Crew, Robert T., and O. F. George. Combined garment and trash bag. 223,897, 6–20–72, Cl. D9—250.

Current, Wayne A., to The Singer Co. Portable sewing machine housing. 223,966, 6–20–72, Cl. D70—1.

Daher, Theodore G., to General Electric Co. Clock or similar article. 223,946, 6–20–72, Cl. D42—7.

Daher, Theodore G., to General Electric Co. Clock or similar article. 223,947, 6–20–72, Cl. D42—7.

Daher, Theodore G., to General Electric Co. Clock or similar article. 223,948, 6–20–72, Cl. D42—7.

Delphos Bending Co., The: *See*—
Cone, Richard E. 223,942.

Dick, Ralph A.: *See*—
Hawkins, Harold V., Dick, and Bongort. 223,925.

Douglas, Livingston C., G. D. Miles, and R. P. McGhie, to Colgate-Palmolive Co. Dispensing closure. 223,900, 6–20–72, Cl. D9—278.

Dover Corp.: *See*—
Brown, George Z., and Babcock. 223,915.

Duvall, Leroy F.: *See*—
Cammelot, Peter A., and Duvall. 223,891.

Edwards, Bryant. Packaging cup or the like. 223,898, 6–20–72, Cl. D9—216.

Ehrensaal, Jay, to Swank, Inc. Card ejector case, or similar article. 223,979, 6–20–72, Cl. D87—3.

Elpper, Gertrude. Noodle press. 223,949, 6–20–72, Cl. D44—29.

Electrohome Ltd.: *See*—
McQuarrie, Harvey K. 223,962.

Eprad Inc.: *See*—
Gray, Geoffrey T. 223,918.

Fedtro, Inc.: *See*—
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Feuer, Perry, to Creative Creations, Inc. Combined doll and mirror. 223,977, 6–20–72, Cl. D86—10.

Frazer, John S., to Union Carbide Corp. Jug. 223,896, 6–20–72, Cl. D9—42.

Fritz, Albert J., and A. J. Panzica, to Schwinn Bicycle Co. Bicycle seat. 223,980, 6–20–72, Cl. D90—16.

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Global Systems Design Corp.: *See*—
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Gran, William A., to The Vendo Co. Cigarette vending machine. 223,957, 6–20–72, Cl. D52—3.

Gray, Geoffrey T., to Eprad Inc. Electric heater housing. 223,918, 6–20–72. Cl. D23—123.

Grube, Clifford E., and R. J. Stern, to Associated Mills, Inc. Steam hair curler housing. 223,976, 6–20–72, Cl. D86—10.

Greubel, Jurgen, to Braun A.G. Hair dryer. 223,975, 6–20–72, Cl. D86—10.

Hauser, Jon W., to General Aviation Electronics, Inc. Glide-slope indicator. 223,958, 6–20–72, Cl. D52—6.

Hawkins, Harold V., R. A. Dick, and E. A. Bongort, to Columbus McKinnon Corp. Pendant hoist control. 223,925, 6–20–72. Cl. D26—13.

Herricht, Fred, to Boyertown Burial Casket Co. Burial casket. 223,903, 6–20–72. Cl. D19—1.

Irelan, Edward A., to Sunbeam Corp. Illuminable makeup mirror. 223,973, 6–20–72, Cl. D86—10.

Ishihara, Koji: *See*—
Momose, Keigo, Ishihara, and Motonaka. 223,923.

John, Raymond, to American Hospital Supply Corp. Surgical clip. 223,978, 6–20–72, Cl. D83—12.

Kahn, Robert D., to Fedtro, Inc. Master control panel for alarm systems or the like. 223,926, 6–20–72, Cl. D26—13.

Kaufman, James C., and R. L. Funkhouser, to The National Cash Register Co. Microform reader. 223,963, 6–20–72, Cl. D61—1.

Kavanagh, Thomas S., R. H. Ralston, R. R. Campbell, J. I. Aweida, and R. A. Thurmer, to Storage Technology Corp. Magnetic tape unit. 223,922, 6–20–72, Cl. D26—5.

Kelbish, Edward D. Pre-assembled modular housing structure. 223,904, 6–20–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 223,905, 6–20–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 223,906, 6–20–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 223,907, 6–20–72, Cl. D13—1.

Kelbish, Edward D. Pre-assembled modular housing structure. 223,908, 6–20–72, Cl. D13—1.

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CLASSIFICATION OF PATENTS

ISSUED JUNE 20, 1972

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89	3,671,187
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200J	3,670,384
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129C	3,670,438
156	3,670,439
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288	3,670,496
324	3,670,502
CLASS 61	
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69	3,670,509
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72.4	3,670,514
72.6	3,670,512
CLASS 62	
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45	3,670,517
116	3,670,519
167	3,670,518
314	3,670,520
329	3,670,521
333	3,670,522
344	3,670,523
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23	3,670,525
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234	3,671,211
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20	3,670,526
50R	3,670,527
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177	3,670,529
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188	3,670,532
207	3,670,533
CLASS 69	
30	3,670,534
CLASS 70	
58	3,670,535
99	3,670,536
120	3,670,537
271	3,670,538
299	3,670,539
421	3,670,540
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97	3,671,215
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105	3,671,217
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121	3,671,219
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49	3,670,544
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421	3,670,557
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117.3	3,670,565
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154	3,670,567
159	3,670,568
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190R	3,670,570
194R	3,670,571
342	3,670,572
379R	3,670,574
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423R	3,670,577
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869	3,670,599
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83	3,671,222
122	3,671,223
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175.5	3,671,226
178AC	3,671,227
207	3,671,228
211	3,671,229
213	3,671,230
CLASS 76	
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83	3,670,601
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53R	3,670,603
98	3,670,604
125	3,670,605
CLASS 82	
1C	3,670,606
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CLASS 83	
37	3,670,609
55	3,670,610
81	3,670,611
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349	3,671,660
473	3,671,661
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72	3,670,629
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50V	3,670,631
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10C	3,670,634
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11L	3,670,639
31CA	3,670,638
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1.8	3,671,232
	3,671,234
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15	3,671,236
27R	3,671,239
27	3,671,237
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29R	3,671,240
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36.2	3,671,243
54	3,671,244
64	3,671,245
66	3,671,246
76R	3,671,248
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109	3,671,255
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111	3,671,256
122	3,671,260
663	3,671,247
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2.18	3,670,640
CLASS 99	
2R	3,671,261
70	3,671,262
	3,671,263
92	3,670,665
94	3,671,264
104	3,671,265
126	3,671,266
128	3,671,267
136	3,671,268
139	3,671,269
171H	3,671,270
174	3,671,271
194	3,671,272
236CC	3,671,273
293	3,670,641
329RT	3,670,642
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382MV	3,670,646
426	3,670,647
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38	3,670,649
42C	3,670,650
	3,670,651
70.2GA	3,670,654
70.2P	3,670,652
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81	3,670,656
87	3,670,657
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22	3,670,658
101	3,670,659
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171	3,670,660
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366C	3,670,663
377.6	3,670,664
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44	3,671,275
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165 3,671,279
289Q 3,671,281

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10 3,670,670
77 3,670,671

CLASS 112
79R 3,670,672
113 3,670,673
121.12 3,670,675
121.29 3,670,674
158B 3,670,676
199 3,670,677
235 3,670,678
262 3,670,679

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65R 3,670,683
66.5P 3,670,684
74A 3,671,315
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230 3,670,686

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119 3,670,691
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139.4 3,671,307
139.5A 3,671,308
156 3,671,310
201 3,671,309
211 3,671,311
212 3,671,312
3,671,313
213 3,671,314
216 3,671,317
333 3,671,286

CLASS 118
5 3,670,693
24 3,670,694
63 3,670,695
320 3,670,696
408 3,670,697
425 3,670,698
629 3,670,699
636 3,670,700
637 3,670,701

CLASS 119
52R 3,670,702

CLASS 121
990 3,670,677

CLASS 122
406R 3,670,703
448S 3,670,704

CLASS 123
8.47 3,670,705
32EA 3,670,706
90.57 3,670,707
103E 3,670,708
124R 3,670,709
140MP 3,670,710

CLASS 124
25 3,670,711
30R 3,670,712

CLASS 126
91A Re.27,392
110R 3,670,713
165 3,670,714
204 3,670,716
270 3,670,717

CLASS 127
25 Re.27,402
46R 3,671,316

CLASS 128
1R 3,670,718
2A 3,670,719
2.05G 3,670,720
2.05V 3,670,715
6 3,670,721
3,670,722
64 3,670,723
92D 3,670,724
149 3,670,725
188 3,670,726
214C 3,670,728
214R 3,670,727
214.4 3,670,729
222 3,670,730
284 3,670,731
297 3,670,732
305 3,670,733
3,670,734
327 3,670,735
404 3,670,736
422 3,670,737
549 3,670,738

CLASS 130
.27T 3,670,739

CLASS 131
261R 3,670,740

CLASS 132
5 3,670,741
88.7 3,670,742

CLASS 134
45 3,670,743
57R 3,670,744
107 3,670,746

CLASS 135
1R 3,670,747
5.1 3,670,750
20 3,670,748
33C 3,670,749

CLASS 136
6 3,671,318
3,671,319
75 3,671,320
3,671,321
83R 3,671,322
86D 3,671,323
153 3,671,324
178 3,671,325
205 3,671,326
225 3,671,327
230 3,671,328
233 3,671,329

CLASS 137
1 3,670,751
13 3,670,752
81.5 3,670,753
3,670,754
3,670,755
84 3,670,745
102 3,670,756
103 3,670,757
150 3,670,758
171 3,670,759
218 3,670,760
315 3,670,761
342 3,670,762
355.18 3,670,763
357 3,670,764
392 3,670,765
512.15 Re.27,399
515.5 3,670,766
596 3,670,767
606 3,670,768
610 3,670,769
614.04 3,670,770
625.6 3,670,771

CLASS 138
114 3,670,772
155 3,670,773
178 3,670,774

CLASS 139
185 3,670,775
188 3,670,776
247 3,670,777
304 3,670,779
349 3,670,778
387 3,670,780

CLASS 140
71R 3,670,781
93R 3,670,783
93.2 3,670,782
118 3,670,784

CLASS 141
9 3,670,785
92 3,670,786
250 3,670,787

CLASS 143
36R 3,670,788

CLASS 144
193D 3,670,789
213 3,670,790
326A 3,670,791

CLASS 146
81A 3,670,792
94R 3,670,793

CLASS 148
1.6 3,671,330
6.17 3,671,332
6.2 3,671,331
6.27 3,671,333
12.3 3,671,334
28 3,671,335
36 3,671,336
111 3,671,337
175 3,671,338
179 3,671,339
187 3,671,340

CLASS 149
19 3,671,341
21 3,671,342
37 3,671,343

CLASS 151
7 3,670,794
29 3,670,795
41.75 3,670,796

CLASS 156
19 3,671,344
77 3,671,345
145 3,671,346
160 3,671,347
187 3,671,348
229 3,671,349
233 3,671,351
250 3,671,350
267 3,671,352
302 3,671,353
306 3,671,354
309 3,671,356
324 3,671,355
359 3,671,357
401 3,671,358
436 3,671,359
466 3,671,360
472 3,671,361
510 Re.27,398
552 3,671,362
556 3,671,363
574 3,671,364
580 3,671,365
3,671,366

CLASS 160
118 3,670,797
354 3,670,798

CLASS 161
27 3,671,367
38 3,671,368
40 3,671,369
43 3,671,370
3,671,371
58 3,671,372
64 3,671,373
76 3,671,025
93 3,671,374
159 3,671,375
162 3,671,377
165 3,671,376
170 3,671,378
3,671,384
3,671,379
173 3,671,380
175 3,671,381
180 3,671,382
214 3,671,383
252

CLASS 162
152 3,671,385
224 3,671,386
284 3,671,387
304 3,671,388
306 3,671,389

CLASS 164
63 3,670,799
76 3,670,401
95 3,670,800
154 3,670,801
258 3,670,802
267 3,670,803
274 3,670,804
312 3,670,805

CLASS 165
22 3,670,806
39 3,670,807
42 3,670,808
60 3,670,809
70 3,670,810
134 3,670,811
175 3,670,812

CLASS 166
.5 3,670,813
3,670,814
136 3,670,815
252 3,670,816
3,670,817
273 3,670,818
305R 3,670,819
3,670,820
315 3,670,821

CLASS 172
7 3,670,822
128 3,670,823
449 3,670,824
805 3,670,825

CLASS 173
4 3,670,826
146 3,670,827

CLASS 174
9F Re.27,397
28 3,671,662
120SC 3,671,663

CLASS 175
4.5 3,670,828
50 3,670,829
52 3,670,830
3,670,831
57 3,670,832

CLASS 176
18 3,671,392
24 3,671,390
73 3,671,393
79 3,671,394

CLASS 177
1 3,670,833

CLASS 178
5.4ST 3,671,664
6.6P 3,671,665
6.7R 3,671,666
6.8 3,671,391
3,671,667
3,671,668
7.3S 3,671,669
67 3,671,670
68 3,671,671
69A 3,671,672

CLASS 179
1VC 3,671,673
15AT 3,671,674
15FD 3,671,675
16F 3,671,676
18DA 3,671,677
81B 3,671,679
100.1DR 3,671,680
100.2CH 3,671,681
100.2MD 3,671,683
100.2Z 3,671,682
117 3,671,684
156 3,671,685

CLASS 180
41 3,670,834
69.1 3,670,835
114 3,670,836
3,670,837
124 3,670,838

CLASS 181
.5NC 3,670,840
.5H 3,670,839
31B 3,670,842
31R 3,670,841
33G 3,670,843
40 3,670,844
57 3,670,845

CLASS 182
19 3,670,849
20 3,670,846
92 3,670,847
115 3,670,848

CLASS 184
6.23 3,670,850

CLASS 187
29R 3,670,851

CLASS 188
1C 3,670,852
71.6 3,670,854
72.6 3,670,853
82.3 3,670,855

CLASS 192
6A 3,670,856
60 3,670,857
107R 3,670,858
112 3,670,859

CLASS 194
1J 3,670,860

CLASS 195
28R 3,671,395
3,671,396
29 3,671,397
31P 3,671,398
100 3,671,399
3,671,400

CLASS 197
18HB 3,671,678
64 3,670,861

CLASS 198
16 3,670,862
22R 3,670,863
29 3,670,864
33AA 3,670,865
33AC 3,670,866
38 3,670,867
41 3,670,868
185 3,670,869
193 3,670,870

CLASS 200
5EA 3,671,686
11TC 3,671,687
48A 3,671,689
48R 3,671,688
61.45R 3,671,690
61.54 3,671,691
61.86 3,671,692
67G 3,671,693
81H 3,671,694
84R 3,671,695
144B 3,671,696
144R 3,671,697
148R 3,671,698
157 3,671,699
160 3,671,700
166C 3,671,702
166J 3,671,701

CLASS 201
12 3,671,401
15 3,671,402
25 3,671,403

CLASS 202
176 3,671,404

CLASS 204
4 3,671,405
16 3,671,406
32R 3,671,407
43 3,671,408
49 3,671,409
56 3,671,410
130 3,671,411
181 3,671,412
195L 3,671,413
195R 3,671,414
284 3,671,415
297R 3,671,416
320 3,671,417

CLASS 206
13 3,670,871
44R 3,670,872
45.34 3,670,881
46PV 3,670,874
46H 3,670,873
52F 3,670,875
58 3,670,876
59F 3,670,877
62P 3,670,878
65D 3,670,879
65S 3,670,880

CLASS 208
10 3,671,418
57 3,671,419
61 3,671,420
68 3,671,421
79 3,671,422
97 3,671,423
127 3,671,424
216 3,671,425

CLASS 209
2 3,670,882
5 3,670,883
80 3,670,884
80.5 3,670,885
139A 3,670,886

CLASS 210
5 3,670,887
20 3,671,426
71 3,670,888
90 3,670,889
104 3,670,890
128 3,670,891
134 3,670,892
138 3,670,893
164 3,670,894
167 3,670,895
242 3,670,896
321 3,670,897
356 3,670,898

CLASS 211
3,670,899

CLASS 212
14 3,670,900

CLASS 213
151 3,670,901

CLASS 214
1P 3,670,902
3,670,904
1Q 3,670,903
6P 3,670,906
16.4A 3,670,905
17DB 3,670,907
24 3,670,908
43 3,670,909
141 3,670,910
312 3,670,911
313 3,670,912
522 3,670,913

CLASS 218
32 3,670,914
48 3,670,915

CLASS 219
10.53 3,671,709
10.75 3,671,703
10.81 3,671,704
69C 3,671,705
69M 3,671,706
74 3,671,707
78 3,671,708
99 3,671,710
117HD 3,671,711
125R 3,671,712
127 3,671,713
203 3,671,714
374 3,671,715

CLASS 220
9F 3,670,916
10 3,670,917
20 3,670,918
54 3,670,919
57 3,670,920
75 3,670,921
97C 3,670,922

CLASS 222
2 3,670,923
3,670,924
3 3,670,925
47 3,670,926
107 3,670,927
288 3,670,928
400.7 3,670,929
527 3,670,930

CLASS 223
71 3,670,931
75 3,670,932

CLASS 224
28B 3,670,933
42.03B 3,670,935
42.1E 3,670,934
42.42 3,670,936
45T 3,670,937
48R 3,670,938

CLASS 225
99 3,670,939

CLASS 226
8 3,670,940

CLASS 227
3,670,941
10 3,670,942
60 3,670,943

CLASS 228
1 3,670,944
4 3,670,945

CLASS 229
4.5 3,670,946
33 3,670,948
39R 3,670,949
40 3,670,950
43 3,670,951
44R 3,670,952
54R 3,670,947
57 3,670,953
3,670,954

CLASS 232
7 3,670,955

CLASS 235
60TN 3,670,957
61.11C 3,671,720
61.11D 3,671,719
61.11E 3,671,718
61.11H 3,671,721
61.12N 3,671,722
61.6A 3,671,716
61.7B 3,671,717
70A 3,670,958
94R 3,670,959
150.1 3,671,725
150.27 3,671,723
151 3,671,724
151.11 3,671,727
151.3 3,671,726
164 3,670,956
186 3,671,729
189 3,671,728
3,671,730
192 3,671,731

CLASS 236
11 3,670,960

CLASS 239
15 3,670,961
62 3,670,962
77 3,670,963
265.019 3,670,964
308 3,670,965
337 3,670,966
412 3,670,967

CLASS 240
8.25 3,671,733
8.3 3,671,732
10.06 3,671,734
41.1 3,671,735
47 3,671,736
84 3,671,738
122 3,671,739

CLASS 241
21 3,670,968
27 3,670,969
3,670,970
69 3,670,971
76 3,670,972
188R 3,670,973

CLASS 242
22 3,670,974
45 3,670,975
47.12 3,670,976
54R 3,670,977
54.4 3,670,978
64 3,670,979
67.1 3,670,980
67.4 3,670,981
71.2 3,670,982
74.2 3,670,983
84.02G 3,670,984
84.43 3,670,985
107.1 3,670,986
118.4 3,670,987
158R 3,670,988
192 3,670,989
3,670,990
197 3,670,991
204 3,670,992

CLASS 244
32 3,670,993
42CC 3,670,994
80 3,670,995
103 3,670,996
110C 3,670,997
121 3,670,998
137 3,670,999

CLASS 248
43 3,671,001
205R 3,671,000
300 3,671,002
361R 3,671,003
467 3,671,004
480 3,671,005

CLASS 249
97 3,671,006
114 3,671,007
155 3,671,008

CLASS 250
41.9ME 3,671,737
43.5R 3,671,740
44 3,671,741
49.5A 3,671,743
49.5E 3,671,742
51.5 3,671,744
61 3,671,745
83.3R 3,671,746
199 3,671,747
201 3,671,748
208 3,671,749
211J 3,671,751
220R 3,671,752
222R 3,671,753
236 3,671,754
237R 3,671,750
3,671,755

CLASS 251
129 3,671,009
151 3,671,010
323 3,671,011

CLASS 252
8.5M 3,671,427
3,671,428
25 3,671,429
32.7E 3,671,430
33.4 3,671,012
33.6 3,671,431
46 3,671,432
49.6 3,671,433
49.8 3,671,434
62.1 3,671,646
62.56 3,671,435
62.58 3,671,436
79.3 3,671,437
90 3,671,438
99 3,671,439
103 3,671,440
133 3,671,441
171 3,671,442
3,671,443
3,671,444
3,671,445
3,671,446
180 3,671,447
3,671,448
182 3,671,449
186 3,671,450
301.1S 3,671,453
301.2SC 3,671,455
301.2 3,671,451
301.4F 3,671,452
3,671,454
305 3,671,456
311.5 3,671,457
351 3,671,458
356 3,671,459
358 3,671,460
3,671,461
429A 3,671,462
448 3,671,463
511 3,671,464
548 3,671,465

CLASS 254
8R 3,671,013
51 3,671,014
142 3,671,015
190 3,671,016

CLASS 256
47 3,671,017

CLASS 259
4 3,671,018
8 3,671,019
10 3,671,020
109 3,671,021

CLASS 260
2EP 3,671,592
2A 3,671,466
2H 3,671,469
2M 3,671,467
2R 3,671,468
2.5AP 3,671,470
2.5R Re.27,401
3,671,471
17.4ST 3,671,472
18PF 3,671,473
20 3,671,474
22R 3,671,475
23AR 3,671,476
23.5A 3,671,477
23.7M 3,671,478
29.1SB 3,671,480
29.6RW 3,671,479
30.2R 3,671,481
30.4N 3,671,482
30.8R 3,671,542
32.8SB 3,671,483
33.4SB 3,671,485
33.6SB 3,671,484
37SB 3,671,546
37N 3,671,486
40R 3,671,487
43.7R 3,671,488
46.5E 3,671,489
47CP 3,671,490
3,671,491
47CZ 3,671,614
75NH 3,671,493
77 3,671,494
3,671,495
77.5AP 3,671,497
77.5CR 3,671,496
78L 3,671,499
3,671,500
3,671,501
78R 3,671,498
79.3MU 3,671,502
79.5B 3,671,503
80.7 3,671,504
80.78 3,671,505
3,671,506
85.5ES 3,671,492
87.1 3,671,508
87.5A 3,671,510
87.5 3,671,509
88.3R 3,671,507
93.7 3,671,511
3,671,513
203 3,671,514
210R 3,671,647
223 3,671,515
229 3,671,516
239BB 3,671,519
239BD 3,671,517
239.3D 3,671,518
240A 3,671,520
240R 3,671,648
244R 3,671,521
247.5R 3,671,522
248AS 3,671,523
249.8 3,671,524
250A 3,671,525
251A 3,671,526
252 3,671,649
268BC 3,671,528
268PL 3,671,527
294.8B 3,671,529
294.8D 3,671,650
294.8F 3,671,512
295F 3,671,530
305 3,671,531
306.7 3,671,533
3,671,534
3,671,537
307B 3,671,538
307C 3,671,535
307H 3,671,539
307.5 3,671,536
309.5 3,671,540
309.6 3,671,541
315 3,671,544
326D 3,671,543
326.5FL 3,671,545
329P 3,671,547
332.2R 3,671,548
343.7 3,671,549
347.8 3,671,550
348R 3,671,551
369 3,671,552
392 3,671,553
397.3 3,671,554
397.4 3,671,555
404 3,671,556
408 3,671,557
410.9R 3,671,558
413 3,671,559
429R 3,671,560
437R 3,671,561
448.8R 3,671,562
463 3,671,563
3,671,651
465F 3,671,564
465.1 3,671,565
465.2 3,671,566
465.8D 3,671,567
3,671,568
3,671,569
468R 3,671,570
471C 3,671,571
480F 3,671,574
485G 3,671,572
488CD 3,671,573
491 3,671,575
497A 3,671,576
3,671,577
515P 3,671,578
517 3,671,579
520 3,671,580
527R 3,671,581
533R 3,671,582
535P 3,671,583
539R 3,671,584
3,671,652
545R 3,671,585
3,671,586
570.7 3,671,587
586B 3,671,588
586R 3,671,589
593R 3,671,590
596 3,671,591
609D 3,671,593
633 3,671,594
648C 3,671,595
658R 3,671,596
666PY 3,671,597
3,671,599
666M 3,671,598
3,671,600
671B 3,671,601
672T 3,671,602
677A 3,671,603
677 3,671,604
678 3,671,605
680E 3,671,606
876R 3,671,607
878R 3,671,608
879 3,671,609
880R 3,671,610
932 3,671,611
987 3,671,612

CLASS 261
26 3,671,023
29 3,671,022
39R 3,671,024
76 3,671,025

CLASS 263
20 Re.27,396
21B 3,671,026
32R 3,671,027

CLASS 264
39 3,671,615
3,671,653
68 3,671,616
89 3,671,617
115 3,671,613
120 3,671,618
168 3,671,619
171 3,671,620
244 3,671,621
263 3,671,622
290 3,671,623
294 3,671,624

CLASS 266
6S 3,671,028
34A 3,671,029

CLASS 267
54 3,671,030
110 3,671,031

CLASS 269
72 3,671,032

CLASS 270
83 3,671,033

CLASS 271
68 3,671,034
76 3,671,035

CLASS 273
33 3,671,036
3,671,037
67R 3,671,038
95R 3,671,039
96R 3,671,040
135A 3,671,041
176AB 3,671,042

CLASS 274
4A 3,671,043
4J 3,671,044
10R 3,671,045

CLASS 277
170 3,671,046
227 3,671,048
235R 3,671,047

CLASS 279
4 3,671,049
47 3,671,050

CLASS 280
11.1ET 3,671,051
11.35M 3,671,054
11.35T 3,671,052
3,671,053
47.32 3,671,056
87.01 3,671,055
124R 3,671,057
166 3,671,058

CLASS 283
7 3,671,059

CLASS 285
54 3,671,060

CLASS 287
20.92W 3,671,061
127 3,671,062
189.36C 3,671,063

CLASS 290
54 3,671,756

CLASS 292
45 3,671,064
175 3,671,065
201 Re.27,390
228 3,671,066
292 3,671,067

CLASS 293
1 3,671,068

CLASS 294
81SF 3,671,069

CLASS 296
65R 3,671,070
69 3,671,071

CLASS 297
32 3,671,072
239 3,671,074

CLASS 298
17S 3,671,073

CLASS 299
79 3,671,075

CLASS 301
37R 3,671,076

CLASS 302
8 3,671,077
28 3,671,078
29 3,671,079

CLASS 303
6C 3,671,080
21BE 3,671,081
3,671,083
21F 3,671,084
3,671,085
21P 3,671,082
23R 3,671,086
60 3,671,087

CLASS 305
7 3,671,088

CLASS 307
10LS 3,671,757
10R 3,671,758
88R 3,671,759
106 3,671,761
116 3,671,760
117 3,671,762
209 3,671,763
3,671,764
251 3,671,769
252UA 3,671,768
252B 3,671,770
252W 3,671,767
268 3,671,771
269 3,671,772
271 3,671,773
273 3,671,774
275 3,671,775
289U 3,671,780
291 3,671,776
293 3,671,777
309 3,671,781
310 3,671,778
311 3,671,779

CLASS 308
20 3,671,089
36.1 3,671,090
40 3,671,091
72 3,671,092
183 3,671,093

CLASS 310
9.5 3,671,765
3,671,783
3,671,784
39 3,671,766
3,671,782
50 3,671,785
87 3,671,786
154 3,671,787
156 3,671,788
163 3,671,789
216 3,671,790
219 3,671,791

CLASS 312
319 3,671,094
352 3,671,095

CLASS 313
85S 3,671,794
109 3,671,795
204 3,671,796
325 3,671,797
336 3,671,798
337 3,671,792

CLASS 315
27TD 3,671,799
36 3,671,800
39.55 3,671,801
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209 3,671,805

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11A 3,671,807
13R Re.27,393
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18D 3,671,809
20 3,671,810
99 Re.27,400
101D 3,671,811
118 3,671,812
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123 3,671,814
133.5 3,671,815
136 3,671,816
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230 3,671,818
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345 3,671,836
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1 3,671,842
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32 3,671,847
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129 3,671,875
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57 Re.27,394
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126 3,671,891
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136 3,671,905
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15.5	3,671,930	347DD	3,671,959	162SF	3,671,106		3,671,127	243	3,671,146	319	3,671,635
52H	3,671,933		3,671,960		3,671,107	37	3,671,128	247	3,671,145	320	3,671,642
63	3,671,934	373	3,671,962	253	3,671,108	85	3,671,129	286	3,671,147	322	3,671,637
146.1AB	3,671,935	392	3,671,958	299	3,671,109	106	3,671,130	295	3,671,148		3,671,638
146.3AE	3,671,936	CLASS 343		307	3,671,110	175	3,671,131	360	3,671,149	323	3,671,639
	3,671,937	6ND	3,671,963	CLASS 351		CLASS 401		395	3,671,150	330	3,671,636
166R	3,671,938	6.5R	3,671,966	113	3,671,111	292	3,671,132	411	3,671,151		3,671,643
171	3,671,939	18C	3,671,965	CLASS 352		CLASS 408		422	3,671,152	346	3,671,644
172.5	3,671,940	18E	3,671,964	84	3,671,112	235	3,671,133	CLASS 418		351	3,671,645
	3,671,941	108R	3,671,967	173	3,671,113	CLASS 415		61	3,671,153	CLASS 425	
	3,671,942	113DE	3,671,968	185	3,671,114	13	3,671,134		3,671,154	78	3,671,157
	3,671,943	117R	3,671,969	CLASS 353		53	3,671,135	73	3,671,155	129	3,671,158
	3,671,944	120	3,671,970	19	3,671,115	89	3,671,136	CLASS 424		130	3,671,156
	3,671,945	710	3,671,971	27	3,671,116	104	3,671,137	45	3,671,625	155	3,671,159
173FF	3,671,946	750	3,671,972	28	3,671,117	111	3,671,138	49	3,671,626	161	3,671,160
173SP	3,671,948	751	3,671,973	CLASS 355		CLASS 416		105	3,671,627	195	3,671,161
173R	3,671,947	CLASS 350		3	3,671,118	61	3,671,139	120	3,671,628	242	3,671,168
174BC	Re.27,395	3.5	3,671,096		3,671,119	176	3,671,141	153	3,671,629	245	3,671,162
174SP	3,671,950	7	3,671,097	7	3,671,121	183	3,671,140	174	3,671,630	297	3,671,163
	3,671,951	8	3,671,098	8	3,671,120	CLASS 417		205	3,671,631	414	3,671,164
174TB	3,671,949	19	3,671,100	22	3,671,122	36	3,671,142	218	3,671,632	445	3,671,165
177	3,671,952	43	3,671,099	97	3,671,123	79	3,671,143	273	3,671,633	CLASS 431	
227R	3,671,953	109	3,671,101	124	3,671,124			274	3,671,634	67	3,671,169
240	3,671,954	125	3,671,360	133	3,671,125			300	3,671,640	88	3,671,170
251	3,671,955	147	3,671,102	CLASS 356				304	3,671,641	93	3,671,166
324A	3,671,956	149	3,671,103					305	3,671,532	116	3,671,171
	3,671,957	157	3,671,104							174	3,671,172
										182	3,671,173
										190	3,671,167
										326	3,671,174
										328	3,671,175

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D 1—	1 223,891		223,908	6	223,923		223,938	32	223,953	D74—	5 223,968
D 8—	5 223,892		223,909	13	223,924		223,939		223,954		7 223,969
	223,893	D16—	3 223,910		223,925	11	223,940		223,955	D83—	1 223,970
	220 223,894		223,911		223,926	15	223,941	D49—	35 223,956		223,971
	263 223,895		223,912	14	223,927		223,942	D52—	3 223,957		8 223,972
D 9—	42 223,896	D19—	1 223,903		223,928		223,943		6 223,958		12 223,978
	216 223,898	D23—	29 223,913		223,929		223,944		223,959	D86—	10 223,973
	218 223,899		30 223,914		223,930	D37—	3 223,945	D54—	12 223,960		223,974
	250 223,897		37 223,915		223,931	D42—	7 223,946	D55—	1 223,961		223,975
	278 223,900		49 223,916	15	223,932		223,947	D56—	4 223,962		223,976
D13—	1 223,901		223,917	D29— 1	223,933		223,948	D61—	1 223,963		223,977
	223,902		123 223,918	23	223,934	D44—	29 223,949	D64—	11 223,964	D87—	3 223,979
	223,904	D24—	1 223,919	D34— 2	223,935	D47—	6 223,950		223,965	D90—	16 223,980
	223,905		223,920		223,936	D48—	2 223,951	D70—	1 223,966	D92—	1 223,981
	223,906	D26—	223,921	5	223,937		20 223,952	D72—	223,967		223,982
	223,907		5 223,922								

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PATENTS

1 :	3,670,483	3,670,728	3,671,390	3,670,826		3,671,637	3,670,760
	3,670,563	3,670,764	3,671,394	3,670,831		3,671,638	3,670,763
	3,670,564	3,670,765	3,671,404	3,670,940		3,671,642	3,670,767
	3,670,581	3,670,789	3,671,425	3,671,199		3,671,829	3,670,770
	3,670,619	3,670,792	3,671,428	3,671,322	11 :	Re.27,397	3,670,785
	3,670,695	3,670,794	3,671,435	3,671,681		3,671,551	3,670,808
	3,670,934	3,670,814	3,671,511	3,671,787	12 :	3,670,418	3,670,825
	3,670,962	3,670,818	3,671,547	3,671,812		3,670,438	3,670,835
	3,671,292	3,670,844	3,671,558	3,671,942		3,670,540	3,670,860
2 :	3,670,603	3,670,850	3,671,609	9 :	3,670,371		3,670,615	3,670,861
4 :	3,670,691	3,670,857	3,671,613	3,670,427		3,670,684	3,670,873
	3,670,938	3,670,859	3,671,675	3,670,433		3,670,742	3,670,875
	3,670,959	3,670,867	3,671,710	3,670,442		3,670,797	3,670,895
	3,671,767	3,670,878	3,671,719	3,670,493		3,670,841	3,670,911
	3,671,770	3,670,880	3,671,720	3,670,497		3,670,845	3,670,921
	3,671,899	3,670,885	3,671,725	3,670,675		3,670,891	3,670,955
5 :	3,670,508	3,670,892	3,671,728	3,670,723		3,670,929	3,670,958
6 :	Re.27,394	3,670,894	3,671,737	3,670,774		3,671,001	3,670,966
	3,670,357	3,670,896	3,671,739	3,670,837		3,671,032	3,671,003
	3,670,358	3,670,935	3,671,740	3,670,852		3,671,071	3,671,020
	3,670,360	3,670,944	3,671,760	3,670,908		3,671,117	3,671,023
	3,670,397	3,670,956	3,671,762	3,671,013		3,671,272	3,671,040
	3,670,411	3,670,960	3,671,766	3,671,171		3,671,372	3,671,045
	3,670,412	3,671,005	3,671,773	3,671,223		3,671,391	3,671,048
	3,670,415	3,671,019	3,671,774	3,671,239		3,671,657	3,671,055
	3,670,423	3,671,041	3,671,793	3,671,298		3,671,741	3,671,065
	3,670,426	3,671,046	3,671,795	3,671,314		3,671,881	3,671,070
	3,670,435	3,671,059	3,671,838	3,671,450	13 :	3,670,401	3,671,091
	3,670,444	3,671,062	3,671,849	3,671,463		3,671,271	3,671,110
	3,670,449	3,671,067	3,671,868	3,671,521	15 :	3,671,219	3,671,114
	3,670,451	3,671,069	3,671,871	3,671,634	16 :	3,670,923	3,671,142
	3,670,462	3,671,082	3,671,876	3,671,715		3,671,559	3,671,161
	3,670,494	3,671,100	3,671,888	3,671,754	17 :	Re.27,398	3,671,215
	3,670,501	3,671,101	3,671,889	3,671,841		3,670,362	3,671,225
	3,670,509	3,671,102	3,671,904	3,671,890		3,670,388	3,671,232
	3,670,516	3,671,122	3,671,908	3,671,900		3,670,409	3,671,269
	3,670,535	3,671,126	3,671,918	3,671,916		3,670,447	3,671,295
	3,670,545	3,671,137	3,671,927	3,671,922		3,670,455	3,671,356
	3,670,555	3,671,138	3,671,940	3,671,956		3,670,472	3,671,380
	3,670,565	3,671,156	3,671,943	3,671,957		3,670,512	3,671,416
	3,670,570	3,671,183	3,671,948	10 :	3,671,201		3,670,543	3,671,418
	3,670,572	3,671,195	3,671,949	3,671,365		3,670,583	3,671,432
	3,670,585	3,671,238	3,671,955	3,671,381		3,670,584	3,671,527
	3,670,602	3,671,275	3,671,964	3,671,458		3,670,606	3,671,538
	3,670,623	3,671,289	3,671,971	3,671,475		3,670,628	3,671,565
	3,670,642	3,671,318	7 :	3,670,416	3,671,509		3,670,662	3,671,595
	3,670,653	3,671,319		3,671,201	3,671,542		3,670,663	3,671,645
	3,670,686	3,671,326	8 :	3,670,428	3,671,598		3,670,669	3,671,668
	3,670,692	3,671,341		3,670,464	3,671,599		3,670,671	3,671,686
	3,670,693	3,671,367		3,670,771	3,671,600		3,670,702	3,671,693
	3,670,727	3,671,369		3,670,820	3,671,604		3,670,745	3,671,697

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PATENT OFFICE NOTICES

Graphic Symbols for Patent Drawings

Rule 84(g) of the Rules of Practice in Patent Cases indicates that graphic drawing symbols and other labeled representations may be used for conventional elements where appropriate, subject to approval by the Office. Also, suitable legends may be used, or may be required, in proper cases.

The Rules of Practice pamphlet has, since the turn of the century, included a section entitled "Symbols for Draftsman" showing various symbols which may be used on patent application drawings. Although these symbols still reflect current practice they are somewhat limited in number and scope. A more complete set of symbols might be beneficial to both the Office and the public since it would foster uniformity of presentation, and more informative drawings. However, for the Office to develop and maintain a substantially complete listing of all graphic drawing symbols would be both difficult and time-consuming.

Therefore, since the American National Standards Institute Inc., 1430 Broadway, New York, N.Y., 10018, publishes a series of publications relating to graphic symbols under its Y32 and Z32 headings, the Office is calling the attention of patent applicants to these symbols for their consideration and use where appropriate in patent drawings. The below listed publications have been reviewed by the Office and the symbols therein are considered to be generally acceptable in patent drawings. Although the Office will not "approve" all of the listed symbols as a group because their use and clarity must be decided on a case-by-case basis, these publications may be used as guides when selecting graphic symbols. Overly specific symbols should be avoided. Symbols with unclear meanings should be labeled for clarification. As noted in Rule 84(g), the Office will retain final authority to approve the use of any particular symbol in any particular case.

The reviewed publications are the following:

Y32.2–1970. Graphic Symbols for Electrical and Electronics Diagram	$11.50
Y32.10–1967. Graphic Symbols for Fluid Power Diagrams	3.00
Y32.11–1961. Graphic Symbols for Process Flow Diagrams in the Petroleum and Chemical Industries	2.00
Y32.14–1962. Graphic Symbols for Logic Diagrams	4.75
Z32.2.3–1949 (R1953). Graphic Symbols for Pipe Fittings, Valves and Piping	2.00
Z32.2.4–1949 (R1958). Graphic Symbols for Heating, Ventilating and Air Conditioning	2.00
Z32.2.6–1950. Graphic Symbols for Heat-Power Apparatus	2.00

No change in the Rules of Practice is considered necessary at this time.

The above list of publications will be included in the Manual of Patent Examining Procedure.

RICHARD A. WAHL,
Assistant Commissioner.

May 19, 1972.

Changes in Charges for Copies

The Patent Office is announcing a change in the charges for copies of materials produced on coin-operated copiers located at Crystal Plaza. The charge will be 15¢ per page.

This change will be effective within the next 30 to 45 days due to the engineering changes necessary to accommodate the difference in number and value of coins.

The Patent Office will monitor this change for a period of six months to: (1) Evaluate effects on other services, equipment utilization, materials, and facilities; and, (2) Ensure that the new charge of 15¢ per page will enable the Patent Office to fully recover the cost of operating the copiers.

At the end of the period, the data obtained will be evaluated with a view to continuance or discontinuance of the reduced rate.

ROBERT GOTTSCHALK,
Commissioner of Patents.

June 6, 1972.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,604,313, F. W. Grantham, DRYERS; **2,643,463**, same, LAUNDRY APPARATUS, filed Feb. 12, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c251, *Paulette Grantham et al.* v. *McGraw-Edison.* Final order of dismissal by stipulation, complaint as amended and all counterclaims are dismissed with prejudice, Jan. 17, 1972.

2,643,463. (See 2,604,313.)

2,795,967, G. F. Schlote, SPIRAL-DRIVE, SLIDABLE SIDE JAW WRENCH, filed Jan. 24, 1972, D.C. Colo. (Denver), Doc. C–3675, *Space Tool, Inc. et al.* v. *Kenneth F. Hails.*

2,839,196, W. C. Schwalge, OIL RECLAIMER, filed Feb. 14, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–95–C, *Prelin Industries, Inc.* v. *G & G. Crafts, Inc. and George E. Barrow.*

2,846,278, W. J. Blazek, POSITIONING MEANS FOR GUIDE ASSEMBLIES OF PUNCH PRESS DIE SETS, filed July 22, 1969, D.C., E.D. Wis. (Milwaukee), Doc. 69–C–360, *Lempco Industries, Inc.* v. *Superior Die Set Corp.* Stipulated order, plaintiff owner of patent. Plaintiff's complaint and defendant's counterclaim are hereby dismissed with prejudice, Feb. 14, 1972.

2,934,932, H. B. Wagner, HYDRAULIC CEMENT MORTAR COMPOSITIONS AND METHODS OF USE; **2,990,382**, Wagner and Fitzgerald, COMPOSITION COMPRISING HYDRAULIC CEMENT, METHYL CELLULOSE AND REEMULSIFIABLE POLYVINYL ACETATE, METHOD OF PREPARING SAME AND MORTAR PREPARED THEREFROM, filed Nov. 4, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71–2125, *Title Council of America, Inc.* v. *Garland White & Co., Inc.*

2,990,382. (See 2,934,932.)

2,998,927, E. P. Aghnides, FLUID MIXING DEVICES; **3,130,918**, same, SLOTLESS AERATOR, filed Aug. 11, 1969, D.C. Md. (Baltimore), Doc. 21076, *Elie P. Aghnides* v. *F. W. Woolworth Company.* Final judgment, Patent 2,998,927 is invalid and complaint is dismissed with prejudice; complaint is dismissed without prejudice as to Patent 3,130,918 subject to terms and conditions of stipulation of counsel, Jan. 27, 1972.

3,043,343, R. W. May, METHOD AND APPARATUS FOR CHART RECORDING, filed Mar. 2, 1972, D.C.N.J. (Newark), Doc. 406–72, *Gulton Industries, Inc.* v. *Esterline Corporation.*

3,072,582, C. B. Frost, POLYETHER-URETHANE FOAMS AND METHOD OF MAKING SAME, filed Mar. 26, 1970, D.C. Del. (Wilmington), Doc. 3867, *The General Tire & Rubber Company* v. *Reichhold Chemicals, Inc.* Order of dismissal upon consent, parties entered into an agreement in settlement; complaint dismissed with prejudice. Counterclaim dismissed with prejudice, Feb. 22, 1972.

3,101,535, M. G. Andis, BLADE ASSEMBLY WITH LATERAL EXTENSIONS, filed Feb. 22, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–107, *Andis Clipper Co.* v. *Oster Corporation.*

3,116,557, J. R. Trice, Jr., METHOD AND MEANS FOR LAYING SEWER PIPE, filed Sept. 30, 1968, D.C., N.D. Ind. (South Bend), Doc. 4261, *Alignment Systems, Inc.* v. *Woodruff and Sons, Inc. and Roy J. Woodruff.* Judgment entered in plaintiff's favor and against defendant with respect to validity of subject patent; judgment in defendant's favor and against plaintiff with respect to plaintiff's claims of infringement of subject patent, Dec. 30, 1971.

3,122,483, M. W. Rosenthal, STRONTIUM ION TOOTHPASTE, filed Feb. 8, 1972, D.C., S.D.N.Y., Doc. 72–C–585, *Block Drug Company, Inc.* v. *Thrifty Cosmetics and Sundries, Inc.*

3,130,918. (See 2,998,927.)

3,135,019, E. O. Aichele, MACHINE FOR APPLYING SEALING LINERS OF THERMOPLASTIC MATERIAL TO BOTTLE CAPS OR THE LIKE, filed Jan. 24, 1972, D.C., S.D. Ind. (Indianapolis), Doc. IP 72–C–30, *Zapata Industries, Inc.* v. *H-C Industries, Inc.*

3,275,816, G. V. Cleary, INSERT FOR NEWSPAPERS, filed Jan. 7, 1971, D.C., N.D. Ill. (Chicago), Doc. 72c58, *Free Standing Stuffer, Inc.* v. *Time Inc.*

3,278,949, B. T. Whitaker, SWIMMING POOL CLEANING APPARATUS, filed Feb. 9, 1972, D.C., M.D. Fla. (Orlando), Doc. 72–31–Orl–C, *Poolmaid, Inc.* v. *Tropicana Pools, Inc. and Ben W. Walters.*

3,287,693, S. M. Bagno, TRANSDUCER-TRANSFORMER UNIT, filed Jan. 25, 1972, D.C.N.J. (Newark), Doc. C–155–72, *Syetron-Donner Corporation* v. *Emergency Products Corporation.*

3,292,615, Bascomb and Mayer, DEVICE FOR AGITATING, SWIRLING AND AERATING THE WATER IN A VESSEL, SUCH AS A BATH TUB OR THE LIKE, filed July 7, 1967, D.C., N.D. Ill. (Chicago), Doc. 67c1170, *Boulevard Electronics Inc.* v. *Marshall Field & Co., J. C. Penney Co., Co-Op Electric Supply Co.* Judgment for defendants, plaintiff failed to establish an invention justifying patent in suit and that there can be no infringement, Jan. 30, 1971.

3,293,094, Nairn, Harkins, Ehrenfeld and Tarlow, TEXTURED FOAM PROCESSES; **3,293,108**, same filed Dec. 20, 1966, D.C., E.D. Pa. (Philadelphia), Doc. 41762, *Congoleum Industries, Inc.* v. *Armstrong Cork Company.* Order, judgment in favor of the plaintiff, and against the defendant, holding that Patents 3,293,094 and 3,293,108 are valid and infringed. Defendant's commercial process infringes claims 1, 2, 3, 5, 6, 7, 8, 9, 16, 21, 22, 26, 27, 28, 29, 30, 32, 55, 62, of Patent 3,293,094, and claims 1, 2, 3, 4, 5, 6, 11, 15, 16, 17, 18, 20, 21, 25, 26, 28, 30, 33, 34 and 39 of Patent 3,293,108. Defendant's infringement has not been willful and wanton, Feb. 23, 1972.

3,293,108. (See 3,293,094.)

3,305,273, J. Kilbourne, MINING APPARATUS SUPPORTING AND DRIVING CONSTRUCTION, filed Jan. 26, 1972, D.C., W.D. Pa. (Pittsburgh), Doc. 72–77, *National Mine Service Company* v. *Jeffrey Galion, Inc.*

3,312,124, Meier and Meier, STEERING-WHEEL ASSEMBLY FOR AUTOMOTIVE VEHICLES, filed Feb. 18, 1972, D.C., N.D. Ohio (Cleveland), Doc. 72–177, *Kamei-Autokomfort and Superior Industries* v. *Giant Tiger Stores, Inc.* Same, filed Feb. 16, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–289–AJZ, *Kamei-Autokomfort Corp.* v. *Gus Mozart, doing business as Eurasia Automotive Products.*

3,349,426, R. S. Haydock, HOODED CASTER WHEEL ASSEMBLY, filed Jan. 31, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–218–R, *Mildred R. Haydock et al.* v. *Shin Kuno, Torii Co. et al.*

3,353,770, W. Sondheim, UNIVERSAL PUMP BOX APPARATUS, filed Dec. 1, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2844–MML, *Permco Corporation* v. *Coxwell's Inc., Specialty Equipment Fabricating Co.* Same, filed Feb. 11, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16193, *Permco Corporation* v. *A.G.N. Manufacturing, Inc. and National Steel Form Corp.*

3,363,422, L. A. Turzillo, METHOD AND APPARATUS FOR ANCHORING A TIE-DOWN BAR IN AN EARTH SITUS, filed Sept. 9, 1968, D.C., N.D. Ohio (Cleveland), Doc. C–68–671, *Lee Turzillo Contracting Co., Inc.* v. *Intrusion Prepakt, Inc., Prepakt Concrete Company.* Consent judgment, plaintiff owner of patent, parties have settled in full plaintiff's claim for damages, Jan. 28, 1972.

Dedications

2,978,705.—*Sigurd M. Moberg*, Pompton Plains, N.J. MACHINE FOR APPLYING TAGS. Patent dated Apr. 11, 1961. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,978,706.—*Sigurd M. Moberg*, Pompton Plains, N.J. TAG APPLYING APPARATUS. Patent dated Apr. 11, 1961. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,990,322.—*Howard A. Jones*, and *John A. Garman*, Baltimore, Md., and *Berton C. Dickinson*, Lyndonville, N.Y. SYNERGISTIC INSECTICIDAL COMPOSITIONS. Patent dated June 27, 1961. Dedication filed Nov. 4, 1971, by the assignee, *FMC Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

2,992,986.—*William T. Ingram*, Whitestone, N.Y. TREATMENT OF SEWAGE AND OTHER WASTE MATERIAL. Patent dated July 18, 1961. Dedication filed Mar. 14, 1972, by the assignee, *Monsanto Enviro-Chem Systems, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,325,989.—*Edgar Dare Bolinger*, Spartanburg, S.C. BALANCED ELASTICIZED MULTIFILAMENT YARN. Patent dated June 20, 1967. Dedication filed June 22, 1971, by the assignee, *Deering Milliken Research Corporation*.

Hereby dedicates to the Public the entire remaining term thereof falling on and after Feb. 20, 1979.

3,475,651.—*George D. Harding* and *Howard L. Storm*, Syracuse, N.Y. CHARGING AND TRIGGERING CIRCUITS FOR PULSED ELECTRICAL DEVICES SUCH AS FLASH LAMPS. Patent dated Oct. 28, 1969. Dedication filed Jan. 12, 1972, by the assignee, *General Electric Company*.

Hereby dedicates to the Public the above-identified patent.

Certificates of Correction for the Week of June 27, 1972

D. 220,678	3,575,430	3,599,460	3,614,759
D. 220,736	3,579,545	3,600,324	3,614,875
3,163,654	3,579,807	3,600,694	3,615,267
3,347,940	3,580,455	3,601,164	3,615,323
3,408,918	3,580,962	3,601,380	3,615,382
3,442,594	3,582,333	3,602,183	3,615,428
3,450,535	3,584,542	3,602,303	3,615,829
3,458,957	3,587,146	3,604,493	3,616,030
3,462,329	3,588,228	3,606,271	3,616,295
3,497,584	3,588,827	3,607,013	3,616,651
3,510,386	3,590,692	3,607,269	3,616,848
3,522,560	4,591,091	3,608,638	3,616,964
3,525,872	3,591,582	3,608,777	3,617,108
3,535,347	3,592,401	3,609,005	3,617,211
3,538,120	3,592,733	3,609,138	3,617,252
3,542,087	3,592,807	3,609,219	3,617,291
3,548,424	3,593,808	3,610,018	3,617,306
3,549,897	3,594,120	3,610,097	3,617,341
3,555,043	3,594,716	3,611,005	3,617,362
3,558,852	3,595,327	3,611,897	3,617,553
3,559,585	3,595,886	3,611,984	3,617,720
3,562,197	3,596,065	3,612,829	3,617,889
3,562,331	3,597,229	3,612,900	3,618,000
3,564,372	3,597,453	3,613,086	3,618,062
3,565,804	3,597,554	3,613,513	3,618,089
3,572,657	3,597,589	3,613,796	3,618,565
3,572,814	3,598,155	3,613,898	3,619,465
3,574,223	3,598,661	3,614,659	3,619,709
3,574,786	3,598,858	3,614,662	3,619,811
3,619,983	3,625,941	3,634,528	3,641,628
3,619,997	3,625,971	3,634,587	3,641,834
3,620,745	3,626,665	3,634,673	3,642,062
3,620,785	3,626,944	3,634,762	3,642,127
3,620,786	3,627,514	3,634,827	3,642,331
3,620,900	3,627,606	3,635,108	3,642,464
3,620,915	3,627,637	3,635,201	3,642,585
3,620,930	3,627,742	3,635,283	3,642,787
3,620,938	3,627,820	3,635,337	3,642,809
3,620,990	3,627,895	3,635,345	3,643,192
3,621,066	3,628,664	3,635,408	3,643,666
3,621,068	3,629,058	3,635,616	3,643,822
3,621,071	3,629,226	3,635,791	3,643,968
3,621,143	3,629,242	3,635,933	3,644,107
3,621,175	3,629,676	3,636,072	3,644,289
3,621,203	3,629,923	3,636,176	3,644,348
3,621,209	3,630,237	3,636,427	3,644,497
3,621,340	3,630,438	3,636,554	3,644,521
3,621,409	3,630,590	3,637,544	3,645,005
3,621,462	3,630,691	3,637,596	3,645,213
3,621,658	3,630,759	3,637,671	3,645,246
3,621,847	3,630,790	3,637,797	3,645,267
3,622,220	3,630,958	3,638,274	3,645,299
3,622,398	3,631,032	3,638,309	3,645,635
3,622,436	3,631,054	3,638,659	3,645,666
3,622,501	3,631,142	3,638,678	3,645,673
3,622,750	3,631,180	3,638,902	3,645,715
3,622,772	3,631,260	3,638,937	3,645,718
3,622,802	3,631,315	3,639,104	3,645,859
3,622,808	3,632,018	3,639,160	3,645,897
3,623,452	3,632,176	3,639,266	3,646,301
3,623,485	3,632,345	3,639,281	3,646,456
3,623,502	3,632,395	3,639,375	3,646,508
3,623,945	3,632,526	3,639,387	3,646,814
3,624,104	3,632,574	3,639,530	3,647,063
3,624,156	3,632,587	3,639,536	3,647,369
3,624,178	3,632,779	3,640,365	3,647,443
3,624,180	3,632,828	3,640,494	3,647,762
3,624,482	3,632,850	3,640,557	3,647,820
3,624,673	3,633,234	3,640,584	3,647,904
3,624,676	3,633,695	3,640,661	3,649,428
3,624,961	3,634,130	3,640,680	3,649,699
3,625,288	3,634,238	3,640,784	3,650,885
3,625,702	3,634,266	3,641,102	3,650,428
3,625,730	3,634,329	3,641,138	3,651,075
3,625,829	3,634,387	3,641,363	3,653,838
3,625,879	3,634,460	3,641,527	3,655,561
3,625,938	3,634,515	3,641,552	

Patents Available for Licensing or Sale

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court East, Syosset, N.Y., 11791.

3,299,868. AUTOMATIC IDLER. Lowell Dean Henke, Box 616, Hobson, Mont., 59452.

3,508,406. COMPOSITE ARCH STRUCTURE. Armco Steel Corporation, Middletown, Ohio. Correspondence to: Melville, Strasser, Foster & Hoffman, 1215 Provident Tower, 1 E. 4th St., Cincinnati, Ohio, 45202.

3,525,099. HAND GUIDED WALK-BEHIND SELF-PROPELLED MATERIAL CONVEYING CART. John Fuhrmann. Correspondence to: Robert C. Weber, 1022 Ellicott Square, Buffalo, N.Y., 14203.

3,625,664. PROCESS FOR THE PRODUCTION OF RICH FUEL TO REPLACE NATURAL GAS BY MEANS OF CATALYTIC HYDROGASIFICATION UNDER PRESSURE OF FLUID HYDROCARBONS. Carlo Padovani. Correspondence to: Murphy & Dobyns, 2001 Jefferson Davis Highway, Suite 307, Arlington, Va., 22202.

3,634,970. WRAPPING FOR TREE ROOT BALLS. Nicholas Williams, 508 Central Ave., Scarsdale, N.Y., 10583.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION THEREOF. Donald L. Segur et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corporation, Research Center, High St., North Billerica, Mass., 01862.

3,652,787. TELEVISION SIGNAL COLOR CORRECTOR. Katarina Tkacenko, 620 Iris Ave., Apt. #319, Sunnyvale, Calif., 94086.

The following 2 patents are offered by: Clarence Willard Franklin, Cedar Tree Farm, Milford, Calif., 96121.

3,540,089. SELF-RELEASING ANIMAL TETHER.

3,640,013. SUBCALIBER ADAPTER FOR FIREARM.

The following 2 patents are offered by: W. Greenhalgh, P.O. 521, Oshawa, Ontario, Canada, and D. K. Soper, 1221 Simcoe St. N., Apt. 623 East, Oshawa, Ontario, Canada.

3,484,011. DISPOSABLE CONTAINER LINER AND ADVERTISING MEANS.

3,610,455. DISPOSABLE CONTAINER LINER WITH REMOVAL MEANS.

The following 6 patents are offered by: W. Greenhalgh, P.O. 521, Oshawa, Ontario, Canada.

3,527,008. INSTANTERECT CONSTRUCTION DEVICE.

3,600,870. INSTANTERECT CONSTRUCTION DEVICE.

3,611,659. PREFABRICATED ROOF STRUCTURE.

3,614,050. REUSABLE FORMING UNIT.

3,624,889. MOBILE PLANT FOR THE FABRICATION OF STRUCTURAL MODULES.

3,656,724. PAKAHOME.

Cerebro-Dynamics, Inc., offers to sell or license the following 2 patents on reasonable terms.

Inquiries should be directed to: Richard L. Bohanon, Cerebro-Dynamics, Inc., 1405 City National Bank Tower, Oklahoma City, Okla., 73102.

3,592,006. ISOLATION DEVICE.

3,653,215. METHOD AND APPARATUS FOR CONFINING AND COLLECTING OIL LEAKAGE.

Fibersteel International Company is prepared to grant semi-exclusive licenses under the following patent at reasonable royalties to marine construction firms and ferro-cement boat builders.

Inquiries respecting licenses should be addressed to Fibersteel International Company, Attn: M. E. Iorns, P.O. Box 661, West Sacramento, Calif., 95691.

3,652,755. METHOD OF FORMING REINFORCED CONCRETE STRUCTURE.

General Motors Corporation is prepared to grant non-exclusive license under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,486,833. HIGH TEMPERATURE COMPOSITE GAS TURBINE ENGINE COMPONENTS.

General Electric Company is prepared to grant non-exclusive licenses under the following 38 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent should be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,579,079. CURRENT SOURCE MAGNETIC GATING CIRCUIT FOR CONTROLLED RECTIFIERS.

Applications for license under the following 5 patents should be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa.

3,598,997. SCHOTTKY BARRIER ATOMIC PARTICLE AND X-RAY DETECTOR.

3,639,845. COMPENSATING THRESHOLD LEVEL DETECTOR.

3,641,531. CHANGEABLE ADDRESS DISPLAY DEVICE.

3,648,037. SYMMETRICAL FUNCTION GENERATOR.

3,648,314. SELF-STABILIZING FLOTATION MODULE.

Applications for license under the following 6 patents may be addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,582,856. TEMPERATURE SENSING RELAY.

3,607,553. APPARATUS FOR PRODUCING A PROTECTIVE COATING ON THE SURFACE OF A MANUFACTURED ARTICLE.

3,616,056. APPARATUS FOR COMPRESSING A LAMINATED ARTICLE AND FOR FORMING A PROTECTIVE COATING OF INSULATING MATERIAL ON AN ARTICLE.

3,620,885. APPARATUS FOR APPLYING UNHARDENED ADHESIVE MATERIAL TO A LAMINATED STRUCTURE.

3,620,886. METHOD FOR BONDING A LAMINATED STRUCTURE AND APPARATUS FOR APPLYING UNHARDENED ADHESIVE MATERIAL TO THE LAMINATED STRUCTURE.

3,638,470. METHOD OF MAKING A FAN.

Applications for license under the following 9 patents may be addressed to: General Electric Company, Electronic Systems Division, 100 Plastic Ave., Pittsfield, Mass., 01201.

3,449,977. GEAR MESHING ARRANGEMENT.

3,816,745. METHOD OF DIELESSLY FORMING SURFACE OF REVOLUTION.

3,354,725. ACCELEROMETER.

3,479,886. ACCELEROMETER.

3,380,788. HYDROSTATIC BEARING.

3,387,482. BEARING SUSPENSION SYSTEM.

3,471,759. PULSE WIDTH MODULATION SERVO SYSTEM INCLUDING A UNIQUE TRANSFORMERLESS DEMODULATOR.

3,623,188. LINEAR DC VOLTAGE TO FIRING ANGLE CONVERTER CIRCUIT.

3,303,810. DRAG REDUCTION WITH RECIRCULATION.

Applications for license under the following 18 patents may be addressed to: Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,087,319. CLOTHES WASHING MACHINE WITH WATER LEVEL CONTROL CIRCUIT.

3,367,609. HERMETIC COMPRESSOR UNIT AND SPRING SUPPORT MEANS THEREOF.

3,506,825. REFRIGERATOR INCLUDING ILLUMINATED CABINET SHELF.

3,526,738. PHASE-MATCHING DEVICE FOR ELECTRONIC OVENS.

3,593,743. FAUCET-COUPLING ASSEMBLY FOR A WASHING MACHINE.

3,612,074. CLEANING AGENT DISPENSING DEVICE IN A DISHWASHER.

3,621,856. ROTARY CONTROL MEANS FOR CHANGING THE FORCE OF WASHING ACTION IN AN AUTOMATIC DISHWASHER.

3,630,227. ASSEMBLY FOR COUPLING A WASHING MACHINE TO A FAUCET.

3,632,982. COMBINATION ELECTRIC GRIDDLE AND COOKTOP.

3,633,622. VALVE MECHANISM FOR DISHWASHER.

3,635,243. FAUCET-COUPLING ASSEMBLY FOR A WASHING MACHINE.

3,642,208. WASHER WITH SELF-REVERSING SPRAY ARM ASSEMBLY.

3,643,464. EXTERNAL ICE SERVICE.

3,643,930. APPARATUS FOR ADDING MOISTURE TO AIR.

3,647,354. FABRIC-TREATING METHOD.

3,650,673. DRY WASH FABRIC CLEANING METHOD AND APPARATUS.

3,654,772. ICE MAKER.

3,656,182. HYDRAULIC THERMOSTAT WITH DOUBLE THROW SWITCH MECHANISM.

Patents Withdrawn From Register

General Electric Company hereby withdraws the following 2 patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available in the OFFICIAL GAZETTE as indicated below:

3,101,889. RESILIENT MOUNTING FOR MOTOR AND FAN UNIT. Aug. 4, 1964.

3,259,268. COVER AND LATCH ARRANGEMENT FOR PORTABLE VACUUM CLEANERS. Nov. 24, 1970.

Disclaimers

2,810,676.—*Bartholdt C. Hadler*, and *Earl L. Pelton*, Midland, Mich. ANTHELMINTIC SOLUTIONS COMPRISING PIPERAZINE COMPOUNDS. Patent dated Oct. 22, 1957. Disclaimer filed Mar. 2, 1972, by the assignee, *The Dow Chemical Company*.

Hereby enters this disclaimer to claims 1 and 3 of said patent.

2,957,106.—*Hannah C. Moodey*, Lancaster, Pa. PLURAL BEAM GUN. Patent dated Oct. 18, 1960. Disclaimer filed Jan. 14, 1972, by the assignee, *RCA Corporation*.

Hereby enters this disclaimer to claims 6 and 12 of said patent.

3,387,322.—*Josef Woellhaf* and *Herbert Wagner*, Ludwigshafen (Rhine), *Wilhelm Uhl*, Frankenthal, Pfalz, and *Otto Hedderich*, Schifferstadt, Pfalz, Germany. APPARATUS FOR THE PRODUCTION OF HOMOGENEOUS SHEETING. Patent dated June 11, 1968. Disclaimer filed Dec. 8, 1971, by the assignee, *Badische Anilin- & Soda-Fabrik Aktiengesellschaft*.

Hereby enters this disclaimer to claim 3 of said patent.

3,452,790.—*Francis E. Vandervyde*, Gilroy, *Thomas E. Roberts, Jr.*, Saratoga, and *Arthur L. McGee*, San Jose, Calif. SHEET PATCHING MACHINE. Patent dated July 1, 1969. Disclaimer filed Feb. 14, 1972, by the assignee, *FMC Corporation*.

Hereby disclaimed the portion of the term of the patent subsequent to May 27, 1986.

3,498,689.—*Roger L. Hansen*, Minnetonka Village, Minn. LAUNDRY CART. Patent dated Mar. 3, 1970. Disclaimer filed Mar. 15, 1972, by the inventor.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,559,836.—*Harold E. Pink* and *Ronald G. Daringer*, Cambridge, Md. WIRE CLOTH TRAY. Patent dated Feb. 2, 1971. Disclaimer filed Feb. 10, 1972, by the assignee, *Cambridge Wire Cloth Company*.

Hereby enters this disclaimer to claims 22 and 23 of said patent.

3,566,281.—*Donald Dennis Baumann*, Los Gatos, Calif. ELECTRIC PULSE WAVE CLIPPING CIRCUITRY. Patent dated Feb. 23, 1971. Disclaimer filed Jan. 20, 1972, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 7 and 11 of said patent.

3,593,782.—*John G. Draves*, Dunkirk, *Maurice R. Garrison*, Hamburg, and *Edward J. Skiba*, Williamsville, N.Y. HEAT EXCHANGER. Patent dated July 20, 1971. Disclaimer filed Apr. 12, 1972, by the assignee, *Robert C. Hagner*.

Hereby enters this disclaimer to claims 1, 8 and 9 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 30, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	3-26-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-16-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	10-07-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-22-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	4-19-71
PHYSICS, GROUP 260—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	4-09-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-25-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	5-03-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Sheping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	2-18-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-01-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	3-22-71

Expiration of patents: The patents within the range of numbers indicated below expire during June 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,709,808 to 2,712,130, inclusive
Plant Patents ..... Numbers 1,396 to 1,403, inclusive

REISSUES

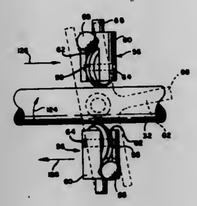
JUNE 27, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,403
VARIABLE PITCH LINEAR ACTUATOR

Wenzel Zaruba, East Paterson, N.J., assignor to The Dumore Company

Original No. 3,473,393, dated Oct. 21, 1969, Ser. No. 669,447, Sept. 21, 1967. Application for reissue Jan. 20, 1970, Ser. No. 4,253
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 — 25 Claims

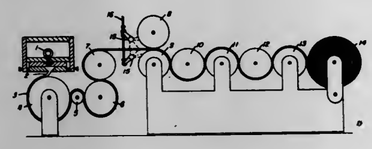


A variable pitch linear actuator for converting angular rotation to linear movement. The conversion is achieved by providing a plurality of wheels spaced about the periphery of a shaft, with the planes of said wheels being pivotable about axes perpendicular to the shaft.

27,404
TRANSPARENT POLYOLEFIN FILMS OF HIGH MODULUS AND CLARITY

Robert F. Williams, Jr., Webster, and Richard H. Jenks, Rome, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,503,843, dated Mar. 31, 1970, Ser. No. 683,064, Oct. 16, 1967, which is a division of Ser. No. 565,305, July 14, 1966, which is a continuation-in-part of Ser. No. 197,217, May 7, 1962, which is a continuation-in-part of Ser. No. 9,567, Feb. 18, 1960, Ser. No. 16,208, Mar. 21, 1960, and Ser. No. 30,324, May 19, 1960. Application Ser. No. 16,208 is a continuation-in-part of Ser. No. 833,666, Aug. 10, 1959, which is a continuation-in-part of Ser. No. 706,626, Jan. 2, 1958. Application for reissue July 31, 1970, Ser. No. 59,959
Int. Cl. B32b *27/32*
U.S. Cl. 161—165 — 8 Claims

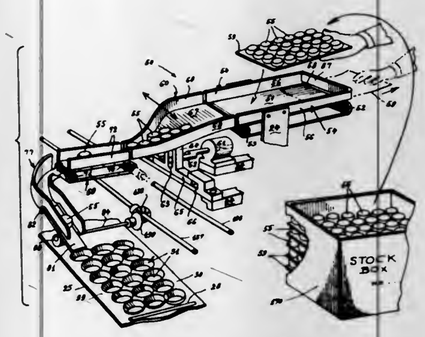


Increased stiffness and better clarity of polymeric films can be obtained by compression rolling relatively thick films of the polymers, provided that the films are coated (at the juncture of the rolls with the film) with enough liquid "lubricant" to form a "hydrodynamic wedge" in the nip area. Films having higher modulus and greater clarity (than could otherwise be produced) can be manufactured by this process. Polyolefin films having such higher modulus plus excellent clarity (less than 3% haze) are claimed.

27,405
CANDY PACKAGING MACHINE

Albert L. Ehe and Charles T. Milligan, Queens County, N.Y., assignors to Multicup Automation Company, Inc., Woodside, N.Y.

Original No. 3,389,531, dated June 25, 1968, Ser. No. 484,596, Sept. 2, 1965. Application for reissue June 10, 1970, Ser. No. 45,273
Int. Cl. B65b *35/14, 35/54, 1/02*
U.S. Cl. 53—126 — 14 Claims

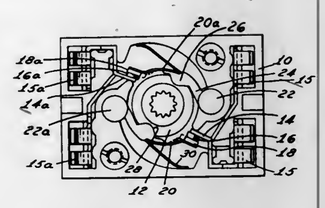


Two conveyor systems are arranged side by side. A compartmented tray is positioned at predetermined positions on one conveyor. The compartments may be shaped to accommodate candy pieces. Individual pieces of candy are deposited into individual compartments. After the trays have been filled with candy pieces, they are moved into individual boxes which are located on a conveyor.

27,406
ELECTRIC SWITCH MECHANISM

Gordon H. Cork, Birmingham, Mich., assignor to Gemco Electric Co., Clawson, Mich.

Original No. 3,474,204, dated Oct. 21, 1969, Ser. No. 677,833, Oct. 10, 1967, which is a continuation-in-part of Ser. No. 625,544, Mar. 23, 1967. Application for reissue Apr. 23, 1970, Ser. No. 31,359
Int. Cl. H01h *1/36*
U.S. Cl. 200—164 R — 4 Claims

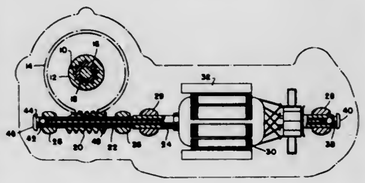


This disclosure shows switch mechanism wherein the switch comprises cooperating electric contact portions operable to move into contact with each other to make the circuit or to move out of contact with each other to break the circuit. One contact is a fixed contact and the other contact is a movable contact. When the two contacts are brought into contact with each other the construction is such that one contact has its contact face wiped across relative to the other contact face so as to clean the same and keep the contact faces free from undesirable deposits.

27,407
WINDOW REGULATOR WITH FLEXIBLE SHAFT

Joseph C. Littmann, Temperance, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Original No. 3,487,704, dated Jan. 6, 1970, Ser. No. 630,089, Apr. 11, 1967. Application for reissue Mar. 3, 1970, Ser. No. 16,270
Int. Cl. F16h *29/20*
U.S. Cl. 74—89.2 — 11 Claims

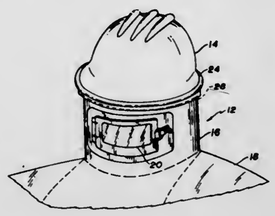


A window regulator for automobiles comprising a motor, a drive shaft composed of a plurality of aligned sections, a resilient torsion member interconnecting the sections at opposite ends of the shaft, and gearing at the output end of the shaft for connection to a window regulator.

27,408
CLAMP-ON PROTECTIVE HOOD

Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Original No. 3,427,660, dated Feb. 18, 1969, Ser. No. 591,791, Nov. 3, 1966. Application for reissue Dec. 17, 1969, Ser. No. 888,181
Int. Cl. A61f *9/00*; A62b *7/00*
U.S. Cl. 2—10 — 11 Claims

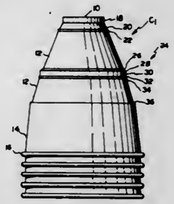


A hood attachable to the periphery of the periphery of the rim of a hard safety hat, which hood extends down over the face, neck and shoulders of the wearer to form a protective atmosphere around the wearer's head. A structure for quickly attaching and detaching the hood to the safety hat which structure assures an air tight seal between the hood and the hat to exclude deleterious airborne substances from interior of the hood. An improved system for conveying and distributing air to the interior of the hood.

27,409
STACKABLE INSERT CONTAINER FOR AXIALLY SPACED ENGAGING SURFACES

Herbert J. Wanderer, Elmhurst, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Original No. 3,232,512, dated Feb. 1, 1966, Ser. No. 366,080, May 8, 1964. Application for reissue Apr. 12, 1967, Ser. No. 637,021
Int. Cl. B65d *21/02, 3/00*
U.S. Cl. 229—1.5 B — 14 Claims



The structure herein described comprises a cup or container of thin wall plastic material adapted to be inserted, frictionally retained, and removed from a supporting holder.

The cups or containers, when stacked, form a resilient stack or column from which a cup or container may readily be removed by application of the holder to the stack, to be securely but releasably retained in the holder.

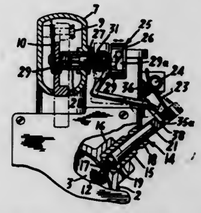
Also herein disclosed is the holder to be used with the cups or containers.

Also herein disclosed are methods and apparatus for thermoforming the cups or containers from sheet plastic material.

27,410
DECOMPRESSION CONTROL FOR INTERNAL COMBUSTION ENGINE

Albert E. Anderson, Greenwich, Albert K. Newman, Noroton, Chris Schou, Greenwich, and James A. Ransom, Bryam, Conn., and Walter Gorski, Armonk, N.Y., assignors to Textron Inc.

Original No. 3,418,992, dated Dec. 31, 1968, Ser. No. 654,446, July 19, 1967. Application for reissue Dec. 23, 1970, Ser. No. 100,963
Int. Cl. F01l *13/08*
U.S. Cl. 123—182 — 12 Claims

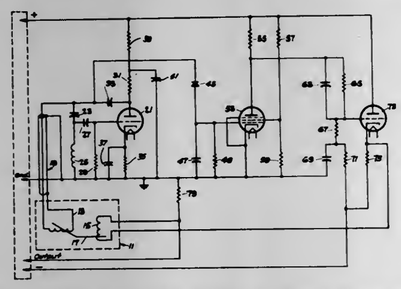


To facilitate starting, an internal combustion engine is provided with a decompression port located at a selected distance from the top of the cylinder so as to decrease compression during cranking of the engine. The port is controlled by a valve which is normally closed and which preferably comprises a ball shaped valve member pressed against an annular valve seat. A unitary locking element holds the engine throttle control member in selected position for starting and also holds the decompression valve open. As soon as the engine starts, actuation of the throttle control member releases the locking element and thereby results in the automatic closing of the decompression valve.

27,411
FORCE MEASURING SYSTEM

Donald E. Bentley, Minden, Nev., and Robert L. Price, Thousand Oaks, Calif., assignors to Systron-Donner Corporation, Concord, Calif.

Original No. 3,057,195, dated Oct. 9, 1962, Ser. No. 708,433, Jan. 13, 1958. Application for reissue Apr. 24, 1970, Ser. No. 31,606
Int. Cl. G01l 1/08
U.S. Cl. 73—141 R 14 Claims

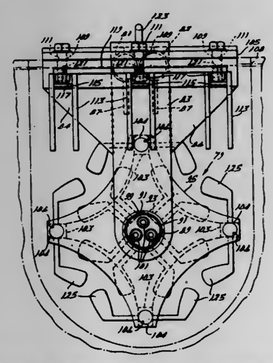


Force measuring system having a sensing inductance and a movable force sensitive element for changing the effective Q of said inductance. A servo restoring coil for restoring the movement of said movable element is provided. An oscillator having a transistor with an output terminal is also provided and includes a loading circuit having said inductance coupled to the output terminal and arranged to vary the effective load with changes in the position of said movable element. Feedback means is arranged to cause said variation in said load to change the amplitude of oscillation and means is provided to apply the changes in amplitude to said servo restoring coil to oppose the motion of said movable force sensitive element.

27,412
VIBRATORY FINISHING APPARATUS AND METHOD

Eugene E. Olson, Addison, Ill., and Harold A. Mickelson, Albert Lea, Minn., assignors to King-Seeley Thermos Company, Ann Arbor, Mich.

Original No. 3,371,449, dated Mar. 5, 1968, Ser. No. 516,514, Dec. 27, 1965. Application for reissue Feb. 2, 1970, Ser. No. 884,765
Int. Cl. B24b 31/06
U.S. Cl. 51—163 18 Claims



A workpiece finishing device comprising, enclosure means containing an abrasive media, fixture means adapted to support a workpiece during a finishing operation, means rotatably supporting the fixture means about a longitudinal axis, and means for effecting movement of the enclosure means and the fixture means about a preselected path transverse to the axis and for rotating the fixture means about the axis, whereby to move workpieces supported on the fixture relative to the media.

27,413
1 - ALKYLAMINO - 4 - ARYLAMINO-ANTHRAQUINONE SULFONIC ACID REACTIVE DYES

Hans Rudolf Schwander and Jean-Pierre Jung, Riehen, and Peter Hindermann, Bottmingen Basel-Land, Switzerland, assignors to Ciba-Geigy AG., Basel, Switzerland

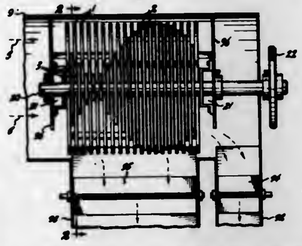
No Drawing. Original No. 3,462,463, dated Aug. 19, 1969, Ser. No. 598,207, Dec. 1, 1966, which is a continuation-in-part of Ser. No. 462,073, June 7, 1965. and Ser. No. 530,351, Feb. 28, 1966. Application for reissue Sept. 1, 1970, Ser. No. 68,806
Claims priority, application Switzerland, Apr. 23, 1958, 58,664/58; Mar. 3, 1965, 2,937/65
Int. Cl. C09b 1/40
U.S. Cl. 260—372 5 Claims

Novel fiber-reactive acid anthraquinone dyestuffs are provided. Such novel dyestuffs are produced by converting amino anthraquinone dyestuffs into the valuable novel dyestuffs by the introduction of halogen, acylamino methyl groups. The novel dyestuffs are especially useful for the batch dyeing and printing of fiber material containing polyamide, especially wool. The invention also provides, as industrial products, the materials dyed and printed with the novel dyestuff.

27,414
DEVICE FOR SEPARATING AIR ENTRAINED ARTICLES OF VARYING SIZE

Merrill N. Musgrave, 1610 E. Boston Terrace, Seattle, Wash. 98102

Original No. 3,463,406, dated Aug. 26, 1969, Ser. No. 662,976, Aug. 24, 1967. Application for reissue Feb. 26, 1970, Ser. No. 14,301
Int. Cl. B02c 13/13, 13/288
U.S. Cl. 241—51 15 Claims

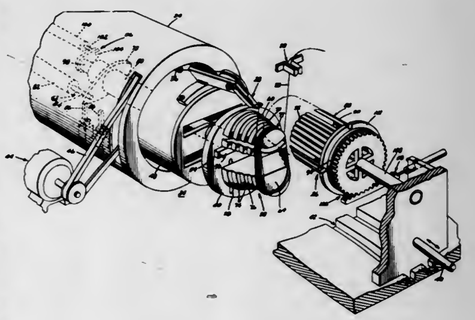


Macadamia nuts grown in Hawaii are harvested by lifting them from the ground beneath the trees, where [they] they have fallen. Suction is commonly employed, as it is elsewhere and for other nuts. Suction picks up husks, leaves, twigs, and even bits of light volcanic rocks, as well as the nuts. It is necessary to separate such trash from the nuts in the simplest and most direct manner, and it is to this object that the present invention is directed. Such separation is effected in the suction duct, wherein all the material picked up passes through a cylindrical cage defined by non-rotative rings spaced axially by a distance approximating the smallest nut it is intended to collect, all such material being acted upon as it starts axially through the cage by a series of generally radially directed rotating blades, the tips whereof extend between adjacent rings, these blades being spaced axially by a distance less than the size of the smallest nut that is to be saved. The relative rotation of the blades and of the rings tends to effect some breaking up of the trash, while the blades, the leading edges whereof define a helix, advance the nuts that enter at one end towards an exit at the other end. Additionally, yet optionally, non-rotative teeth that lie in planes intermediate the rotating blades will engage bits of trash tending to rotate with the blades, and so will break up the same. Thereby nuts and trash are separated at a single point in the short suction duct, the nuts passing to bins or sacks, and the trash falling upon the ground or being otherwise disposed of. The length of the harvester is thereby kept short, and it is easily maneuverable.

27,415
PROCESS FOR DEVELOPING WOUND COILS FOR ELECTROMAGNETIC DEVICES

Arthur S. Cutler, Scotia, N.Y., and Dallas F. Smith, Fort Wayne, Ind., assignors to General Electric Company

Original No. 3,522,650, dated Aug. 4, 1970, Ser. No. 812,590, Apr. 2, 1969, which is a continuation-in-part of Ser. No. 594,463, Nov. 15, 1966. Application for reissue Dec. 15, 1970, Ser. No. 98,487
Int. Cl. H02k 15/00, 15/14, 15/16
U.S. Cl. 29—596 16 Claims



Method for developing electrical coil groups formed of a number of coils in a coil group-accommodating member for ultimate transfer into selected slots of a magnetic core. The coil group-accommodating member is supported adjacent a noncollapsible, longitudinally movable coil form in position to receive the coil group. The coils in each coil group are developed by winding turns of a given coil on the noncollapsible form and concurrently moving some of the turns from the form into the accommodating member where the individual coil groups are finally developed. The noncollapsible coil form is periodically moved longitudinally to produce coils of differing spans during the development of each coil group. *Also the coil-receiving or coil group-accommodating means is positioned with its distal end generally in alignment with the distal end of the coil form to receive generated turns. As the turns are generated about the coil form, the last generated turn moves at least the next adjacent previously generated turn toward the distal end of the coil form.*

PLANT PATENTS

GRANTED JUNE 27, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,220
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 12, 1970, Ser. No. 80,257
Int. Cl. A01h 5/00
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly in its points of uniqueness compared to the cultivar Yellow Marble by a 5"–6" shorter habit, smaller foliage which is approximately 1½" shorter in length and 1" narrower in width, higher production with approximately 12 more flowers per spray, a deeper yellow flower color which is more resistant to fade under high light and high temperature conditions, ½" smaller flowers, 2–3 days earlier response with a more uniform response within a flowering block, and a trait of heavy budding, which, under high temperature, late summer conditions, can result in a slower response of 3 days as compared to Yellow Marble.

3,221
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Oct. 30, 1970, Ser. No. 85,830
Int. Cl. A01h 5/00
U.S. Cl. Plt.—80 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared with the parent cultivar Escapade by its 3"–4" more vigor, 1"–1½" longer foliage, 3–4 days later response, ¾"–1" larger flower, darker flower color, 20 percent more petalage which provides a more solid flower, and slightly more yellow green foliage.

3,222
GRAPEFRUIT TREE

Richard A. Hensz, Weslaco, Tex., assignor to Texas A & I University, Kingsville, Tex.

Filed Nov. 18, 1970, Ser. No. 90,883
Int. Cl. A01h 5/03
U.S. Cl. Plt.—45 1 Claim

1. The new and distinct variety of grapefruit tree characterized as to novelty by horticulturally seedless fruit with deep red flesh that stays through maturity, a yellow red-tinted peel with occasional red blushes, a reddish colored albedo, the fruit suited for fresh consumption and for process juice and sectioning, and having a red coloration in the cambium cells.

3,223
BLUEGRASS PLANT

Kevin Joseph McVeigh, Somerset, and Cyril Reed Funk, Jr., Milltown, N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Jan. 5, 1971, Ser. No. 104,182
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant which exhibits an attractive, fresh, moderately light green color, an upright panicle, and rather small florets and spikelets. The plant produces a dense, upright turf of a unique, soft, velvety texture which has excellent horizontal spreading ability, excellent resistance to stripe smut and moderately good resistance to leaf spot and crown rot.

PATENTS

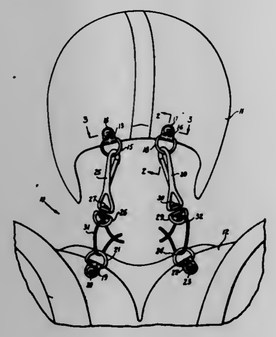
GRANTED JUNE 27, 1972

GENERAL AND MECHANICAL

3,671,974
FOOTBALL TRAINING HARNESS

Don D. Sims, P.O. Box 636, Throckmorton, Tex.

Filed Sept. 4, 1970, Ser. No. 69,788
Int. Cl. A42b
U.S. Cl. 2—3 R 1 Claim

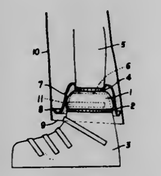


A football training harness in which detachable rigid connections adjustable in length extend from the shoulder pads to the rear of the football helmet to prevent hyperflexion and the bending of the head of the player forwardly during blocking and tackling. The connection includes rings secured to the helmet and shoulder pads and swivel snap hooks connected to the shoulder pad rings by means of a wire so as to be adjustable in length, with the snap hooks snaping into the rings fastened to the helmet.

3,671,975
SKI PANTS

Werner Vorsteher, Enzesfeld, N.O., Austria, assignor to Anba Sportmode Vorsteher KG, Wien, Austria

Filed June 24, 1970, Ser. No. 49,334
Claims priority, application Austria, Jan. 16, 1970, 425/70
Int. Cl. A41d *1/08*
U.S. Cl. 2—232 2 Claims

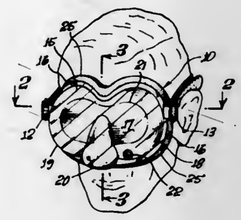


Each trouser leg of a ski pants type of garment is provided with a combined windbreak and cuff which provides for improved appearance, wind and snow protection, and flexibility in the area where the trouser legs overlap ski boots. Each windbreak is attached to a lower inside portion of a trouser leg and to an upper band of the cuff. The cuff includes upper and lower bands which limit up and down movements of the cuff when it is in an enclosing position over the top portion of a ski boot.

3,671,976
FULL VIEW DIVER'S MASK

Clarence S. Johnson, 4444 West Point Loma Boulevard, San Diego, Calif., and Larry E. McKinley, P. O. Box 647C, Oro Verde Road, Escondido, Calif.

Filed Oct. 15, 1970, Ser. No. 81,032
Int. Cl. A61f *9/02*
U.S. Cl. 2—14 C 4 Claims

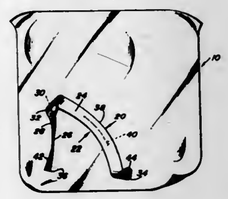


A full view diver's mask having a transparent faceplate member configured to conform to the general contour of a diver's face, carries a peripheral, resilient seal to maintain a sealed relationship. A frontal planar section and a pair of curved portions permit distortion-free frontal and peripheral vision.

3,671,977
HEADDRESS WITH IMPROVED HEAD ENCIRCLING BAND

Julia S. Degnon, 175-39 Daisy Road, Jamaica Estates, N.Y.

Filed May 21, 1970, Ser. No. 39,304
Int. Cl. A42b *5/00*
U.S. Cl. 2—207 1 Claim

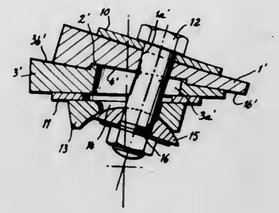


A headdress characterized by two component parts, namely, a head encircling band and strap and a complemental head covering scarf which has a restricted portion stitched or otherwise attached to a median top portion of the band. The band is made up of inelastic and elastic portions with separable and connectible ends provided with quick-separable fasteners. The scarf is made of attractive fabric, is retained in place solely by the band and has loose free flowing ends which can be arranged at will to achieve an eye-pleasing effect.

3,671,978
ANGULAR ADJUSTMENT DEVICES FOR USE IN ARTIFICIAL LIMB MANUFACTURE

Denis Ronald William May, London, England, assignor to J. E. Hanger and Company Limited, London, England

Continuation-in-part of Ser. No. 848,865, Aug. 11, 1969, abandoned. This application Aug. 9, 1971, Ser. No. 170,098
Int. Cl. A61f *1/00, 1/08*
U.S. Cl. 3—1 4 Claims

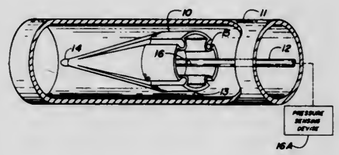


An adjustment means for pre-setting relative angularity between the axes of two parts of an artificial limb or prosthesis comprising wedge shaped discs mutually rotatable about an axis and having inter-engaging eccentric means for imparting a transverse translational movement between the discs upon relative rotation to eliminate variation of axial spacing between the outer surfaces of the discs upon adjustment thereof.

3,671,979
CATHETER MOUNTED ARTIFICIAL HEART VALVE FOR IMPLANTING IN CLOSE PROXIMITY TO A DEFECTIVE NATURAL HEART VALVE

Spyridon Moulopoulos, Athens, Greece, assignor to The University of Utah, Salt Lake City, Utah

Filed Sept. 23, 1969, Ser. No. 860,341
Int. Cl. A61f *1/22*; A61b *5/02*
U.S. Cl. 3—1 2 Claims

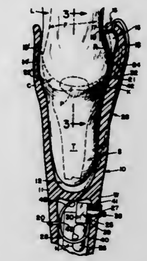


An artificial heart valve for implantation in close proximity to a malfunctioning or damaged natural aortic or mitral heart valve by remote means without performing an open chest or other major surgical operation. The artificial heart valve comprises a flexible membrane in the form of an umbrella in that the apex of the umbrella resides in the direction that blood flow is to be periodically prevented while the distal end opens sufficiently to contact the inner walls of the vessel to prevent the reverse flow of blood and the membrane collapses about the axis of the umbrella to allow the forward flow of blood.

3,671,980
FLUID PRESSURE CLAMP FOR PROSTHETIC APPLIANCE

Lincoln F. Baird, 734 18th Street, Santa Monica, Calif.

Continuation-in-part of Ser. No. 59,480, July 30, 1970, abandoned. This application Feb. 19, 1971, Ser. No. 117,027
Int. Cl. A61f *1/02, 1/12*
U.S. Cl. 3—20 9 Claims

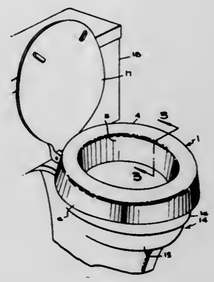


The securing of an artificial limb to an amputated limb by means of a yieldable binding between the artifice and the amputated limb, affording freedom of articulation of a condylar joint therein without chafing of the skin or exerting painful pressures thereto; the yieldable binding being a self-contained built-in fluid pressure wedge with a source of compressible fluid and control means therefor.

3,671,981
INVALID OR GERIATRIC TOILET SEAT

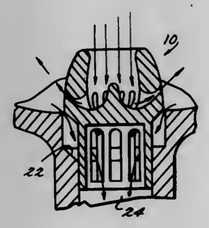
Sarah B. Smith, 2030 Spottswood Road, Charlottesville, Va.

Filed Oct. 20, 1970, Ser. No. 82,305
Int. Cl. A47k *13/00*
U.S. Cl. 4—242 7 Claims



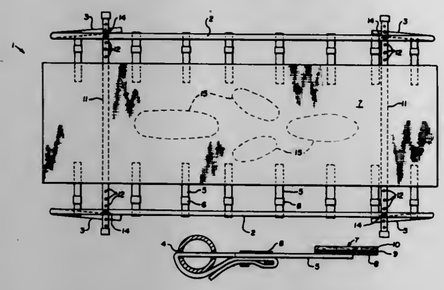
An auxiliary invalid or geriatric seat for toilets for placement on top of a conventional seat to substantially raise the seating level. The auxiliary seat consists of a core having a rigid upper portion and a resilient lower section, with the core being coated with a smooth finish material, at least the lower portion of the coating being flexible to allow the lower surface of the seat to conform to the shape of the surface upon which it is placed to stabilize the auxiliary seat in position upon the conventional seat. The center of gravity may be lowered to increase stability by enclosing a weighted member within the lower inner edge of the seat.

3,671,982
DRAIN PLUG
James Norman Sayles, 909 Robideaux Street, St. Joseph, Mo.
Filed Jan. 21, 1971, Ser. No. 108,397
Int. Cl. A47k 1/14
U.S. Cl. 4—295 7 Claims



The drain plug is provided with a tubular lower section for insertion into the opening of a drain pipe; the tubular section is provided with one or more flow passages and a cross-sectional dimension such that the exterior wall of the section will frictionally engage the interior wall of the drain pipe; the upper portion of the plug is provided with flow deflecting surfaces arranged so that, when a stream of water is directed against the surfaces, the flow will be directed in a spray pattern upwardly and outwardly from the drain plug towards the top edge of the basin to wash down walls of the basin.

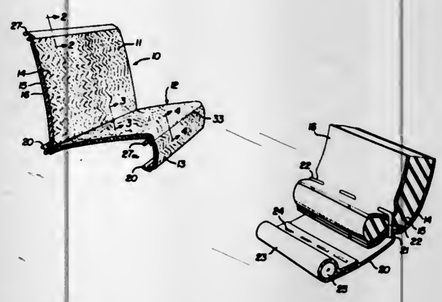
3,671,983
PROLONGED BED CARE FRAME
Doris Y. Bertolet, R.D. #1, Oley, Pa.
Filed Aug. 21, 1970, Ser. No. 65,887
Int. Cl. A61g 7/10, 1/00
U.S. Cl. 5—82 1 Claim



A bed frame for prolonged care of invalids, which frame is constructed to relieve pressures on certain parts of the body to support the lumbar region and maintain alignment of the spinal column and legs and to allow air circulation to reduce or prevent ulcers.

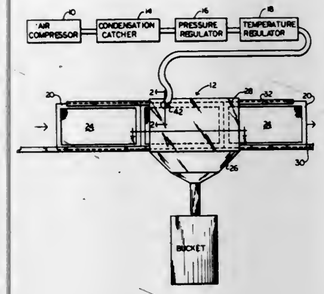
A pair of side frame members are curved vertically to conform to the shape of the back of the invalid. A pad of canvas and sheepskin is stretched between said members by lateral adjusting rods for adjusting the distance between the side frame members. Portions of the pad are cut-out to provide ventilation and reduce the chance of ulcers and patient discomfort.

3,671,984
UPHOLSTERY EDGING
Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fiber Products Company, Birmingham, Mich.
Filed July 12, 1971, Ser. No. 161,643
Int. Cl. B32b 3/24; A47c 27/08
U.S. Cl. 5—353.1 9 Claims



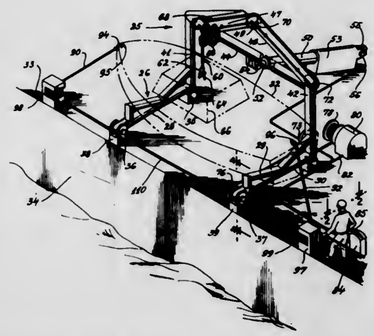
An upholstery edging formed of a thin, narrow relatively stiff, linearly oriented polypropylene fiber, randomly oriented, cloth strip, which is stretch resistant in all of its planar directions, stitched to and extending the length of an edge of an upholstery cover fabric which is to be fastened to another element, with the strip being double bent along the line of stitches to form a double ply, and with the free edge of the outer ply being bent over into a continuous tubular portion for receiving an elongated stiffening rod therein.

3,671,985
METHOD FOR EXTRACTING HONEY
William Roland Bell, 804 25th Street, Snyder, Tex.
Division of Ser. No. 794,059, Jan. 27, 1969, Pat. No. 3,535,721, Continuation-in-part of Ser. No. 621,397, March 2, 1967, abandoned. This application July 15, 1970, Ser. No. 55,108
Int. Cl. A01k 59/02
U.S. Cl. 6—12 A 8 Claims



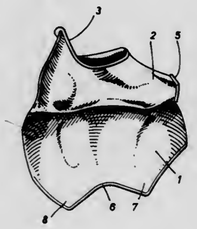
Honey is removed from the honeycomb by blowing a small jet of air into the cells of the honeycomb, thus blowing the honey therefrom.

3,671,986
APPARATUS AND METHOD FOR LAUNCHING AND RECOVERING A SMALL BOAT
Allen A. Peters, 49 Wateraide Parkway, Staten Island, N.Y.
Filed Jan. 2, 1970, Ser. No. 262
Int. Cl. B63b 23/02
U.S. Cl. 9—39 3 Claims



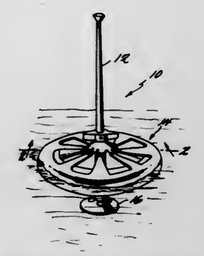
Apparatus for launching and retrieving a boat comprises a frame rotatably mountable on the deck of a vessel. The frame has rails defining a cradle for the boat. The rails are integrally joined to davit posts and crossbeams to form a rigid frame structure. An electrically operable ram is connected to the frame for rotating it on a horizontal axis. A cable is entrained on sheaves carried by the frame and terminates in a hook suspeneded from an arm over the boat. The other end of the cable is engaged by a motor driven winch to retract and to play out the cable. The boat can be provided with a centrally located sling engageably by the hook for hoisting the boat while the frame is rotated to shift the boat laterally. Spring loaded spring lines for steadying the boat can be provided. The ram and motor are operable automatically by a control circuit in predetermined launching and retrieval cycles. The boat can be provided with shiftable water ballast or mechanical balance means. The frame may have two arms supporting two cables for engaging spaced points on the boat to hoist it horizontally.

3,671,987
SWIMMER'S SHOE
Jean Mayor, Lausanne, Switzerland, assignor to Materiaux S.A., Lausanne, Canton of Vaud, Switzerland
Filed March 10, 1970, Ser. No. 18,053
Claims priority, application Switzerland, March 13, 1969, 3829/69
Int. Cl. A63b 31/10
U.S. Cl. 9—309 5 Claims



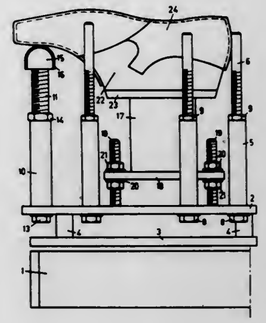
A swimming shoe adapted especially to aid in the performance of the breast stroke comprising: a sole, means for attaching the sole to the foot of the wearer and a scoop-shaped fin extending from the underside of the sole. The joint between the fin and the sole extends in substantially the same direction as the longitudinal axis of the sole, and the scoop portion of the fin opens towards the inward side of the wearer's foot.

3,671,988
AQUATIC AMUSEMENT DEVICE
Yetty Newman, 910 Park Avenue, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,726
Int. Cl. A63b 35/10
U.S. Cl. 9—349 11 Claims



An inflatable amusement device used for supporting and propelling an individual across the surface of a body of water having a vertical shaft with foot rests on one end and a water engaging member at the other end resiliently linked to a ring shaped buoyant tube.

3,671,989
SUPPORT FOR A LAST USED IN A DEVICE FOR MOLDING SHOE SOLES
Petrus R. Deryck, Oordegem, Belgium, assignor to ACEC Atelius de Constructions Electriques de Charleroi, Charleroi, Belgium
Filed Oct. 12, 1970, Ser. No. 79,945
Claims priority, application Belgium, Sept. 16, 1969, 80373
Int. Cl. A43d 3/00
U.S. Cl. 12—123 5 Claims

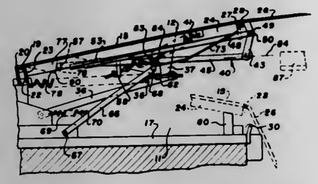


A support for a last used in the molding of shoe soles. The support includes means for positioning the last with respect to the support and magnetic means associated with the support and the last for securing the last to the support. The magnetic means includes a magnet secured to the support and a piece of magnetic material fixed on the side of the last opposite to the sole. The last is made of non-magnetic material.

3,671,990
SELF-EXTENDING DOCKBOARD

Adrian P. Hovestad, 986 Garden City Road, Richmond, British Columbia, Canada

Filed June 23, 1970, Ser. No. 48,994
Int. Cl. B65g 11/00
U.S. Cl. 14—71 14 Claims

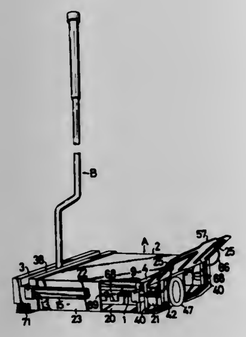


A dockboard having a hinged lip which normally hangs down and retains the dockboard in a substantially horizontal position. Linkage connected to the dockboard and the lip locks the latter in its pendent position, and when the dockboard is swung upwardly a predetermined distance and then lowered, the linkage is moved across a toggle line and thereafter swings the lip into an extended position. When the dockboard is released, it swings downwardly until it hits stop means, at which time the momentum causes the lip to swing back towards the pendent position.

3,671,991
CARPET SWEEPER

Hiroshi Fukuba, 2-320-82 Matsugaoka, Nagariyama, Chiba, Japan

Filed Oct. 12, 1970, Ser. No. 79,915
Claims priority, application Japan, Oct. 13, 1969, 44/96752; June 18, 1970, 45/52416
Int. Cl. A47l 11/33
U.S. Cl. 15—41 13 Claims

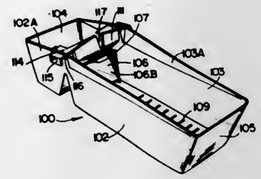


A carpet sweeper comprises a body serving as a dust container and a rotary brush disposed at the center of lower portion of the body and adapted to be rotated by a driven wheel in frictional contact with wheels to be driven on the floor so as to sweep dust off the floor into the dust container. The dust container is defined by a case open at its opposite ends and two side frames integrally fixed to the ends of the case. A pair of the front and rear wheels and the driven wheel disposed therebetween are mounted on one of the side frames, while the other side frame is provided with dust outlets and a cover plate for covering the outlets. The cover plate is opened and the body is inclined for dust disposal.

3,671,992
ARTIST'S TOOL & CONDITIONING STRUCTURE

Harrison K. Linger, 7412 Springvale Drive, Louisville, Ky.

Continuation-in-part of Ser. No. 866,471, Oct. 15, 1969. This application Sept. 4, 1970, Ser. No. 69,565
Int. Cl. B44d 3/00
U.S. Cl. 15—104.92 19 Claims

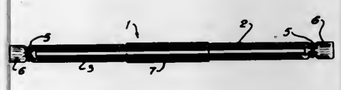


There is disclosed herein an artist's tool conditioning structure comprising an open receptacle having a bottom wall and an upstanding side wall. Tool conditioning means is carried by the side walls; the tool conditioning means including a slot therein for receiving the working end of an associated artist's tool. The tool conditioning means is formed of a semi-rigid material whereby opposed inward pressure on the tool conditioning means in the direction of the slot causes constriction of the slot and the application of compresive force on the end of the associated artist's tool in the slot, whereby longitudinal movement of the end of the associated artist's tool through the constricted slot results in the squeezing out and removal of waste materials on the working end of the associated artist's tool.

3,671,993
SWAB TOOL FOR TEST TUBES

Seth Morris Smedstad, 4612-102 Avenue, Edmonton, Alberta, Canada

Filed Jan. 15, 1971, Ser. No. 106,790
Int. Cl. A47l 13/16
U.S. Cl. 15—211 2 Claims



A semi-rigid, moisture-absorbent swab tool is provided for drying a test tube. The swab has a diameter slightly larger than that of the test tube. When forced into the tube it wipes it dry using a single push-pull operation.

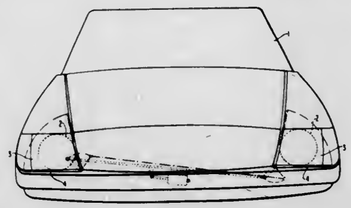
3,671,994
INSTALLATION FOR CLEANING THE COVER PANES OF MOTOR VEHICLE HEADLIGHTS

Werner Breitschwerdt, Stuttgart-Botnang; Rudolf Andres, Sindelfingen, and Gerhard Busch, Gechingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertwerkheim, Germany

Filed Aug. 26, 1970, Ser. No. 67,140
Claims priority, application Germany, Aug. 29, 1969, G 69 34 013.2
Int. Cl. B60s 1/38
U.S. Cl. 15—250.36 14 Claims

A cleaning installation for cleaning the cover panes of motor vehicle headlights by means of wipers adapted to move over the surfaces of the cover panes, in which the wipers, normally wiping a circular sector, are of such length that they can

be visually observed from the vehicle interior space during a part of their movement when they project above the upper

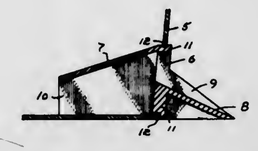


edge of a fender structure or the like into which the headlights are inserted.

3,671,995
WASTE BASKET AND THE LIKE

Alton F. Carr, 8 Cutter Lane, West Yarmouth, Mass.

Filed Dec. 16, 1970, Ser. No. 98,657
Int. Cl. A47l 13/52
U.S. Cl. 15—257.1 8 Claims

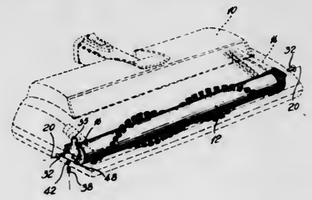


A container such as a waste basket is disclosed as having a transverse slot a short distance above its bottom. The container wall includes an inward projection overlying the slot and shaped and dimensioned to minimize the chances of articles entrant of the container through its open end escaping through the slot and a projection extending outwardly and downwardly from the bottom edge of the slot with its free edge resting on the floor, the outward projection being a collecting and guiding channel along which dirt may be swept. The projections are shown as parts of a slot-defining frame that is snapped into a transverse slot in the wall of the container.

3,671,996
ROTARY BRUSH ADJUSTMENT DEVICE FOR VACUUM CLEANER ATTACHMENT

Paul Emile Gaudry, 40 Oulmet Street, Laval des Rapides, Quebec, Canada

Filed Nov. 2, 1970, Ser. No. 86,139
Int. Cl. A47l 9/04
U.S. Cl. 15—368 8 Claims

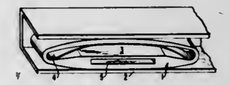


A device for adjusting the level of a rotary brush mounted inside the housing of a vacuum cleaner attachment including a driving member mounted for rotation in the housing at one end of the brush and a driven member also mounted for rotation in the housing at the other end of the brush. A stationary shaft is eccentrically connected at each end thereof to the driving and driven members for transmitting the rotary movement imparted by the driving member to the driven member so as to simultaneously vary the level of both ends of the stationary shaft. The brush is mounted for rotation of the stationary shaft and the level thereof is adjusted by the movement of the stationary shaft.

3,671,997
SLIDE SHOE STRUCTURES OF SYNTHETIC PLASTIC MATERIAL FOR SLIDING ROOFS OF MOTOR VEHICLES

Gerhard Sigmund, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 748,990, July 31, 1968, Pat. No. 3,558,183. This application June 24, 1970, Ser. No. 49,427
Claims priority, application Germany, Aug. 3, 1967, P 16 30 330.3
Int. Cl. E05d 13/02; B60j 7/04
U.S. Cl. 16—93 6 Claims

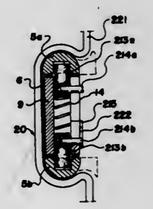


A slide structure made from synthetic plastic material for sliding roofs of motor vehicles, which slides in profile members and is provided with an aperture or recess within which is arranged at least one prestressed spring.

3,671,998
HINGES THAT TAKE TO PIECES

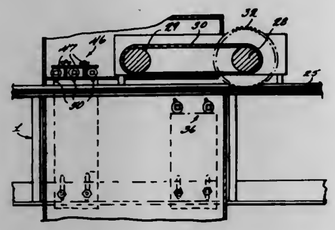
Jose Antonio Ruiz, 75 rue des Chantiers, Le Havre Graville, France

Filed Dec. 22, 1970, Ser. No. 100,594
Claims priority, application France, Dec. 23, 1969, 6944681
Int. Cl. E05d 1/06
U.S. Cl. 16—176 7 Claims



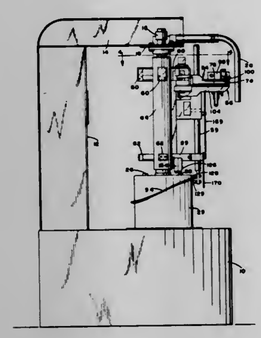
A hinge that takes to pieces, comprising a male and a female part which move around an axis. The male part comprises two retractable pivots which can be inserted into a corresponding housing in the female part. The pivots are separated by a compression spring. Each pivot is joined to a pin sliding in an oblong hole in the cylindrical body of the male part. This oblong hole has a slot to block the pin on each pivot in the locking position for taking the hinge to pieces.

3,671,999
APPARATUS FOR RECOVERING MEAT FROM BONES
Frank R. Downs, Estherville, Iowa, assignor to Francis L. Downs, Estherville, Iowa
Filed July 14, 1970, Ser. No. 54,674
Int. Cl. A22c 17/04
U.S. Cl. 17—1 G 6 Claims



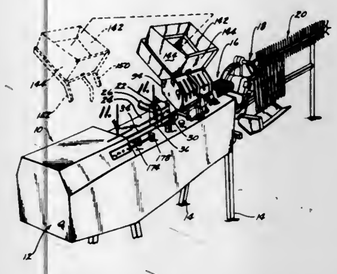
A horizontally disposed chain wire-link endless belt conveyor receives the poultry pieces to be treated and moves the same beneath a flexible imperforate hold-down endless belt conveyor and while the pieces being treated are still on the chain wire-link endless belt conveyor directing thereonto water-jets under suitable pressure from above; the meat separating from the bones and falling downwardly through the chain wire-link conveyor for collection and the separated bones moving over the end of the chain wire-link endless belt conveyor for disposal.

3,672,000
MACHINE TO DE-BONE CHICKEN THIGHS
Eugene G. Martin, Stevens, and Edwin C. Mohler, Willow Street, both of Pa., assignors to Victor F. Weaver, Inc., New Holland, Pa.
Filed Aug. 31, 1970, Ser. No. 68,260
Int. Cl. A22c 21/00, 17/04
U.S. Cl. 17—11 20 Claims



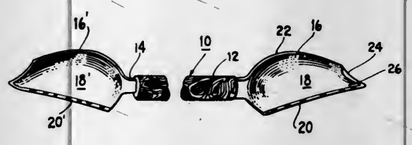
A machine for removing the bone from chicken thighs by engaging the ball at one end of the thigh bone and moving stripper members into engagement with the thigh bone immediately below the gripping means, and effecting longitudinal movement between the gripping means and the stripper members until the stripper members move the full length of the bone and engage and move around the ball at the opposite end of the thigh bone, to complete the removal of the meat from said bone.

3,672,001
PRODUCT ENCASING MACHINE
Charles Austin Greider, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed June 29, 1970, Ser. No. 50,740
Int. Cl. A22c 11/02, 11/10
U.S. Cl. 17—33 19 Claims



A product encasing machine comprising an adjustable hopper for product casings, the hopper being positioned above a clamp means comprising front and rear V-shaped seats. The front and rear seats are adapted to receive one casing at a time from the hopper when in their open position. The front and rear seats are movable from the open position to a closed position so as to grasp the casing therebetween and position the same to permit a stuffer tube to be inserted therein. The stuffer tube slidably extends through and is in communication with a meat pump to permit the stuffer tube to inject the meat product into the casing. The clamp seats return to their open position after the stuffer tube has been inserted into the casing. The machine includes a linking assembly which links the product into uniform links. A looping assembly automatically deposits the links in uniform loops on a take-away conveyor. A cam follower rod is slidably mounted below the stuffer tube and has a casing follower mounted thereon which moves along the stuffer tube and engages one end of the casing to compress the casing before it is rotated and to maintain uniform pressure on the casing as the meat product is encased in the casing. A counterbalanced arm member extends through the front clamp seat and prevents the closing movement thereof to prevent recycling of the machine unless a casing is positioned thereon. Means is provided to prevent damage to the fragile casings as they are being handled by the machine. Means is also provided for precisely controlling the operation of the stuffer tube, cam follower rod and casing clamp so that the machine properly cycles to automatically produce a uniformly encased product.

3,672,002
FISH CLEANING AND FILLETING DEVICE
Melvin C. Penman, 560 Helm Road, Getzville, N.Y.
Filed June 29, 1970, Ser. No. 50,848
Int. Cl. A22c 25/16
U.S. Cl. 17—69 7 Claims



A hand tool having a handle with a concave blade at each end and a method for obtaining a skinless, boneless one piece fillet. The blade includes a linear shearing edge and a curvilinear shearing edge conforming to the rib cage of a fish, the edges converging to an apex. The apex of the blade may be inserted in a slit along the backbone of the fish terminating in a transverse slit at the tail. With the concavity facing toward the tail, the linear shearing edge bearing against the inner surface of the skin and the curvilinear shearing edge embracing the rib cage, the tool is moved from the head toward the tail to remove substantially all of the flesh portion of the fish with a plow-like action. The blades are mirror images of each other, one being suitable for use on one side of the fish and the other blade suitable for use on the opposite side of the fish.

3,672,003
CABLE STRAP
Thomas E. Morgan, Cleveland Heights, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,474
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 6 Claims

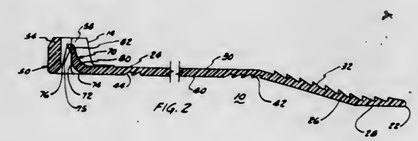
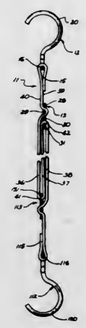


FIG. 2

The cable tie has an elongated, unitary, flexible strap with an enlarged head at one end. An opening in the head allows the remote strap end to be threaded through the opening in the head to clamp a bundle of wires or the like within the loop so formed. The strap body has an integral flexible pawl extending into the opening to lockingly engage inset ratchet teeth in the strap body adjacent the remote end of the strap.

3,672,004
ADJUSTABLE STRAP
Thomas R. Smith, Newton, Iowa, assignor to Pyramid, Inc., Newton, Iowa
Filed Oct. 8, 1970, Ser. No. 79,167
Int. Cl. A44b 21/00, 11/02
U.S. Cl. 24—73 HH 7 Claims



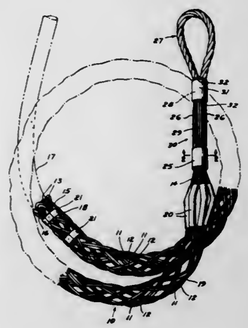
An adjustable strap assembly is connectable between two variably spaced points to provide a holding tension therebetween. The strap assembly includes two buckles and an elongated belt connected to the buckles to provide three strands between the buckles. The relative spacing between the buckles is selectively adjustable to alter the effective length of the strap assembly.

3,672,005
EXPANDABLE COLLAR CLASP
Wayland F. Barber, P.O. Box 34, Black Creek, N.Y.
Filed Oct. 20, 1970, Ser. No. 82,271
Int. Cl. A44b 21/00; F16g 13/22
U.S. Cl. 24—81 D 2 Claims



A collar clasp which straddles the space between the collar tabs of a gentleman's shirt, the clasp retaining the tabs in a neat and attractive appearance, the clasp comprising an expandable, spring loaded, link chain with a clip at each opposite end thereof for grasping the collar tabs.

3,672,006
OPEN MESH CABLE GRIP
Alfred W. Fidrych, Stonington, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.
Filed Oct. 23, 1970, Ser. No. 83,475
Int. Cl. F16g 11/02
U.S. Cl. 24—123 F 14 Claims



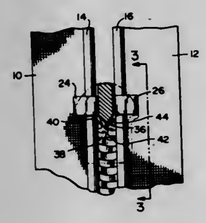
An open mesh wire cable grip having a grip body composed of paired strands woven over one and under one at the cable receiving end thereof and in certain cases at also the draft end thereof, and woven over two and under two between the ends thereof. The strands at the draft end of the grip body are gathered into a plurality of branches which form the shoulder of the grip, and these branches are further divided into two groups which are bound together with the ends of the draft loop by two steel bands to form a stiffened draft shank. The outermost band forming such shank is encloseed by a tube of heat shrinkable plastic to cover any protruding strand ends. The plastic tube may be provided with a distinctive color, or an additional distinctively colored sleeve may be secured to the grip's draft end to designate the size of the grip.

3,672,007
SLIDER BUCKLE FOR STRAPS AND THE LIKE
Adalberto Steinberg, Via Angelo Inganni 79, and Silvio Ricco, both of Milan, Italy
Filed June 29, 1970, Ser. No. 50,665
Claims priority, application Italy, July 18, 1969, 19827 A/69
Int. Cl. A44b 11/10
U.S. Cl. 24—196 1 Claim



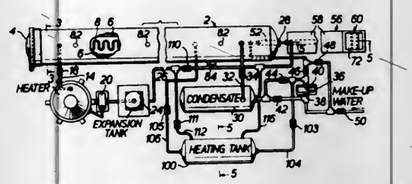
A slider buckle in which the buckle is fixed to one end of the strap and has a structure defining two windows into which the free end of the strap is inserted and fixed.

3,672,008
SLIDE FASTENER STOP ASSEMBLY
George B. Moertel, Connoautville, and James R. Wilson, Conneaut Lake, both of Pa., assignors to Textron Inc., Providence, R.I.
Filed May 4, 1970, Ser. No. 34,340
Int. Cl. A44b 19/36, 19/12
U.S. Cl. 24—205.11 F 10 Claims



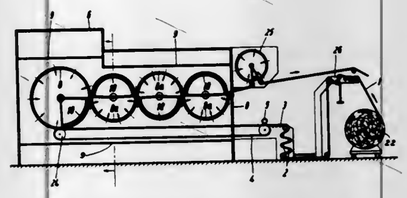
A slide fastener having terminal fastener elements reduced in size relative to the remaining fastener elements and two stop members adjacent the terminal fastener elements, each stop member being formed from a mass of fusible material fused onto a slide fastener tape, the reduced terminal fastener elements accommodating the diamond of a slider when the slider engages the stop members to prevent splay of the slide fastener tapes. A method of forming the above described slide fastener including supporting a slide fastener chain to expose the terminal fastener elements, reducing the size of the terminal fastener elements, and fusing a mass of fusible material onto each slide fastener tape to form the stop members. Apparatus for forming the above described slide fastener including a support block having parallel channels for receiving separate slide fastener tapes, a forming anvil having a pair of spaced legs movable in the channels to capture the terminal fastener elements in cavities therein, a source for supplying ultrasonic energy to the forming anvil to reduce the size of the terminal fastener elements, a forming block supporting the separated slide fastener tapes adjacent cavities defined therein by another forming anvil, a forming member engaging the forming block to move the forming block relative to the other forming anvil and shear blanks of fusible material in the cavities, and a source for supplying ultrasonic energy to the forming member to fuse the blanks onto the slide fastener tapes to form separate stop members.

3,672,009
METHOD OF AUTOCLAVING BUILDING BLOCKS
John W. Pike, New Rochelle, N.Y., assignor to Struthers Scientific and International Corporation
Division of Ser. No. 698,264, Jan. 16, 1968, Pat. No. 3,535,407. This application Oct. 20, 1970, Ser. No. 82,360
Claims priority, application Canada, Jan. 12, 1968, 009776The portion of the term of this patent subsequent to Oct. 20, 1987, has been disclaimed.
Int. Cl. B01j 3/00
U.S. Cl. 25—133 1 Claim



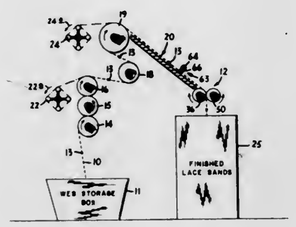
An indirectly heated autoclave for building blocks has a heating tank containing coils which are used for the indirect heating of water in the heating tank when the indirect heating capacity is not needed for the autoclave. This provides a source of heated water to shorten time between autoclaving cycles.

3,672,010
APPARATUS FOR THE CONTINUOUS TREATMENT OF TEXTILE MATERIALS
Heinz Fleissner, Egelsbach near Frankfurt/Main, Germany, assignor to Vepa AG
Division of Ser. No. 831,686, June 9, 1968, Pat. No. 3,521,378, which is a continuation-in-part of Ser. No. 654,728, July 20, 1967, Pat. No. 3,503,134. This application Nov. 21, 1969, Ser. No. 877,565
Claims priority, application Germany, June 8, 1968, P 17 60 604.1; June 22, 1968, P 17 60 717.9; June 27, 1968, P 17 60 751.1; April 8, 1969, P 19 17 757.2
Int. Cl. D06c 3/02; F26b 3/06, 13/30
U.S. Cl. 26—60 5 Claims



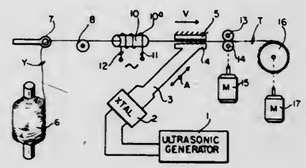
The present disclosure is directed to an apparatus for the treatment of materials which comprises a heat-insulated treatment chamber, a plurality of sieve drum means subjected to a suction draft rotatably disposed within said treatment chamber, fan means associated with the sieve drum means for producing a suction draft and for circulating the treatment medium in said treatment chamber, heating means provided in the circulation zone of the treatment medium, tentering means containing tensioning chains at least partially disposed outside of the treatment chamber serving as inlet means for said material, said tentering means cooperating with the sieve drum means for the effective conveyance of the material being treated to avoid shrinkage within said treatment chamber and outlet means for removing the material being treated from the treatment chamber.

3,672,011
APPARATUS FOR SEPARATING A WEB OF LACE INTO INDIVIDUAL BANDS
Richard M. Neth, Dallas; John M. Rogers, Shavertown, and James J. Gallagher, Kingston, all of Pa., assignors to Indian Head Inc., New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,366
Int. Cl. D02g 3/00
U.S. Cl. 28—1 CS 4 Claims



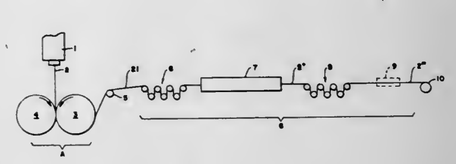
A machine for separating a web of lace into individual bands includes at one end a pair of drive rollers for pulling the material through the machine, and at the other end a set of tensioning rollers for retarding the free movement of the material through the machine. A plurality of idler rollers guide the material in its travel between the tensioning and drive rollers. The lacers holding the individual bands of lace together as a web are stripped from the web and wound on one or more take-up reels. As the material is drawn through the machine, the reels are rotated to continuously rip the lacers from the web of material thus separating the web into individual bands.

3,672,012
APPARATUS FOR TEXTURIZING YARNS AND THE LIKE
Glenn A. Burkland, 3903 Carolyn Avenue, Fairfax, Va.
Filed July 30, 1970, Ser. No. 59,506
Int. Cl. D02g 1/00
U.S. Cl. 28—1.2 11 Claims



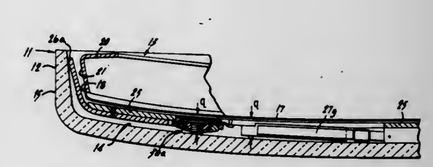
Improved technique for texturizing synthetic filaments, fibers and yarns by the application of high frequency impact thereto to impart bulk and/or stretch characteristics, each impact being applied to the yarn at an acute angle with respect to its axis and in such a way that each fiber or filament is peened asymmetrically on one side to cause curling or bending while at the same time being advanced through the texturing zone by the impact, and between impacts the yarn is fully released by the impact applying members in the zone so that the yarn can assume a relaxed position whereby any build up of twisting of the yarn is avoided.

3,672,013
APPARATUS FOR PRODUCTION OF POLYMER FIBERS
Brian J. Vernon, Timperley, and Wladyslaw H. Skorossewski, Davyhulme, Manchester, both of England, assignors to Shell Oil Company, New York, N.Y.
Filed April 9, 1969, Ser. No. 814,768
Claims priority, application Great Britain, April 10, 1968, 17,237/68
Int. Cl. D01d 13/00; B29d 7/14
U.S. Cl. 28—71.3 1 Claim



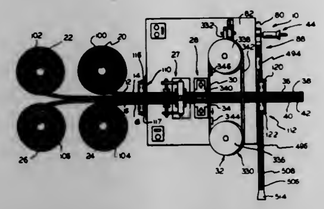
Synthetic fibers, such as polypropylene fibers, are manufactured in a form in which the fibers are of regular dimensions and substantially free from whiskery appendant fibrils, by a controlled fibrillation method which comprises impressing in a web of the polymer composition at a temperature above its crystalline melting point a plurality of grooves disposed in close but spaced-apart relationship to the longitudinal direction of the web by passing the web at said temperature between two rollers having non-yielding surfaces, e.g. steel rollers, at least one of which bears closely spaced, parallel surface ridges each having inwardly directed sides leading to peaks which are rounded off to a small radius, the sides of adjacent ridges forming troughs, chilling the grooved web, and subjecting the chilled web to a fibrillation treatment including stretching said web to orient the polymer.

3,672,014
METHOD OF MOUNTING A MASS IN A CATHODE-RAY TUBE USING RETRACTABLE SPACING UNITS
Laurence B. Kimbrough, Lititz, Pa., assignor to RCA Corporation
Filed Dec. 24, 1970, Ser. No. 101,315
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.15 9 Claims



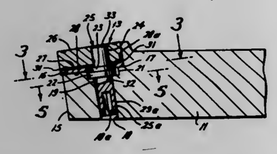
The method includes positioning a mask-frame assembly in predetermined spaced relation with the inner surface of a faceplate of a cathode-ray tube by means of at least four retractable spacing units. The spacing units are each extended a predetermined fixed distance, and the mask-frame assembly is mounted in the panel. Then the spacing units are retracted to allow the mask to be self-supporting in the panel, and the spacing between the mask and the face-plate is measured at discrete positions without removing the retracted spacing units.

3,672,015
APPARATUS FOR PROCESSING FLEXIBLE METALLIC CONDUIT
William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest
Filed Jan. 9, 1970, Ser. No. 1,735
Int. Cl. B21b *15/00*; B23p *23/04*, *25/00*
U.S. Cl. 29—33 K 7 Claims



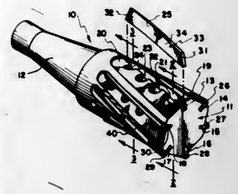
A machine and method for mechanically and simultaneously sizing and cutting multiple strands of flexible metallic conduit to desired lengths, and for facilitating the application of a fitting to either end of the respective resulting lengths, in which the conduit is simultaneously drawn, by a roller drive, from a number of rolls of same in parallel strands and is fed past a cutting station the conduit length desired, after which feeding of the conduit strands ceases and the conduit lengths are simultaneously severed from the row of strands by sawing. The machine includes a device for mechanically rotating the individual end fittings for the conduit length ends, whereby the machine operator can individually manipulate the individual conduit length ends to apply same to the device to permit the end fitting for same to be mechanically rotated into its fully seated position in the conduit end, and an attachment that permits the conduit wiring to be mechanically fed into same and cut off at the right length to complete the conduit assembly.

3,672,016
INDEXABLE BIT CUTTING TOOL HOLDER
Arthur A. Mellander, 10006 Hanka, Houston, Tex.
Filed March 3, 1970, Ser. No. 16,046
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 4 Claims



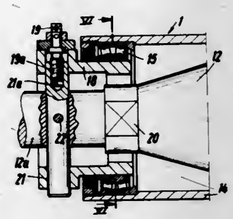
An indexable bit cutting tool holder includes a shank which is provided with a recess at one end thereof for receiving an indexable bit cutting tool. A locking arrangement is provided for locking the indexable bit cutting insert or tool in position on the holder in a manner so that the bit cutting tool can be used to cut in more than one direction. The locking arrangement is such that a maximum surface contact inhibits loosening of the insert. An anvil is also provided on which the indexable bit cutting tool is adapted to be seated, the anvil having raised edges along one surface so that only the edges of the bit cutting tool are engaged and supported thereon to inhibit chipping or otherwise damaging the bit cutting tool.

3,672,017
HELICAL BLADE MILLING CUTTER
Waldemar R. Nielsen, Ojai, and Charles D. Mathias, Goleta, both of Calif., assignors to Industrial Tools, Inc., Ojai, Calif.
Filed June 15, 1970, Ser. No. 46,031
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 1 Claim



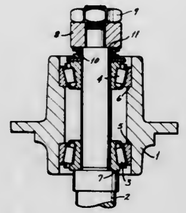
A helical blade milling cutter has a plurality of spiral slots formed in the tool body periphery for retaining helical cutter blades. Retaining sockets open into each slot and are shaped to position clamps. Each clamp has a cylindrically shaped block with a edge shaped face formed with a pair of tapered locking ribs separated by a shallow recess and an adjustment element which may be moved to simultaneously force the block into its associated socket and urge the locking ribs into tight, tow-point or two line locking engagement against the blade.

3,672,018
GUIDING ROLLER FOR CALENDERS
Dieter Junk, Kreuztal-Buschhuttes; Jurgen Schlunke, Krefeld, and Heinz Boisen, Huls, all of Germany, assignors to Joh. Kleinewefers Sohne Maschinenfabrik, Krefeld, Germany
Filed Jan. 27, 1971, Ser. No. 110,100
Claims priority, application Germany, Aug. 25, 1970, P 20 42 001.3
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD 3 Claims



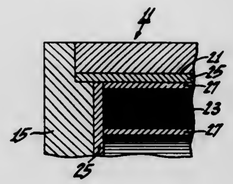
A guiding roller for calenders, especially glazing calenders, which has a multi-sectional tubular guiding mantle surrounding a roller shaft the pivot ends of which are each supported by a bushing journalled in self-aligning bearing means. The said bearing means also support the respective adjacent end of the adjacent tubular mantle section, while control means are provided for selectively adjusting said pivot ends relative to said bushing and relative to the respective pertaining mantle section.

3,672,019
METHOD OF ADJUSTING ROLLING BEARINGS
Thomas George Barnbrook, and Frederick James Wren, both of Northampton, England, assignors to The Timken Company, Canton, Ohio
Filed June 22, 1970, Ser. No. 48,286
Claims priority, application Great Britain, June 30, 1969, 33,018/69
Int. Cl. B23p *11/00*
U.S. Cl. 29—148.4 A 14 Claims



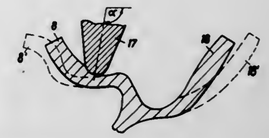
A bearing capable of carrying thrust loads is adjusted by positioning a spacer washer against one of the bearing races and applying an axial load to that washer. The load is resisted by the bearing and is sufficient in magnitude to deform the washer first elastically and then plastically. The plastic deformation is such that upon removal of the axial load and recovery of the elastic deformation, the spacer will provide the desired end play or preload adjustment for the bearing.

3,672,020
METHOD OF MAKING A HEAT PIPE HAVING AN EASILY CONTAMINATED INTERNAL WETTING SURFACE
Robert Alfred Freggens, Lancaster, Pa., assignor to RCA Corporation
Filed May 18, 1970, Ser. No. 38,323
Int. Cl. B23p *15/26*; B21d *53/00*
U.S. Cl. 29—157.3 R 10 Claims



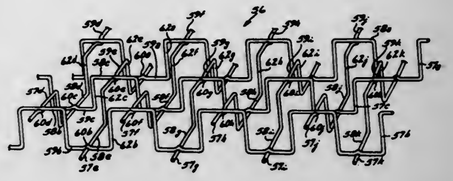
A novel method of making a heat pipe having an easily contaminated internal wetting surface, comprising cleaning the surface and then coating the cleaned surface with a material that is soluble in the working fluid at an operating temperature of the heat pipe. For a heat pipe employing a mercury metal working fluid, easily-oxidized ferrous metal surfaces of the capillary structure and envelope inner wall may be coated with nickel.

3,672,021
METHOD OF MAKING WHEELS
Friedrich Wilhelm Schulte; Manfred Diels, and Wilhelm Rosenkranz, all of Meinerzhagen, Germany, assignors to Otto Fuchs, Meinerzhagen, Germany
Filed Feb. 13, 1970, Ser. No. 11,233
Claims priority, application Germany, Feb. 20, 1969, P 16 08 465.2
Int. Cl. B21h *1/02*; B21k *1/32*
U.S. Cl. 29—159.01 11 Claims



Wheels, particularly for automotive vehicles, are made by first forming a disk-shaped blank, forging the same into a semi-finished wheel having a hub and a wheel disk surrounding the hub and having a peripheral rim provided with a cylindrical circumferential edge face, and then mounting the semi-finished wheel in a machine. The edge face is thereupon engaged with at least one pressure roller and split under application of pressure in direction inwardly of the edge face and towards the hub to obtain two unfinished flanges. The unfinished flanges are rollingly deformed in opposite directions axially of the hub and to the desired configuration to thereby obtain two finished wheel flanges.

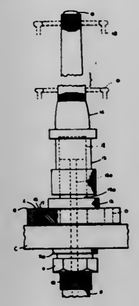
3,672,022
WIRE CORE STRUCTURE FOR SANDWICH MATERIAL
Charles Herbert-Greer York, Costa Mesa, Calif., assignor to Wire Core Development Corp.
Filed April 1, 1969, Ser. No. 811,945
Int. Cl. B21c *37/00*; E04c *2/42*
U.S. Cl. 29—191.6 5 Claims



A wire core structure for sandwich material including a plurality of planar wire core ribbons which are formed of wire bent at right angles to form anchor sections on opposite sides of the core to engage the face sheets of the sandwich material—said core anchor sections being joined by joinder sections which extend at a right angle to the plane of the core structure. A notch is provided on the outside of some anchor sections to receive a cross wire extending in the plane of said core structure at a right angle to said core ribbons. Such notches are related to the diameter of said cross wires so that the cross wires will project slightly beyond the notch into which is received the cross wire, which spacing provides space for an adhesive, and yet, the cross wires may be deformed enough in welding to make the outer side of the cross wires generally flush with the outer sides of the anchor sections. In one embodiment there is a core ribbon which is serpentine and in one embodiment the ribbons are used in pairs which are offset to form a series of closed sections and a series of downwardly open sections and a series of upwardly open sections with a se-

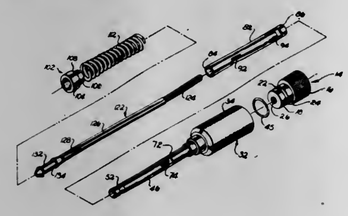
ries of cross wires being received into said last mentioned downwardly open and upwardly open sections.

3,672,023
ALIGNING DEVICE FOR SPINDLE ASSEMBLY
Carl McCombs, 1 Lisa Drive, Greenville, S.C.
Filed Feb. 10, 1971, Ser. No. 114,161
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 2 Claims



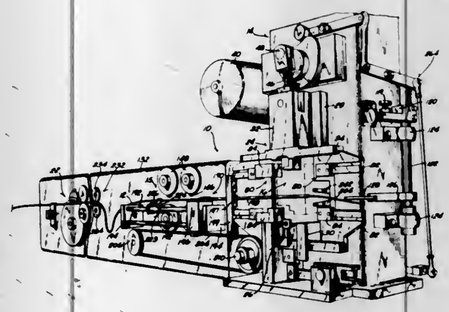
A device for aligning a spindle on spinning and twisting frames which is carried on an intermediate body of the spindle assembly. The device includes an aligning member which extends radially from the spindle. A plurality of adjustable setscrews are carried in threaded holes in the aligning member with the bottom of the screws being in contact with the rail upon which the spindle assembly is carried. The holes are equally spaced around the spindle so that by rotating the screws the spindle can be aligned on a desired axis.

3,672,024
CONNECTOR CLIP REMOVAL TOOL
John E. Barr, Van Nuys, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,364
Int. Cl. B25b *27/02*
U.S. Cl. 29—203 H 7 Claims



A contact clip extraction tool for use in connection with a contact clip that is releasably lockable in a bore within an electrical connector body. The tool comprises a capture rod having a clip retainer portion for insertion in said connector body bore, the clip retainer portion being slidable into the interior of said clip. The clip retainer portion is expandable when the clip retainer portion is inserted a predetermined distance into the clip. The clip retainer portion can engage the clip in a manner such that withdrawal of said clip retainer portion from the body also results in withdrawal of said clip therefrom. Further, a spring may be secured to the tool for retracting said clip retainer portion onto the clip when the clip retainer portion has been inserted the predetermined distance into the clip. Also a protective sleeve surrounding the rod and slidable with respect to the rod, the sleeve protects the connector body bore during insertion and extraction of the tool.

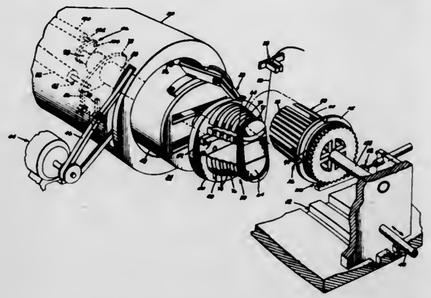
3,672,025
TERMINAL APPLICATOR
Ragnar Gudmestad, West Allis, Wis., assignor to Artos Engineering Company, New Berlin, Wis.
Filed Dec. 4, 1970, Ser. No. 95,284
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 21 Claims



An automatic terminal applying machine including a pair of terminal applicators, a wire cutting and stripping assembly located between and in line with the applicators, a wire measuring unit, a wire feed assembly including a wire guide assembly to accurately align the wire in the cutting and stripping assembly, and a wire drag and discharge assembly for holding the wire during terminal application and discharging the wire from the assembly after terminal application to a collection trough or wire stacking device. The cycle of operation of each of the assemblies is controlled by a number of cams secured to a common drive shaft and controlled by a one revolution pin clutch. A clutch controlled loop assembly provides a loop in the wire to minimize drag movement of the wire guide tube.

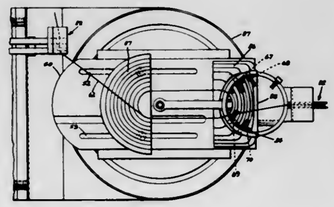
3,672,026
APPARATUS FOR DEVELOPING WOUND COILS FOR ELECTROMAGNETIC DEVICES
Arthur S. Cutler, Elnora, N.Y., and Dallas F. Smith, Fort Wayne, Ind., assignors to General Electric Company
Continuation of Ser. No. 839,742, April 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 594,463, Nov. 15, 1966, abandoned. This application May 11, 1970, Ser. No. 36,245
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R 22 Claims

Apparatus for developing electrical coil groups formed of a number of coils in a coil group-accommodating member for ultimate transfer into selected slots of a magnetic core. The coil group-accommodating member is supported adjacent a non-collapsible, longitudinally movable coil form in position to receive the coil group. The coils in each coil group are developed by winding turns of a given coil on the non-collapsible form and concurrently moving some of the turns from the form into the accommodating member where the individual coil groups are finally developed. The non-collapsible coil



form is periodically moved longitudinally to produce coils of differing spans during the development of each coil group.

3,672,027
COIL DEVELOPING APPARATUS
Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company
Division of Ser. No. 884,145, Dec. 11, 1969, Pat. No. 3,579,791, which is a continuation-in-part of Ser. No. 748,406, July 29, 1968, abandoned. This application June 1, 1970, Ser. No. 42,150
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R 10 Claims



Apparatus for developing one or more coil groups of electrically conductive wire. The apparatus includes a coil turn-forming assembly having a jump form portion and a snap-out form portion. The jump form portion includes a plurality of turn-gauging steps with an interruption formed at one side. The snap-out form portion is supported adjacent to the interruptions on the turn-gauging steps and includes a corresponding number of snap-out winding form plates, each having a fill-in winding section for spanning one of the associated interruptions on the jump form portion.

The apparatus also includes a flyer for placing wire on the coil turn-forming assembly to generate turns and a jump means for locating a turn-gauging step of the jump form portion in the path of the wire being wound by the flyer. Concurrently as the jump means locates a turn-gauging step in the path of the wire wound by the flyer, a snap-out plate is extended to place a fill-in winding section in alignment with its associated interruption of a turn-gauging step. The turn-gauging step of the jump form portion and its associated fill-in winding section cooperate to provide a form for winding or generating turns of a predetermined length for receipt in a coil group accommodating means or device. Preferably, the coil group accommodating means is comprised of spaced curved blades defining turn receiving slots. The spaced curved blades and corresponding fill-in winding sections of the snap-out plates have associated mating curved surfaces whereby, when a snap-out plate is engaged with a curved blade, the entry of the turns of a coil being generated into the corresponding turn receiving slot is facilitated by the mating curved surfaces. Thus each coil is developed directly in the coil group accommodating means as the turns for the coil are generated about the coil turn-forming assembly. Also, the jump form portion and the snap-out plates may be supported for movement in essentially a vertical direction, and the curved blades are supported in alignment with the snap-out plates so that force of gravity facilitates the removal of the turns from the coil form assembly.

Additionally at least part of the jump form portion is movable relative to the snap-out portion during the turn-generating operation for selectively varying the lengths of successive turns.

A coil group is developed in the coil group accommodating means by producing a plurality of serially connected wound coils of a coil group in the coil group accommodating means. Thereafter the coil group may be inserted directly from the coil group accommodating means into preselected slots of a stator core.

3,672,028
DIP TUBE GUIDE ARRANGEMENT
Monte J. Boling, Fairfield, N.J., assignor to Anderson Machine Works, Ridgefield Park, N.J.
Continuation-in-part of Ser. No. 774,853, Nov. 12, 1968. This application June 12, 1970, Ser. No. 45,749
Int. Cl. B23p *19/04*; B21d *39/04*
U.S. Cl. 29—208 B 7 Claims

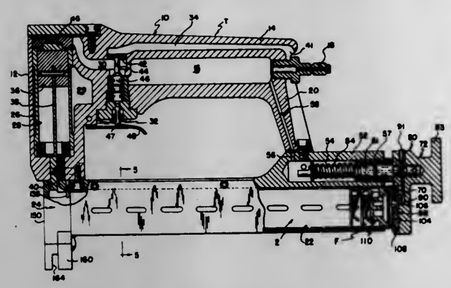


A guide for association with a movable chuck in a machine for inserting valved dip tubes in aerosol containers, the guide comprising a plurality of fingers having ends which, in one position, define a restricted opening through which a dip tube can be freely advanced in a desired direction, and which can be moved by the advancing chuck to a second position through which the valve body can be passed for engagement with the open neck of the container.

3,672,029
FASTENER DRIVING APPARATUS
Albert T. Butrim, Westlake, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Sept. 30, 1970, Ser. No. 76,743
Int. Cl. B23p *11/00*, *19/04*; B25d *9/16*
U.S. Cl. 29—243.56 5 Claims

A fastener driving apparatus including an improved construction for a fluid operated fastener driving tool adapted to

receive a detachable and replaceable magazine for automatically and sequentially feeding a plurality of fasteners in an



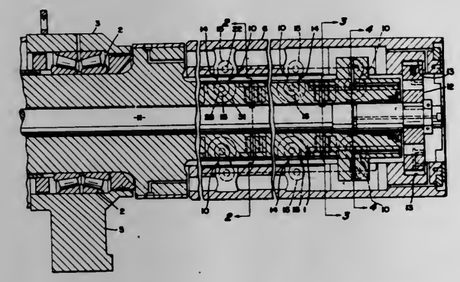
aligned side-by-side relation into a predetermined uniform spaced and secured position on a work piece.

3,672,030

DOWNCOILER MANDREL OF THE TOGGLE LINK TYPE FOR HOT STRIP MILLS, AND METHODS FOR REPAIRING OR REBUILDING SAME

Stanley Darwin Noll, Shaker Heights, and William F. Delfeld, Lyndhurst, both of Ohio, assignors to Production Experts, Inc., Cleveland, Ohio

Filed March 9, 1970, Ser. No. 17,828
Int. Cl. B22d *19/10*; B21d *53/10*
U.S. Cl. 29—401 6 Claims



A method of repairing a downcoiler mandrel is described, in which worn areas of the mandrel body and segments are machined to dimensions suitable for accommodating bushings and half-bushings of pre-selected materials, the toggle links are machined in their pin areas to receive bushings of selected materials, and the outer arcuate surfaces of the links are plated with a hard wear-resistant metal, such as chromium. The overall construction resulting from such repairs and replacements is also applicable to the construction of new mandrels of this type.

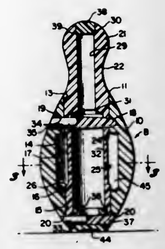
3,672,031

METHOD OF MANUFACTURING PLASTIC BOWLING PIN

Maurice Anthony Negrini, 25 Quimby Avenue, Woburn, Mass.

Division of Ser. Nos. 836,518, June 25, 1969, and Ser. No. 882,036, Dec. 4, 1969, Pat. No. 3,572,710. This application Sept. 17, 1970, Ser. No. 73,131
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 4 Claims

This specification discloses a bowling pin of plastic that has the appearance of a wooden pin, sounds like a wooden pin, and scores like a wooden pin. These properties are imparted by the structure comprising a hollow main body, a hollow core with a space between the core and the body, a removable and replacable cap plug for the upper end of the core, and a removable and replaceable base plug for the lower end of the core; and method of manufacturing the pin of this construction.



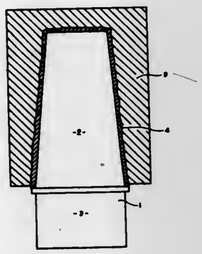
The present invention relates to blowling pins, and is concurred primarily with a bowling pin of plastic that has all the properties that are of vital interest to a bowler, of a wooden pin and which properties are imparted to the pin by the structural characteristics thereof.

3,672,032

PROCESS FOR MOUNTING A WORKPIECE FOR MACHINING

Harry Witherspoon, Ealing, England, assignor to Rolls-Royce Limited

Filed Nov. 17, 1969, Ser. No. 882,411
Claims priority, application Great Britain, Nov. 15, 1968, 54,188/68
Int. Cl. B23p *17/02*
U.S. Cl. 29—424 7 Claims



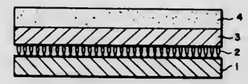
A process for producing a removable workpiece mounting for holding the workpiece during machining operations comprising the steps of applying a settable coating to a portion of the workpiece to provide a key, and casting a block of material around said coating when set, said cast material being solid at room temperature and said coating remaining stable at least up to the melting temperature of said cast material, said coating comprising a grit in a binder and said binder being soluble in a solvent which is non-corrosive to the workpiece material.

3,672,033

METAL LAMINATED MATERIAL AND PROCESS FOR ITS MANUFACTURE

Ulf Richter, Wasserscheide, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

Filed Jan. 8, 1970, Ser. No. 1,333
Claims priority, application Germany, May 3, 1969, P 19 22 757.7
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 7 Claims



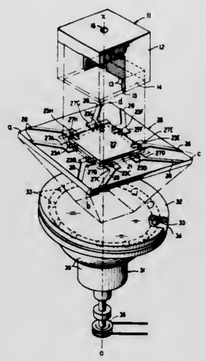
The present disclosure is directed to a laminated metallic composite and to a process for the production of said composites which comprises placing metallic spacers between the metal sheets to be bonded, said spacers being wound in a helical shape from a wire with the axis of the spirals oriented substantially parallel with respect to the metal sheets, applying a layer of explosive to the upper sheet of metal and detonating said explosive to produce impingement and welding of the upper sheet with the remaining sheets.

3,672,034

METHOD FOR BONDING A BEAM-LEAD DEVICE TO A SUBSTRATE

James E. Clark, Coopersburg, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Division of Ser. No. 646,251, June 15, 1967. This application Jan. 14, 1970, Ser. No. 7,330
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 22 Claims



A process and an apparatus are disclosed for the thermocompression bonding of beam-lead integrated circuits to a series of conductor patterns located on a substrate.

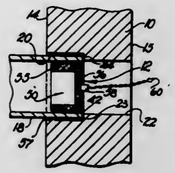
The flat tip of a hollow rectangular rod comprises the heating unit. The beam-lead device is positioned on a substrate; the substrate is mounted on a carrier; and, illustratively, the carrier is located on a wobble table. When appropriate means undulate the wobble table, the beam leads are rocked into successive contact with the heating unit and thereby are bonded to the substrate.

3,672,035

METHOD OF FABRICATING A TUBE SHEET ASSEMBLY

Irving Lieberman, Covina, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed March 20, 1970, Ser. No. 21,435
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.3 5 Claims



A tube sheet assembly has tube sheets with a plurality of orifices formed therein with an enlarged bore inner portion extending partially through the thickness of the sheet for slidably receiving the tube ends intersecting with a coaxial smaller outer bore portion extending through the rest of the sheet thickness corresponding to the inner diameter of the tube. With the ends of each tube positioned in the enlarged inner bore portion of the respective orifices, an explosive welding charge is inserted through the smaller outer bore portion to be positioned within the end of each tube. The charges may then be detonated simultaneously to weld the outer surfaces of the tube ends to the surrounding inner tube sheet surfaces within the enlarged bore portion of the orifices, thus providing an essentially uniform fluid flow path free of discontinuities from the tube sheet into the tubes.

3,672,036

METHOD OF MAKING ASSEMBLIES OF STAINLESS STEEL TUBING

John P. Ziemianski, Avonmore, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Feb. 26, 1969, Ser. No. 802,671
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 2 Claims

A method of making assemblies of stainless steel tubing or piping and conventional plumbing fittings which comprises coating stainless steel tubing, at least at the ends thereof, with copper, tin or alloys thereof and joining a fitting coated portion by soldering.

3,672,037

NITRIDE STRENGTHENED STAINLESS STEEL COMPOSITE AND PRODUCTION THEREOF

Lynn E. Kindlimann, Natrona Heights, and Alexander B. Greene, New Kensington, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Feb. 28, 1969, Ser. No. 803,442
Int. Cl. B23k *31/02*
U.S. Cl. 29—497.5 9 Claims

The application describes composite members containing a plurality of layers at least one of which is nitride strengthened stainless steel and a pressure bonding method for producing them.

3,672,038

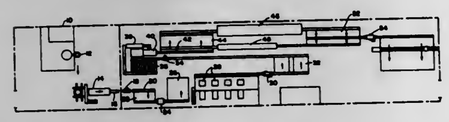
METHOD AND APPARATUS FOR PRODUCING EXTRUDED STEEL SHAPES

Daniel L. Lombard, Youngstown, Ohio, assignor to Lombard Corporation, Youngstown, Ohio

Filed May 5, 1970, Ser. No. 34,838
Int. Cl. B23k *19/00*
U.S. Cl. 29—527.6 5 Claims

A method and apparatus for producing extruded steel shapes, characterized in that no rolling or forging of a billet is

required prior to the time that the billet is placed in an extrusion press container. The entire system consists only of a refining furnace, a continuous casting machine for casting a bar which is cut into desired lengths, a consumable electrode furnace which uses the bars from the casting machine as electrodes to be melted, and the extrusion press itself which ex-



trudes sections of the ingot formed by the consumable electrode furnace while requiring only a light surface treatment of the billets prior to extrusion. In this manner, the capital investment in a mill for producing bars of various shapes is reduced considerably.

3,672,039

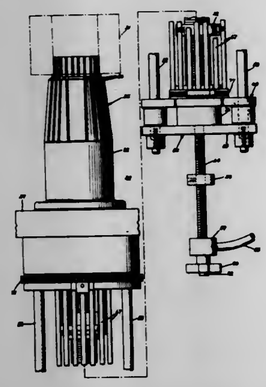
METHOD FOR INSERTING INSULATORS AND COIL TURNS INTO THE SLOTS OF A MAGNETIC CORE

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company

Division of Ser. No. 875,895, Nov. 12, 1969, which is a continuation-in-part of Ser. No. 748,405, July 29, 1968, abandoned. This application May 6, 1970, Ser. No. 35,175

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **11 Claims**



Method for concurrently inserting insulators and side turn portions of an electrical coil into selected axially extended slots of a magnetic core. For inserting the insulators into the slots, insulator pushers are slidably disposed in guide apertures of the apparatus. The side turn portions of the electrical coil are inserted into the axially extending slots by a preselected number of coil turn feeder blades movably supported relative to a divider blade section. The divider blade section and coil turn feeder blades define a series of turn-receiving gaps in which the electrical coil is carried.

A driver actuated by a suitable power source effects a movement of the insulator pushers in an axial direction continuously through a first, second and a third increment of travel to effect placement of the insulators in the slots. The divider blade section and the coil turn feeder blades are conjointly actuated in an axial direction during the second increment of travel. Upon completion of the second increment of travel the divider blade section and coil turn feeder blades are extracted and extend through the bore of the magnetic core. During the third increment of travel of the driver, only the insulator pushers and the coil turn feeder blades are actuated in an axial direction, and upon completion of the third increment of travel the side turn portions of the electrical coil are inserted into predetermined pairs of slots. Movement of the coil turn feeder blades relative to the divider blade section materially reduces the frictional drag on the coils during insertion. Preferably, the coil turn feeder blades are formed with reduced portions terminating in a pair of turn-pushing ledges, and the turn-receiving gaps are defined by the walls of the reduced portions and adjacent walls of the divider blade section. Also, the travel of the driver through the third increment of its travel is resiliently cushioned as the insulator pushers and coil turn feeder blades are driven to the fully extended position.

Also, the ledges may terminate short of the peripheral edges of the feeder blades, and the feeder blades include shoulders axially recessed from the ledges. With this arrangement the gaps form extensions of the slot entrances to receive some of the side turn portions as other side turn portions are inserted into predetermined slots. The shoulders thereafter effect insertion of the side turn portions first received in the slot entrance extensions.

The method can be beneficially practiced to insert side turn portions of an electrical coil group even when insulators are not being inserted.

With this arrangement it is possible to accommodate magnetic cores of different stack heights with relatively minor adjustments and to insert mechanically loaded insulators into magnetic cores having relatively small diameter bores. The coil turn feeder blades and divider blade section form a rigid structure for precisely controlling the insertion of the coil side turn portions thereby minimizing a possibility of damage to the conductor wire during the insertion process.

3,672,040

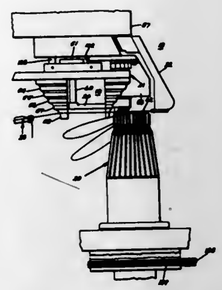
METHOD OF DEVELOPING COILS OF A COIL GROUP FOR A MAGNETIC CORE

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company

Division of Ser. No. 884,145, Dec. 11, 1969, Pat. No. 3,579,791, which is a continuation-in-part of Ser. No. 748,406, July 29, 1968, abandoned. This application June 1, 1970, Ser. No. 42,189

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **15 Claims**



A method of developing one or more coil groups of electrically conductive wire in a coil group accommodating device such as coil insertion tooling. A coil turn-forming assembly is positioned with a snap-out winding form plate in alignment with a corresponding turn-gauging step and engaging a coil group accommodating device adjacent a turn receiving slot. Turns of wire are generated about the winding form plate and turn-gauging step and received in the turn receiving slot during the generation operation. Thereafter, other snap-out winding form plates are sequentially positioned in alignment with a corresponding turn-gauging step and engaging the coil group accommodating device adjacent corresponding turn receiving slots. The turn generating operation is repeated using each winding form plate and turn-gauging step, with the generated turns being received in the corresponding turn receiving slot during that generation operation.

When all the coils for one coil group have been developed in the coil group accommodating device, the coil group accommodating device can be rotated to bring other turn receiving slots in alignment with the coil turn-forming assembly. Then the desired number of operations, as described above, can be repeated to develop, in the coil group accommodating device, additional coil groups. When the coil group accommodating device is coil injection tooling, the developed coils can thereafter be inserted from the coil injection tooling into preselected slots of a magnetic core.

3,672,041

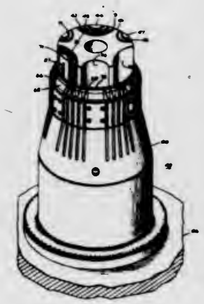
METHOD AND APPARATUS FOR INSERTING COIL TURNS INTO THE SLOTS OF A MAGNETIC CORE

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company

Filed Dec. 21, 1970, Ser. No. 100,219

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **9 Claims**



Method and apparatus for inserting side turn portions of electrical coils in a coil group into selected axially extending coil receiving slots of a magnetic core and for freely shedding end turn portions of at least some of the turns within at least two coils of a coil group radially toward a generally solid or yoke section of the core as the side turn portions of other turns in the selected coils are moved axially toward an end face of the core. Preferably, the at least two coils include two of the innermost coils in a coil group. The side turn portions of the electrical coils are inserted into the axially extending slots by coil turn feeder blades movably supported relative to the divider blade section. The divider blade section and the turn pushing surfaces of the coil turn feeder blades define the side and bottom, respectively, of a series of turn-receiving gaps which have openings in the free extremity of the divider blade section and in which the electrical coils are carried. Insulator pushers may also be provided for inserting insulators into slots after side turn portions of coils have been placed therein.

An actuating assembly includes a driver actuated by a suitable power source and effects continuous axial movement of insulator pushers through first, second and third increments of travel to effect placement of insulators in the slots. The divider blade section and the coil turn feeder blades are conjointly actuated in an axial direction during the second increment of travel. Upon completion of the second increment of travel the divider blade section extends axially through the bore of the magnetic core. At this time, the free extremity of the divider blade section in the vicinity of at least two turn-receiving gaps in which the two innermost coils are carried is spaced closely adjacent to the end face of the core. Preferably, the end face of the core and the divider section surface are within one eighth to one quarter inch of each other. During the third increment of travel, the insulator pushers and the coil turn feeder blades are moved in an axial direction relative to the core and divider blade section. During this increment of travel, as the end turn portions of the two innermost coils in one or more selected coil groups move to the gap openings in the free extremity of the divider blade section, the end turn portions move away from the gap openings and toward the yoke section of the core. The method and apparatus can be used even when insulators are not being inserted.

3,672,042

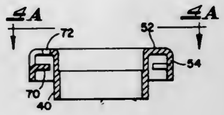
METHOD OF MAKING POLE MEMBERS

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed April 26, 1971, Ser. No. 137,378

Int. Cl. H01f *7/06*

U.S. Cl. 29—602 **14 Claims**



The method of manufacturing pole members or rotors such as the type used in electromagnetic friction clutches and brakes. The pole member is manufactured from a stamped blank which is drawn into a suitable form. A plurality of support fingers are then formed and non-magnetically joined to form a hub. A portion of the hub is then removed forming an annular cavity in which an annular ring of friction material is installed. The hub may then be splined or keyed for mounting in the clutch or brake.

3,672,043

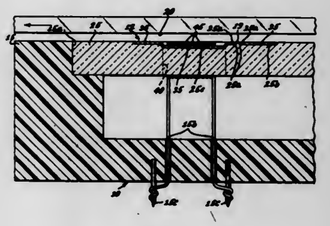
MINIATURE MAGNETIC HEAD

Cebern B. Trimble, Hawthorne, Calif., and Robert R. Skutt, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 511,843, Dec. 6, 1965, Pat. No. 3,564,521. This application April 29, 1970, Ser. No. 43,631

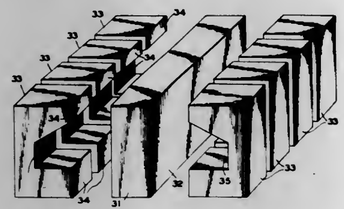
Int. Cl. H01f *7/06*

U.S. Cl. 29—603 **11 Claims**



This invention relates generally to magnetic transducer devices, and more particularly to a novel magnetic transducer construction and method of making.

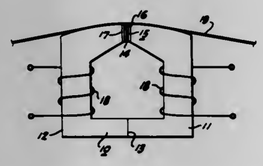
3,672,044
MULTI-CHANNEL DUAL-GAP MAGNETIC HEAD
Takashi Tanaka, Osaka, and Yasuo Nomura, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed March 4, 1970, Ser. No. 16,320
Claims priority, application Japan, March 10, 1969, 44/19680
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 1 Claim



A multi-channel dual-gap magnetic head. The head has a plurality of magnetic head tips which are separated magnetically from each other by non-magnetic materials and each having two magnetic gaps. A plurality of magnetic back cores are connected to said magnetic head tips, and a plurality of windings are wound on the respective back cores. The corresponding magnetic gaps in the head tips are aligned in two straight lines which are parallel to each other and perpendicular to the direction of tape movement of the tape for a recording and reproducing device. The magnetic gaps aligned in one straight line have at least two different gap widths.

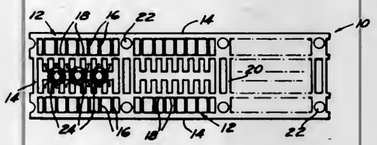
The method of making the multi-channel dual-gap head is to provide a magnetic plate and join to it a plurality of grooved magnetic material blocks by means of spacers of various thicknesses. Thereafter, slots are cut at the joints between the blocks, and non-magnetic plates are inserted in the slots. The resulting assembly is trimmed appropriately and back cores are attached and connected to the head tips.

3,672,045
PROCESS FOR BONDING MAGNETIC HEADS
David D. Robertson, Palo Alto, Calif., assignor to Surface Technology, Inc., Mountain View, Calif.
Filed April 29, 1970, Ser. No. 33,013
Int. Cl. G11b 5/42
U.S. Cl. 29—603 10 Claims



A process is disclosed for bonding magnetic heads by forming a low magnetic permeability spacer between pole pieces of a magnetic head. A primary gap material is deposited, preferably by R.F. sputtering, on the pole pieces. A bonding layer is deposited over the primary gap material, also preferably by R.F. sputtering. The thus coated pole pieces are vacuum degassed and heated to a temperature in the range of 150° to 450° C. The bonding layers are then mated and a pressure of from 50 to 100 psi is applied and held between ½ and 4 hours. Any material which has a relatively low magnetic permeability and can be applied by R.F. sputtering or thermal evaporation is suitable for the primary gap material. The bonding layer is formed of either copper, silver, gold or titanium, or any material which produces a good diffusion bond under the above conditions.

3,672,046
METHOD OF MAKING AN ELECTRICAL COMPONENT
William T. Storey, II, West Chester; Robert F. Procter, Bristol; Charles H. A. Snyder, Philadelphia; George M. Jacob, Flourtown, and Raymond T. Mooney, Philadelphia, all of Pa., assignors to Technitrol, Inc., Philadelphia, Pa.
Filed Jan. 14, 1970, Ser. No. 2,742
Int. Cl. H01b 13/00; H05k 3/00
U.S. Cl. 29—624 12 Claims



The method comprises forming a lead frame having a plurality of sets of leads and connecting at least one electrical element to each set of leads. The elements are preencapsulated with a pressure-distributing material which is substantially free of gases. The preencapsulated elements are then encapsulated and the respective elements and their associated leads are separated to provide the electrical components.

The invention further includes the electrical component per se.

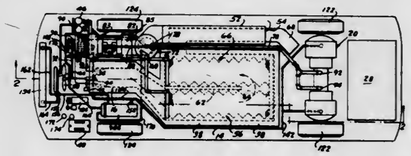
3,672,047
METHOD FOR BONDING A CONDUCTIVE WIRE TO A METAL ELECTRODE
Yuzaburo Sakamoto, and Morio Toyooka, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 29, 1970, Ser. No. 102,309
Claims priority, application Japan, Dec. 29, 1969, 44/105284
Int. Cl. H01r 43/00; H05k 43/00
U.S. Cl. 29—628 9 Claims



A connector wire is bonded to a solder electrode by pressing the end portion thereof to the solder electrode by using a capillary while the capillary is heated up to a temperature not less than the melting point of the solder, by melting the solder electrode and then by cooling the whole bonding area of the connector wire and the solder electrode, thereby the end portion of the connector wire is buried in the solder electrode and is firmly fixed thereto.

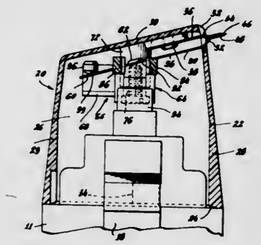
3,672,048
STEAM POWERED VEHICLE
Phillip J. Conwell, RR #1, P.O. Box 35, Mt. Orab, Ohio
Filed May 25, 1970, Ser. No. 39,966
Int. Cl. B60k 3/00
U.S. Cl. 180—67 6 Claims

A passenger automobile or the like is steam power driven by providing a flat planar boiler beneath the passenger compartment and intermediate of the main drive steam turbine and the combustion chamber which, depending upon whether the



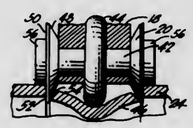
vehicle is front wheel driven or rear wheel driven, may be located alternatively at the front or rear of the vehicle.

3,672,049
HAIR TRIMMER ATTACHMENT FOR ELECTRIC SHAVERS
Michael Demci, Bridgeport, and Richard Ihasz, Stratford, both of Conn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 22, 1970, Ser. No. 82,882
Int. Cl. B26b 19/38
U.S. Cl. 30—90 6 Claims



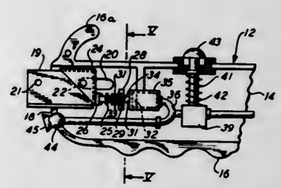
An auxiliary long-hair trimmer cutter head attachment for an electric shaver, the attachment including a fixed cutter, a movable cutter and a cutter drive member for supporting the movable cutter and maintaining the latter in cutting engagement with the fixed cutter.

3,672,050
TUBE CUTTER
Francis J. Hanback, Palos Verdes, Calif., assignor to McDonnell Douglas Corporation
Filed Aug. 5, 1970, Ser. No. 61,197
Int. Cl. B23d 21/08
U.S. Cl. 30—99 5 Claims



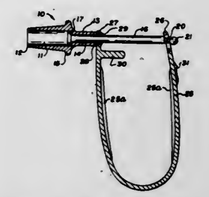
A tube cutting tool for the repair of permanently installed piping systems wherein a section of faulty tubing may be removed and a splicing sleeve fitted thereover for permanent repair in the piping system. The tool may be used in confined quarters since it does not rotate around the tubing. The cut is free of chips, burrs, or other minute particles that require purging of the line before use.

3,672,051
AIR-OPERATED CUTTING DEVICE
Gerald S. Ramiccio, 24 Valley Road, West Milford, N.J.
Filed May 21, 1970, Ser. No. 39,359
Int. Cl. B26b 1/08
U.S. Cl. 30—123 R 8 Claims



A tool for cutting off a part of a sheet of material from a receiving roller and tucking the cut edge portion around said roller, so that it continues to wind thereon comprising a housing, a knife mounted for sliding in and out of an end of said housing, a spring for biasing said knife so that it tends to return to a protected position in said housing, a piston with a rod connected to said knife, and a connection from a source of compressed air to said piston, said connection branching beneath said knife, so that when air is released to move the knife so that it protrudes from said housing, air is simultaneously released to act on the cut edge portion of said sheet of material.

3,672,052
INFANT FEEDING DEVICE
Allen C. Mason, P.O. Box 927, Golden, British Columbia, Canada
Filed Dec. 7, 1970, Ser. No. 95,745
Int. Cl. A47j 43/28
U.S. Cl. 30—130 3 Claims

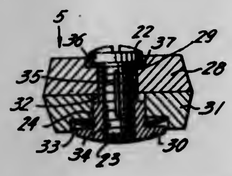


A device to simplify feeding infants their first solid foods which consists of a tube having an open end adapted to be inserted into the infant's mouth and a plunger movable within the tube to draw food into the tube by suction as the plunger is moved away from the open end and to expel that food into the child's mouth during movement of the plunger towards the open end. The tube has an external annular flange to prevent it from being inserted too far into the child's mouth and a stop to prevent the plunger from being pushed past the open end of the tube.

3,672,053
PIVOT ARRANGEMENT
Richard R. Wiss, Short Hills, N.J., assignor to J. Wiss & Sons Co., Newark, N.J.
Filed Feb. 26, 1971, Ser. No. 119,096
Int. Cl. B26b 13/00
U.S. Cl. 30—267 12 Claims

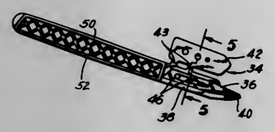
Improved pivot arrangement in scissors, shears snips and the like tools, the tool having an internally threaded pivot bushing or tubular shaft located at the pivot point of the blades, the bushing having an enlarged head at one end and a

reduced forward portion provided with two oppositely disposed flat sides. A metal spring-type washer coated with a material having a low friction coefficient is disposed between one of the blades, through which the bushing projects, and the enlarged head of the bushing. The other blade is provided with



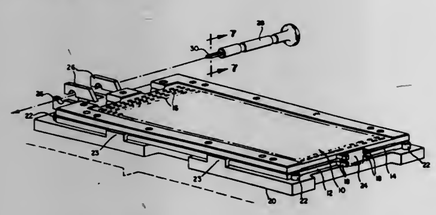
an opening with opposed flats accommodating the reduced portion of the bushing. A locking screw having an enlarged head engages the internal threads of the bushing for adjusting the tightness between the blades; there being provided an antifriction washer between the locking screw head and the said other blade.

3,672,054
CUTTER AND LIKE ARTICLE
Jack W. Kaufman, 357 Frankel Boulevard, Merrick, Long Island, N.Y.
Filed Nov. 13, 1969, Ser. No. 876,325
Int. Cl. B26b *29/02*
U.S. Cl. 30—294 8 Claims



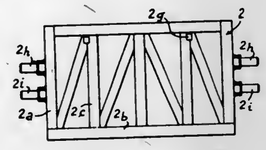
A cutter for cutting threads, particularly sutures, having a main body portion with jaw means and a cutter blade. The jaw means retaining the cutter blade in place and comprising fixed and hingeable elements integrally formed together. The fixed element of the jaw means has a forwardly extending pointed portion which resides beneath of the blade and forms a gap or slot with the blade for wedging a thread therebetween and cutting same against the blade.

3,672,055
HAND PUNCHING DEVICE FOR DATA CARDS
Eugene C. Krueger, Drexel Hill, Pa., assignor to Krueger Associates, Drexel Hill, Pa.
Filed Oct. 16, 1970, Ser. No. 81,421
Int. Cl. B26f *1/32*
U.S. Cl. 30—358 8 Claims



A convenient, light weight, inexpensive, portable device for hand punching data cards comprising a transparent upper face plate and a mating base plate having a card size recess therebetween with an edge opening for the introduction of a data card therein, and both having holes of the preselected data hole size and shape in each of the numerous preselected positions at which data holes may be punched in the card. The side of the base plate facing the upper face plate has a hard surface with well defined edges surrounding each of the possible data holes. Underlying the base plate is a removable bottom cover, preferably of a yieldable material, the cover and/or the bottom of the base plate defining a recess for receiving the card chips when data holes are punched therein. A member urged toward the edge opening of the face and base plates, to lock the data card therein, preferably comprises a flexible extension of the yieldable bottom cover locked into position by locking members extending from said base and upper plates in the area of the edge opening. A hand held punch with a hard forward surface having a cross sectional shape corresponding to the size and shape of the data holes is provided to punch data holes at any of the preselected positions and a data card inserted in the card recess by forcing the punch through the corresponding holes in the upper face plate and base plate and the card which is inserted therebetween.

3,672,056
INSTALLATION FOR PRODUCTION OF SOFT AND WASHED-CURD CHEESES
Jean-Pierre Barbier, and Jean-Pierre Feugnet, both of Retiers, France, assignors to Laiteries E. Bridel, Retiers, France
Filed Nov. 6, 1969, Ser. No. 874,488
Int. Cl. A01j *25/16*
U.S. Cl. 31—49 5 Claims

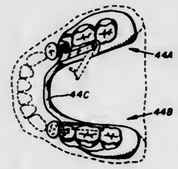


Installation for production of soft and washed-curd cheeses, including a device for molding washed-curd, consisting of giant molds, each having the section of the final cheese product and capacity corresponding to a multiple of the final cheese volume, said molds being grouped in units; a drainer device including means for turning over the mold units by imparting to them a tilting motion, followed by a pendular one, to drive out the serum; and a device for cutting the molded curd taken out of the mold into slices to the final dimensions of the cheeses, including a cutting device equipped with means to adjust knife spacing in function of the length of the molded curd in order to obtain equal curd parts regardless of the length of molded curd.

3,672,057
ATTACHMENT FOR REMOVABLY SUPPORTING A PARTIAL DENTURE TO AN ADJACENT NATURAL TOOTH
Ralph C. Mays, 1139 North Gary Avenue, Tulsa, Okla.
Filed Nov. 13, 1970, Ser. No. 89,238
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 10 Claims

An attachment for removably supporting a partial denture to an adjacent natural tooth including a gudgeon member affixed to a natural tooth including a flat portion having a pinhole therein, a locking bar having at the first end a perpendicular extending pin portion of a diameter to be received in

the gudgeon member pinhole and at the other end a hinge pin opening, a hinge pin pivotally received in the locking bar



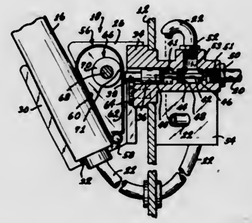
hinge pin opening, the hinge pin being adaptable to be affixed within a partial denture.

3,672,058
DENTAL IMPLANT
Albert-Jean Nikogbossian, 333a Chemin de la Madrague-Ville, 13 Marseille, 15, France
Filed April 16, 1970, Ser. No. 29,072
Claims priority, application France, April 18, 1969, 6911366; Feb. 6, 1970, 7004374
Int. Cl. A61c *13/22*
U.S. Cl. 32—10 A 5 Claims



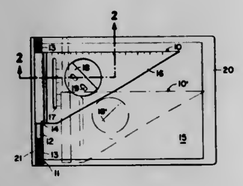
Endo-osseous dental implant composed, in a single piece, of a stump intended to support a dental prosthesis and a self-drilling conical screw extended by a long sharp point and process of putting such an implant in position by screwing in the walls of the alveolar recess of a freshly extracted tooth root after it has been filled with autopolymerizable resin.

3,672,059
HOLDER FOR DENTAL HANDPIECE
Dwight Allan Booth, Portland, Oreg., assignor to Omark Air Controls, Inc., Portland, Oreg.
Filed Feb. 16, 1970, Ser. No. 11,532
Int. Cl. A61c *19/02*
U.S. Cl. 32—22 3 Claims



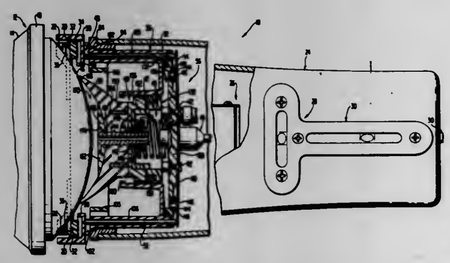
gers.' The scale is printed on a standard size insert which is mounted on a recess on the body of the device. The measuring device may be affixed directly to the container by means of a double-sided tape. Alternately, the device may be affixed to any vertical surface, and the container to be measured placed in a measuring relationship with the device.

3,672,062
PORTABLE DRAFTING DEVICE
Allister L. Baker, Danville, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.
Filed March 9, 1971, Ser. No. 122,406
Int. Cl. B43l *13/02*
U.S. Cl. 33—109 **7 Claims**



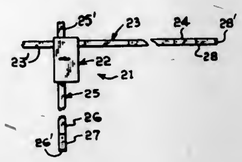
A lightweight drafting device comprises a ferrous board and a magnetized roller which acts as a paper holder and guide means for a drafting element. The strong magnetic attraction between the board and roller ensure a fixed relation between the paper and drafting element, and maintains parallelism between drawn lines. The device is readily transportable and is operable in any convenient attitude.

3,672,063
HEADLAMP AIMING DEVICE WITH ORIENTATION SENSING
Evan Lloyd Hopkins, 1701 West 13th Street; Ross Eugene Hopkins, 1910 Darlene Way, and Evan Leon Hopkins, 1135 Oxford Drive, all of Emporia, Kans.
Filed Jan. 25, 1971, Ser. No. 109,149
Int. Cl. G01b *13/00*; G01c *9/00*
U.S. Cl. 33—180 L **20 Claims**



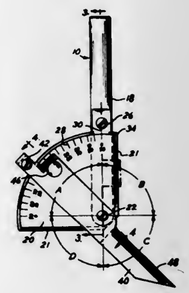
An elongate headlamp aiming tool including a seating surface for matingly abutting a reference surface of a vehicle headlamp with the tool positioned in a predetermined orientation. The tool may be held against the headlamp with a suction force of a magnitude capable of releasably and securely retaining the tool in that orientation. In instances of improper tool orientation, a sensing assembly cooperates with the headlamp and prevents the suction force from reaching that magnitude. A lower suction level thus produced signals the operator of the improper orientation by reason of the weight of the tool, and the operator may slide the partially supported tool across the headlamp until the correct orientation is obtained. Tool removal may be accomplished by positive fluid pressure.

3,672,064
INDEXING MEANS FOR WALL PANEL OPENINGS
Johnny C. Elkins, P.O. Box 387, Robert Lee, Tex., and Gilbert A. Theriot, P.O. Box 4030, San Angelo, Tex.
Filed Dec. 21, 1970, Ser. No. 100,080
Int. Cl. G01b *3/38*
U.S. Cl. 33—180 R **9 Claims**



Indexing apparatus for accurately marking and positioning indicia to enable cutouts to be formed in a panel in order to accommodate fixtures and other objects associated with a building structure which must be received within the cutouts when the panel is attached to the structure.

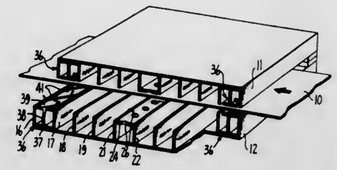
3,672,065
ANGLE GAGE MECHANISM
Raymond G. Voss, 2120 West Pleasant Street, Davenport, Iowa
Filed Nov. 9, 1970, Ser. No. 88,017
Int. Cl. B27g *23/00*
U.S. Cl. 33—185 R **9 Claims**



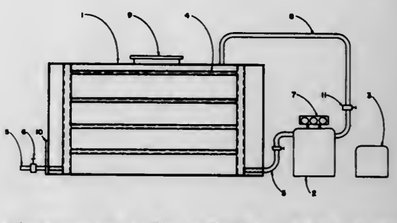
An angle mechanism for use in setting up workpieces in a machine tool at any given angle in relation to the machine tool spindle or chuck centerline so that surfaces of the workpiece may be machined in the desired relationship to the given angle. The angle gage mechanism includes a shank assembly suitable for mounting in the machine tool spindle or chuck and a protractor-like member pivotally mounted on the shank assembly, the protractor-like member having gage edges that lie in a plane passing through the centerline of the shank assembly. The shank assembly includes clamping means to clamp the protractor-like member at a predetermined angle to the centerline of the shank assembly. The angle gate mechanism may include a reverse angle attachment to permit use of the mechanism through 360°.

3,672,066
MICROWAVE DRYING APPARATUS
Erik W. Stephansen, Foster City, Calif., assignor to Bechtel International Corporation
Filed Oct. 30, 1970, Ser. No. 85,568
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **6 Claims**

A device is provided for drying a continuous web or sheet of material passing through a drying zone. The device includes two air cushions which face each other and force the sheet of material passing through the drying zone to stay midway between opposite microwave drying units. Further, to prevent wrinkling of the sheet material, the air cushions are provided by spaced slots extending at an angle to the path of travel of the sheet to ensure that streaking of a coating on the sheet is obviated.

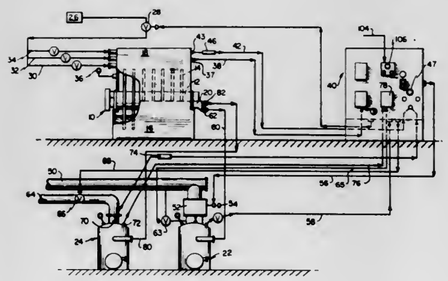


3,672,068
METHOD AND APPARATUS FOR DRYING MATERIALS
Albert Challen Wilkison, c/o Lennox Associates & Co. Room 5, 1161 Melville Street, Vancouver 5, B.C., Canada
Filed Dec. 31, 1969, Ser. No. 889,595
Int. Cl. F26b *3/04*
U.S. Cl. 34—15 **2 Claims**



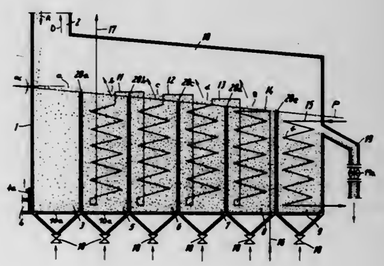
An improvement in the method and apparatus used in vacuum drying materials such as grain, cotton, pulps, papers and peats in chambers, wherein the internal pressures are below atmospheric pressure. The previous methods and apparatus are simplified with respect to heating by distributing the heat generated by the operating vacuum pump throughout a heat exchanger manifold located inside the chamber.

3,672,067
METHOD FOR STEAM DRYING FILTER CAKE
Robert C. Emmett, Jr., Route 1, P.O. Box 216, East Dundee, Ill., and Donald A. Dahlstrom, 5340 Cottonwood Lane, Salt Lake City, Utah, assignors to Envirotech Corporation
Filed Oct. 30, 1970, Ser. No. 85,488
Int. Cl. F26b *5/04*
U.S. Cl. 34—15 **5 Claims**



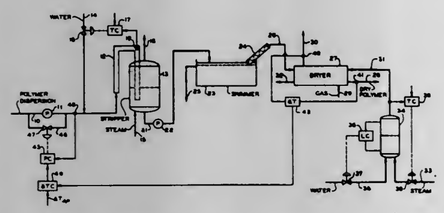
A method is disclosed for steam drying filter cake on a drum or disc type vacuum filter having a steam drying cycle wherein optimum cake thickness and moisture content is obtained at optimum thermal efficiency by controlling steam condensation within the cake at constant steam input, through control of the vacuum on the filter during cake formation and during filter cake drying with generally constant speed of rotation of the filter element.

3,672,069
FLUIDIZED-BED COOLER AND METHOD OF COOLING PARTICULATE SOLID MATERIAL
Lothar Reh, Bergen Enkheim; Werner Hans Schmidt, Frankfurt, and Karlheinz Rosenthal, Neu-Isenburg, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany
Filed Feb. 20, 1970, Ser. No. 13,130
Claims priority, application Germany, Feb. 22, 1969, P 19 09 039.2
Int. Cl. F26b *7/00*, *17/00*
U.S. Cl. 34—20 **8 Claims**



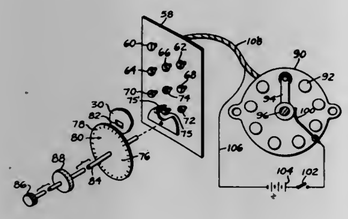
A fluidized-bed heat exchanger in which a plurality of compartments are arranged side by side and are separated by respective baffles forming weirs or overflow arrangements whereby particle transfer is from one compartment to another and each compartment is fluidized by the introduction of carrier or fluidizing gases from below. Within the individual compartments, heat exchangers are provided and are connected to conduct a cooling fluid from compartment to compartment countercurrent to the direction of movement of the particles. The cooling means or heat exchangers may be tube coils connected in series.

3,672,070
DRYER CONTROL
Galen D. Stacy, and Raymond G. Robiling, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Sept. 1, 1970, Ser. No. 68,642
Int. Cl. F26b 3/00
U.S. Cl. 34—25 4 Claims



Particulate material, such as an olefin polymer, is passed through a heated dryer where it is contacted with a stream of gas. The flow of material to the dryer is controlled in response to a measurement of the temperature differential between the material removed from the dryer and the gas removed from the dryer.

3,672,071
GAME DEVICE
Victor J. Prola, 334 Maple Avenue, Blairsville, Pa.
Filed Feb. 24, 1970, Ser. No. 13,486
Int. Cl. G09b 7/00
U.S. Cl. 35—9 B 14 Claims

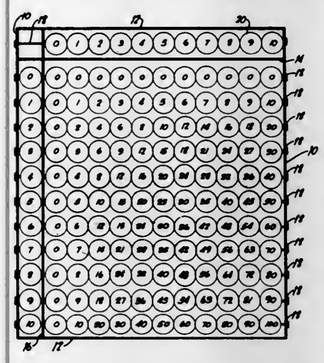


A device in which a series of instructions, such as instructions for mathematical operations are supplied in the form of visible or audible signals, and in sequence. At the end of the sequence of instructions, an answer signal is supplied so that the operator of the device can check the accuracy with which the signalled instructions have been followed. For visible signals, the instructions and answers are printed and are made sequentially visible by the sequential energization of respective lamps.

For audible signals, the instructions and answer are voice recordings and are supplied sequentially by way of a transcribing device.

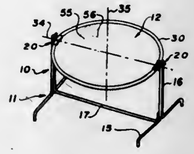
3,672,072
EDUCATIONAL DEVICE
Joseph S. Akiyama, Denver, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Dec. 11, 1970, Ser. No. 97,157
Int. Cl. G09b 19/02
U.S. Cl. 35—31 B 3 Claims

A rectangular hollow frame contains a plurality of spaced parallel coplanar rods. A plurality of flat coplanar discs are disposed individually rotatably around each rod. The discs are



blank on one side and carry numbers on the other.

3,672,073
TEACHING APPARATUS
Felix Pilorusso, 4271 West Eleventh Avenue, Vancouver, British Columbia, Canada
Filed Sept. 11, 1970, Ser. No. 71,502
Int. Cl. G09b 23/04
U.S. Cl. 35—34 12 Claims

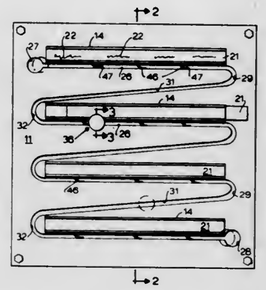


Apparatus having a panel providing a flat surface which represents a plane and including sets of component parts which can be secured to the panel and to each other as a geometric or other figure. The parts include elongated members which represent lines and/or vectors, spheres to represent points, and various structural components to join the aforementioned parts into a comprehensive three-dimensional figure.

3,672,074
REMEDIAL READING TEACHING DEVICE
Jean M. Huffstetter, 1753 Willowside Road, Santa Rosa, Calif.
Filed July 23, 1970, Ser. No. 57,538
Int. Cl. G09b 17/00
U.S. Cl. 35—35 H 9 Claims

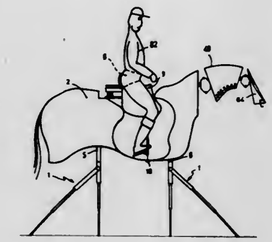
To train students having problems in reading to move the eyes from left to right of an entire line of reading matter and then to move the eyes from the right end of one line to the left end of the next line, a mechanical teaching device is provided. The front face of the device has vertically spaced apart parallel (horizontal) holders into which cards displaying reading material may be inserted. Below each holder is a slot parallel to the holder, and the right end of the top slot is connected by a diagonal slot to the left end of a slot below the next holder, each parallel slot being connected to the next lowermost by a diagonal slot. A pointer is inserted in a hole at the left end or beginning of the top slot and may be removed only from the

right end or finish of the bottom slot. Springs may be positioned at intervals in the slots to prevent the pointer from



moving backward and assuring that the reader's eyes follow through in proper reading procedure from beginning to end.

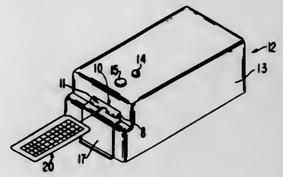
3,672,075
TRAINING APPARATUS
Matthijs Johan Elkelenboom, Sweelinckplein 50, The Hague, Netherlands
Filed Aug. 21, 1970, Ser. No. 65,780
Int. Cl. G09b 9/00
U.S. Cl. 35—29 R 14 Claims



Apparatus for training and exercise with respect to the mechanical athletic side of horsemanship except for displacement and speed, the apparatus comprising a coordinated structure simulating the trunk, neck and head of a horse and cooperating mechanism providing the motions involved in horsemanship and horseback riding, wherein the trunk includes chest widening and saddle mechanisms and carries a stirrup mechanism, the neck mechanism is pivoted between the trunk and head, and the head carries a bit mechanism and reins for actuating the head and neck by the rider.

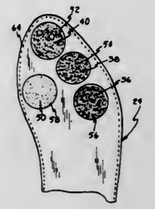
3,672,076
SENSING SOLENOID GRADING SCHEME
Daniel D. Miller, Sunnyvale; Donald D. Miller, Saratoga, and James M. Wrenn, Palo Alto, all of Calif., assignors to Miller Scientific Corporation, Los Gatos, Calif.
Continuation-in-part of Ser. No. 831,025, June 6, 1969, abandoned. This application April 5, 1971, Ser. No. 131,092
Int. Cl. G09b
U.S. Cl. 35—48 B 1 Claim

Apparatus for scoring multiple choice examinations recorded on answer cards having answers indicated thereupon by means of conventional pencil marks. As used herein, the term "multiple choice" includes any situation where the student chooses between more than one possible answer, such as "true" or "false," "a," "b," or "c," etc. The answer card and the master card are held in registration and placed into the apparatus where photocells detect the presence or absence of ordinary pencil marks in the answer card which are disposed in



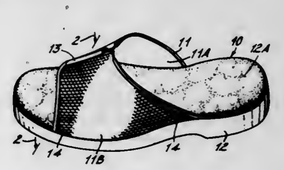
locations relative to the master card denoting correct answers. An electrical output signal is given in the event of a wrong answer and a mark is automatically made on the answer card indicating the error.

3,672,077
SHOE CONSTRUCTION AND METHOD
Kyle R. Coles, 3265 Elgin Drive, Salt Lake City, Utah
Filed Dec. 14, 1970, Ser. No. 97,491
Int. Cl. A43b 23/28; A43d 9/00
U.S. Cl. 36—2.5 T 10 Claims



A shoe construction including a shoe sole having a plurality of apertures therein. A cleat is removably attached in each aperture and is formed of material having predetermined traction characteristics. Thus, when the shoe construction is used, for example, with bowling shoes, specific cleat compositions for right or left shoes can be selected to best accommodate right or left hand bowlers. The method includes selectively replacing predetermined ones of the cleats with other cleats formed of different material to incrementally change the gripping or traction characteristics of the shoes.

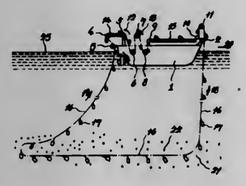
3,672,078
FOOTWEAR
Tatsuo Fukuoka, 3,3-Ban, 2-chome Shin-Minami-Fukushima, Tokushima, Japan
Filed June 23, 1970, Ser. No. 49,042
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 3 Claims



A method for producing an injection molded article comprises positioning pre-formed sections made of cloth or the like in the cavity of an injection mold, injecting the molten

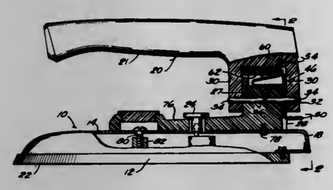
resinous material into the remainder of the cavity and cooling the material to a condition under which the latter is cured and integrally connected to the pre-positioned sections. The article produced by the above method comprises at least sections and connecting - members adapted to connect said sections to each other.

3,672,079
METHOD AND APPARATUS FOR MINING MANGANESE NODULES FROM THE DEEP SEA-BOTTOM
Yoshio Masuda, and Toshikazu Murakami, both of Tokyo, Japan
Continuation of Ser. No. 701,739, Jan. 30, 1968, abandoned. This application April 22, 1970, Ser. No. 28,287
Claims priority, application Japan, Feb. 14, 1967, 42/8979
Int. Cl. E02f 3/14
U.S. Cl. 37—69 6 Claims



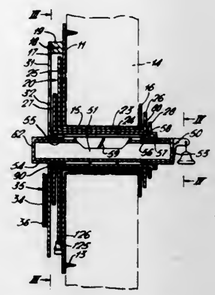
A mechanism for mining manganese nodules from the deep sea bottom including a number of dredge nets tied to a long endless rope suspended from both sides of a ship, the rope falling from one side of the ship to the deep sea-bottom with apparatus being provided to pull the rope therefrom to another side of the ship, whereby manganese nodules are continuously collected by the dredge nets.

3,672,080
TRAVEL IRON WITH FOLDING HANDLE
Willard Murphy, and Norman A. Beam, both of Macon, Mo., assignors to McGraw-Edison Company, Elgin, Ill.
Filed Jan. 13, 1971, Ser. No. 106,153
Int. Cl. D06f 75/34
U.S. Cl. 38—90 6 Claims



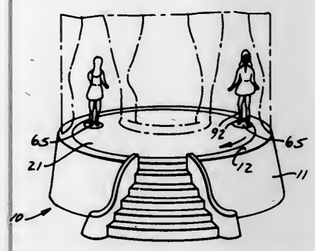
A travel iron having a readily foldable cantilevered handle connected by pivot means extended front to rear of the iron between an upstanding post on the iron frame and lateral projection of the handle, the grip part of the handle in the collapsed position being closely adjacent one side of the frame and in the elevated position being centrally spaced over the frame, and a spring biased lock cooperating as between the post and handle to releasably hold the handle in the elevated position while having a cam lead on surface to permit handle setup to the elevated position without manipulation of the lock itself.

3,672,081
SERVICE VISUAL INDICATOR AND MOVABLE CURRENCY DRAWER
Gaetan G. Bergeron, P.O. Box 1324, Assiniboia, Canada
Filed July 29, 1970, Ser. No. 58,861
Claims priority, application Canada, March 13, 1970, 077,402
Int. Cl. G09f 11/23
U.S. Cl. 40—70 6 Claims



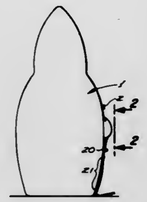
A wall-mountable delivery service aid is provided. It includes a mounting member. Means are provided on the mounting member visually to indicate on one side thereof required goods and/or services, such as dairy products, dry-cleaning, laundry or the like. Means are also provided in the mounting member, operable from a side opposite to that of the visual indicator, to adjust the visual indicator to indicate the goods and/or services required. Finally, a currency storage and transfer device is provided which is slidably mounted on the mounting member. This device includes a currency storage compartment movably mounted selectively to position the same for access to the compartment from one side or the other of the mounting member. By these means currency may be placed in the compartment from one side of the wall on which the apparatus is mounted and may be removed from the opposite side of the wall.

3,672,082
WALKING MECHANISM FOR A DOLL
Sidney Tepper, Millburn; William Tierney, Bellville, and Nicholas Lilinga, Montclair, all of N.J., assignors to Topper Corporation
Continuation-in-part of Ser. No. 55,909, July 17, 1970. This application Oct. 20, 1970, Ser. No. 85,847
Int. Cl. G09f 19/08
U.S. Cl. 40—106.36 11 Claims



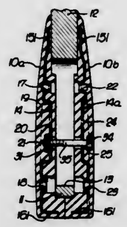
A mechanism including a support and two elements carried by the support for engaging the legs of a doll. The support carries a pivotable arm, and slots in the support and arm cross each other. A pin connected to each element passes through both slots, and the arm oscillates with respect to the support by engaging stationary abutments along the path of travel of the support. An upwardly concave guide surface on the support causes the elements to move along an arcuate path.

3,672,083
INFLATABLE AND ILLUMINABLE FIGURE
James G. Moran, 122 North Rose Street, Burbank, Calif.
Filed June 3, 1970, Ser. No. 42,968
Int. Cl. G09f 19/00
U.S. Cl. 40—126 B 6 Claims



An inflatable and illuminable figure in which the figure is provided with a window of transparent plastic material bordered by attachment pockets, and a cell containing a light source and having a convex window is secured to the figure by tabs which are received in the pockets and secured therein by a gripping force created when the figure is inflated.

3,672,084
REINFORCED PISTOL GRIP
Frank A. Pachmayr, Los Angeles, Calif., assignor to Mershon Company, Los Angeles, Calif.
Filed June 8, 1970, Ser. No. 44,347
Int. Cl. F41c 23/00
U.S. Cl. 42—71 P 7 Claims

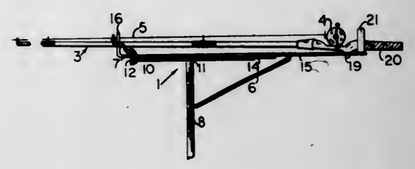


A pistol grip is formed by molding similar rubber sections of rubber internally reinforced by apertured metallic stampings having progressively increasing concavities toward the butt end of the grip and from flattened terminals at their opposite ends, the stampings being fully embedded in the rubber and conformed to the shape of the grip.

ERRATUM

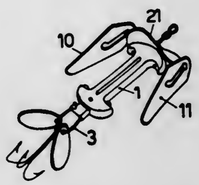
For Class 42—50 see:
Patent No. 3,672,089

3,672,085
AUTOMATIC HOOK SETTING DEVICE
George W. King, P.O. Box 144, Gower, Mo.
Filed May 13, 1970, Ser. No. 36,786
Int. Cl. A01k 97/00
U.S. Cl. 43—15 1 Claim



An automatic hook setting device for an unattended fishing pole comprises a vertically extending standard having one end adapted to be firmly anchored in a fixed position and an elongated transversely extending bar fixedly mounted on an upper end of the standard. An elongated rod is pivotally mounted on the bar intermediate its ends and has a pole cradle adjacent one end and a holding member adjacent the other end thereof for holding a fishing pole handle. A releasable catch member is pivotally mounted on the rod for engaging the bar and has a trigger portion positioned to have a fishing line looped therearound. Spring means is connected to the rod to move same and the fishing pole thereon to set a fish hook when a fish pulls on the line to release the catch member.

3,672,086
DEMOUNTABLE FISHING LURE WITH INTERCHANGEABLE ELEMENTS
Giansandro Terreni, Via Montesanto, Luino, Italy
Filed Feb. 4, 1970, Ser. No. 8,611
Int. Cl. A01k 85/00
U.S. Cl. 43—42.09 6 Claims

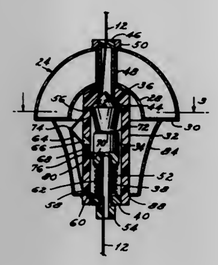


An artificial fishing lure is disclosed, which can be variously transformed by inserting or removing some parts thereof. This fishing lure essentially comprises a central frame to which various spoon baits, sinkers, blades, fish hooks and the like can be connected. Said central frame consists of a main body with a central longitudinal slot, two pairs of opposite projections, an upper connection member for attachment to the fishing line and a lower fastener means for securing the fishing hook and the like.

3,672,087
FISHING BOBBER MECHANISM
Raymond E. Millburn, Jr., Route 1, P.O. Box 128, Round Lake, Ill.
Filed Dec. 17, 1970, Ser. No. 99,160
Int. Cl. A01k 93/00
U.S. Cl. 43—44.88 7 Claims

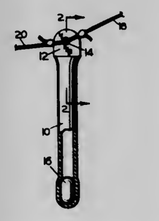
A fishing bobber having a hollow float and a yieldably biased plunger slidably received in a chamber to engage a por-

tion of a fishing line extending through the float. A latch tripped by a rapid upward movement of the line releases the



plunger to engage the line and restrain its movement through the float.

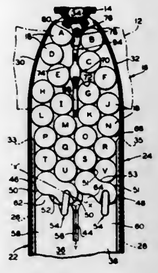
3,672,088
FISHING SINKER
Russell E. Sells, 1331 N.E. Marine Drive, Portland, Oreg.
Filed Sept. 17, 1969, Ser. No. 858,720
Int. Cl. A01k *95/00*
U.S. Cl. 43—44.97 1 Claim



A fishing sinker comprises an elongated sealed cylinder having secured in its bottom end a weight of predetermined magnitude. The upper end of the capsule is buoyant. When the sinker is immersed in water the net effect is to maintain it in a substantially upright position. Attaching means is provided at the upper end of the capsule for attaching both the rod line and the hook line. Accordingly, when the sinker with attached hook are drawn through the water, or allowed to rest on the bottom of a stream of water where there is current flow, the fish hook tends to be elevated slightly above the bottom and the danger of snagging both sinker and fish hook are minimized.

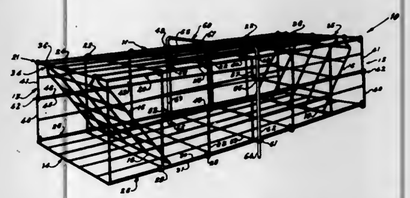
3,672,089
LARGE CAPACITY MAGAZINE
Stanley D. Silsby, Granby, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed Aug. 13, 1969, Ser. No. 849,635
Int. Cl. F41c *25/02, 25/08*
U.S. Cl. 42—50 7 Claims

A large capacity magazine of practical proportions feeds cartridges successively from four columns to a mouth ready for pickup by the reciprocating firearm bolt. During displacement towards the mouth the cartridges are separated by a divider into the two double columns which are in turn converted into single columns by cams on the divider arranged in combination with curved sides of the magazine so that two cartridges are fed consecutively to the mouth from one side of the



divider followed by two consecutive cartridges on the other side to prevent jamming at the mouth.

3,672,090
ANIMAL TRAP
William B. Sonntag, 2939 Valley View Drive, Fairborn, Ohio
Filed Feb. 18, 1971, Ser. No. 116,389
Int. Cl. A01m *23/08, 23/18*
U.S. Cl. 43—66 6 Claims



A collapsible box-like animal trap of the type which includes inwardly sloping end walls or doors which are pivotable about the top and engage the bottom of the trap at a point spaced inwardly from the front edge of the bottom wall. The ends are held closed by gravity such that animals may push the bottoms of the doors inwardly and upwardly to an open position and thereby gain access to the interior of the trap but may not push it outwardly to obtain their freedom. The walls of the trap are all hingedly interconnected and side walls of the trap are collapsible inwardly about medial hinges located midway up the side walls such that the complete trap may be collapsed by folding the doors inwardly against the top of the trap and by folding the side walls inwardly until the medial hinge line of each side wall is located in juxtaposition to the medial hinge of the opposite side wall. To hold the trap in an erected position, a U-shaped stake extends upwardly along one side wall over the top and down the other side wall and passes through loops attached to the side walls at points spaced from the corners. The bottom ends of the U-shaped stake extend into the ground and serve the function not only of holding the trap in an erected condition but preventing it from being rolled by an entrapped animal.

3,672,091
ENDLESS FISHING CABLE INSTALLATION
Emeric Cloutier, Rue Principale, Mont St. Pierre, Gaspe-North, Quebec, Canada
Filed May 11, 1970, Ser. No. 39,192
Int. Cl. A01k *79/00, 91/00*
U.S. Cl. 43—27.4 2 Claims

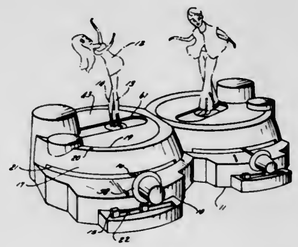
A fishing installation having an endless cable to which are attached a number of fish-lines in spaced-apart relationship

along the length of the endless cable which is supported by two shore pulleys and one offshore submerged pulley mounted on a baseplate adapted to be anchored at the bottom of a body



of water. The two shore pulleys are pivotable up and down relative to an horizontal axis and an endless cable advance mechanism is provided between the two shore pulleys to advance the endless cable.

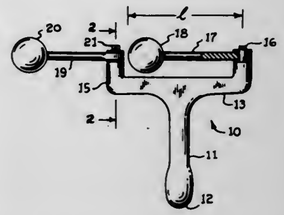
3,672,092
ANIMATING DEVICE FOR A DOLL
Sidney Tepper, Millburn, and Nicholas Lalinga, Montclair, both of N.J., assignors to Topper Corporation
Filed July 29, 1971, Ser. No. 167,383
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R 14 Claims



Each foot of a doll is connected by an element to one of a pair of movable racks which, respectively, sit in a pair of parallel grooves located in a rotatable base. The rotatable base and a stationary gear whose teeth engage the racks are both supported by a base plate. When the rotatable base is oscillated by a lever coupled to the base and driven by a motor, the racks move the feet in opposition directions. A third rack is coupled to the base plate and the base plate is slidably mounted for radial movement relative to a rotatable platform mounted in a housing. The rotatable platform includes a radial slot through which the elements connected to the doll extend. A shaft having a pinion which engages the third rack is supported on the rotatable platform. Accordingly, rotation of the shaft moves the doll radially, and angular movement of the shaft rotates the rotatable platform and the doll.

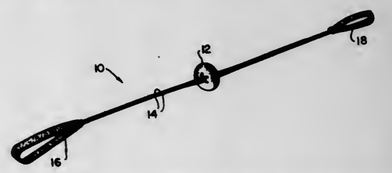
3,672,093
HAND HELD WEIGHT SWINGING TOY
Samuel W. Meek, Sr., P.O. Box 342, Pocola, Okla.
Filed June 25, 1971, Ser. No. 156,868
Int. Cl. A63h *1/32*
U.S. Cl. 46—47 7 Claims

A hand held weight swinging apparatus comprised of a frame handle from which there outwardly depends spaced apart shafts, with each shaft receiving the end of an arm in journaled relationship thereon. The free depending end of the arm is attached to a weight in the form of a ball so that when the frame is properly held in one's hand and manipulated, each of the balls may be pivotally swung about their respective shafts, with the direction of rotation being clockwise, counter-clockwise, or in opposed direction with respect to one



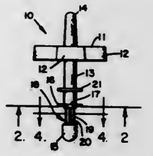
another, dependent upon the manner in which the handle is manipulated.

3,672,094
EXERCISING DEVICE
Benito Vigorito, 2318-82nd Street, Brooklyn, N.Y.
Filed Nov. 24, 1970, Ser. No. 92,416
Int. Cl. A63h *1/32*
U.S. Cl. 46—62 4 Claims



An exercising device consists of a disc of preselected diameter and width and is provided with a central bore and a plurality of smaller bores uniformly spaced about the central bore. A low twist cord is threaded through the plurality of smaller bores such that a cross of cord passes over the central bore; a further double strand of low twist cord is threaded through the central bore and in contact with opposed sections of the cross cord, and hand gripping loops are provided at the ends of the double strand of low twist cord.

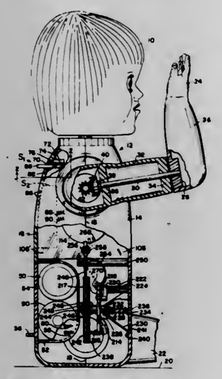
3,672,095
TOP GAME AND APPARATUS
Adolph E. Goldfarb, Tarzana, and Rene Soriano, Los Angeles, both of Calif., assignors to Adolph E. Goldfarb
Division of Ser. No. 807,299, March 14, 1969, abandoned.
This application Oct. 14, 1970, Ser. No. 80,675
Int. Cl. A63h *1/02*
U.S. Cl. 46—65 9 Claims



A top game comprising (a) a plurality of spinner units, each of which is the combination of a spindle-type top, a holding means detachably connected to the top so as to support the top but be readily releasable from it, and a string attached to the holding means for winding around the top; and (b) a stadium having a plurality of wall receivers or receiving means for

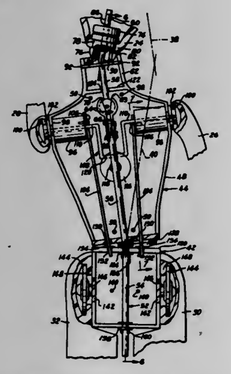
each receiving and supporting a spinner unit so that the holding means may be pulled simultaneously or in rapid succession to spin the tops and introduce them into the stadium for engagement with one another.

3,672,096
DOLLS
Frank T. Johmann, 49 Hampton Drive, Berkeley Heights, N.J.
Filed June 8, 1970, Ser. No. 44,066
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 8 Claims



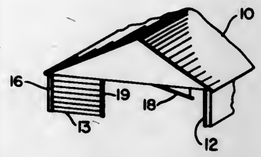
This invention relates to a doll driven by a motor, preferably battery operated, which may move its hands through a number of different positions. The doll may include a sound-reproducing unit and may also move her mouth so as to appear to talk. The doll may also move her head or eyes. Dolls of the invention can be made in varying degrees of complexity to include all or part of any of the preceding activities. Dolls of the invention can be made which can actively participate with a child in playing games such as "Peek-A-Boo," "Simon Says," or other similar games involving movement of arms and hands.

3,672,097
CRANK OPERATED DANCING DOLL
Robert Gardel, New York, N.Y., and Egon Goraky, Westfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Continuation-in-part of Ser. No. 866,953, Oct. 16, 1969, Pat. No. 3,609,909. This application Oct. 15, 1970, Ser. No. 80,890
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 2 Claims



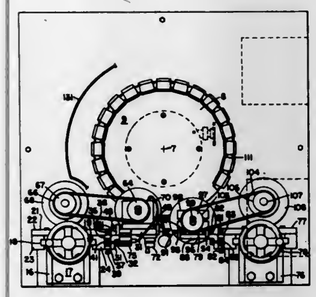
A doll having animated torso, arms and head movement. The torso is comprised of an upper and lower portion, the upper portion of which gyrates with respect to the lower portion. The arms swing alternately in a forward and backward movement. The head gyrates at the same time the torso is gyrating. A crank is provided for manually moving the arms, torso, and head of the doll.

3,672,098
SWING-UP DOOR MULLION
Cleitus E. Webb, Jr., and Royce F. Johnson, both of Little Rock, Ark., assignors to Windsor Door Co., Inc., Memphis, Tenn.
Filed Nov. 13, 1970, Ser. No. 89,416
Int. Cl. E06b *5/00*
U.S. Cl. 49—365 10 Claims



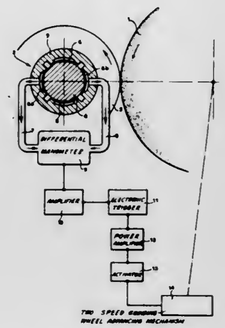
A door mullion for hangar style doors pivoted at the top to swing from a vertical position, in which doors associated therewith are permitted to open and close, into a horizontal position in which raised doors associated therewith are locked in a raised position. The door mullion includes a portion extending beyond a pivot mounting therefor to lock one of two doors adjacent thereto on opposite sides thereof in an up position with the door mullion in a horizontal position. Means are also provided for guiding the mullion into the plane of the doors when it is pivoted into a vertical position and for locking the swing-up mullion in a vertical position.

3,672,099
AUTOMATIC ROCK THINSECTIONING MACHINE
George R. Parkhurst, Dixon, Calif., assignor to The Regents of the University of California, Berkeley, Calif.
Filed Sept. 3, 1970, Ser. No. 69,381
Int. Cl. B24b *7/04*
U.S. Cl. 51—3 2 Claims



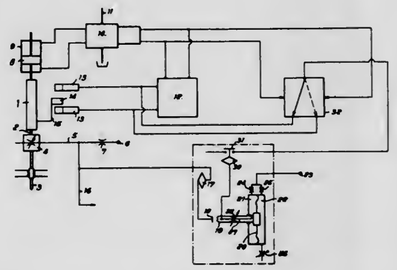
A machine for thinsectioning rock specimens includes a turntable intermittently rotatable on a frame to carry specimens in holders to a saw station at which a rotary saw on an arbor is motor driven and is mounted for adjustment of its rotational axis in various directions and then to a grinder station in which a motor driven grinder is likewise mounted for rotation about an axis movable into various different positions and to be approached more or less closely to the rock specimen on the turntable.

3,672,100
SPEED CONTROL DEVICE
Manlio Pesante, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy
Filed Feb. 27, 1970, Ser. No. 14,907
Claims priority, application Italy, March 4, 1969, 50838-A/69
Int. Cl. B24b *49/08*
U.S. Cl. 51—165.77 10 Claims



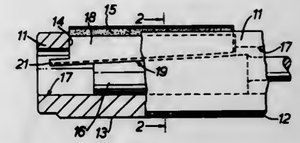
A grinding machine has a grinding wheel advancing mechanism having at least two speeds of operation, and a hydrostatic spindle for supporting a workpiece. Detector means are provided for detecting the change in pressure of the support fluid of the hydrostatic spindle when the grinding wheel contacts the workpiece supported on the spindle. Speed changing means are provided, responsive to the output of the detector means, for effecting a change in the speed of the advancing mechanism of the grinding wheel.

3,672,101
LAPPING OR MICRO-MACHINING TOOLS
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed May 25, 1970, Ser. No. 40,080
Claims priority, application France, May 30, 1969, 6916427
Int. Cl. B24b *49/00*
U.S. Cl. 51—165.93 6 Claims



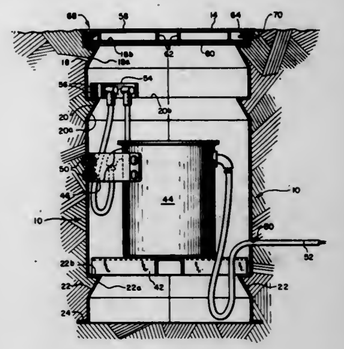
Improvement in a machine for lapping or micro-machining whereby the direction of longitudinal movement of the tool is reversed when a rapid drop in torque resistance between the tool and the work piece occurs. The machine comprises a longitudinally reciprocated mounting which carries a rotary spindle attached to a machining tool through a torque detector.

3,672,102
HONING TOOLS
Donald Edgar Johnson, Cheltenham, England, assignor to Delapena Honing Equipment Limited
Filed Oct. 14, 1970, Ser. No. 80,557
Claims priority, application Great Britain, Oct. 17, 1969, 51,013/69
Int. Cl. B24d *17/00*; B24b *5/06*
U.S. Cl. 51—204 7 Claims



A honing tool has an abrasive stone fixed within a shell which is movable radially of the tool by means of an axially displacable wedge member. The shell comprises a channel of constant width and tapering depth which is formed from a sheet metal blank by pressing.

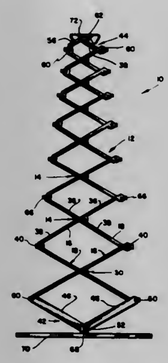
3,672,103
MODULAR UTILITY VAULT
Robert A. Kost, Fort Collins, Colo., assignor to City of Fort Collins, Ft. Collins, Colo.
Filed Dec. 31, 1969, Ser. No. 889,615
Int. Cl. E02d *29/14*; H02g *9/10*
U.S. Cl. 52—20 6 Claims



A modular construction for underground utility vault. Semi-cylindrical end sections are molded in the form of a relatively thin shell from fiberglass or other moldable material of similar physical characteristics. The shells are formed with a series of radially offset circumferentially extending ribs which provide increased rigidity to the shell and also form shelves for supporting elements such as transformers, connection points, etc. within the vault. The end section is one form of structural module which may, in some installations, be combined with a second modular element in the form of a flat side panel having a cross-sectional configuration matching that of the end section. Two end sections may be secured to each other to form a cylindrical vault or, alternatively, two end sections may be assembled with one or more pairs of side panels attached to and mounted between the opposed end sections. A cover element of laminated molded sheet material closes the opening at the upper end of the completed vault and is provided with internal stiffening ribs. A lock and retainer-hinge assembly is employed to releasably lock the cover in position and enables the

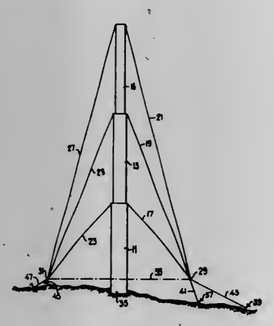
cover, when unlocked, to either be swung upwardly as on a hinged mounting or removed entirely.

3,672,104
NESTING THREE DIMENSIONAL LAZY TONG STRUCTURE
George R. Luckey, Playa Del Rey, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Dec. 23, 1970, Ser. No. 100,912
Int. Cl. E04h *12/10*
U.S. Cl. 52—109 10 Claims



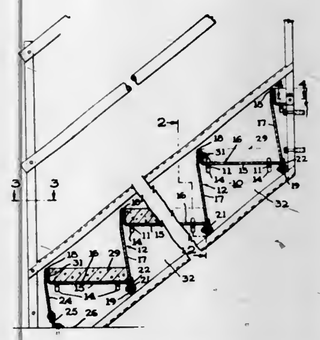
A nesting three-dimensional lazy tong structure of hollow polygonal cross-section having tapered sides provided by lazy tong frames whose hinged links are pivotally joined and cross-over one another in a manner such that the successive link sets or tiers of the structure nest one within the other when the structure is retracted to its contracted configuration to provide the structure with a contracted length approximating the contracted dimension of a single link set or tier. A lazy tong frame and link pair for the structure.

3,672,105
ARRANGEMENT IN STAYING A TELESCOPIC TOWER BY MEANS OF STAY WIRES
Lars Anton Wessel, Uppsala, Sweden, assignor to AB Wikstrand & Berg, Wibe, Mora, Sweden
Filed June 16, 1970, Ser. No. 46,662
Int. Cl. E04h *12/20*
U.S. Cl. 52—148 2 Claims



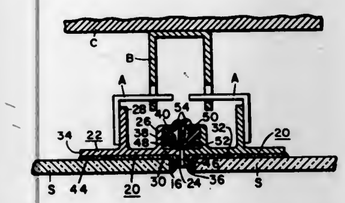
A telescopic tower is stayed by wires extending in three or four vertical planes. In each plane the wires connected to the tower at different levels have their lower ends connected to a point situated somewhat above the ground which point is anchored to the ground. All of said connection points are situated in the same horizontal plane.

3,672,106
STAIR STRUCTURE
Thomas C. Mulitz, Silver Spring, Md., assignor to Pico Safe Stairs Co., Hyattsville, Md.
Filed Aug. 13, 1970, Ser. No. 63,491
Int. Cl. E04f *11/12*
U.S. Cl. 52—188 6 Claims



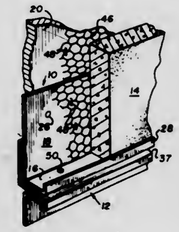
A stair structure fabricated from riser-tread units each having an inverted U-shaped nosing forming a trough or pan at the tread portion, in combination with the sides of supporting channels and the lower portion of the next higher riser, into which concrete or similar material is poured. The rear of the tread portion forms a U-shaped groove extending below the bottom of the pan surface for receiving the lower edge portion of the next higher riser portion therein.

3,672,107
GRIPPING AND SEALING SYSTEM FOR SLAB FACING MATERIALS
George J. Santry, New Canaan, Conn., and Harold R. Wacenske, Campbell, N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed May 11, 1970, Ser. No. 36,298
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 10 Claims



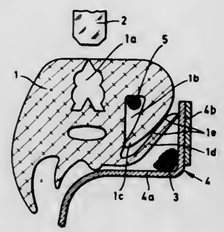
A mounting system for slab facing materials including a plurality of contiguous slabs, each slab having a kerf formed in the peripheral edges thereof. This system includes a structural channel member for each facing slab edge, with the structural channel members having first flange portions for cooperatively gripping each slab, and second flange portions with the second flange portions of adjacent channel members of two contiguous slabs defining first and second plunum chambers. Spline means inserted into the first plenum chamber act as both a moisture stop and an air pressure equalizer while gasket means are inserted into the second plenum chamber for cushioning and sealing purposes. Third flange portions of the channel members serve as a joiner member for attachment lugs. Structural channel members for corner joints are also set forth.

3,672,108
JOINT CONSTRUCTION
Donald J. Conway, Glenview, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Division of Ser. No. 771,821, Oct. 30, 1968, Pat. No. 3,568,391. This application Aug. 19, 1970, Ser. No. 65,351
Int. Cl. E04b *1/70*; E04f *13/06*
U.S. Cl. 52—367 7 Claims



A stucco-covered, curtain wall construction employs a joint including an elongate L-shaped casing bead and an elongate generally wing-shaped drainage cap member. The two joint components form a horizontally-disposed, structurally yielding joint between outer covering panel sections. The two joint components provide ventilation and water drainage between the windward and leeward sides of the wall.

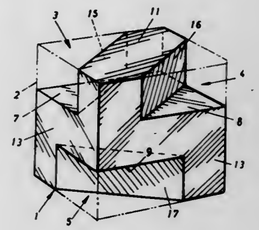
3,672,109
PACKING AND SECURING STRIP FOR WINDSHIELDS
Karl Erck, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed March 19, 1970, Ser. No. 21,063
Claims priority, application Germany, March 21, 1969, P 19 14 350.1
Int. Cl. E06b *3/54, 3/56*
U.S. Cl. 52—400 3 Claims



A packing and securing strip of flexible material for mounting glass windshield plates in a window opening of a metal frame with the aid of an adhesive with the strip mounted in the metal frame and a covering lip and a holding lip in contact with the frame.

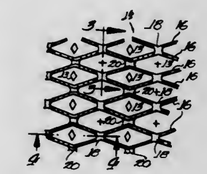
During mounting of the plate and securing strip in the frame opening, the covering lip lies between the adhesive and the holding lip to prevent contact between the adhesive and the holding lip. After the plate and strip are pressed into the opening, the holding lip is drawn from between the covering lip and the body of the strip and over a flange of the opening, in a known manner.

3,672,110
BUILDING BLOCK
Per Christer Nordstrom, Nordenskioldsgatan 20, 5-413 09 Goteborg, Sweden
Filed Jan. 28, 1971, Ser. No. 110,527
Claims priority, application Sweden, Jan. 22, 1971, 1978/70
Int. Cl. E04c *1/18, 2/30*
U.S. Cl. 52—608 5 Claims



A building block for erection of interior and exterior walls, partitions and like structures. The building block is shaped in such a way that by combining it in various ways it makes possible to obtain walls providing simultaneously building-technical advantages and aesthetical effects. The basic shape of the building block is, in the preferred embodiment, that of a cube from which four corner pieces have been cut away such that four triangular faces are formed in the cubic body. These triangular faces extend essentially in parallel with two opposite side faces of the cube, and have two of its sides contiguous to two of the remaining, non-opposite walls of the cube. The sides of the cut-away triangles opposite the apex define a rectangular face extending in pairs in parallel relationship with one diagonal line, and also in pairs in parallel relationship with the other diagonal line of the side opposite faces of the cube, one diagonal line crossing the other diagonal line preferably at right angles.

3,672,111
RETICULATED BAR GRATING
Lester T. Deck, Park Forest, and Fredrick E. Kupsky, Villa Park, both of Ill., assignors to Stanoray Corporation, Chicago, Ill.
Filed Nov. 29, 1968, Ser. No. 779,815
Int. Cl. E04c *2/42*; E04f *11/16*
U.S. Cl. 52—666 8 Claims

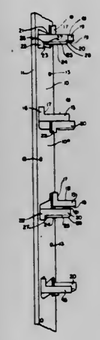


A reticulated sheet employs transversely extending strips formed from said sheet and disposed substantially normal to the general sheet plane so as to afford reinforcement against bending forces acting normal to such plane. Additional reinforcement is afforded by elongate reinforcements secured to saddle portions of said sheet integrally formed with said strips whereby loads applied to said sheet are uniformly distributed throughout the sheet.

3,672,112
BRICK HANGERS

James B. Sloss, 8903 Allandale Road, Richmond, Va., and Wesley A. Gramling, 6804 Gleanmont Street, Falls Church, Va.

Filed April 2, 1970, Ser. No. 25,167
Int. Cl. E04b 13/14
U.S. Cl. 52—712 4 Claims

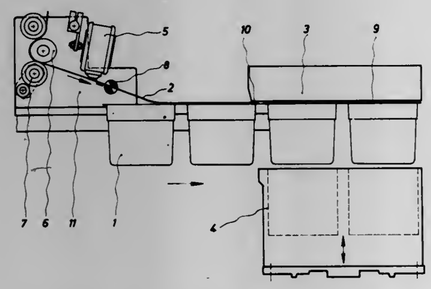


Brick hanger strips to be applied to a wall or other flat surface in parallel rows or columns, and having outstanding lugs between which individual bricks are inserted to be held in uniformly spaced mutual relationship and at a predetermined distance from the wall, the spaces between the bricks then generally being filled with grout or other suitable filler to provide the appearance of a finished masonry structure.

3,672,113
PROCESS AND APPARATUS FOR SECURING COVERING MATERIAL IN PROPER ALIGNMENT TO A SERIES OF CONTAINERS

Rolf Andra, Schmiden, Germany, assignor to Hofliger & Karg, Stuttgart, Germany

Filed May 7, 1970, Ser. No. 35,424
Claims priority, application Germany, May 8, 1969, P 19 23 431.2
Int. Cl. B65b 7/00, 41/18
U.S. Cl. 53—39 4 Claims

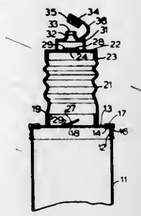


The leading edge of a sheet of covering foil is sealed to the leading rim of a container of a row of several containers to ensure correct positioning of the foil on the containers, while the covering sheet previously sealed to the leading rim of a container is now completely sealed over the tops of its several containers.

3,672,114
DEVICE FOR EVACUATING CONTAINERS

Alvin H. Sacks, 12682 Roble Veneno, Los Altos Hills, Calif.

Filed Jan. 11, 1971, Ser. No. 105,335
Int. Cl. B65b 31/02
U.S. Cl. 53—88 4 Claims



A manually-actuated pump is attached to the lid of a container for substances such as ground coffee, which deteriorate in the presence of air. The pump consists of a cylindrical bellows which can be compressed toward the lid and extended. A first flap-type check valve is installed on said lid and a second flap-type check valve is installed on a closure on the outer end of the bellows. A seal cap fits over the second valve to maintain the vacuum once the container has been evacuated.

3,672,115
METHOD OF ERECTING SUPER-HIGH-RISED TOWER STRUCTURE

Kaoru Abe, Hiroshima; Takeji Matsumoto, Itsukaichicho, and Nobuo Itoki, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Chiyoda-ku, Tokyo, Japan

Filed Oct. 29, 1970, Ser. No. 85,126
Claims priority, application Japan, Nov. 4, 1969, 44/88219
Int. Cl. E04h 12/00; E04g 1/20
U.S. Cl. 52—741 2 Claims



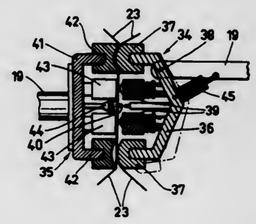
A method of erecting a super-high-rised towery structure, which comprises assembling the lowermost segment of the towery structure on a foundation in fixed relation thereto, assembling the uppermost segment of a cylindrical body within the thus assembled lowermost segment of the towery structure in such a manner that it is supported upright by the horizontal members of said lowermost segment, said uppermost segment of the cylindrical body having a crane mounted at the top end thereof, lifting said uppermost segment of the cylindrical body by push-up means or hoisting means, connecting the next lower segment of said cylindrical body to the lower end of said uppermost segment of the same, assembling the next higher segment of the towery structure on top of said lowermost segment of the same while hoisting the structural members

thereof by said crane, again lifting the assembly of the uppermost and the next lower segments of said cylindrical body and connecting the next lower segment of the cylindrical body to the lower end of said assembly, repeating the above-described steps to construct the segments of the towery structure to a predetermined height, constructing a platform of a sufficient width on top of the thus assembled portion of the towery structure in fixed relation thereto, carrying up the construction materials required for the construction of the remaining segments of the towery structure from the ground onto said platform by means of another crane mounted on said platform, and assembling the remaining segments of the towery structure while hoisting the structural members thereof from said platform by the crane at the top end of said uppermost segment of the cylindrical body.

3,672,116
METHOD AND MACHINE FOR PACKAGING GOODS

Martin Ingmarson, Vallingby, Sweden, assignot to Kooperativa forbundet ekonomisk forening, Stadsgarden, Stockholm, Sweden

Filed May 11, 1970, Ser. No. 36,370
Int. Cl. B65b 11/10, 11/48, 51/30
U.S. Cl. 53—3 13 Claims



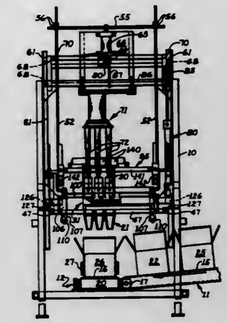
A method and apparatus for wrapping a film having an elasticity sufficient to stretch without bursting about four sides of an object, in which the object is moved into a loop of the film between two supply rollers and the film is fed from the supply rollers at a rate such that the film is stretched adjacent the fourth side of the object are then brought together and clamped along a first line while the film is still under tension. The tension on the portions of film brought together is then released. Thereafter, the portions of the film adjacent the fourth side of the object are again clamped along a line parallel to the first line of clamping. The portions of film are then welded along a line parallel to and between the two lines of clamping, and the film is then cut within the weld.

3,672,117
HINGE PAN PACKER

James J. Shuttleworth; Carlton S. Sprague, both of Huntington; Howard P. Shuttleworth, Warren; Charles E. Zimmerman, Huntington, and John A. Wiseman, Anderson, all of Ind., assignors to Shuttleworth Machinery Corporation, Huntington, Ind.

Filed Feb. 26, 1970, Ser. No. 14,336
Int. Cl. B65b 5/06, 35/38
U.S. Cl. 53—35 10 Claims

Case packing method and apparatus wherein aerosol cans or other objects are moved from a conveyor onto a support plate hingedly mounted on a vertically movable carriage including grid guide fingers. A box conveyor positions a box under the carriage. A vacuum head is movable downwardly into engagement with the objects, whereupon the vacuum head attaches to the objects. The vacuum head continues to move downwardly until the objects are placed in the box and the vacuum is turned off. The vacuum head is then returned to its starting position. During the downward stroke of the head, the carriage is first stationary until the head attaches to the objects. Then the carriage moves with the head until the guide fingers are inserted into the box and are holding it in position. Next the support swings on the carriage out from under the

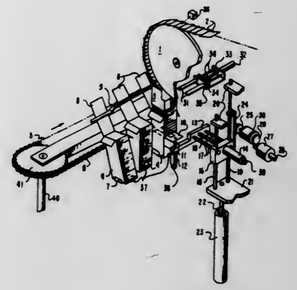


objects. The carriage is then stopped and the head passes through the carriage and the guide fingers to place the objects in the box.

3,672,118
CARD PACKAGING APPARATUS

Egbert D. De Jong, Amstelveen; Hans Koch, Amsterdam, both of Netherlands, and Kenneth B. Maynard, Belle Mead, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

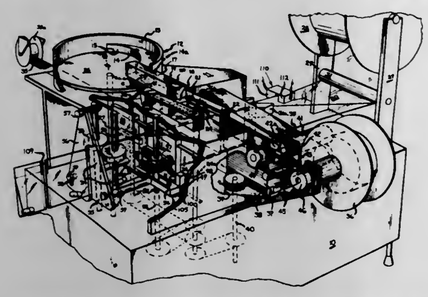
Filed Feb. 5, 1971, Ser. No. 112,989
Claims priority, application Netherlands, March 9, 1970, 7003290
Int. Cl. B65b 57/20
U.S. Cl. 53—59 R 5 Claims



This apparatus packages a preselected number of like small flat items, such as cards, directly in a series of cartons. Each carton, when loaded, is automatically removed from a loading station and replaced by an empty carton, while cards are supplied to the station without interruption. Cards are delivered successively from a conveyor above the loading station and dropped flatwise, while guided by a cage, to form a stack on a platform that is moved downwardly within the open front of the carton so as to keep the top of the stack at a substantially constant height within the cage. An electronic counter causes the platform to move downward according to the speed at which cards are supplied to the stack. When the counter reaches the preselected number, a knife moves horizontally into the cage to temporarily support the stream of cards while the platform moves rapidly downward to a lower limit position and is then withdrawn from the carton, leaving the stack in the

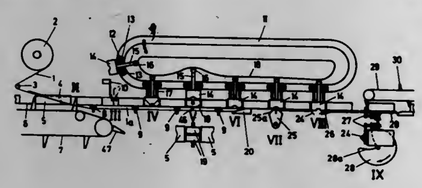
carton. The loaded carton is then automatically advanced from the loading station, while an empty one is being moved into said station. Meanwhile, the platform is withdrawn, raised, and then moved into the open front of the empty carton; whereupon the knife is removed and the empty carton is loaded as above described.

3,672,119
APPARATUS FOR PACKAGING ARTICLES
Larry C. Gess, 1255 Fir Drive, Toledo, Ohio
Filed May 18, 1970, Ser. No. 38,143
Int. Cl. B65b *61/02, 9/06*
U.S. Cl. 53—131 13 Claims



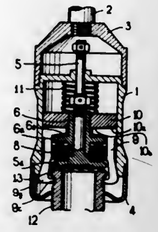
A machine is provided for packaging articles in flexible sheet material. An improved, simplified drive for the machine operates components thereof with a minimum of controls and mechanical elements. The machine includes a feeder that supplies articles to an escapement which delivers a predetermined number of the articles to a package enclosure as it is being formed of the flexible sheet material. The sheet material is in strip form and is longitudinally advanced by feed rolls at intervals, the contents being printed on the material which is subsequently transversely sealed, when stopped. After the material is sealed, it can be separated into individual packages. The drive for the machine includes means for operating the sealing devices, the escapement, and the printer, in timed relationship through a single drive shaft. The machine also includes closure members for temporarily closing a portion of the sheet material before articles are supplied thereto, prior to the material being permanently sealed.

3,672,120
DEVICE FOR THE CONTINUOUS PRODUCTION OF PACKAGES
Hans Heinzer, Beringen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Aug. 26, 1970, Ser. No. 67,052
Claims priority, application Switzerland, Sept. 4, 1969, 13414/69
Int. Cl. B65b *9/06, 11/12*
U.S. Cl. 53—180 7 Claims



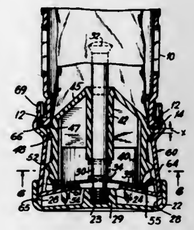
A band of wrapping material is continuously withdrawn with uniform speed from a supply roll and wrapped tubularly about rectangular articles supplied to said band with the same speed and moving lengthwise always in the same direction. Transversely moving cutting devices and folding members—which during their operational movement also are moved with uniform speed lengthwise with the tubular wrapping and the articles therein—firstly cut into the tubular wrapping, of course between the articles therein, then fold the end portions of the wrappings projecting from the articles against the ends and bottom of the articles, and finally the completed packages are separated from each other by cutting a single longitudinal bottom flap which was formed on the wrapping at the time it was wrapped tubularly around the uniformly spaced articles.

3,672,121
CONTAINER SEALING DEVICE
Kohachi Kawaminami, 35, 1-chome, Noshigashinocho, Jotoku, Osaka, Japan
Filed Dec. 9, 1970, Ser. No. 96,307
Int. Cl. B65b *7/28*
U.S. Cl. 53—351 3 Claims



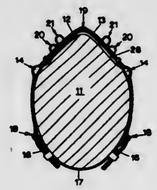
A head unit to seal bottles and other similar containers with ductile metallic caps, having a central spindle with lower face plate and also a chuck with radially spaced fingers and jaws to be opened normally and closed when a bottle neck raises both the spindle and the chuck in a manner that the spindle is raised more than the chuck by the cushioning effect of springs, so that the chuck jaws may press and deform the metallic cap to the bottle neck in a tightly fitting relation as they slide along the bottle neck.

3,672,122
BAG HOLDER AND EXPANDER UNIT
Leonard Berger, Ridgewood; William E. Fitzpatrick, Oakland, both of N.J.; James H. McGinley, Smyrna, Del.; Adolf Pfund, Milford, N.J., and Ira G. Schwartzberg, Dover, Del., assignors to International Playtex Corporation, New York, N.Y.
Filed July 20, 1970, Ser. No. 56,364
Int. Cl. B31b *7/00*; B65b *43/26*
U.S. Cl. 53—384 12 Claims



A bag expander is provided for mounting an open ended flexible bag positioned thereon on to a hollow, reusable holder which terminates in an annular edge. The expander has a base member and a head member which are adapted to move axially with respect to each other. A plurality of fingers are housed in the base member and biased toward the head member such that the head member provides a camming action on the fingers when axial movement takes place. A bag is placed over the head member and ends of the fingers of the expander, which is positioned on the holder and depressed, thereby camming the fingers outwardly and thus folding the bag outwardly and over the edge of the holder. Excursion limitation means are provided to limit the relative movement between the head member and base member of the expander to prevent the fingers from contacting the bag at the edge of the holder during the bag seating operation to prevent tearing of the bag, especially if the expander is rotated during the seating operation. In a preferred embodiment the excursion limitation means is comprised of a skirt extension of the head member which is of a predetermined length and prevents further movement when the skirt reaches the base member. The skirt is preferably of such a configuration so as to perform the additional function of supporting the fingers on their initial movement. An improved base construction is provided having compartments which seat the fingers for pivotal movement therein, as well as preventing lateral movement of the fingers, which simplifies the fabrication of the expander.

3,672,123
TROTTING-HORSE SADDLES
Albert W. Dykman, No. 2 R.D., Ashburton, New Zealand
Filed June 22, 1970, Ser. No. 48,314
Int. Cl. B68b *01/00*
U.S. Cl. 54—2 2 Claims



A saddle for a trotting-horse comprises two superimposed straps secured together, the upper strap being separated from the lower strap at two points so as to form two D-shaped openings disposed one on each side of the horse, and adapted to receive the shafts of a sulky pulled by the horse.

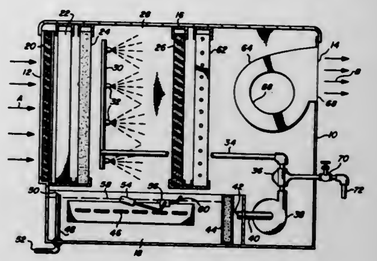
3,672,124
HARNESS FOR ATTACHING A HORSE TO A VEHICLE
Angelo Pirotta, Settimo Milanese, Italy, assignor to Racing Tack di Angelo Pirotta & C.S.a.s., Milan, Italy
Filed Nov. 5, 1970, Ser. No. 87,136
Claims priority, application Italy, Nov. 29, 1969, 54216 A/69
Int. Cl. A68b *05/00*
U.S. Cl. 54—38 2 Claims

A lightweight harness for a sulky comprises a central element worn on the horse's back, and a plurality or straps connected to the element by buckles. The strap is laminated from leather and plastics material. The buckle comprises a slotted body with wings defining a wedge-shaped space along the slot, and a guide bracket having two parallel limbs and a cross-piece. A slide member is mounted on the guide limbs and has a wedge-shaped part that enters the wedge-shaped cavity and locks in place a strap that is threaded through the slot, over the slide member, and returns through the slot.

3,672,125
NTA SOLID SUPPORT FOR HYDROGEN SULFIDE REMOVAL
Richard C. Miller, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
Filed Jan. 28, 1971, Ser. No. 110,611
Int. Cl. B01d *53/34*
U.S. Cl. 55—73 5 Claims

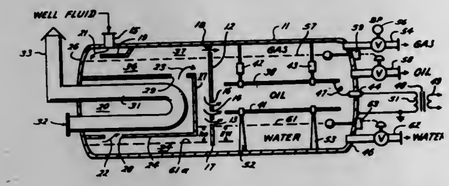
A method of removing hydrogen sulfide from gaseous streams by means of a nitrilotriacetic acid-ferric complex sorbed on a silica-alumina support.

3,672,126
AIR CONDITIONER
William H. Goettle, Scottsdale, Ariz., assignor to Goettle Bros. Metal Products, Inc.
Filed July 20, 1970, Ser. No. 56,531
Int. Cl. B03c *3/66*
U.S. Cl. 55—106 8 Claims



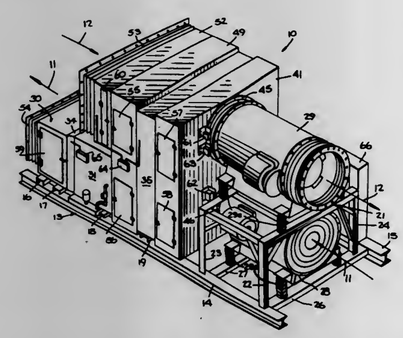
An air cleaner having a plurality of spaced apart filters including an electronic filter, as well as other filters and a spray chamber disposed between some of said filters and having spray nozzles adapted to emit cool liquid in a flow path of air through said filters; and refrigeration means for cooling said liquid so as to cool said air to a degree at which a dew point condition exists such that liquid sprayed into the air will collect moisture from the air, thereby drying and also cooling it.

3,672,127
PHASE SEPARATOR FOR IMMISCIBLE FLUIDS
Weldon D. Mayse, and Frederick D. Watson, both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Filed May 26, 1970, Ser. No. 40,624
Int. Cl. B01d 19/00
U.S. Cl. 55—174 28 Claims



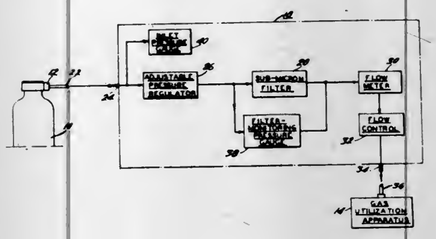
A phase separator for resolving a mixture of immiscible fluids such as crude oil and water phases. The separator comprises a vessel with an inlet, oil and water outlets and divided by a baffle into inlet and outlet separation zones. A metering orifice in the baffle discharges all oil from the inlet separating zone into the outlet separation zone responsively to a substantial pressure differential whose magnitude is automatically determined by the rate of crude oil inflow into the vessel. A large opening in the baffle provides for unobstructive flow of the water between the separation zones in a lower horizon of the vessel. A heater in the inlet separation zone promotes an initial separation into oil and water phases. Water is removed at the lower horizon in the vessel to maintain the oil-water interfacial zone at a relative fixed level. An electric field between electrodes in the outlet separation zone promotes further separation of the liquids in the outlet separation zone. A second large opening in the baffle at the upper horizon allows gas to pass freely between separations zones for removal through a back-pressure valve. The total open area of the orifice is selected so that the oil-water interfacial zone remains below the upper horizon in the outlet separation zone and above the lower horizon in the vessel under all normal rates of flow of incoming liquids through the inlet.

3,672,128
UNITIZED AIR TREATING UNIT
Donald B. Heffron, Townsend, Tenn., assignor to Aero-Flow Dynamics, Inc., The Wing Company Division, Linden, N.J.
Filed July 23, 1970, Ser. No. 57,508
Int. Cl. B01d 27/08
U.S. Cl. 55—222 6 Claims



Two air moving devices are mounted one above the other on a frame platform integrated with an enthalpy wheel, interconnecting box-like duct structures, air filters, and a sprayed coil conditioning unit. The arrangement has two substantially independent straight line parallel and co-planar paths for the passage of air, one path for supply and the other for exhaust. In a modification the conditioning unit and high efficiency air filter are omitted.

3,672,129
APPARATUS FOR DISPENSING STERILE GAS
Gordon N. Strople, Cherry Hill, and Justin W. Mills, Jr., Clementon, both of N.J., assignors to Lif-O-Gen, Inc., Lumberton, N.J.
Filed March 20, 1970, Ser. No. 21,242
Int. Cl. B01d 53/30
U.S. Cl. 55—270 6 Claims

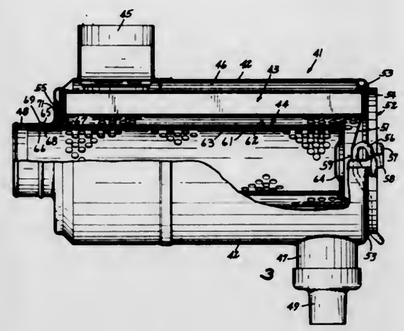


A portable unit for sterilizing gas to cleanse it of foreign bodies, especially living microorganisms, comprising a portable frame supporting a sub-micron filter through which the gas is passed when connected between a gas source and gas utilization apparatus, for example between an oxygen source and an oxygen mask for a patient. A pressure gauge monitors the pressure developed across the sub-micron filter and is preferably calibrated in terms of filtration efficiency to provide an indication of when the filter has reached a condition for which it should be replaced. The sub-micron filter is preceded by a pressure regulator which receives gas under high pressure from a contaminated source, reduces it to a working pressure, and supplies it to the sub-micron filter at a fixed predetermined pressure value. Preferably also employed are an inlet pressure gauge for measuring the pressure of the gas supplied from the source to the pressure regulator and a flow meter and flow control through which the gas passes before it is delivered to the outlet connection to the gas utilization apparatus. In this way gas from a bulk source or an unsterilized container is rendered sterile by connection thereto of the portable gas sterilizer. The visual monitoring of the condition of the filter insures proper maintenance by replacement of the filter when needed.

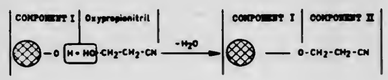
3,672,130
RETENTION MEANS FOR AIR CLEANER ELEMENT
Bruce M. Sullivan, Burnsville, and Carl M. Kaus, Bloomington, both of Mich., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed April 2, 1970, Ser. No. 25,092
Int. Cl. B01d 59/50
U.S. Cl. 55—323 5 Claims

The disclosure is directed to a centrifugal air cleaner which includes within an outer container a primary filter assembly and a secondary backup filter assembly, both of which are removably disposed for purposes of maintenance and replacement. The primary filter assembly is sealably held between the ends of the container. The secondary assembly is disposed

within the primary assembly, but is independently supported at the filtered fluid outlet by a plurality of beaded spring clips which cooperate with an annular recess located on the inner wall of the outlet.



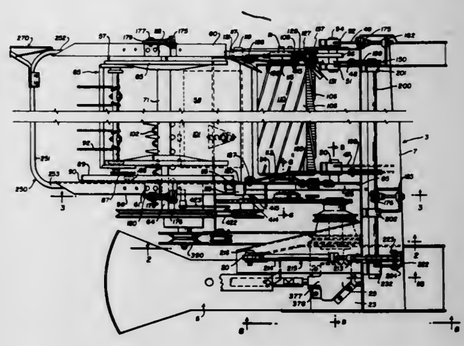
3,672,131
STATIONARY PHASE FOR SELECTIVE SORPTION
Istvan Halasz, Frankfurt am Main, Germany
Filed Jan. 15, 1970, Ser. No. 3,054
Int. Cl. B01d 15/08
U.S. Cl. 55—386 16 Claims



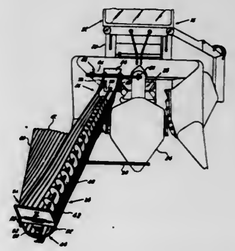
Stationary phases for chromatographic ion exchange or catalysis produced by esterification of solid substances having acidic OH groups at the surface as Components I with organic compounds as Components II. The specific surface area of Components I is above 100 cm^2/g and Components II each have at least one hetero atom in their molecules, disregarding the oxygen connected to a carbon atom in the molecule for esterification with the acid OH group in Component I. By hetero-atoms is meant an atom other than carbon and hydrogen.

3,672,132
PUSH OVER BAR
Thomas J. Scarnato, Barrington, and N. Donald Patterson, Downers Grove, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 9,020
Int. Cl. A01d 47/00
U.S. Cl. 56—1 9 Claims

A push over bar attachment for a crop harvester. The attachment comprises a U-shaped member having a pair of laterally spaced side legs and an intervening cross-bar. A novel bracket attachment for each leg to an adjacent side panel of the harvester. Each bracket has a pair of identical generally Z-shaped elements clamping the associate side leg therebetween, a pair of bolts secure the brackets along one edge to each other and along an opposite edge there extend a pair of bolt and nut assemblies one of which is attached to an adjacent side panel of the harvester and provides a horizontal pivot to permit the attachment to swing vertically to adjusted positions and the other extends through an arcuate slot concentric with the axis of pivot and secures the bracket to the side panel to hold the attachment in selected adjusted positions.



3,672,133
CONVEYOR ATTACHMENT FOR A COMBINE
Herbert K. Mestad, R.R. 1, Clear Lake, Iowa
Filed Oct. 14, 1970, Ser. No. 80,606
Int. Cl. A01d 61/04
U.S. Cl. 56—13.5 13 Claims

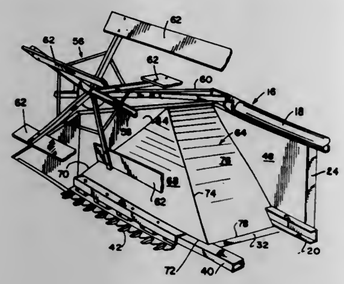


An easily mountable and demountable auxiliary conveyor attachment for use with a combine whereby the combine can be driven or towed depending upon whether it is self-propelled to any location where grain is stored and such stored grain can be delivered by the auxiliary conveyor to the threshing mechanism of the combine. The use of the auxiliary conveyor makes the normal operating mechanism of the combine available particularly for shelling corn when such corn is located in a storage bin or other location remote from the growing crops where the combine is normally used. The conveyor is usable with either the corn head or grain head attached to the combine or may be used with the combine when neither the grain head or corn head is attached thereto. The conveyor is provided with a quick coupling attachment for operation to power sources available on the combine and may also be provided with a self-contained source of power.

3,672,134
CROP HARVESTER PLATFORM
Donald A. McCallum, Burlington, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed May 26, 1971, Ser. No. 147,109
Int. Cl. A01d 47/00
U.S. Cl. 56—14.4 5 Claims

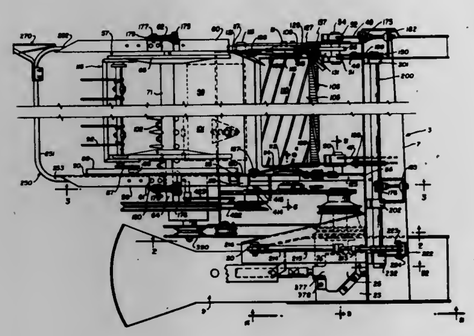
A crop harvester having a self-propelled chassis and a crop harvester platform supported forwardly of said chassis for

cutting a standing crop and depositing the cut crop into a swath on the ground. The harvester platform includes a cutter, a crop-gathering reel above the cutter, and a pair of gauge wheels behind the cutter for supporting the platform for



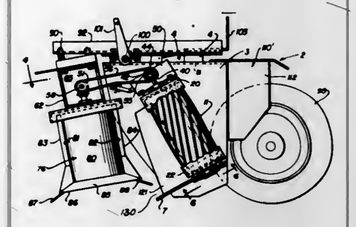
movement over the ground. A pair of shield structures is mounted on the platform over the respective gauge wheels. The shield structures are arranged to direct the flow of cut crop rearwardly and laterally inwardly of the platform to form the swath.

3,672,135
ROLL OPENING DEVICE
Peter J. Peacock, Western Springs, and Thomas J. Scarnato, Barrington, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 9,026
Int. Cl. A01d *43/00*
U.S. Cl. 56—14.2 1 Claim



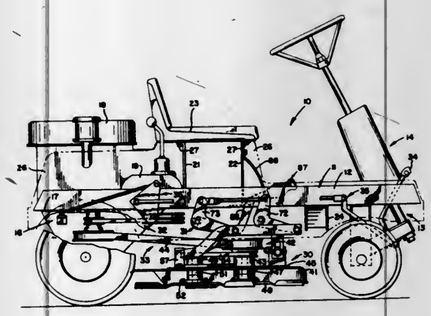
A mower conditioner having a pair of hay conditioning rollers. A pair of levers mounting the upper roller intermediate their end, having forward ends pivoted coaxially to the sides of a harvesting unit vertically, swingably mounted from a ground supported frame, and links pivoted coaxially at their upper forward ends to the rear ends of the levers and having lost-motion connections at their rear ends to the stationary framework supporting the unit, the links functioning as compression members beyond the extent of lost-motion and operative to swing the roller mounting levers upwardly attendant to the harvesting unit being pivoted upwardly beyond a predetermined elevation.

3,672,136
MOWER CONDITIONER
Peter J. Peacock, Western Springs, and Paul C. Gordon, Hinsdale, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Sept. 21, 1970, Ser. No. 73,923
Int. Cl. A01d *49/00*
U.S. Cl. 56—14.4 10 Claims



A mower conditioner having rotary cutters arranged in pairs, each pair cutting the crops in front thereof and throwing the cut crops rearwardly to a pair of short length, vertically inclined, crushing rollers which in turn discharge the crops against the underside of a deflector by which the crops are fluffed and deposited upon the field.

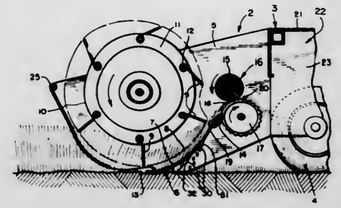
3,672,137
MOWER SUPPORT AND LIFT LINKAGE
George J. Hamouz, Clarendon Hills; W. Robert Dalenberg, Hinsdale, and James W. Zurek, Berkeley, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Continuation of Ser. No. 725,725, May 1, 1968, abandoned. This application Oct. 26, 1970, Ser. No. 84,256
Int. Cl. A01d *35/26*
U.S. Cl. 56—15.8 1 Claim



A mounting assembly for adjustably supporting an implement from a riding lawn mower, the assembly comprising a parallel lift linkage mounted on the mower, a cutting unit suspended from the linkage, and a lever operatively connected

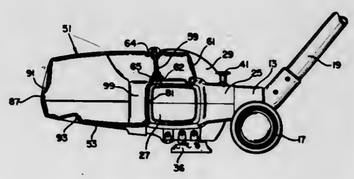
to the linkage for varying the elevation of the cutting unit. The lift geometry of the lever relative the operator is such to provide a three-point force distribution opposing the lift force exerted on the lever.

3,672,138
FORAGE HARVESTER
Thomas J. Scarnato, Barrington, Ill.; Guy O. Tufts, Phoenix, Ariz.; Peter J. Peacock, Western Springs, and George B. Cicci, Broadview, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Oct. 16, 1970, Ser. No. 81,359
Int. Cl. A01d *43/02*
U.S. Cl. 56—158 13 Claims



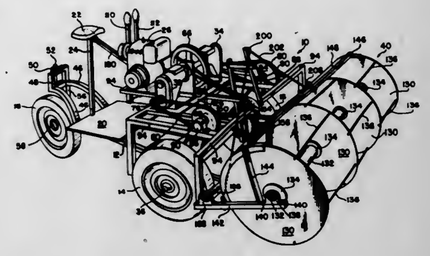
A forage harvester having an upwardly and rearwardly inclined platform and a reel sweeping over the platform to move the crops from a cutter at the front edge of the platform to associated mechanism at the rear of the platform. The platform is provided with a plurality of apertures in the form of louvers or corrugations or apertured riffles which are arranged to prevent crops from falling through or plugging the apertures while permitting sand and dirt to sift through the platform.

3,672,139
TRIMMER-EDGER DEBRIS CATCHER
Raymond J. Duran, Lutherville, and Gordon F. Musch, Fork, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed July 14, 1971, Ser. No. 162,581
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 11 Claims



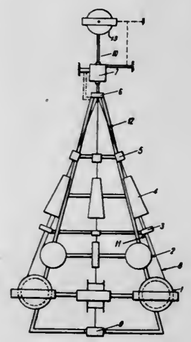
A trimmer-edger including a frame supported for movement along the ground. A motor and motor housing are supported upon the frame and the motor has an output rotary shaft to which a blade is affixed. The motor housing is pivotally adjustable upon the frame so that the blade can rotate through a generally horizontal or a generally vertical plane for trimming and edging, respectively. An upstanding handle is secured to the frame for control and manipulation of the device. A novel debris catcher is releasably secured to the housing forwardly of the blade and is adapted to receive grass, debris, etc., propelled forwardly by the blade during use of the device as an edger.

3,672,140
CRANBERRY HARVESTING APPARATUS
Julius M. Furford, Route 1, P.O. Box 442, Grayland, Wash.
Filed July 9, 1970, Ser. No. 53,425
Int. Cl. A01d *45/08*
U.S. Cl. 56—330 11 Claims



A self-propelled vehicle having a pair of driven front wheels and a single free rotating pivotal rear wheel mounted on a generally triangular chassis. A motor mounted on the chassis adapted to drive the front wheels and a cranberry harvesting reel mounted on the front portion of the chassis. Separate drive trains running from the motor to each wheel, each drive train including a two-way clutch such that each wheel may be driven forwardly, rearwardly or completely disengaged from the motor for free rotation. An operator's platform mounted on the chassis adjacent control means for the two-way clutches.

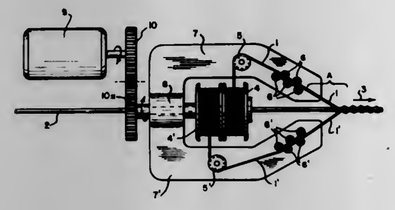
3,672,141
APPARATUS FOR FORMING ELECTRIC CABLES
Alojzy Tomica, Goodmayes, and John Francis Blackwell, Welling, both of England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,454
Claims priority, application Great Britain, Jan. 2, 1969, 218/69
Int. Cl. D02g *3/36*; B65h *81/00*
U.S. Cl. 57—12 12 Claims



A pair of conductors are insulated and twisted together in a continuous operation. Each conductor passes through in-

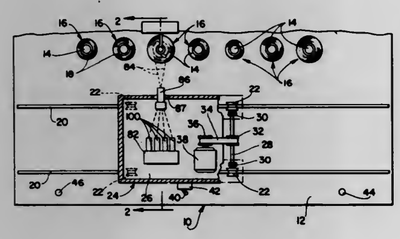
dividual forming means which simultaneously apply insulation to each conductor and means are provided to twist the insulated conductors together.

3,672,142
WINDING APPARATUS AND METHOD
William J. Gilmore, Manitou Beach, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed March 27, 1970, Ser. No. 23,432
Int. Cl. D07b 3/04
U.S. Cl. 57—17 11 Claims



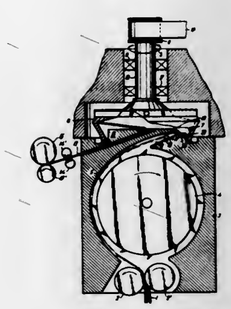
Method and apparatus are disclosed for producing a composite multiwire structure by helically wrapping at least one wire structure about a core element and, prior thereto, imparting undulating longitudinal movement to the wire structure at a point located closely to the point of wrapping to effectively control torsion naturally induced in the wire structure during the wrapping operation.

3,672,143
DOFFING APPARATUS AND METHOD
William R. Whitney, Cranston, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Oct. 20, 1970, Ser. No. 82,455
Int. Cl. D01h 9/10
U.S. Cl. 57—53 17 Claims



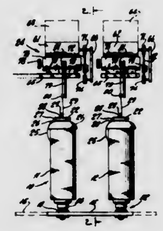
A spinning frame has a plurality of stations for spinning roving into yarn and winding the yarn onto a bobbin. A tender moves passed the stations and stops at any of the stations requiring servicing such as, for example, doffing a filled bobbin and donning an empty bobbin. The tender then continues patrolling the stations until it comes upon another station requiring servicing. As the tender patrols the stations, a first sensing device on the tender scans the stations to determine whether or not the yarn is advancing normally and provides an appropriate signal. A signal from a second sensing device indicates whether or not the station is operational. The signal from the first sensing device is combined with the signal from the second sensing device to stop the tender only at an operational station requiring servicing, whereupon the servicing cycle commences. At the end of servicing, if the yarn is advancing normally the tender resumes its patrolling. If the yarn is not advancing properly, another servicing cycle is commenced. Thereafter, if the yarn is still not advancing properly, the roving is automatically broken above the usual drafting rolls of the station as a signal flag is positioned to indicate to the second sensing device that the particular station is non-operational. The tender is not stopped at a non-operational station. The two sensors may both be phototransducers. The first sensor provides a particular fluctuating signal responsive to a transverse alternating motion of the yarn which results from ballooning of the yarn as it is advanced longitudinally while being wound onto the bobbin, and this signal results in the tender passing the station and continuing its patrolling. All other fluctuating signals from the first sensor, such as may be caused by ambient light, either day light or artificial light, for example, as well as signals resulting from movement of the tender while patrolling the stations, are filtered out.

3,672,144
BREAK-SPINNING MACHINE
Stanislav Didek; Zdenek Svec, and Frantisek Pospisil, all of Usti Nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti Nad Orlici, Czechoslovakia
Filed April 30, 1971, Ser. No. 138,954
Claims priority, application Czechoslovakia, May 6, 1970, 3141/70
Int. Cl. D01h 1/12
U.S. Cl. 57—58.95 11 Claims



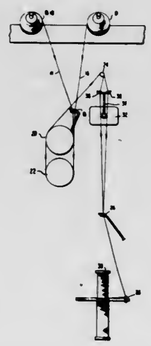
A rotary spinning chamber has a hollow interior accessible through an open side. A stationary body is located adjacent the open side and has a portion projecting into the same, this portion being either cylindrical or frustoconical in outline and having a transverse surface extending transversely of the axis of rotation of the spinning chamber and a circumferential surface which surrounds this axis. A fiber channel is formed in the stationary body having an upper and a lower boundary surface, an inlet receiving fibers from a fiber feed means and an outlet provided in the projecting portion. The outlet is so located in the projecting portion that the upper and the lower boundary surfaces of the fiber feed channel respectively intersect the transverse and the circumferential surface of the projecting portion.

3,672,145
SUPPLY SPINDLE FOR TWISTING MACHINE
Josef Plenningsberg, Monchengladbach, Germany, assignor to U.S. Textile Machine Company, Scranton, Pa.
Filed Nov. 16, 1970, Ser. No. 89,959
Int. Cl. D01h 7/02
U.S. Cl. 57—60 17 Claims



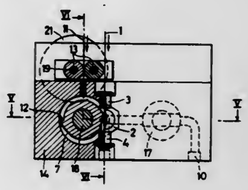
Supply spindle for high speed upstroke twisting. A blade, which surrounds an upstanding, stationary core of the spindle, has a cap removably mounted on its upper end, for rapid rotation with the blade. A filament-twisting rotor is mounted on the cap, for rotation therewith and for filament-twisting motion relative thereto. The supply package of filament is mounted on the blade, below the cap, and filament is unwound from this package. A short length of the unwound filament always runs to and over the cap, and to an upper central part of the twisting rotor, for the application of twist and for guidance to an overlying collector spindle. The filament is kept under extremely low tension, and this tension is kept substantially uniform. For these purposes the core and blade are constructed so as to avoid vibratory criticality at normal high-speed rotation of the spindle, and rapidly to dampen vibrations of the core, blade and supply package while the rotational speed rises to or falls from the normal speed, which typically amounts to multiples of 10,000 rpm.

3,672,146
YARN BREAK DETECTOR
Cecil S. Adams, Greenville, S.C., assignor to Adams Incorporated, Greenville, S.C.
Filed Oct. 28, 1970, Ser. No. 84,830
Int. Cl. D01h 13/16
U.S. Cl. 57—81 5 Claims



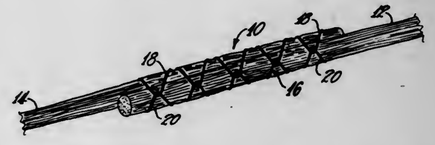
A yarn break detector is disclosed particularly for twisting machines used for plying two or more yarns. The arrangement includes a switch operated by a drop wire means which is positioned between the feed mechanism and the twisting and take-up means and holds the two yarns separated from each other in such manner that breakage of either or both yarns change the condition of the switch. A switch which is particularly adaptable to this environment is also disclosed.

3,672,147
METHOD FOR MANUFACTURING YARN CONSISTING OF FIBERS AND FILAMENTS
Michele Calleri; Giorgio Faraci, both of Gozzano, and Mario Paracchini, Borgomanero, all of Italy, assignors to Bemberg S.p.A., Milan, Italy
Filed Aug. 19, 1970, Ser. No. 65,006
Claims priority, application Italy, Aug. 30, 1969, 21470 A/69
Int. Cl. D02g 3/34
U.S. Cl. 57—157 F 7 Claims



A method and an apparatus for producing a yarn composed by a bundle of filaments with which fibers or staples are interlaced which are blown in the desired quantity by means of a jet of air or gas by a metering device and thereafter are conveyed by the jet on the bundle of filaments in an interlacing device. Preferably a part of the jet of air or gas is guided through the metering device and cooperates with the same, and this part of the jet is combined with another part of the jet passing outside the metering device before the interlacing device or within the same. The jet of air or gas guided through the metering device may be intermittent and also the feeding of staples or fibers to the jet of air or gas by the metering device may be intermittent.

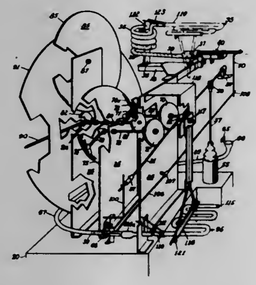
3,672,148
SEWN TIRE CORD SPLICE AND METHOD
Gustav E. Benson, Edgewood, and James M. Pisani, Cumberland, both of R.I., assignors to Owens-Corning Fiberglas Corporation
Filed April 27, 1970, Ser. No. 31,896
Int. Cl. B65h 69/06
U.S. Cl. 57—159 4 Claims



A method of splicing glass fiber tire cord ends together which includes the steps of positioning oppositely extending tire cord ends in side-by-side overlapping relationship and sewing an extensible thread around the overlapping ends using a zigzag stitch, the sewing being done in such a manner as to preclude penetration of the overlapping cord ends by the needle, and the sewing tension on the thread causing it to elongate as it is being applied. Excess thread is then trimmed off. Subsequent retraction of the thread after it is locked in position around the overlapping cord ends causes it to form a very tight

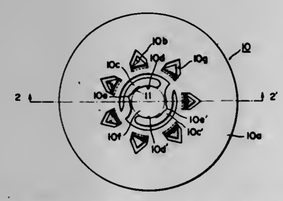
wrap around the tire cord ends. Also disclosed is the splice or joint made by such method. The splice includes oppositely extending glass fiber tire cord ends in side-by-side overlapping relationship bound together with an extensible thread having been sewn in a zigzag stitch.

3,672,149
CLOCK MECHANISM ACTUATED BY SUCCESSIVELY SUPPLIED BALL WEIGHTS
Lawrence A. Howard, 737 Pierce Avenue, Columbus, Ohio
Filed Nov. 23, 1970, Ser. No. 92,011
Int. Cl. G04b *45/00*
U.S. Cl. 58—2 10 Claims



A clock mechanism actuated by a large number of separate ball weights which are fed individually from a supply chamber into a cup on a counterweighted pivoted motion arm or balance lever. The weight of each successive ball overcomes the counterweight of the lever and swings it about its pivot until the ball cup moves to a position where the ball drops from the cup and permits the lever to swing back to its counterbalanced position. The lever is connected to suitable mechanism so that this movement of the lever produces a predetermined advance of indicators of the clock to indicate correct time. The balls discharged successively from the ball cup are collected and supplied to the ball supply chamber for re-use in actuating the indicator mechanism.

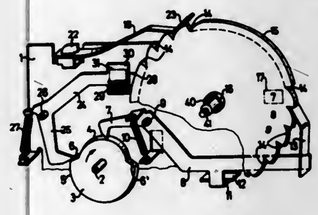
3,672,150
DISPLAY DIAL ASSEMBLY FOR TIMEPIECE
Tetuya Yasuda; Hidetaka Tutiya, and Takeshi Mori, all of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Filed Dec. 28, 1970, Ser. No. 101,668
Claims priority, application Japan, Dec. 25, 1969, 44/104545; June 30, 1970, 45/65151; Nov. 12, 1970, 45/111594
Int. Cl. G04b *19/24*
U.S. Cl. 58—5 7 Claims



The present invention relates to a display dial, such as a day calendar display dial, for a timepiece.

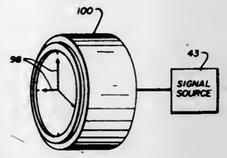
The improvement comprises the provision of at least two resilient arms made integral therewith and adapted for easy and positive engagement with a positioning peripheral groove formed on the mounting shaft for the dial.

3,672,151
SYNCHRONOUS ALARM CLOCK MECHANISM
Walter Trinpler, Nurnberg, Germany, assignor to Diehl, Nurnberg, Germany
Filed Jan. 11, 1971, Ser. No. 105,217
Claims priority, application Germany, Jan. 14, 1970, G 70 01 038.7
Int. Cl. G04b *19/24*
U.S. Cl. 58—5 9 Claims



The specification discloses an arrangement for a clock, such as an electrical driven alarm clock. The clock is provided with indexable date indicating means and with day-night indicating means and with actuators in the form of levers for actuating the said means. The clock includes a shaft rotatable once every 24 hours and this shaft carries a single cam disc with a single cam track thereon and both of the aforementioned levers engage the cam track and are actuated thereby.

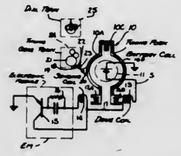
3,672,152
ELECTROMECHANICAL OSCILLATOR
William E. Reefmen, Santa Barbara, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed June 17, 1970, Ser. No. 46,926
Int. Cl. G04c *3/02*; H02k *7/06*
U.S. Cl. 58—23 V 10 Claims



A ring-shaped pendulum is supported on a base by crossed flat spring flexure members which permit limited rotational movement of the pendulum. Each flexure member is supported at one end by the base and is connected to the pendulum at the opposite end. Piezoelectric elements, either laminated to flexure members or coupled to them by drive rods, cause oscillation of the pendulum upon application to the elements of an electrical signal at a frequency approximately the same as the natural frequency of the suspended system or in multiple relation thereto. Through a spring-pressed pawl attached to the pendulum, the oscillating movement of the latter actuates a ratchet wheel, which drives a gear train.

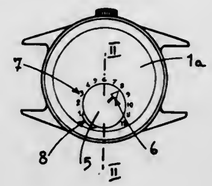
A variant form is self-energized. A piezoelectric element on one flexure member provides an input signal to an amplifier. The output from the amplifier is used to drive a piezoelectric element on another flexure member, thus maintaining the suspended system in oscillation.

3,672,153
MINIATURIZED BATTERY-OPERATED TUNING-FORK TIMEPIECE
William W. Mutter, Paramus, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,271
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 TF 5 Claims



A miniaturized electronic watch including a tuning-fork resonator which is sustained in vibration by a battery-energized electronic drive circuit and whose vibrations are converted into rotary motion for operating dial pointers. The tuning fork, which is mounted on a pillar plate, is constituted by a pair of tines having a bow-legged formation to define a circular zone. The battery for the electronic drive circuit is seated in the zone within a circular well formed in the pillar plate, thereby conserving space.

3,672,154
ELECTRIC TIME-PIECE
Kurt Hubner, Neuchatel, Switzerland, assignor to Ebauches Electroniques S.A., Neuchatel, Switzerland
Filed July 28, 1971, Ser. No. 166,761
Claims priority, application Switzerland, Aug. 7, 1970, 11906/70
Int. Cl. G04c *3/00*; G04b *37/12*
U.S. Cl. 58—23 BA 4 Claims



A time-piece the case of which contains a source of current in the form of an ordinary or storage-battery housed in a space closed by means of a plug, characterized by the fact that one of the two elements, casing and plug, is provided with a scale and the other one with a mark, so that when the plug is put in place, it can be adjusted to such an angular position that the mark indicates, at least approximately, with respect to said scale, the date at which the source of current has been put in place or the date at which this source must be replaced.

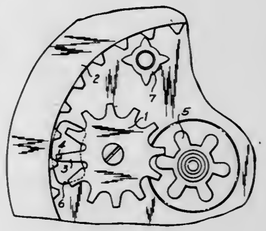
3,672,155
SOLID STATE WATCH
John M. Bergey, and Richard S. Walton, both of Lancaster, Pa., assignors to Hamilton Watch Company, Lancaster, Pa.
Filed May 6, 1970, Ser. No. 35,196
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R 17 Claims

Disclosed is a solid state watch which requires no moving parts for timekeeping and display. The watch comprises a crystal controlled oscillator connected through an integrated circuit binary frequency divider to an electro-optical display in the form of light emitting diodes. The display is energized only on demand and the level of the light output is controlled



in accordance with ambient light conditions. The watch is energized from a rechargeable battery.

3,672,156
BREAK PREVENTION DEVICE FOR CALENDAR ADVANCING OF A CALENDAR WATCH
Mamoru Miyasaka, Shimosuwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed June 4, 1971, Ser. No. 150,110
Claims priority, application Japan, June 11, 1970, 45/57055
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 5 Claims

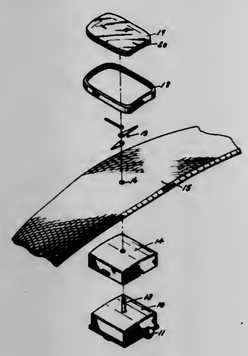


A break prevention device for a calendar watch wherein the calendar advancing wheel includes an elongated adjusting tooth formed with a partial slope at its end and resiliently displaceable out of the plane of the calendar wheel.

3,672,157
COMBINED WATCH AND CONTINUOUS WATCH BAND
John Manceri, Long Island, N.Y., assignor to Judson Jewelry Corp., New York, N.Y.
Filed Nov. 15, 1971, Ser. No. 198,518
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 W 5 Claims

A wrist watch which comprises a substantially continuous watch band arranged so that a central portion of the band extends across the user's wrist and further serves as the dial or face of the watch. Soldered or otherwise secured to the underside of the band is the watch case including the watch movement and from which a center spindle supporting the hour and second hands extends through a small opening in the watch band so as to be positioned over said band central portion. A frame or bezel is soldered or otherwise secured to the opposite, upper side of the band above the watch movement. A crystal is supported by the bezel. As a result, the watch band become part of the watch itself, specifically its face. A standard size watch case movement can be used regardless of any form the watch frame or bezel will take. On the other hand, the frame or bezel may assume unlimited shapes and configu-

rations because it is used to delineate any desired portion of the band central portion. Thus the over-all construction of the



watch is simplified while unlimited aesthetic configurations are made possible.

3,672,158

SYNTHETIC RESIN WATCHCASE WITH EMBEDDED METAL REINFORCEMENT

Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,393
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 3 Claims



In a watchcase wherein the case-body is made of a synthetic resin, a long-lasting water-proof seal between the synthetic resin case and the glass face is ensured by means of a metal reinforcing ring embedded in the synthetic resin. The reinforcing ring is suitably perforated so that synthetic resin flows into the perforations during the molding operation and locks the reinforcing ring in place permanently.

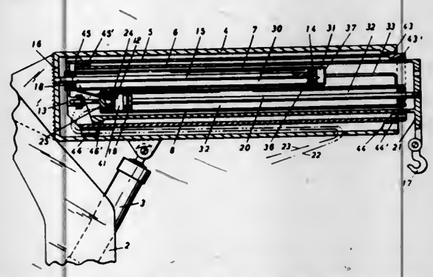
3,672,159

APPARATUS FOR CRANE JIBS ADAPTED TO BE EXTENDED AND RETRACTED TELESCOPICALLY

Anders Erik Sundin, Forsa, Sweden, assignor to A. E. Sundin Produkter AB, Delsbo, Sweden

Filed Feb. 25, 1970, Ser. No. 13,991
Claims priority, application Sweden, Feb. 28, 1969, 2764/69
Int. Cl. F15b 11/16, 13/06; B66c 23/56
U.S. Cl. 60—10.5 3 Claims

A crane jib for attachment to a crane column including in combination a jib inner section pivotally attached to the crane column, a jib central section telescopically disposed with respect to the inner section, a jib outer section telescopically disposed with respect to the central section, first and second hydraulic cylinders disposed within the central section and having their rods attached respectively to the inner and outer sections, valve means and control means for applying fluid pressure through the valve means to the hydraulic cylinders



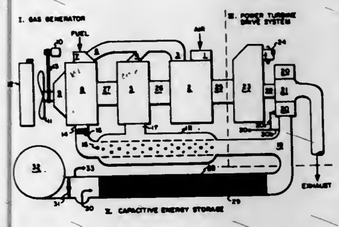
for telescoping said sections substantially simultaneously for extension and retraction of the jib.

3,672,160

SYSTEM FOR PRODUCING SUBSTANTIALLY POLLUTION-FREE HOT GAS UNDER PRESSURE FOR USE IN A PRIME MOVER

Dae Sik Kim, 23 Hearthstone Drive, Medfield, Mass.

Filed May 20, 1971, Ser. No. 145,128
Int. Cl. F02b 37/02
U.S. Cl. 60—13 16 Claims



An extremely low polluting turbine-powered vehicle comprises in combination a supercharged internal combustion engine operating under fuel-rich conditions, an interburner for completing the combustion of unburned fuel in the exhaust gases from the internal combustion engine, a gas turbine for utilizing the exhaust gases from the interburner for powering the vehicle, an air compressor driven by the engine and turbine for providing air under pressure to the interburner, an air compressor driven by the engine and turbine for providing air under pressure for use by the internal combustion engine and by the interburner compressor, a gas reservoir for storing exhaust gas supplied from the interburner for later use in providing power to the turbine for the acceleration of the vehicle or initial operation thereof, and a heat exchange/storage device for abstracting heat from the exhaust gas supplied to the gas reservoir and for returning a substantial portion of this abstracted heat to the exhaust gas delivered from the gas reservoir to the gas turbine.

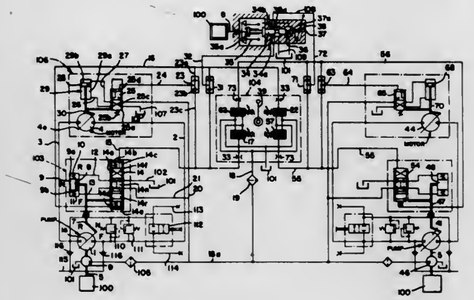
3,672,161

CONTROL SYSTEM FOR A STEPLESS HYDROSTATIC DRIVE

Alfred Krusche, Grossostheim, and Helmuth Rosslein, Lohr/M., both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jan. 13, 1971, Ser. No. 106,095
Claims priority, application Germany, Jan. 15, 1970, P 20 01 701.0
Int. Cl. F02b 41/00
U.S. Cl. 60—19 12 Claims

A hydrostatic drive has a pump driven by a prime mover, e.g., an internal-combustion engine, and connected in a substantially closed hydraulic power circuit with a hydraulic motor connected to a load. The hydrostatic drive may be used, for example, to power a vehicle or an accessory or appliance of the vehicle. The hydrostatic pump-motor system has a control member shiftable to vary the speed of the system in a



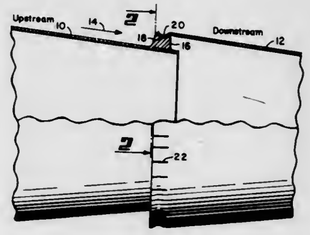
stepless manner and operated by a servocylinder from a pilot valve which, in turn, is controlled by the pressure in a pair of pilot lines. A speed governor or sensor responsive to an overload of the engine, automatically acts upon the pilot valve to reduce the speed in the vent of a torque overload.

3,672,162

COMBUSTION CHAMBER ASSEMBLY FOR A GAS TURBINE ENGINE

Joseph Rygelis, Monroe; Ervin J. Sweet, Trumbull, and Brian W. Doyle, Shelton, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Jan. 28, 1971, Ser. No. 110,449
Int. Cl. F02c 3/00
U.S. Cl. 60—39.32 7 Claims



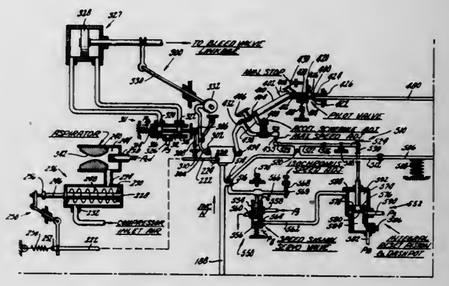
A combustion chamber liner is comprised of two telescoping sections, the leading edge of the downstream section overlapping the trailing edge of the upstream section. The end of the upstream section is provided with a plurality of peripherally spaced bosses. The outer peripheral surface of each of the bosses is grooved to accept the complementary depressed ring in the end of the larger downstream section. When cool, the dimensions of the upstream and downstream sections are such that there is a loose connection between the sections. However, the upstream section is heated more than the downstream section and causes its expansion to provide a tight fit.

3,672,163

INTEGRAL FUEL CONTROL

Albert H. White, Wethersfield, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Jan. 2, 1970, Ser. No. 230
Int. Cl. F02c 9/08
U.S. Cl. 60—39.28 R 3 Claims



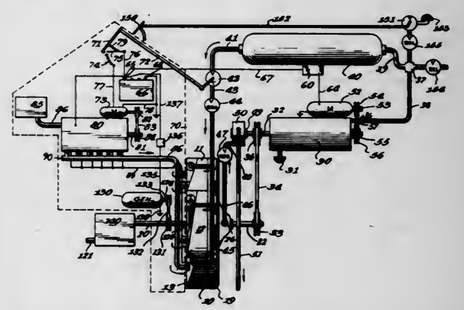
A fuel control of the 3D cam type for a gas turbine engine has a proportional governor and an integral governor interconnected by a linkage which acts as a highest wins device between an acceleration schedule and the governors. The linkage also compares the actual engine speed with the desired set engine speed to position a pilot valve which controls the position of a fuel metering valve. An axially movable 3D cam has the acceleration schedule contoured on its surface and is adapted to be contacted by a follower which is functionally connected to the pilot valve. Another contour on the cam is engaged by a follower which controls the position of a compressor interstage bleed valve. A compressor air inlet temperature sensor rotatably positions the 3D cam in accordance with the magnitude of the sensed air temperature. The metering valve moves towards its full open position as the acceleration schedule on the advancing 3D cam closes the pilot valve. The proportional governor becomes effectual as the set speed is attained and the integral governor resets the proportional governor for isochronous governing at the preselected isochronous speed.

3,672,164

INDEPENDENT IGNITION ENGINE

Don B. Pieper, Rolling Meadows, Ill., assignor to Whim, Inc.

Filed March 27, 1970, Ser. No. 23,368
Int. Cl. F02c 5/04
U.S. Cl. 60—39.38 11 Claims



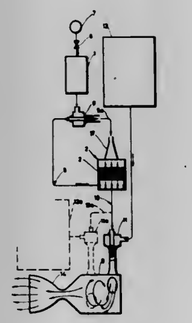
Optimum or most economical air-fuel mixture for a turbine engine is maintained by having the fuel injection system, the ignition system and the pressure air system operate indepen-

dently of the rotational velocity of the drive shaft of the engine or any of its primary rotating parts. The engine turbine and its drive shaft may be decelerated by placing a high air compression load on the drive shaft.

3,672,165
METHOD OF FEEDING LIQUID PROPELLANTS TO GAS GENERATORS OR ROCKET COMBUSTION CHAMBERS AND FEEDING SYSTEM FOR PERFORMING THE METHOD

Werner Baum, Frankenbach, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Sept. 3, 1969, Ser. No. 855,054
Int. Cl. F02k 9/02, 9/06; F23k 5/00
U.S. Cl. 60—39.48 8 Claims



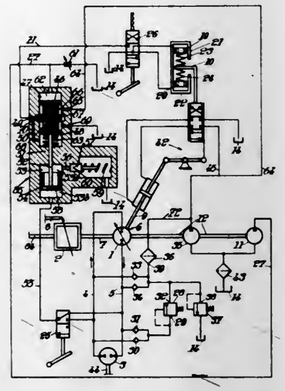
A method of feeding liquid monergolic propellants, either alone or with liquid non-monergolic propellants, to gas generators or rocket combustion chambers, utilizes jet pumps, connected to propellant supplies, to feed the propellants. The monergolic propellants are catalytically dissociated to provide decomposition gases which are supplied to the jet pumps as the pump operating fluids to aspirate propellants into the jet pumps. The pressure drop across the catalysts is compensated by utilizing the energy of a source of gas under pressure. The pressure gas source may be connected to the container for the monergolic propellant, or may be connected to the container for an auxiliary propellant fed to an auxiliary combustion chamber. The auxiliary combustion chamber is supplied with the decomposition gases, and may be used to drive a turbine in turn driving an auxiliary pump for the decomposition gases.

3,672,166
VARIABLE RATIO HYDROSTATIC TRANSMISSIONS

Olivier Isaac, Lyon, France, assignor to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A., Paris, France

Filed Sept. 25, 1970, Ser. No. 75,343
Claims priority, application France, April 8, 1970, 7012759
Int. Cl. F16d 31/06
U.S. Cl. 60—53 R 10 Claims

The hydrostatic transmission comprises a hydraulic motor as well as a pump of which the cubic capacity is regulated by a mechanism sensitive to the pressure of a liquid. This liquid is supplied by a pressure regulator on the movable member of which act, in the sense tending to increase the pressure, a force increasing with the speed of the pump and, in reverse sense, a force increasing with the resistant couple applied to

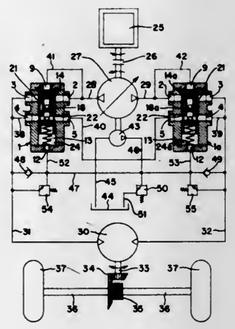


the motor and a force proportional to said pressure. The transmission is useful for automobiles.

3,672,167
HYDROSTATIC VEHICLE TRANSMISSION

Karl-Heinz Griesenbrock, Duisburg, Germany, assignor to Eaton Yale & Towne GmbH, Velbert/Rheinland, Germany

Filed Nov. 20, 1970, Ser. No. 91,270
Claims priority, application Germany, Nov. 21, 1969, P 19 58 436.2
Int. Cl. F16d 31/06
U.S. Cl. 60—53 R 5 Claims

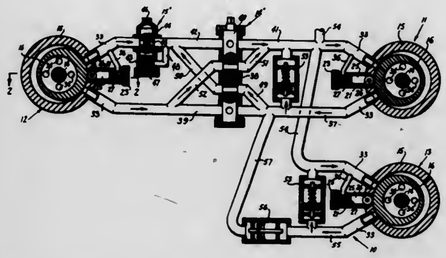


The invention relates to a hydrostatic vehicle transmission having a closed symmetrical circuit and a variable displacement pump with a reversible direction of delivery, and having an anti-pressure-build-up device, by means of which the pressure in the line carrying pressure fluid from the hydraulic motor to the pump is released when, under particular travel conditions, especially during deceleration of the vehicle, the motor acts as pump and vice versa.

3,672,168
ROTARY PUMP AND POWER TRANSMISSION SYSTEM

Leonard M. Salmon, 2012 Cummings, Mission, Tex.

Filed Nov. 6, 1970, Ser. No. 87,479
Int. Cl. F16d 31/06
U.S. Cl. 60—53 R 5 Claims

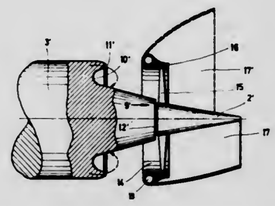


A rotary pump and power transmission system in which multiple cam grooves are formed in a rotor and a follower engages in the grooves to form a rotary pump and a rotary motor. A secondary pump is connected in the system to increase the fluid flow to the motor. A four-way reversing valve provides means for reversing the direction of rotation of the motor while continuing to operate the pump in the original direction. A valve is provided in the system actuated by the hydraulic brakes of the vehicle to retard the flow of drive fluid to or from the motor to retard the speed of the vehicle.

3,672,169
DRIVE ENGINE HAVING SHROUDED PROPELLER WITH A VARIABLE OUTLET CROSS SECTION

Erich Ufer, Meindorf, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed Oct. 5, 1970, Ser. No. 77,813
Claims priority, application Germany, Oct. 11, 1969, P 19 51 425.1
Int. Cl. F02k 1/20
U.S. Cl. 60—230 20 Claims

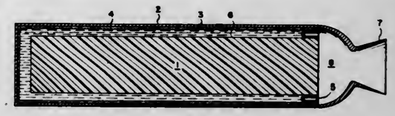


A drive engine includes a rotatable propeller with a shroud around the propeller which carries flaps which extend in the flow direction and which may be moved inwardly and outwardly for varying the shroud outlet cross section. A drive engine is operated to produce a high specific static thrust using the shrouded propeller, for example during take off, when it is in an outward position at which the discharge or outlet is expanded. For a high speed flight the outlet of the shroud is narrowed by moving the trailing ends of the flaps inwardly, for example; this accelerates the main air current inside the shroud for a great specific thrust with reduced shroud drag. In one embodiment, the mounting body for the propeller and the flaps is provided with an annular slot having an auxiliary air current feed for stabilizing potential vortices. Similar potential vortices adjacent the shroud are controlled either by the use of a separate auxiliary ring member associated with the shroud or by using a closed ring having means for discharging a fluid current in the vicinity of the vortex generation. The shroud itself may advantageously be either also provided with or alternatively provided with an annular groove for controlling any vortices in this location.

3,672,170
PROPELLANT GRAIN SUSPENSION SYSTEM

Robert N. Chappell, and Robert L. Carroll, both of Redlands, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 12, 1970, Ser. No. 45,770
Int. Cl. F02k 9/04
U.S. Cl. 60—255 5 Claims

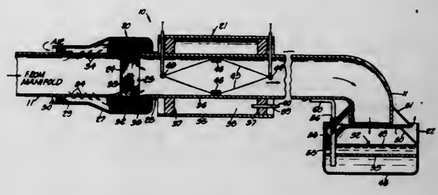


A stress-free propellant grain suspension system wherein the propellant grain is suspended in the motor casing by means of a viscous liquid and the plenum gas pressure.

3,672,171
APPARATUS AND METHOD FOR TREATING ENGINE EXHAUST PRODUCTS TO MINIMIZE HARMFUL CONSTITUENTS

Hrant Eknayan, 7528 Columbia Street, Rosemead, Calif.

Filed Feb. 5, 1970, Ser. No. 8,931
Int. Cl. F01n 3/14; F02b 75/10; F02m 25/06
U.S. Cl. 60—274 16 Claims



A method and accessory for treating engine exhaust products to minimize if not eliminate harmful pollutants present therein as the exhaust products pass through an engine exhaust pipe. The hot exhaust products are exposed to charcoal, copper and heat in the presence of fresh air to combust incompletely burned products and to decompose and absorb nitrogen compounds. Thereafter, the hot exhaust products are exposed to water where remaining traces of nitrogen compounds are absorbed before the treated exhaust products are wasted into the atmosphere. Vaporized water containing absorbed nitrogen compounds is returned to the carburetor intake in pre-heated condition.

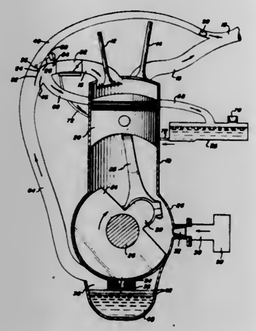
3,672,172
SIMPLIFIED SUPERCHARGED INTERNAL COMBUSTION ENGINE WITH EMISSIONS CONTROL

Gary L. Hammond, R.R. 4, Macomb, Ill.

Filed March 15, 1971, Ser. No. 124,044
Int. Cl. F01n 3/10, 7/00
U.S. Cl. 60—282 10 Claims

Internal supercharging of non-radial, reciprocating internal combustion engines is achieved by means of a unique form of crankcase compression. The engine includes a sealed crank-

case and a first one-way valve in fluid communication with the crankcase and disposed so that external air is induced into the crankcase upon movement of the piston in one direction. An air reservoir is provided in fluid communication with the crankcase and a second one-way valve is disposed between the crankcase and the air reservoir so that air in the crankcase is forced into the reservoir upon movement of the piston in the reverse direction, the net effect being a positive displacement



supercharger. Passageways are provided for introducing the resulting pressurized air into the cylinder and separately into the exhaust for afterburning purposes, a pressure regulator proportioning the airflows thereto. The pressurized air also pressurizes the fuel tank and thus the fuel supply to the engine. In a particular embodiment a lubricating oil reservoir is provided adjacent the air reservoir with air-oil separator means therebetween.

3,672,173

FORMING SELF-SUPPORTING BARRIERS IN MINE PASSAGES AND THE LIKE

Edwin L. Paramore; Bernard T. O'Loughlin, and Thomas L. Brown, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed May 13, 1969, Ser. No. 824,157
Int. Cl. E02b *3/16*; E02d *29/00*
U.S. Cl. 61—36 52 Claims



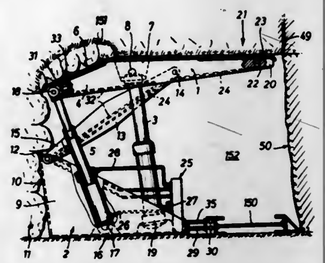
The present invention relates to methods and apparatus for remotely forming self-supporting water impermeable barriers in mine passages and the like. A fast setting cementitious composition is formed by combining an aqueous slurry of cement with an aqueous silicate solution. The cementitious composition thus formed is continuously deposited transversely on the floor and walls of a mine passage by apparatus extending into the mine passage through the mine opening, or through a bore drilled into the passage from the ground surface. The cementitious composition sets into a firm impermeable mass as it is being deposited thereby forming a firm self-supporting barrier in said passage.

3,672,174

METHOD AND APPARATUS FOR SUPPORTING THE ROOFS IN UNDERGROUND EXCAVATIONS

Hanajoachim Von Hippel, 4628 Linen F 2286 Muhlenkamp 12, 7771 Oberstenweller, Germany

Filed Sept. 8, 1970, Ser. No. 70,048
Claims priority, application Germany, Dec. 4, 1969, P 19 60 807.2
Int. Cl. E21d *11/16*
U.S. Cl. 61—45 D 34 Claims



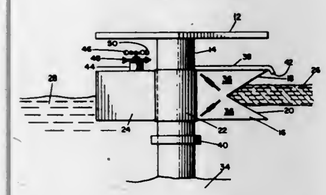
A walking mine roof support wherein one or more roof engaging caps are pivotable on the upper end of at least one extendable pit prop which is mounted on the floor engaging base. Balancing rams connect the rear ends of the caps with the base or such rams carry bars which are movable against the roof behind the caps. The props and the rams are operated by a hydraulic control system in response to signals from pressure gauges mounted on the front and rear ends of the caps. Such signals indicate changes in pressure which the mine roof exerts against the respective ends of the caps.

3,672,175

ICE CUTTER

Charley Mack Mason, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Oct. 2, 1970, Ser. No. 77,507
Int. Cl. E02b *15/02*; B63b *35/12*
U.S. Cl. 61—46 10 Claims



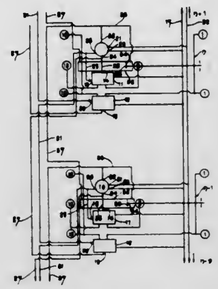
A cutter rotatably mounted on a marine structure for cutting and diverting encroaching ice floes. The cutter has upper and lower cutting edges that are angled from one another and intersect. Sides angle away from the cutting edges, and the trailing edge of the sides flare outwardly to divert the ice around the marine structure. The cutter is attached to a sleeve which rotates around the marine structure in response to a vane member which also acts as a counterweight and is shaped to act as a protected boat dock.

3,672,176

ROOF SUPPORTING SYSTEMS

Karl Maria Groetschel, Bochum, and Utz Groetschel, Munich, both of Germany, assignors to Karl Maria Groetschel, by said Utz Groetschel

Filed Dec. 18, 1970, Ser. No. 99,496
Claims priority, application Germany, Dec. 18, 1969, P 19 63 558.6
Int. Cl. E21d *23/18*
U.S. Cl. 61—45 D 14 Claims



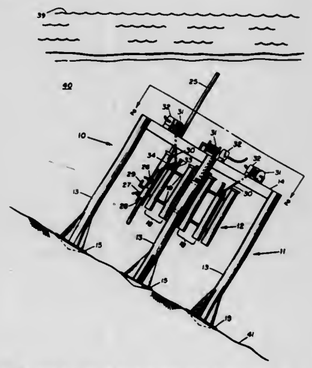
The invention comprises a roof supporting system for use in a mine working employing a row of roof supports each having an inner unit and an outer unit incorporating hydraulic props and advanced in turn by hydraulic ram means. A control valve provided on each of the supports can be moved into a position to depressurize the props of the inner unit of that support to pressurize the props of an outer unit on an adjacent one of the supports in the system and advance these two units simultaneously so that each support need be visited only once by an operator to bring about advancement of all the units in the whole supporting system. Each control valve may have selectively usable outlets to enable the outer unit of an adjacent support on one side or the other of that incorporating the control valve to be advanced simultaneously with the inner unit of the latter support.

3,672,177

SUBSEA FOUNDATION UNIT AND METHOD OF INSTALLATION

William F. Manning, Dallas, Tex., assignor to Mobil Oil Corporation

Filed June 24, 1970, Ser. No. 49,372
Int. Cl. E02b *17/00*, *17/08*
U.S. Cl. 61—46.5 14 Claims



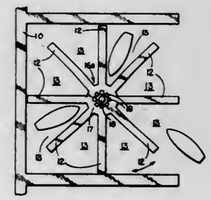
The specification discloses a subsea foundation unit for use in drilling and completing a plurality of submerged wells particularly in areas where the marine bottom slopes or is uneven. The unit is comprised of a base and a drilling and completion template. The unit is lowered in the water until the base engages the marine bottom. The template is adjusted with relation to the base until the template is substantially level. Next, the template is secured to the bottom and is released from the base. The base is removed leaving only the leveled template on the bottom.

3,672,178

ROTARY DOCK

Paul A. Trautwein, 1906 Holiday Road, Newport Beach, Calif.

Filed Nov. 23, 1970, Ser. No. 91,921
Int. Cl. E02d *29/06*
U.S. Cl. 61—46 7 Claims



This disclosure relates to the berthing of boats, and to the problem caused by the need for providing maneuvering room to permit the boats to enter their boat slips. This problem is particularly acute for larger boats and for the less experienced skippers.

The disclosed invention teaches the use of a rotary dock, somewhat similar to a merry-go-round, having a plurality of boat slips associated therewith. In use, the rotary dock is rotated so that any given one of the plurality of boat slips may be positioned at any desired peripheral location.

Thus, in the case of a mooring arrangement in a marina, any boat slip of the rotary dock may therefore be positioned at a peripheral location that facilitates the boat's entering or leaving the channel, whereas, in the case of a marine service station that is already crowded with boats being serviced, the rotary dock may be rotated so that an emoty boat slip in in location to receive the newly arrived boat. In the case of a boat rental or a boat sales agency having a large inventory of boats, the rotary dock may be rotated so that any desired boat of the inventory may be made available for customer examination or use.

3,672,179

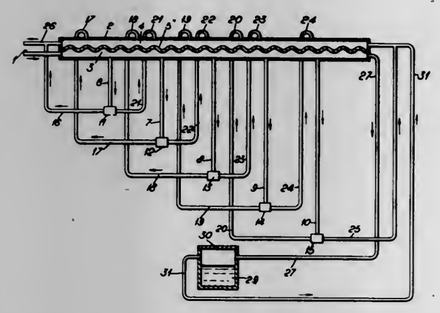
GAS LIQUIFACTION

Richard W. Foster-Pegg, Warren, Pa., assignor to Struthers Energy Systems, Inc.

Filed Aug. 4, 1970, Ser. No. 60,877
Claims priority, application Great Britain, Aug. 6, 1969, 39,401/69
Int. Cl. F25b *9/02*
U.S. Cl. 62—5 3 Claims

A gas under pressure enters a single counter-flow heat exchanger haVing a high pressure entrance side and a low pressure exhaust side, the gas from the high pressure side being connected in parallel to a number of Ranque tubes in which the gas expands. The hot and cold streams from the

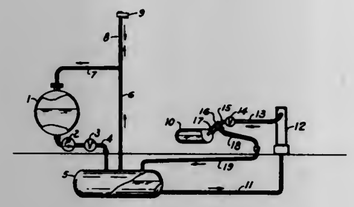
tubes are connected along the length of the low pressure side of the heat exchanger to progressively cool gas in the high pressure side until a small percentage of the gas can be flashed to liquid for storage.



3,672,180
FUEL VAPOR RECOVERY APPARATUS

Edwin R. Davis, 2020 Beverly Plaza 0213, Long Beach, Calif.

Filed Feb. 19, 1968, Ser. No. 714,189
Int. Cl. F17c *13/12*
U.S. Cl. 62—54 9 Claims



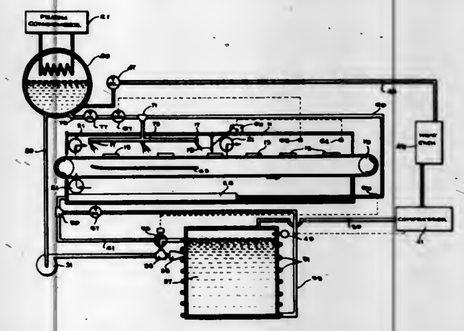
A fuel recovery apparatus including a service station storage tank and a fuel transfer line for connection with a truck tank. Condenser means is provided for receiving vapor expelled from the storage tank during filling thereof and the condensed fuel is returned to the storage tank in liquid form. A vapor return conduit may be provided for cycling the expelled vapor back to the ullage in the truck tank during emptying thereof.

3,672,181
METHOD AND APPARATUS FOR CARBON DIOXIDE COOLING

Lewis Tyree, Jr., 10401 South Oakley Avenue, Chicago, Ill.

Filed Feb. 26, 1970, Ser. No. 14,575
Int. Cl. F25d *13/06*
U.S. Cl. 62—63 17 Claims

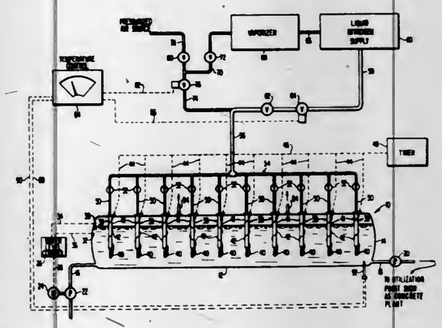
Apparatus for cooling articles using carbon dioxide as a refrigerant including an enclosure adapted for cooling articles to be conveyed therethrough and a cooling system having snow nozzles in the upper portion thereof. A heat-exchanger is disposed in a lower portion of the enclosure and a conduit connects a source of high pressure CO_2 to the inlet of the heat-exchanger. The outlet from the heat-exchanger is connected to the snow nozzles whereby snow falling into the lower portion of the enclosure and coming to rest on the heat-exchanger absorbs heat during its change of state thereby precooling the high pressure Co_2. The orifice openings in the nozzles are varied with pressure, and blowers assure a blizzard of snow is created within the enclosure.



3,672,182
WATER COOLING METHOD AND APPARATUS EMPLOYING LIQUID NITROGEN

William F. Stowasser, and Keith A. Miller, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed June 25, 1970, Ser. No. 49,859
Int. Cl. F25d *17/02*
U.S. Cl. 62—98 20 Claims



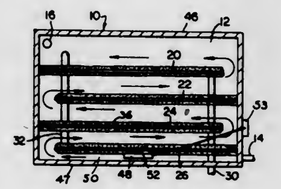
Water is cooled by the direct injection thereinto of liquid nitrogen. Preferably, heat is applied in the vicinity of the injection zone and preferably the injection of the liquid nitrogen is intermittent with inert gas being injected when liquid nitrogen is not injected. The application of the heat and the injection of the gas eliminates the tendency of the injector to be plugged by ice formation.

3,672,183
ICE BANK HEAT EXCHANGER

Arthur Bernstein, 2636 North Hutchinson Street, Philadelphia, Pa.

Filed Jan. 21, 1970, Ser. No. 8,101
Int. Cl. F25d *17/02*
U.S. Cl. 62—139 1 Claim

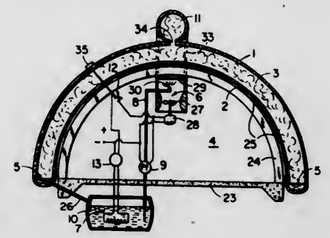
An ice bank heat exchanger including a process water retaining reservoir provided with a hot process water inlet and a water outlet returning cooled water to the process equipment, a refrigeration unit associated with the said reservoir and expanding through evaporator coils contained within the said water reservoir, the evaporator coils being affixed to ice bank plates which are arranged within the reservoir to freeze the stored process cooling water and to provide a serpentine water path therethrough from the hot water inlet connection to the cooled water outlet connection.



3,672,184
APPARATUS FOR THERMALLY INSULATING A BODY

Sten Olof Zellon, Glumslov, Sweden

Filed Dec. 10, 1969, Ser. No. 883,744
Int. Cl. F25b *13/00*
U.S. Cl. 62—324 15 Claims

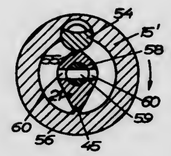


A thermal insulation is obtained by producing foam, introducing the foam into the insulating space, collecting the liquid formed upon the collapse of the foam, again transforming said liquid into foam and introducing the foam into the insulating space to replace the collapsed foam.

3,672,185
IMPULSE MOTOR

Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 24, 1970, Ser. No. 13,283
Claims priority, application Sweden, Feb. 28, 1969, 2842/69
Int. Cl. F16d *3/80*; B25d *15/00*
U.S. Cl. 64—26 15 Claims

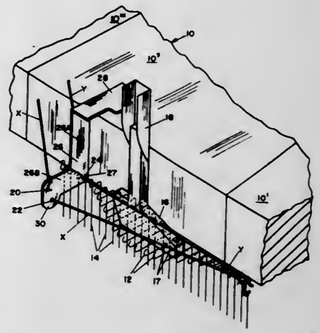


A impulse motor comprises a rotatable cylinder with a cavity containing a liquid, a rotatable anvil and a sealing member being movably mounted in the cavity for cyclically passing a sealing position therein during relative rotations between the cylinder and anvil, in which sealing position the sealing member separates a chamber in the cavity disposed between the cylinder and anvil and of decreasing liquid volume during continued rotation of the cylinder. The impulse motor has a relief valve in the cylinder and means for controlling the relief valve in dependence upon the rotation of said cylinder for keeping during subsequent passages of said sealing member past said sealing position firstly at least once in sequence the said chamber open in said cavity for permitting acceleration of the cylinder during more than one revolution thereof and thereupon closed for producing a pressure impulse in said chamber active to rotate the anvil.

3,672,186
METHOD AND APPARATUS FOR FORMING A RIB FABRIC HAVING A TWO-PLY SECTION

Joseph Rab, New York, N.Y., assignor to Knit Tech Development Corporation

Filed April 10, 1970, Ser. No. 27,239
Int. Cl. D04b *9/06*, *15/54*
U.S. Cl. 66—25 5 Claims

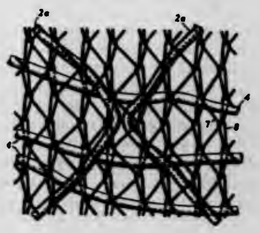


The method of knitting two-ply segments extending coursewise of a rib fabric on a knitting machine of the type having two sets of needles, for example cylinder and dial needles, a plurality of feeds, and means at a selected feed for guiding the yarn forming each ply into the path of the hooks of the needles on which it is being knit and into the hook-opposite side of the other set of needles. The feeding of the yarns to their respective sets of needles is carried on at a single yarn feed without reliance on any special cams or delayed timing.

3,672,187
FABRIC

Elsworth C. Simpson, Glens Falls, N.Y., assignor to Polylok Corporation, New York, N.Y.

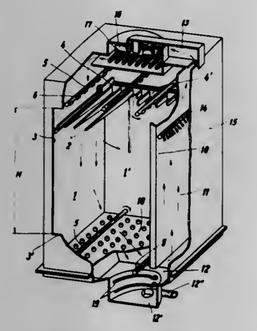
Filed May 19, 1967, Ser. No. 639,836
Int. Cl. D04b *23/10*
U.S. Cl. 66—192 14 Claims



A fabric having a layer of substantially spaced apart design elements which are laid on a cloth substrate, in the warp

direction. along nonlinear paths is disclosed. The design elements are affixed to the substrate and other optional components of the fabric by knit-stitching with parallel rows of stitches forming a series of loop chains.

3,672,188
WASHING MACHINE
Hugo Werner Geschka, Angermund; Wolfgang Oberhoff, Krefeld, and Klaus Korb, Lintorf, all of Germany, assignors to Beges AG, Chur, Switzerland
Filed April 20, 1970, Ser. No. 30,128
Claims priority, application Germany, April 18, 1969, P 19 19 730.9; Aug. 28, 1969, P 19 43 690.9
Int. Cl. B05c *5/00*
U.S. Cl. 68—12 R **23 Claims**

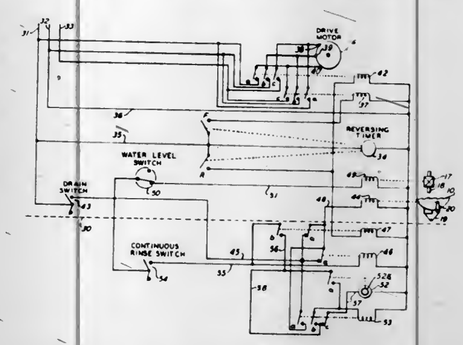


A washing machine with a front-loading washing and drying chamber, including a slidable rack for the suspension of garments to be washed by a set of spray nozzles, is provided with a narrow air shaft rising alongside the treatment chamber and communicating with it at the top and bottom, the air being circulated in a drying phase along a closed path by a blower above the chamber. A sprinkler disposed in the upper part of the air shaft serves to condense the steam entrained with the circulating air, its jets being intercepted by a textile liner on the shaft wall which guides the water down to a collecting trough at the chamber bottom. In a washing phase, with the spray nozzles operating, solution accumulating in the trough is recirculated after reheating by a heater split into two sections, one of them being energized continuously during a warmup period while the other is energized only during standstill of the intermittently operated recirculation pump.

3,672,189
CONTINUOUS RINSE AND COOL-DOWN CONTROL
Richard A. High, and George J. Vesper, both of Cincinnati, Ohio, assignors to McGraw-Edison Company, Elgin, Ill.
Filed Aug. 12, 1970, Ser. No. 63,069
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **8 Claims**

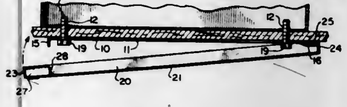
A continuous rinse and cool-down control for washers and washer-extractors is provided of a character which requires modification only of the electrical circuitry of existing commercial machines. The initial step in this control is to open the drain valve on an intermittent time basis, and in response water is added by a water level control to replace that which is drained. Preferably, the drain valve is opened every other time the direction of the drive is changed, and is closed after a preset interval determined by a timer. Since the machine is never completely drained by this method the rinsing operation is a continuous one.

A continuous rinse is advantageous in that it achieves economy in time used to complete a rinse operation. Prior methods of obtaining continuous rinsing have operated generally on some form of flow-through principle, and commonly included a weir arrangement. The present invention resides in an arrangement whereby increments of the bath are intermittently discharged by periodically opening the drain valve, and fresh water is admitted to replenish what is



discharged each time, controlled by a bath-level switch. Further, it is a feature that existing commercial machines of both the tub and shell-less types can be modified to perform these new functions simply by changing the control circuitry without any structural changes.

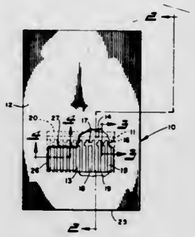
3,672,190
DEVICE FOR PREVENTING UNAUTHORIZED REMOVAL OF PORTABLE EQUIPMENT
Mario Palazzolo, Jackson Heights, N.Y., assignor to Di Mar Metal Fabricators, Inc., Long Island City, N.Y.
Filed June 24, 1970, Ser. No. 49,394
Int. Cl. E05b *73/00*; F16b *41/00*
U.S. Cl. 70—58 **8 Claims**



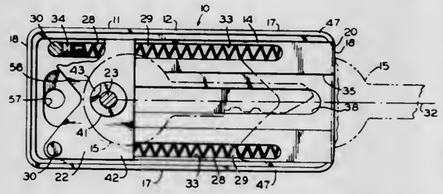
A device to prevent theft or other unauthorized removal of portable equipment, such as typewriters, adding machines and the like, from their normal location or places of use. The protective device comprises a bar readily attachable by fasteners passing through the bar and through openings in the desk top, shelf or other supporting member, and into the base of the piece of portable equipment. The latter is thus held in firm engagement with the supporting member. Access to the attaching bar and fasteners is prevented by a trough-like member which encases the attaching bar and the fasteners. The encasing member is provided with lock means for securing it in position, so as thereby to prevent any but an authorized person from gaining access to the fasteners associated with the attaching bar.

3,672,191
SECURITY CARD
John F. Regan, Anaheim, Calif., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 14, 1970, Ser. No. 63,717
Int. Cl. E05b *19/00*
U.S. Cl. 70—393 **7 Claims**

A security card for use with electronic locks, accounting systems and other electrical identification and data processing systems comprising a plastic wallet-size card with a coded permutation circuit imbedded in the card. Terminals connected to the circuit are exposed through a window in at least one side of the card for mating with matching contacts in a receptacle at a remote station of a security system. The terminals are spaced from the inserting edge of the card a sufficient distance to avoid physical damage.

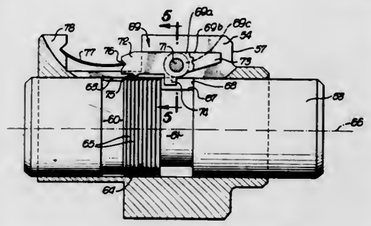


3,672,192
SPRING RETRACTABLE CAR KEY
Vassilios Dontas, 6056 West A, West Linn, Oreg.
Filed Feb. 17, 1971, Ser. No. 116,191
Int. Cl. A47g *29/10*; E05b *19/00*
U.S. Cl. 70—414 **5 Claims**



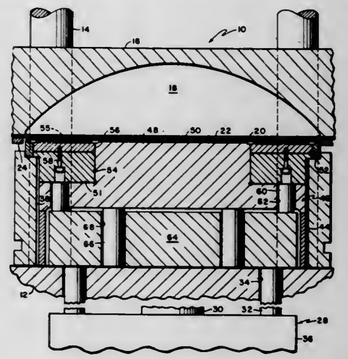
A retractable key holder has a carriage disposed within to which a key is releasably clamped by a shoulder on a shaft threadedly engaged with such carriage and extending exteriorly of the holder. A pair of compression springs are disposed in the body of the holder in parallel relation to the key. Prongs extending from one side of the carriage are engageable with the springs. Pressure applied to an actuator carried by the shaft slides the carriage and the clamped key to an extended position causing the prongs to compress the springs and bias the key toward its retracted position.

3,672,193
PRESSER TOOL WITH FAULTY OPERATION LOCK
Teddy M. Schiller, Huntington Beach, Calif., assignor to Purex Corporation, Lakewood, Calif.
Filed April 30, 1970, Ser. No. 33,183
Int. Cl. B21d *55/00*
U.S. Cl. 72—4 **10 Claims**



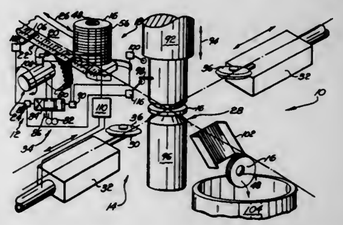
A crimping tool employing a fluid pressure operated reciprocable ram. Ratchet means is provided to prevent faulty crimping operations including a ratchet tooth movable with the ram and a pawl adapted to engage the tooth against return movement of the ram in response to a crimping stroke of less than a predetermined length.

3,672,194
FORMING AND TRIMMING APPARATUS FOR HYDROFORM PRESS
John J. Martin, Milford, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Nov. 20, 1970, Ser. No. 91,288
Int. Cl. B21d *28/18*
U.S. Cl. 72—55 **5 Claims**



A device having separate shape-forming and trim die portions is incorporated in a hydroform press. A blank sheet is placed over the die portions and a diaphragm is placed over the blank sheet. The diaphragm is pressurized with hydraulic fluid and then only the shape-forming die portions are urged into the flexible die element to shape and trim the element in a single cycle of the machine.

3,672,195
AUTOMATIC LOADING DEVICE FOR PULLEY SPLITTING MACHINE
Matthew Pacak, Solon, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 22, 1970, Ser. No. 4,932
Int. Cl. B21h *1/04*
U.S. Cl. 72—71 **1 Claim**

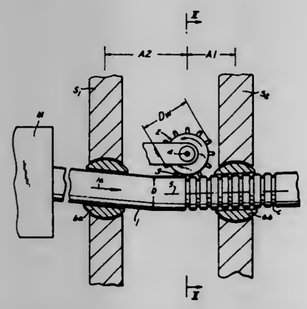


An apparatus for making grooved wheels includes a metal blank feeder and a forming mechanism for forming grooves in the metal blanks. The feeder includes a retaining means for retaining a supply of metal blanks and a mechanism for feeding the blanks from the supply into position so that the forming mechanism can work thereon. The forming mechanism includes tools which split the peripheral edge of the metal blank while the blank is being rotated. The feeding mechanism operates to eject a completed grooved wheel from the forming mechanism while positioning another metal blank to be formed in the forming mechanism.

3,672,196
METHOD AND APPARATUS FOR MAKING CORRUGATIONS IN TUBES CONSISTING OF DUCTILE MATERIAL

Friedrich Levacher, Brauweiler; Hans Leo Ditscheid, Refrath; Walter Burger, Bochum; Peter Asselborn, and Werner Cramer, both of Bergisch Gladbach, all of Germany, assignors to Felten & Guilleaume Kabelwerke Aktiengesellschaft, Cologne-Mulheim, Germany

Filed July 13, 1970, Ser. No. 54,247
Claims priority, application Germany, Aug. 2, 1969, P 19 39 402.6
Int. Cl. B21d 15/06
U.S. Cl. 72—77 24 Claims

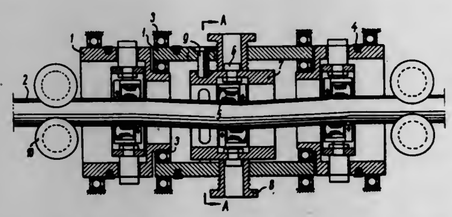


A tube consisting of ductile metallic or plastic material is provided with circumferentially complete corrugations, helical grooves and/or axially parallel grooves while it travels between two universally movable bearings so that it can flex sideways without any appreciable elongation or hardening of its material. The grooves or corrugations are formed by tools having concave tube-engaging faces and rotatably mounted in a holder which orbits about the tube between the two bearings. The tools can be fixedly or adjustably mounted in the holder; in the latter instance, a single set of tools can be used to form circumferentially complete corrugations, helical grooves or axially parallel grooves.

3,672,197
STRAIGHTENING MACHINE FOR PIPE-LIKE ARTICLES

Boris Vasilievich Popov, ulitsa Zelenodolskaya, 24, kv. 110; Alexandr Zosimovich Slonim, Pushkinskaya ulitsa, 11, kv. 43; Anatoly Leonidovich Sosin, ulitsa Koreva, 9, korpus 2, kv. 152; Gennady Konstantinovich Zhukov, Kabanskaya ulitsa, 12, kv. 24, and Olga Samuilovna Zhokhova, 2 Goncharny pereulok, 3, kv. 39, all of Moscow, U.S.S.R.

Filed Aug. 11, 1969, Ser. No. 849,009
Int. Cl. B21d 3/06
U.S. Cl. 72—79 2 Claims

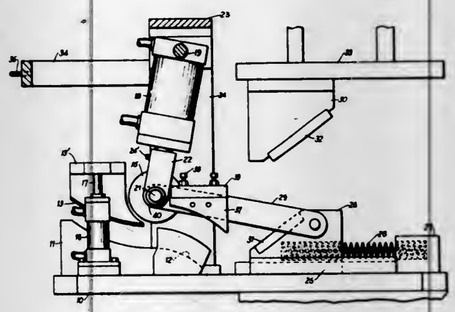


For straightening pipes, there is provided a machine with input and output rollers between which are rotatably and coaxially arranged three casings internally carrying tongue passes which engage and straighten the pipes. The casings are driven in opposite directions.

3,672,198
FENDER FLAIRING APPARATUS

Roman J. Gasiorowski, Little Rock, Ark., assignor to AMF Incorporated

Filed April 6, 1970, Ser. No. 25,952
Int. Cl. B21d 7/02
U.S. Cl. 72—215 5 Claims

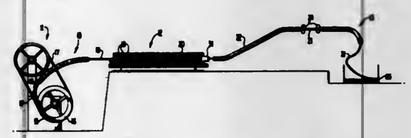


The reverse curl on the end of an arcuate fender is roll-formed between a stationary curved die and a movable roller die which is rolled along the stationary die.

3,672,199
COBBLE RELIEF MECHANISM FOR ROLLING MILL

David H. West, and Kenneth R. Stone, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed May 18, 1970, Ser. No. 38,393
Int. Cl. B21b 39/20, 41/00
U.S. Cl. 72—250 6 Claims



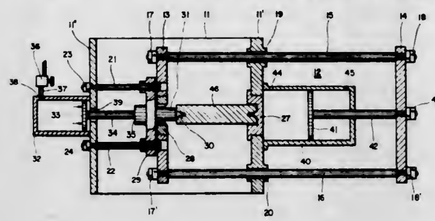
A cobble relief mechanism for a rolling mill of a continuous metal casting and rolling system wherein the accumulation of rod within the mill housing is relieved by opening a portion of the housing and allowing the rod to play out of the opening. The housing is opened in response to the buildup of the rod within the housing, and when the rod is allowed to escape from the confines of the housing the hazard of damage to the rolling mill components is reduced and the entangled rod is played out beyond the housing until the operation of the rolling mill is terminated.

3,672,200
MACHINE TOOL

Sadanori Ogasawara, Nakashim-gun, Japan, assignor to Aikoku Kogyo Kabushiki Kaisha, Nakashima-gun, Aichi, Pref., Japan

Filed Dec. 23, 1970, Ser. No. 100,947
Claims priority, application Japan, Dec. 24, 1969, 44/1386; Nov. 14, 1970, 45/100621
Int. Cl. B21c 3/12
U.S. Cl. 72—285 4 Claims

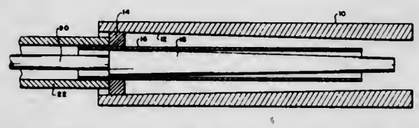
A machine tool, e.g., an extruder or a push bench, for processing a long work-piece, which machine tool comprises a pair of holder members, each including a center pin for holding either longitudinal end of said long work-piece by engaging one of center holes prebored on opposite edge surfaces of the work-piece, a die capable of shaping said work-piece, and a hydraulic piston-cylinder device for moving said die while causing the die to operatively engage the work-piece. The hydraulic piston-cylinder device includes a driving portion for actuating the die and a compensating portion for selectively releasing the stress in the work-piece during the working by the die.



3,672,201
METHOD AND APPARATUS FOR SHAPING TUBES

John W. Hinshaw, Garden Grove, Calif., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed May 19, 1969, Ser. No. 825,482
Int. Cl. B21c 3/12
U.S. Cl. 72—285 16 Claims

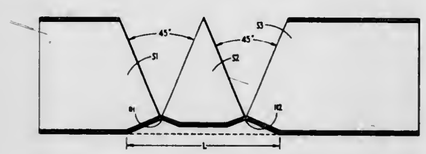


Elongated workpieces are axially positioned in a chamber formed with a cavity that is designed to axially guide a die that is forced through the cavity over the workpiece. In one embodiment a tubular workpiece is shaped by both the die and a mandrel. In another embodiment the die is a deformable die and the cavity tapers so that the die is caused to close over and shape the workpiece during drawing.

3,672,202
METHOD OF MAKING WAVEGUIDE BEND

Wayne Barber, Bedford, Mass., assignor to Microwave Development Laboratories, Inc., Needham Heights, Mass.

Filed Sept. 15, 1970, Ser. No. 72,279
Int. Cl. H01p 11/00
U.S. Cl. 72—369 2 Claims

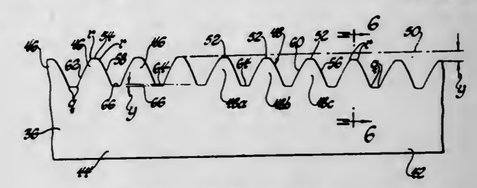


A method of forming an H-plane or E-plane bend in a straight, hollow, rectangular waveguide is described which permits a decrease in the "a" or "b" dimension in going around the bend. In the practice of the method, part of one wall of the waveguide is deformed by a die to cause the wall portion to be sheared from the adjacent walls and pressed into the waveguide. The portions of the waveguide walls extending outside the deformed wall are cut away. Triangular segments are removed from the waveguide to form the guide into three sections. The three sections are then folded together to make the bend.

3,672,203
TOOTH FORMING TOOL

Marvin R. Anderson, 17 Deeplands South, Grosse Pointe Shores, Mich.

Filed Feb. 8, 1971, Ser. No. 113,227
Int. Cl. B21h 5/02
U.S. Cl. 72—469 12 Claims

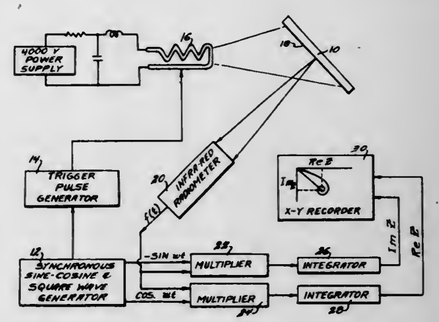


A tool for pressure forming teeth on the periphery of a cylindrical workpiece comprising a body having a leading end and a trailing end with a front portion extending rearwardly from the leading end and a rear portion extending from the front portion to the trailing end. A plurality of identical teeth are provided on the rear portion, each of which has a configuration fully conjugate to the configuration of the teeth to be formed on the workpiece. A plurality of teeth are formed on the front portion, the tips of which are spaced from the plane of the tips of the teeth of the rear portion at progressively increasing distances from the juncture of the front and rear portions to the leading end. Each tooth on the front portion is congruent with the teeth on the rear portion from the tips of the teeth of the rear portion toward the root thereof for a distance corresponding to the height of the respective front tooth. In one arrangement, the front teeth are each inclined with respect to the rear teeth and are otherwise of identical size to the rear teeth. In another arrangement, the body has a root line common to both the front and rear portions, and the front teeth are each of progressively decreasing height above the root line from the juncture of the front and rear portions to the leading end of the body.

3,672,204
TRANSIENT THERMAL METHOD AND MEANS FOR NONDESTRUCTIVELY TESTING A SAMPLE

Donald R. Green, Richland, Wash., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed April 8, 1970, Ser. No. 26,569
Int. Cl. G01n 25/00
U.S. Cl. 73—15 R 23 Claims

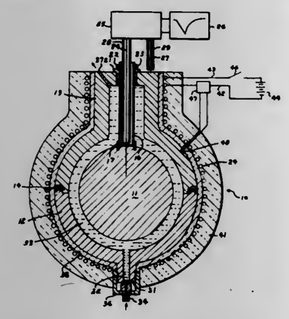


A sample is nondestructively tested by generating and transmitting a transient-function heat flux into a surface of the sample and measuring responsive to the heat flux the surface thermal impedance of the sample at the area thereof in contact with heat flux.

3,672,205
DETERMINATION OF HEAT TRANSFER THROUGH FLUIDS

Wolfgang Leidenfrost, West Lafayette, Ind., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 14, 1970, Ser. No. 97,597
Int. Cl. G01n 25/18
U.S. Cl. 73—15 A 10 Claims

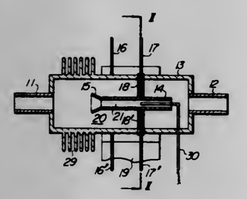


A method is provided for determining the heat transfer properties of a fluid which comprises filling the space between two concentric geometrically similar objects with the fluid to be tested, the objects being in a state of thermal equilibrium; changing the temperature of the outer of the two concentric bodies; measuring the capacitance between the bodies as the temperature of the outer body changes; and measuring the time required for the capacitance measurement to reach a constant value, thereby indicating that the two bodies are in a new state of thermal equilibrium. One of the most important uses of the method is in controlling the quality of industrial products produced by continuous processes.

3,672,206
OXYGEN DENSITOMETER FOR LIQUID METALS

Tadashi Goto, Hitachi-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 17, 1969, Ser. No. 842,642
Claims priority, application Japan, July 24, 1968, 43/51863
Int. Cl. G01n 27/08
U.S. Cl. 73—61 7 Claims

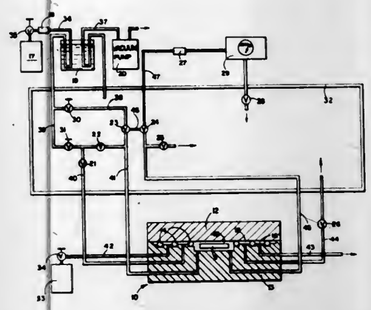


An oxygen densitometer for liquid metals employs a pair of separated passageways, each having different cross sectional areas, each passageway being located immediately adjacent with the other end and receiving a common stream of liquid metal. A pair of electrodes are disposed on each passageway so that the liquid flow on the passageway may be measured to provide an indication of the differential flow resistance between the two passageways caused by an oxides which may exist within the liquid metal. Preferably, the passageways include concentrically disposed tubes and the electrodes attached thereto provide a signal representing flow resistance differential and a thermometer attached thereto provides a signal representing the temperature of the liquid metal.

3,672,207
APPARATUS FOR VERIFYING HERMETICITY OF SMALL ELECTRONIC ASSEMBLIES

Allen R. Cramp, Laguna Beach, and Kenneth J. Brion, Fullerton, both of Calif., assignors to North American Rockwell Corportion

Filed Jan. 4, 1971, Ser. No. 103,450
Int. Cl. G01m 3/02, 3/20
U.S. Cl. 73—40.7 10 Claims

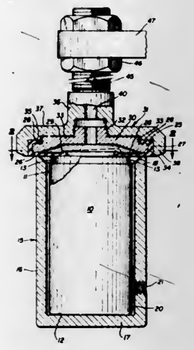


A sealed package in a test chamber is exposed to the flow of a high purity inert carrier gas at a lower than atmospheric pressure. If the sealed package leaks, the carrier gas purity level changes and is measured by a gas chromatograph detector. Buffer chambers surrounding the test chamber are continuously purged of any contaminants for preventing contamination of the test chamber from outside sources.

3,672,208
TESTING DEVICE FOR TESTING EDGES OF CYLINDERS FOR DEFECTS

Ronald A. Pearce, Lakewood, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Sept. 25, 1970, Ser. No. 75,555
Int. Cl. G01m 3/32
U.S. Cl. 73—49.2 6 Claims



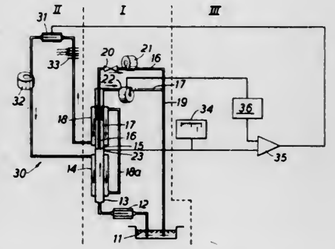
A testing device for testing edges of cylinders for defects comprising a flexible diaphragm member and a holder for said member through which compressed air is injected into a cylinder to be tested while the diaphragm is in cylinder sealing position relatively to the end of the cylinder. The cylinder is positioned in a pressure casing which provides an air chamber between the casing and the cylinder. Measurement of the air pressure in the chamber indicates whether any compressed air has leaked out of the cylinder due to defect in the cylinder.

The diaphragm-sealing member comprises a flexible bearing wall sealing the end of the cylinder to be tested, said bearing wall becoming deformed under light pressure without being compressed and avoiding defect-concealing engagement with the cylinder side walls when in sealing contact with the cylinder and edge.

3,672,209
LIQUID METAL MONITORS

Peter Francis Roach, Warrington, and Daniel Fraser Davidson, Bowdon, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 24, 1970, Ser. No. 75,157
Claims priority, application Great Britain, Oct. 7, 1969, 49,317/69
Int. Cl. G01n 11/00, 25/02
U.S. Cl. 73—61 LM 4 Claims

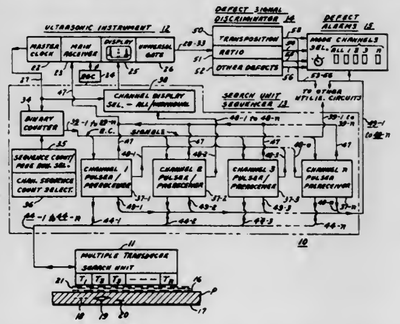


A liquid :netal monitor comprising an orifice in a liquid metal flow path which orifice can be at least partially plugged by impurity precipitated from liquid metal in the flow path, a division of the liquid metal flow at the orifice into two parts so that subsequently one of the parts passes through and the other part by-passes the orifice, characterized in that heat transfer means are provided for transferring heat energy from the liquid metal in the flow path upstream of the orifice to liquid metal in the flow path down stream of the orifice.

3,672,210
ULTRASONIC INSPECTION SYSTEM WITH SCANNED MULTIPLE TRANSDUCERS

Russell N. Cressman, Center Valley; Walter J. Bantz, and Edward M. Nusbickel, Jr., both of Allentown, all of Pa., assignors to Bethlehem Steel Corporation

Filed Nov. 20, 1969, Ser. No. 878,488
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 6 Claims

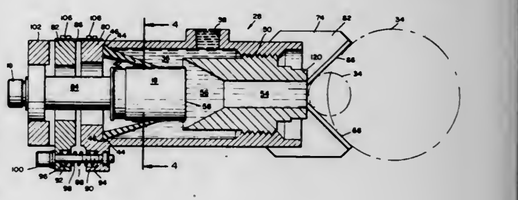


Portable ultrasonic search unit has multiple transducers, each located over an incremental surface of a metallic workpiece. Each transducer is connected to a combined pulser/prereceiver operating under control of a single gate. A binary counter, driven by a triggering pulse from a clock, issues binary coded channel selecting signals. Each control gate also functions as a decoder of these signals and enables itself unassisted by other circuitry and in sequence with the other gates, thus causing electronic scanning of the transducers. A series of pulse echo signals from each prereceiver are passed in sequence through a main receiver amplifier and on to a system of gates. These gates are synchronized by the triggering pulse and pass only preselected pulse echo signals from each prereceiver. Defect signal discriminators sample the gated pulse echo signals and simultaneously distinguish between transposition and amplitude ratio determined defects, such as laminations, and other defects. Alarms for each channel, or other utilization circuits, are selectively activated by the discriminator outputs when combined with channel selecting signals.

3,672,211
ULTRASONIC SEARCH UNIT

Gordon H. Hatch, Brookfield, Conn., assignor to Automation Industries, Inc., Century City, Calif.

Filed June 1, 1970, Ser. No. 42,076
Int. Cl. G01n 29/04
U.S. Cl. 73—71.5 6 Claims



Herein described is an ultrasonic nondestructive material tester which is useful in testing cylindrical objects, such as pipes or rods. Included in the device is a search unit, comprised of a housing which includes a pair of shoes outwardly extending therefrom, which is adapted to ride on the outside diameter of the pipe or rod. A search unit is disposed in a manner so that ultrasonic energy radiated therefrom is always normal to the outside diameter of the workpiece. A bracket is affixed to the housing and a plate is positioned parallel to the bracket and spaced therefrom. One side of the plate is coupled to the bracket by flexure. The other side of the plate is spring-coupled to the bracket. A second plate parallel to and spaced from the first plate is coupled to the first plate with a flexure on the side of the bracket ninety degrees from the first plate flexure. The second plate is spring-coupled to the first plate in a similar manner.

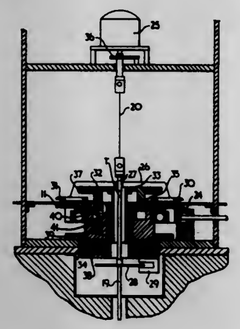
3,672,212
DEVICE FOR THE MEASUREMENT OF THE ANGLE OF ROTATION OF A ROTATABLE OBJECT

Rudolf Caspary, Hanau am Main, and Peter Kretschmer, Niederrodenbach, both of Germany, assignors to Dunlop Holdings Limited, London, England

Filed March 27, 1970, Ser. No. 23,398
Claims priority, application Germany, March 31, 1969, P 19 16 525.4
Int. Cl. G01h 3/26
U.S. Cl. 73—99 12 Claims

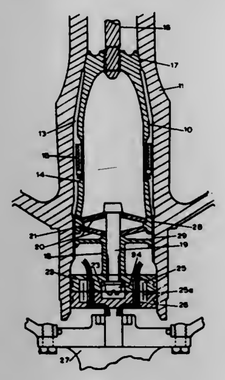
A device for the accurate measurement, despite misalignment of parts, of the angle of rotation or twist of an object capable of being rotated or twisted e.g. a test-piece in a torsion-testing apparatus. The device incorporates opposed con-

tacts normally held free of an associated annular resistor or resistors, the contacts being connected to a summing circuit



which compensates for errors arising from the angular measurement of voltage to arrive at the angle of rotation or twist.

3,672,213
TORQUE TRANSDUCERS
Kenneth Watson, Yeovil, England, assignor to Westland Aircraft Limited, Yeovil, Somerset, England
Filed Aug. 12, 1970, Ser. No. 63,074
Claims priority, application Great Britain, Aug. 22, 1969, 41,997/69
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A 6 Claims

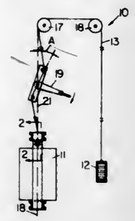


A torque transducer for insertion within a hollow shaft consisting of a tube with expansible ends and having a waisted portion along a predetermined length forming a housing for strain gauges.

The expansible ends of the tube comprise expansion bolts to give a non-slip pressure face contact with the inside face of the shaft on which torque measurements are required.

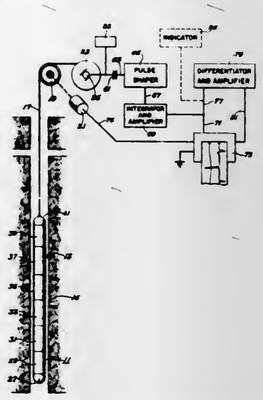
3,672,214
ROPE TENSION GAUGE FOR ELEVATOR SYSTEM
Kentaro Yasuda, Bergenfield, N.J., assignor to Otis Elevator Company, New York, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,048
Int. Cl. G01l 5/06
U.S. Cl. 73—144 1 Claim

A hoist rope tension gauge for an elevator system, including an elevator car, a counterweight, and a plurality of hoist ropes suspending said elevator car and counterweight, wherein said rope tension gauge is connected to one of said hoist ropes and is operative to measure the rope tension force in said hoist rope for comparison with the rope tension forces in the remaining hoist ropes for equalizing said forces, said rope tension gauge comprising an elongate bearing member having bearing portions disposed at opposite ends thereof for engaging opposite sides of spaced portions of said selected rope, a



torque wrench connected to said bearing member at a portion intermediate said bearing member ends for applying a torque to said bearing member for transmission to said selected rope, an angle indicator mounted on said bearing member for measuring the angle of displacement of said selected rope caused by the torque transmitted to said selected rope, and means for measuring the amount of torque applied to said selected rope by said bearing member.

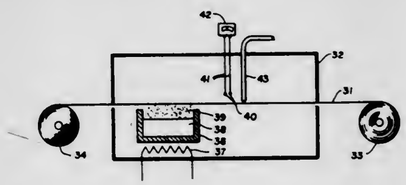
3,672,215
APPARATUS EMPLOYING DIODE JUNCTION MEANS FOR MEASURING SUBTERRANEAN TEMPERATURES
Beauford F. Stout, Grandview, and George W. Hann, Fort Worth, both of Tex., assignors to Worth Well Surveys, Inc., Fort Worth, Tex.
Filed Sept. 8, 1969, Ser. No. 855,981
Int. Cl. F21b 49/00
U.S. Cl. 73—154 4 Claims



Apparatus for measuring temperatures and temperature anomalies along the longitudinal axis of a borehole penetrating subterranean formations characterized by a temperature sensor comprising a power supply and a temperature-compensated constant current regulator connected with at least one diode junction for flowing a constant current through the diode junction, the voltage drop across the diode junction varying linearly with temperatures over the range of 60°–350° F and linearly enough to be usable to temperatures as high as 400° F. In a specific disclosed embodiment, a unijunction

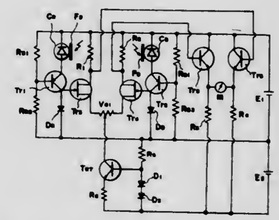
transistor generates, in response to the voltage drops across the diode junction, frequency-type signals which are sent to the surface; an integrator is provided for integrating the signals to effect an indication of temperatures; and a differentiator is provided for differentiating the output from the integrator to effect a differentiated temperature indication to delineate anomalies. The temperatures and differentiated temperature indications are ordinarily recorded with respect to depth. Specific structures of the diode junction and of the temperature-compensated constant current regulator are also disclosed.

3,672,216
MEASUREMENT OF TEMPERATURE OF A MOVING STRAND IN A VACUUM
Albin E. Schraeder, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 585,140, Oct. 7, 1966, abandoned. This application April 2, 1970, Ser. No. 25,242
Int. Cl. G01k 1/16
U.S. Cl. 73—343 R 6 Claims



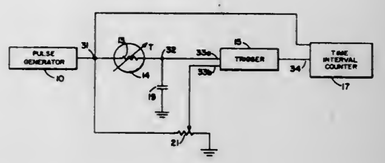
The temperature of a moving strand in a vacuum is measured by placing a thermocouple in sliding contact with the strand while supplying a gas inert to the strand to the thermocouple in the region of its contact with the strand.

3,672,217
COLOR THERMOMETER MEASURING DEVICE
Mikio Naya; Haruki Yamaguchi, and Izumi Horie, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha
Filed June 10, 1970, Ser. No. 45,125
Claims priority, application Japan, June 12, 1969, 44/46248
Int. Cl. G01j 5/30
U.S. Cl. 73—355 EM 5 Claims



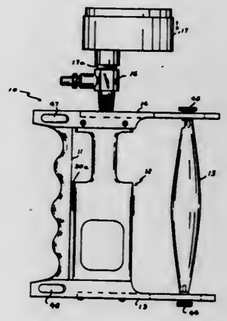
Two individual detecting circuits each of which detects a different spectral range and including a photovoltaic element and a transistor for providing an output signal proportional to the intensity of spectral energy incident on the photovoltaic element. Each output signal is modified by a diode and provided to an input of a differential amplifier composed of a pair of field effect transistors to provide an output representative of the ratio of the spectral energies. The differential amplifier output drives an indicating means to indicate the color temperature.

3,672,218
SYSTEM FOR MEASURING TEMPERATURE OF A CRYOGENIC ENVIRONMENT
Richard L. Hartman, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army
Filed Jan. 26, 1971, Ser. No. 109,876
Int. Cl. G01k 7/24, 7/34
U.S. Cl. 73—362 AR 2 Claims



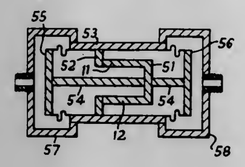
A system for measuring the temperature of a cryogenic environment including an RC circuit provided with a source of reference voltage with a resistance sensor disposed within the environment and connected to a trigger. A pulser is connected to supply the RC circuit and a temperature indicator is connected to a pulser and trigger to count the RC interval for determination of the temperature of the environment.

3,672,219
ADJUSTABLE HYDRAULIC/ELECTRIC HAND GRIP DYNAMOMETER
Robert E. Van Patten, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed Nov. 12, 1970, Ser. No. 88,760
Int. Cl. G01l 5/02
U.S. Cl. 73—379 8 Claims



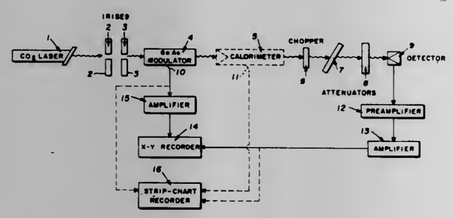
A hand-grip dynamometer having a main support element mounting front and back grip members in spaced relation on opposite sides thereof, and incorporating a hydraulic system interconnected with the front grip member and combined with a potentiometric pressure transducer for measuring a gripping force applied to the front grip member.

3,672,220
FORCE-TRANSDUCERS
Joram Agar, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England
Division of Ser. No. 637,471, May 10, 1967, Pat. No. 3,529,470. This application Feb. 12, 1970, Ser. No. 14,877
Int. Cl. G01l 13/06
U.S. Cl. 73—398 R 3 Claims



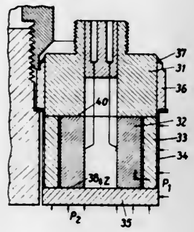
Force-measuring apparatus having a composite strut with two bars which are to be maintained in transverse vibration at a common resonance frequency by electrical feedback, the frequency of vibration indicating the force applied to the composite strut.

3,672,221
TEMPERATURE SENSOR
Raoul B. Weil, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 19, 1969, Ser. No. 886,637
Int. Cl. G01k 11/12
U.S. Cl. 73—339 R 5 Claims



The disclosure herein relates to a method for monitoring the temperature of a material transparent to a given part of the electromagnetic spectrum or of a body in good thermal contact with the material. The preferred method referenced herein utilizes laser radiation to measure variations in the index of refraction of a material with temperature variations. Alternative embodiments refer to variations in the transmission coefficient and reflection coefficient with variation in temperature.

3,672,222
INSTRUMENT LANCE FOR BASIC OXYGEN STEELMAKING FURNACE
Philip D. Stelts, Center Valley, and David W. Kern, Slatedale, both of Pa., assignors to Bethlehem Steel Corporation
Filed Dec. 16, 1970, Ser. No. 98,490
Int. Cl. G01k 1/10
U.S. Cl. 73—343 R 4 Claims



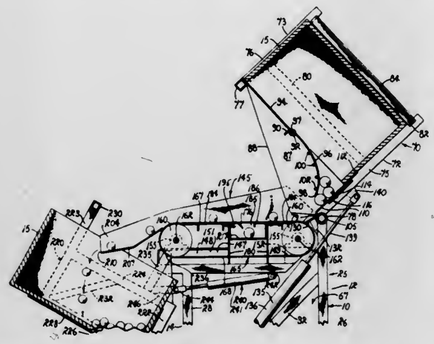
An instrument lance for introducing expendable immersion thermocouple devices into a molten steel bath contained in a basic oxygen steelmaking furnace. The instrument lance has means to introduce an inert gas and a fire retardant liquid against the outer surface of the thermocouple devices in order to prevent premature failure of the thermocouple elements as a result of the high temperature present in the heated interior of the basic oxygen steelmaking furnace.

3,672,223
PRESSURE TRANSDUCER
Gelli A. Spescha, Winterthur, Switzerland, assignor to Kistler Instrumente AG, Winterthur, Switzerland
Filed June 19, 1970, Ser. No. 47,801
Claims priority, application Switzerland, June 20, 1969, 9553/69
Int. Cl. G01l 7/08
U.S. Cl. 73—406 12 Claims

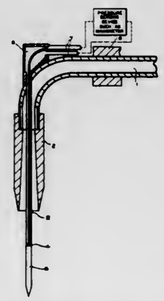
A pressure transducer employs a transducer element which is supported on the transducer casing and on a plate which serves as a pressure transmission medium and which is subjected to axial pre-stressing by the provision of an elastic tube spring, which is connected with the transducer casing and the pressure transmitting plate. The tube spring is arranged on a tubular diaphragm which seals the transducer element against the measuring pressure. A support member is also provided against which the tubular diaphragm rests in a radial direction, the support member being arranged between the diaphragm and the transducer element.

3,672,224
ARTICLE SAMPLING APPARATUS
Ralph W. Starr, P.O. Box 576, Selma, Calif.
Filed Jan. 2, 1970, Ser. No. 372
Int. Cl. G01a 1/02
U.S. Cl. 73—421 R 11 Claims

An article sampling apparatus for obtaining a random sampling of articles such as fruits, vegetables and the like from relatively large produce transporting bins providing ding an elongated frame having a bin receiving end and an opposite bin discharging end including bin elevating and dumping means disposed adjacent to said bin receiving end of the frame having an elevated position for dumping the articles in the bins onto an elongated article sampling member providing an intermittently opening article discharge slot for removing a sample of such articles therefrom prior to the discharge of the bulk of the articles from an opposite discharge end of the member and tiltable bin reloading means mounted on the discharge end of the frame for positioning empty bins in article receiving relation to the discharge end of the sampling member with the bins emptied by the elevating and dumping means being movable along the frame for engagement by said bin reloading means.

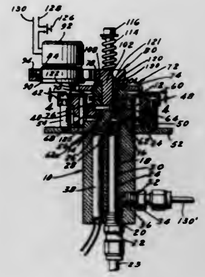


3,672,225
GAS SAMPLING
Rodney Brian Louis, Johannesburg, Republic of South Africa, assignor to African Explosives and Chemical Industries Limited
Filed Aug. 13, 1970, Ser. No. 63,528
Claims priority, application Republic of South Africa, Aug. 15, 1969, 69/5850
Int. Cl. G01l 13/00; G01n 1/22
U.S. Cl. 73—421.5 R 5 Claims



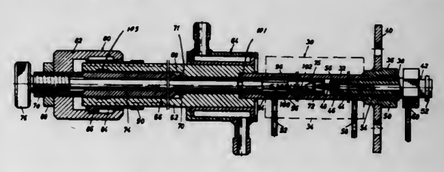
Apparatus for sampling fluid flow in a conduit comprising a sampling probe having an aerodynamically shaped nozzle and a double static tube axially located within the nozzle and extending beyond its mouth to terminate in a closed, aerodynamically contoured end, the outer wall of the extended portion of the tube being provided with first and second orifices to communicate with the bore of the tube and the annular passage of the tube remote from the extended portion operatively communicating with a pressure sensing device to sense the static pressure of the fluid flow outside the nozzle and the static pressure of the fluid flow entering the mouth of the nozzle.

3,672,226
CHROMATOGRAPH INLET WITH ROTATING SEPTUM
John D. Reid, Monrovia, Calif., assignor to Hamilton Company, Whittier, Calif.
Filed Dec. 18, 1969, Ser. No. 886,142
Int. Cl. G01n 1/00, 31/08
U.S. Cl. 73—422 GC 3 Claims



A septum inlet apparatus for chromatographs having a ported body and a septum disc carried by a rotatably mounted septum carrier driven by an electric motor through speed reduction gearing. The septum is rotatably moved a predetermined amount by operating the motor for a predetermined period of time to move a used portion of the septum out of operative position and bring into operative position an unused portion.

3,672,227
SAMPLE INJECTION ARRANGEMENT FOR AN ANALYTICAL INSTRUMENT
Peter Frank, Diasendorf/Meersburg/Bodensee; Dietrich Jentzsch, and Helmut Kurger, both of Uberlingen/Bodensee, all of Germany, assignors to Bodenseewerk Perkin-Elmer, Uberlingen/Bodensee
Filed March 13, 1970, Ser. No. 18,378
Claims priority, application Germany, April 12, 1967, B 92023
Int. Cl. G01n 1/22, 1/28
U.S. Cl. 73—422 GC 9 Claims

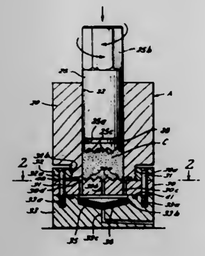


Sample injection in an analytical instrument comprises mechanically sealing a sample in a vessel, positioning the vessel within an injector of the instrument, mechanically forming an aperture in the vessel, and flowing a carrier gas through an apertured vessel.

3,672,228
METHOD AND APPARATUS FOR FORMING A SHALE CAKE AND MEASURING THE RESISTIVITY AND DENSITY THEREOF
Harold L. Overton, 5418 Whispering Creek, Houston, Tex.
Filed June 22, 1970, Ser. No. 48,095
Int. Cl. G01n 27/12
U.S. Cl. 73—432 R 7 Claims

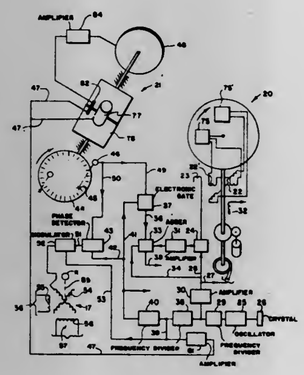
Method and apparatus for forming a shale cake of a standardized volume from random samplings of shale cuttings obtained from a well, and wherein the electrical resistivity and

density of such shale cake is measured to thereby provide dependable objective data for analysis as to various conditions in



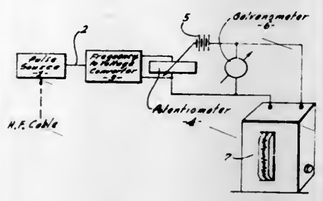
the well which indicate the presence or lack of petroleum formations and pressurized layers in the well.

3,672,229
APPARATUS FOR INDICATING ERRORS IN INCLINATION FOR INERTIAL NAVIGATION
Carl-Erik Granqvist, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden
Continuation-in-part of Ser. No. 467,182, June 11, 1965, abandoned, which is a continuation-in-part of Ser. No. 169,538, Jan. 29, 1962, abandoned. This application July 13, 1967, Ser. No. 653,075
Claims priority, application Sweden, Feb. 6, 1961, 1200/61
Int. Cl. G01p 15/14
U.S. Cl. 73—504 5 Claims



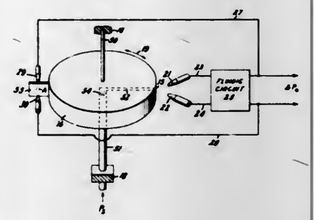
An inertial navigation and guidance system includes a gyroscope and accelerometer mounted on a platform for establishing a common normally horizontal plane. The gyroscope is precessed at a constant rate and a pulse signal is produced whose frequency varies in accordance with the deviation of the platform from the horizontal. An electronic gate compares the pulse signal with a constant frequency reference signal. A further pulse signal is produced in response to the accelerational forces acting on the accelerometer in the common plane. This latter pulse signal is applied together with the output of the gate and with a constant frequency reference signal to an adder which provides an output signal related to the acceleration of the system.

3,672,230
METHOD AND APPARATUS FOR TESTING PRODUCTION OF HIGH FREQUENCY CABLES
Wolfram Klebl, An Der Beeke, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany
Filed Jan. 12, 1970, Ser. No. 2,056
Int. Cl. G01p 3/48
U.S. Cl. 73—506 8 Claims



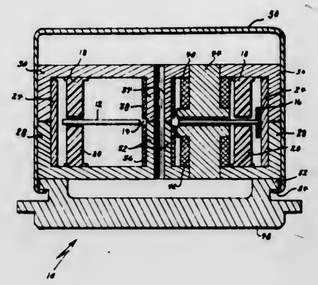
The production of HF cables is supervised by indicating speed deviations from the desired cable speed. Cable speed is represented by a pulse source providing pulses leaving frequency proportionate to cable speed, the frequency is converted into a voltage to be compared with a reference for indicator control.

3,672,231
CLOSED-LOOP FLUIDIC ANALOG ACCELEROMETER
Jeffrey N. Shinn, and Carl G. Ringwall, both of Scotia, N.Y., assignors to General Electric Company
Division of Ser. No. 642,115, May 29, 1967. This application July 18, 1969, Ser. No. 862,110
Int. Cl. G01p 15/02
U.S. Cl. 73—515 4 Claims



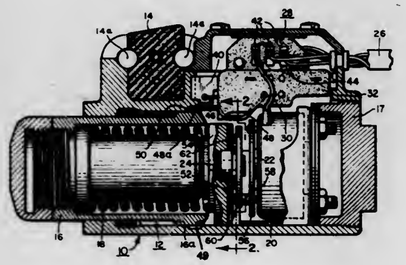
Apparatus for sensing acceleration and generating an analog-type pressurized fluid signal proportional to the magnitude of the associated event. Linear acceleration as sensed by a flexure-mounted inertial mass including a hollow, elongated spring member of the cantilever beam type having a first end rigidly fixed in position and a second unsupported end upon which the acceleration-sensitive inertial mass is mounted. The hollow portion of the spring member issues a fluid jet from the second unsupported end directed at fluid receivers, the flexure of the spring member causing distribution of the jet between the receivers in proportion to the magnitude of the acceleration. Fluid amplifier circuitry provides high gain and stabilization in the loop comprising the spring-mass device, receivers, fluid amplifier circuitry and a negative feedback circuit to obtain closed-loop null-type operation producing insensitiveness to changes in pressure of the fluid supplied to the hollow spring member. Angular motion acceleration is sensed by utilizing a cylindrical inertial mass connected along its longitudinal axis to two torsional spring members rigidly fixed in position at their far ends such that the cylindrical mass is subject to rotation in the presence of an angular motion acceleration.

3,672,232
TWO AXIS GAS BEARING ACCELEROMETER
Kurt A. Marggraf, Tonawanda, and Ernest Metzger, Eggertsville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force
Filed June 2, 1970, Ser. No. 42,647
Int. Cl. G01p 15/08
U.S. Cl. 73—516 R 1 Claim



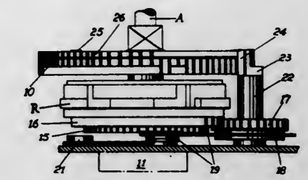
A new type of rugged two axis gas bearing accelerometer wherein the gas bearing is piezo-electrically actuated, the mass sensor is a simple flat metal washer which is suspended between two sets of piezo-electric ceramic parts, the pick off is a conventional capacitance pick off and the forcer principle is electro-dynamic.

3,672,233
ACTUATOR MECHANISM
Hans U. Hjermstad, Chicago, and Carl J. Kopp, Arlington Heights, both of Ill., assignors to C. P. Clare & Company
Filed July 6, 1970, Ser. No. 52,513
Int. Cl. G05g 17/00
U.S. Cl. 74—2 6 Claims



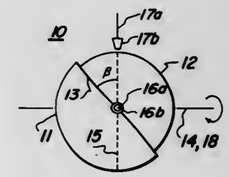
An electro-mechanical actuator comprises a housing defining a cylindrical chamber for receiving a plunger which is movable between an energy-storing, cocked position and a released position. Release is effected by momentary energization of a rotary armature of a solenoid in response to an electrical signal pulse. A latch arm of a slidable switch member is normally captivated by the plunger but is released upon its displacement thereby to permit movement of the slidable switch member. A locking means coupled to the rotary armature of the solenoid is movable on release of the plunger to captivate the latch arm until power is removed from the solenoid.

3,672,234
RAPID-RELEASE ESCAPEMENT FOR TIMING PROGRAMMERS
Renato Gazzani, Frosinone, Italy, assignor to O.M.P. Officine Meccanoplastiche Di Precisione S.R.L., Frosinone, Italy
Filed Sept. 30, 1970, Ser. No. 76,894
Claims priority, application Italy, Oct. 4, 1969, 40523 A/69
Int. Cl. G05g 21/00
U.S. Cl. 74—3.52 6 Claims



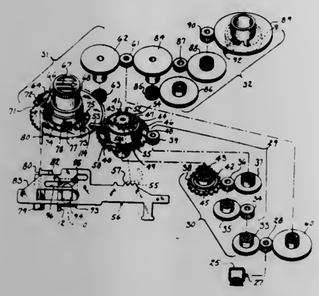
Reduction gearing driven by a motor drives a toothed transmission wheel. A toothed advancement wheel is driven by the toothed transmission wheel and is provided with an axial pin having a short longitudinal nib, and a long longitudinal nib located diametrically opposite to the short nib. An output wheel has two partial rings of teeth one of which is in driven alignment with the short nib and both of which are in driven alignment with the long nib. A dwell wheel is coaxial with and has a lost motion connection with the output wheel, and has a partial ring of teeth in driven alignment with the long nib.

3,672,235
FLUIDIC AXIS POSITION SENSOR FOR ROTATING MASS
Carl G. Ringwall, Scotia, N.Y., assignor to General Electric Company
Filed Feb. 18, 1970, Ser. No. 12,241
Int. Cl. G01c 19/28
U.S. Cl. 74—5.6 7 Claims



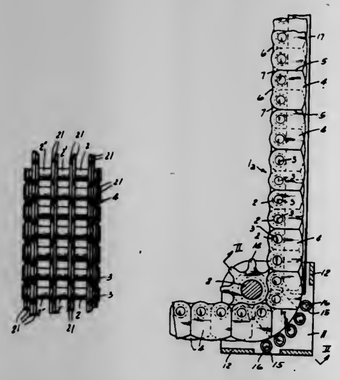
A fluidic axis position sensor is disclosed wherein the axis of rotation of a rotating mass may be determined by sensing irregularities on the surface of the rotating mass. The surface irregularities induce pressure changes in the ambient fluid which may then be sensed. The specific embodiment disclosed relates to a gyroscopic rotor formed by joining hemispheres of differing diameters. Upon rotation about an axis not having as an equator the discontinuity formed by the joint, the discontinuity induces pressure variations which are sensed by fluidic pickoffs spaced about the rotating mass. The output of each pickoff is a pulse width modulated signal whose duty cycle is used to determine the position of the axis of rotation of the mass.

3,672,236
MECHANICAL RECIPROCATOR
David G. Prosser, Mequon, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.
Division of Ser. No. 818,763, April 23, 1969, Pat. No. 3,574,330. This application Sept. 2, 1970, Ser. No. 69,058
Int. Cl. F16h 19/04
U.S. Cl. 74—32 4 Claims



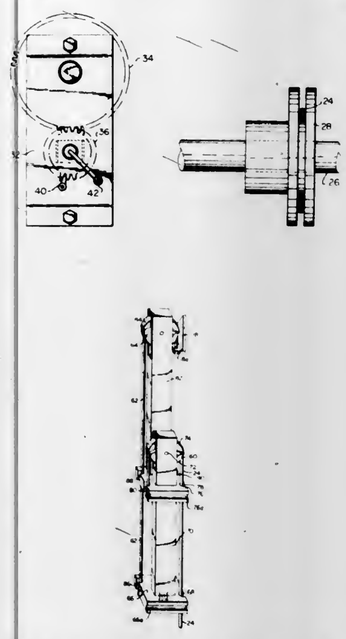
A reciprocating member is alternately engaged to be driven first in one direction by an arcuate rack and in the opposite direction by a pinion both of which are power actuated from a common source.

3,672,237
LOAD SUPPORTING CHAIN AND SPROCKET SUPPORTING STRUCTURE THEREFOR
Tony Nagin, 14016 South Indiana Avenue, Chicago, Ill.
Filed Sept. 29, 1969, Ser. No. 861,582
Int. Cl. F16h 27/02
U.S. Cl. 74—89.21 6 Claims



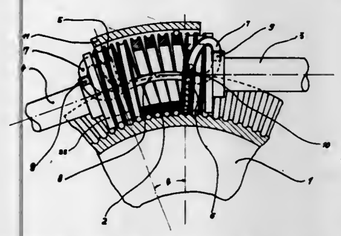
A compression chain arrangement comprising a plurality of roller chain links having connecting plates which have a configuration such that the connecting plates abut end to end when the chain is disposed along a straight line to provide a structure that is rigid in such line, but permit the chain to flex in one direction transverse to such line but not in the opposite direction, said chain being meshed with the teeth of a sprocket disposed at the side of the chain which will permit flexing of the latter about the sprocket, the outermost edges of the roller connecting plates being arcuate in shape and disposed, as they pass around the sprocket, in an arc concentric with the sprocket axis, means being disposed adjacent to and engageable with the concentrically positioned edges for guiding said plates as they pass around the sprocket.

3,672,238
EXTENDABLE AND RETRACTABLE SUPPORTS
Charles H. Young, Elkhart, and Donald L. Ray, South Bend, both of Ind., assignors to Ski-Tow Manufacturing Co., Elkhart, Ind.
Filed Feb. 18, 1970, Ser. No. 12,387
Int. Cl. F16h 27/62
U.S. Cl. 74—89.2 20 Claims



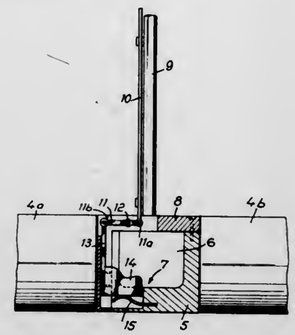
An extendable and retractable support system for raising and lowering the top of a vehicle in which telescope assemblies at the four corners are connected by cables to a winch assembly. The cables are pinned to individual guides which have slots spaced apart the thickness of the cable to provide even movement. The telescope assemblies each include rigid, internal rods with pulleys near the end having circumferentially disposed cable hoods carried by the rods above the pulleys to provide strong, but economic assemblies in which the cable will not come out of operative position.

3,672,239
WORM GEAR DRIVE
Georg Titt, D-8358 Obere Vorstadt 9, Vilshofen, Germany
Filed Dec. 21, 1970, Ser. No. 100,317
Int. Cl. F16h 1/16, 55/06, 55/22
U.S. Cl. 74—425 10 Claims



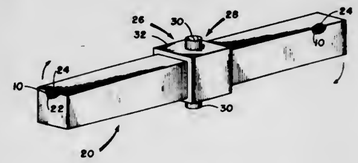
A worm gear drive in which a worm coil is curved along the periphery of a worm wheel and has convolutions formed with peripheral grooves which receive rolling bodies which mesh with teeth at the periphery of the worm wheel.

3,672,240
HAND BRAKES IN MOTOR VEHICLES
Albert A. G. Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Jan. 15, 1970, Ser. No. 3,018
Claims priority, application France, Jan. 22, 1969, 6901111
Int. Cl. G05g 1/10
U.S. Cl. 74—503 4 Claims



A device for controlling the brakes of a vehicle including a handle mounted in a housing in the dashboard such that its outer surface is flush with the dashboard when the handle is in one position of operation.

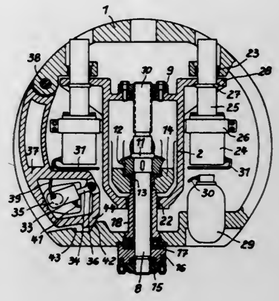
3,672,241
FILAMENT ROTOR STRUCTURES
David W. Rabenhorst, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.
Filed July 31, 1970, Ser. No. 60,047
Int. Cl. F16c 15/00
U.S. Cl. 74—572 26 Claims



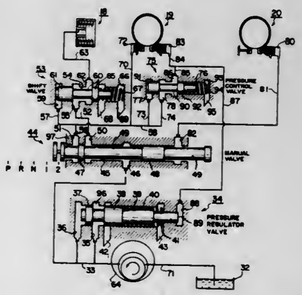
A rotational energy storage device comprising in its basic form a rotor or "flywheel" structure constructed of straight anisotropic filamentary members, the members being disposed in substantially parallel relation to the major stress component acting on the structure. Each filamentary member is essentially loaded along its longitudinal axis, thereby permitting maximum utilization of high strength-to-density uniaxial properties of the member.

3,672,242
CRANK WITH ADJUSTABLE CRANK RADIUS
Manfred Fritz, Erkrath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany
Filed June 29, 1970, Ser. No. 51,744
Claims priority, application Germany, June 28, 1961, P 19 33 008.6
Int. Cl. F16c 3/28
U.S. Cl. 74—600 8 Claims

In adjustable throw cranks, it is desirable to take up any play in the mechanical adjusting mechanism. The play is taken up using a pressure fluid thrusting device which thrusts the crank pin towards the axis of rotation of the crankshaft. This is particularly useful in flying shears where the force of the shear blade is opposed to centrifugal force.



3,672,243
FLUID PRESSURE CONTROL MECHANISM
Noboru Murakami, and Koichiro Hirozawa, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya Aichi Pref., Japan
Filed June 1, 1970, Ser. No. 42,420
Claims priority, application Japan, May 30, 1969, 44/42839; June 21, 1969, 44/49249
Int. Cl. F16h 3/74, 5/42; B60k 21/00
U.S. Cl. 74—753 4 Claims

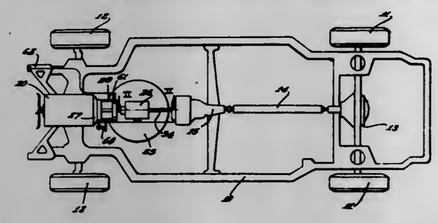


In a fluid operated speed change mechanism the hydraulic pressure from a supply source is subjected to a pressure adjustment by a suitable control valve and is selectively supplied to a fluid motor which controls the engagement of a brake band in the planetary gearing. The reaction force caused by engagement of the brake band is transmitted mechanically or fluidically to the pressure adjusting control valve in a manner to increase the fluid pressure being supplied to the fluid motor thereby increasing the braking force of the brake band to prevent undue slippage. When the brake band is not applied, no reaction force can be transmitted to the control valve and the control valve will function in the normal manner.

3,672,244
FLYWHEEL AUTOMOTIVE VEHICLE
Algirdas L. Nasvytis, 10823 Magnolia Drive, Cleveland, Ohio
Filed April 8, 1970, Ser. No. 26,713
Int. Cl. B60k 21/00; F16h 3/74
U.S. Cl. 74—859 5 Claims

An automotive system employing a high velocity, moderate mass flywheel capable of storing and rapidly dissipating large

supplies of kinetic energy coupled with a transmission adapted to permit the smooth release of stored kinetic energy from the flywheel to the vehicle wheels, and a charging means for supplying kinetic energy to the flywheel at relatively low energy levels. The system provides substantial fuel economy and pollution relief through an efficient energy-conversion system.



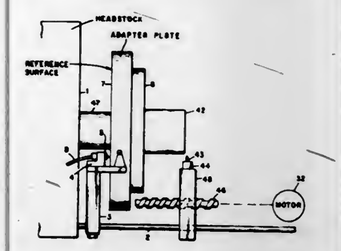
3,672,245
WRENCH
Charles F. Hoffman, 11850 Mayfield Road, Chardon, Ohio
Filed March 15, 1971, Ser. No. 124,071
Int. Cl. B25b 7/12, 7/04
U.S. Cl. 81—367 2 Claims



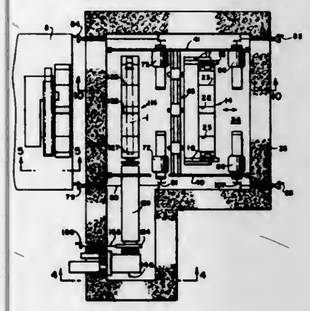
Pliers for positively gripping a selected work piece between substantially parallel gripping jaw surfaces, one of which is carried by a fixed handle, the other of which is carried by a pivoted toggle member mounted on an extension of the fixed handle for pivotal movement and adjustment toward and away from the jaw on the fixed handle, a handle pivotally connected to the toggle member and tensioning means connecting said handles and adjustment means on the fixed handle and having pivotal connection with the pivoted handle whereby the gripping effort on a selected work piece may be adjusted to secure a strong positive grip thereon without causing damage to the work piece.

3,672,246
AUTOMATIC SPINDLE GROWTH COMPENSATION SYSTEM
Hubert P. Prewett, Jr., and Charles H. Thompson, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed April 20, 1970, Ser. No. 29,925
Int. Cl. G05d 23/275; B23b 23/06
U.S. Cl. 82—2 B 5 Claims

A numerically controlled lathe is provided with a spindle growth compensator which continuously monitors the spindle growth using a displacement sensing device with a linear electrical output signal. The signal is them modified and used in the numerically controlled machine tool control unit to offset the programmed carriage position, thereby continuously compensating for spindle growth.

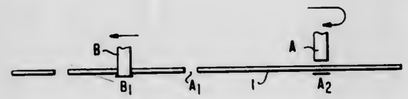


3,672,247
APPARATUS AND METHOD FOR PROCESSING SPENT NUCLEAR FUEL ELEMENTS
Guy H. Cherel, Bougival, France, assignor to Saint-Gobain Techniques Nouvelles, Courbevoie, France
Filed June 19, 1968, Ser. No. 738,336
Claims priority, application France, June 19, 1967, 67110858
Int. Cl. B26d 1/08, 1/52, 7/02
U.S. Cl. 83—35 29 Claims



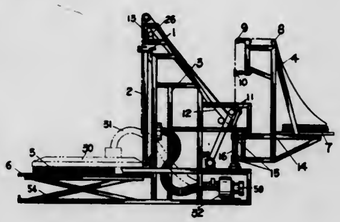
Apparatus and method for the processing of spent nuclear elements preparatory to reconditioning the nuclear fuel thereof. Each element is, in turn, elevated on a truck moving along an inclined track, from a storage chamber to an enclosure wherein it is automatically transferred to a crane supported for movement horizontally in a direction normal to the length dimension of the element. Moving with the crane, the element is transported to and between two spaced sawing or abrasive cutting devices where its inert ends are cut off and collected. The element, sans ends, continues movement on and with the crane, to a table on which it is deposited. The crane returns to initial position. Mechanism incorporated in the table translates the element in the direction of its length to a shear wherein it is cut into fragments of relatively short length. The fragments are accumulated into batches and each batch is released in turn, for gravity drop into a tank of solvent for the nuclear fuel. A number of such tanks are provided and mechanism enables each batch to be directed, as desired, into a selected one of the tanks. All operating parts are completely shielded and controlled from remote stations exteriorly of the shielded enclosure. The invention eliminates a number of apparatuses, including panniers, necessary with prior art devices of like purpose.

3,672,248
METHOD OF CONTINUOUSLY PERFORATING A WEB AND APPARATUS FOR THE SAME
Kimiaki Tsujimura, and Toslo Moriya, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed April 9, 1970, Ser. No. 26,996
Claims priority, application Japan, April 19, 1969, 44/30489
Int. Cl. B26f 1/06
U.S. Cl. 83—37 3 Claims



Cutter blades are moved downwardly in individual fashion at different times in repetitive sequence to perforate the web, while at the same time the blades are moving horizontally at a speed equal to that of the moving web with the blade projecting through the web driving the same. Thus, the individual blades both perforate the web and feed the same.

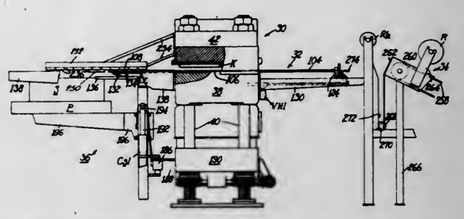
3,672,249
PROCESS AND APPARATUS FOR AUTOMATIC CUTTING AND PILING OF KNITTED FABRICS
Tadajiro Sasaki, Osaka, Japan, assignor to Kabushiki Kaisha Sasakiseisakusho, Osaka, Japan
Filed June 11, 1970, Ser. No. 45,446
Int. Cl. B65h 29/32
U.S. Cl. 83—80 5 Claims



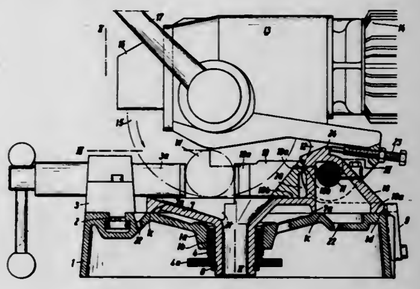
A process and apparatus for automatically cutting and piling knitted fabric comprising the steps of successively drawing a long continuous tubular knitted fabric creased in both side edges and folded in a longitudinal direction, maintaining the creased edges or moving same to the center, conveying the fabric slowly upward and forward, hanging the fabric, stopping the hanging at a predetermined length, attracting the fabric at a stop position, cutting the fabric at its top, shifting the attracted fabric to a piling stand, and piling the fabric successively after releasing it from attraction.

3,672,250
CUTTING PRESS HAVING IMPROVED MEANS FOR HANDLING CUT PRODUCT
David F. Creffield, Bristol, England, assignor to USM Corporation, Boston, Mass.
Division of Ser. No. 682,953, Nov. 14, 1967, Pat. No. 3,527,132. This application April 27, 1970, Ser. No. 48,567
Int. Cl. B65h 31/10
U.S. Cl. 83—92 5 Claims

A cutting press having a beam and a bed arranged for relative movement of approach and separation is provided with improved means for handling the cut product. The product handling means includes a product feed table and a stacking device having a vertically movable table and control means operative in response to engagement of the upper surface of the stack with sensing means adjacent the under side of the feed table to terminate upward movement of the table of the stacking device.



3,672,251
SAW
Leopold Jagers, Rudolf-Diesel-Str.-1, 535 Euskirchen/Rhineland, Germany
Continuation-in-part of Ser. No. 20,852, March 18, 1970, abandoned. This application Oct. 5, 1970, Ser. No. 77,825
Claims priority, application Germany, Oct. 7, 1969, P 19 50 512.5; March 19, 1969, P 19 13 833.1
Int. Cl. B23d 47/02, 45/04
U.S. Cl. 83—169 15 Claims

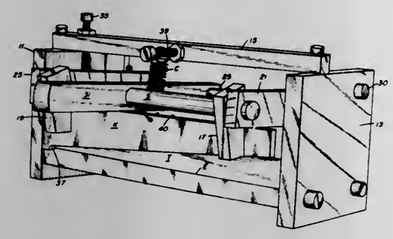


A saw comprising a base plate 1 (FIG. 1), a disc 7 rotatably mounted on the base plate; clamping means disposed over the disc 7 and comprising forward elements 3, 3*a* and a backstop element composed of arms 18*a*, 18*b* (FIG. 2), and the arcuate member 19 joining the said arms, said clamping means being disposed over the disc 7, and a saw assembly 13, 14, 15, 16, 17 pivotally mounted on the machine via pin 11 (FIG. 1). The arcuate member 19 of the backstop is in bearing relation with the mount of the saw assembly adjacent the upper level of the arcuate member 19*a*, 19*b*. To accommodate different size workpieces, an auxiliary backstop 28 (FIG. 4) is provided to permit positioning a small workpiece in a more forward position with respect to the path of the saw blade, permitting more effective operation of the saw.

3,672,252
APPARATUS FOR SEVERING A SHEET
Willard G. Symonds, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 18, 1970, Ser. No. 90,501
Int. Cl. B26d 5/10
U.S. Cl. 83—582 11 Claims

Apparatus for severing a sheet of material such as photographic film or paper, comprising a plane table having a

cutting edge; a knife movable into and out of shearing relationship with the cutting edge; a shaft supporting the knife and having a longitudinal axis spaced ahead of the cutting edge outboard thereof, the knife being pivotally movable about said axis; and levers for supporting the shaft for movement in an arc about a pivot. A spring urges the knife inwardly toward the cutting edge, and also acts to restore the knife to its initial



position after each cutting operation. Advantageously the spacing of the shaft ahead of the cutting edge is such that a first plane through the shaft axis and a line along the cutting edge forms an acute angle of 10°–15° with a second plane through said line and normal to the plane table. The principles apply to cuts straight across a sheet, and to oblique cuts (in the latter case, said line extends across a terminal point of the knife edge).

3,672,253

ELECTRONIC MUSICAL INSTRUMENT WITH EXPRESSION CONTROL DEVICE FOR SIMULTANEOUSLY CONTROLLING DIFFERENT TONE SIGNALS BY DIFFERENT AMOUNTS

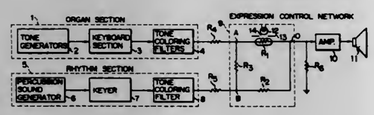
Ryu Hiyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed March 15, 1971, Ser. No. 124,027

Claims priority, application Japan, March 16, 1970, 45/24807

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.27 **5 Claims**



An electronic musical instrument includes two different music part playing sections such as an organ section and a rhythm section. The tone signal from the organ section is applied to an amplifier followed by a loudspeaker through a variable resistor for expression control, while the tone signal from the rhythm section is applied to the amplifier through a resistor having a resistance higher than the minimum resistance of the variable resistor and lower than the maximum resistance of the same. The input sides of both resistors are shunted by another resistor having a resistance comparable with the output impedance of the playing sections. When the variable resistor is operated, the rhythm section signal is subjected to volume control of a narrower range than the organ section signal.

3,672,254

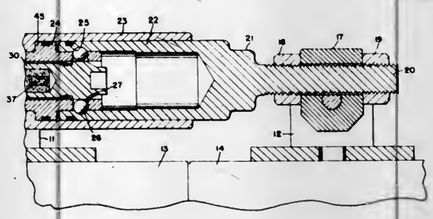
CARTRIDGE ACTUATING DEVICE

Bruce W. Travor, Holland, and Lennord L. Pitney, Levittown, both of Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed June 8, 1970, Ser. No. 44,470

Int. Cl. F42b *25/16*; B64d *1/04*

U.S. Cl. 89—1 B **2 Claims**



A cartridge actuated bomb release mechanism or assembly in which malfunctioning is eliminated with the provision of a positive disconnect between the delay element body of the cartridge and the released forward plug that initially held ball detents in a locking relationship between wall openings of the cartridge chamber and the internally grooved piston sleeve to which a hatch opening block and bracket are attached or secured.

By providing a 360° crimp in the cartridge case at the delay body peripheral groove, an O-ring positioned in the crimped area will seal the cartridge chamber and retain the delay body from interfering with release of the ball detents after initiation and forward movement of the plug member.

3,672,255

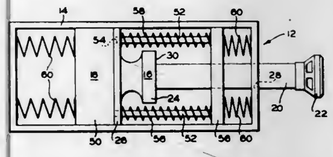
EQUAL IMPULSE FIREARM

David Findlay, and Arnold L. Fowler, both of Guilford, Conn., assignors to The United States of America as represented by the Secretary of the Army

Filed Feb. 23, 1965, Ser. No. 435,410

Int. Cl. F41f *19/14*

U.S. Cl. 89—42 R **4 Claims**



A gun including a receiver, a barrel assembly slidingly mounted in said receiver, a chamber in a barrel of said barrel assembly for receiving a cartridge with a base for discharge, a bolt slidingly mounted in said receiver for longitudinal displacement respective to said receiver and said barrel assembly and arranged to receive a rearward impulse by said cartridge when discharged, cooperating means in said cartridge and barrel assembly for imparting thereto a forward impulse equal to the rearward impulses received by said bolt through said base, and mechanical means for applying the impulses in said bolt and barrel assembly each against the other while under the urgings of such impulses to produce a zero velocity respective to each other and to said receiver, said mechanical means including a forward face on said barrel assembly, a stop plate and means for mounting said stop plate to said bolt so as to contact said forward face for stopping relative displacement between said bolt and barrel assembly responsive to discharge of the cartridge when said bolt is displaced to an open position relative to said barrel assembly.

3,672,256

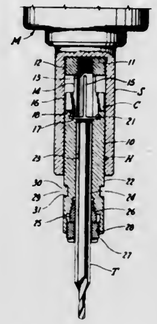
CENTRIFUGAL CHUCK DEVICE

Wojciech B. Kosmowski, Covina, Calif., assignor to Advanced Controls Corporation, Pico Rivera, Calif.

Filed Nov. 9, 1970, Ser. No. 87,992

Int. Cl. B23c *5/26*; B23b *31/04*

U.S. Cl. 90—11 A **11 Claims**



Centrifugal force responsive means for holding a tool in the bore of a spindle, in which the tool is carried by a tool holder insertable into and removable from the spindle bore, the tool holder having an inner end provided with a cavity, and a chuck being disposed in the spindle bore and having spring fingers, the ends of which engage in the cavity of the tool holder to initially hold the tool holder in the spindle, and the gripping action of the chuck fingers is increased by centrifugal force.

3,672,257

EXTENSION MEANS OF A MULTI-STAGE BOOM

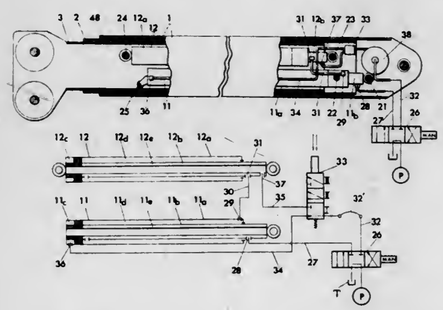
Tadao Yunoki, and Toshio Fujiyasu, both of Oh-Machi, Japan, assignors to Kabushiki Kaisha Tadano Tekkosho, Shinden-cho, Takamatsu, Kagawa Prefecture, Japan

Filed March 16, 1970, Ser. No. 19,717

Claims priority, application Japan, March 20, 1969, 44/21406; March 17, 1969, 44/20283

Int. Cl. F75b *11/18*

U.S. Cl. 91—168 **10 Claims**



A multi-stage boom having at least three telescopic sections extendible and retractable relative to one another. A first cylinder means coacts between first and second boom sections for permitting relative movement therebetween, and a second cylinder means coacts between second and third boom sections for permitting relative movement therebetween. A fluid pressure control system is connected to the cylinder means for permitting the boom sections to be sequentially automatically extended or retracted. The control system includes a switching valve which, during extension of the boom, initially supplies pressure fluid to the first cylinder means to cause extension of the second boom section. The switching valve is automatically shifted when the second boom section is fully extended to cause pressure fluid to be supplied to the second cylinder means for causing the third boom section to be automatically extended relative to the second boom section. The shifting valve functions in the reverse manner upon retraction of the boom for causing the sections thereof to automatically but sequentially retract.

3,672,258

CONTROL MECHANISM FOR ALTERNATELY APPLYING A PRESSURE MEDIUM UPON THE OPPOSITE LATERAL SIDES OF A ROTARY PISTON

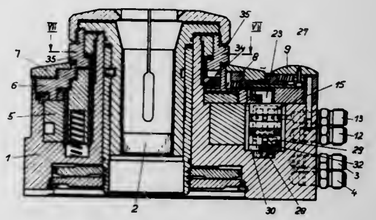
Franz Spindelberger, Zurich-Hongg, Switzerland, assignor to E. Heiss-Thurow, Zurich, Switzerland

Filed Oct. 8, 1969, Ser. No. 864,792

Claims priority, application Germany, May 13, 1969, P 19 24 402.1

Int. Cl. F15b *11/15*

U.S. Cl. 91—355 **8 Claims**



A very simple servomechanism for alternately conducting a pressure medium, for example, compressed air, to the opposite lateral sides of a rotary piston for turning this piston back and forth over specific angular distances especially for indexing purposes on a machine tool. The servomechanism consists of a valve unit which may be easily mounted in an indexing apparatus or machine tool itself and consists of simple mechanical means including a rotary servo valve.

3,672,259

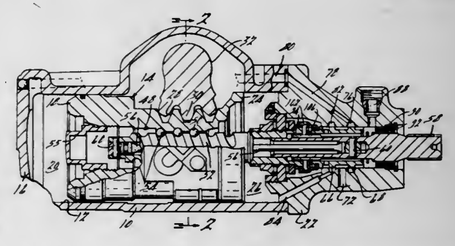
PRESSURE DISTRIBUTOR VALVE CONSTRUCTION FOR POWER STEERING GEAR MECHANISMS

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 17, 1970, Ser. No. 90,304

Int. Cl. F15b *9/10*

U.S. Cl. 91—382 **8 Claims**



A valve mechanism for controlling pressure distribution to a fluid pressure operated servo motor in a power steering gear mechanism for an automotive vehicle comprising a simplified valve spool, a driver operated steering shaft, a relatively fric-

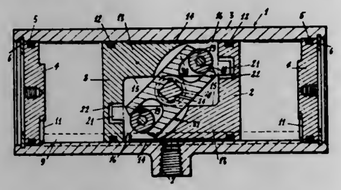
tion-free screw mechanism adapted to connect the steering shaft to driven portions of a steering system, the steering shaft including a torsion bar portion that yields upon application of steering effort to the steering shaft, a cam having a driving part connected to the steering shaft and a driven part connected to the valve spool for adjustably positioning the valve spool in response to deflection of the torsion bar portion, and a valve spring biasing the valve spool against the cam surface of said cam connection thereby establishing a zero backlash condition.

3,672,260

COMPRESSED-AIR ACTUATOR

Jean Gachot, 179 Avenue de la Division Leclerc, 95 Enghien, and Fernand Perales, 87 Avenue A. G. Belin, 95 Argenteuil, both of France

Filed Dec. 14, 1970, Ser. No. 97,928
Int. Cl. F01b 7/02
U.S. Cl. 92—69 10 Claims



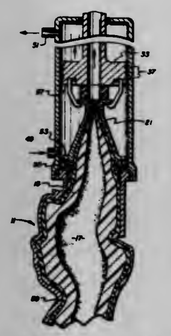
A compressed air actuator is provided which is capable of producing a limited angular displacement of an output shaft. The actuator comprises an air tight cylinder wherein two pistons are adapted to slide in opposite directions relative to each other. Each piston is integral with a slide-block which carries a roller engaging a fork of a pivotal lever mechanically coupled to the output shaft. The slide-blocks are guided by sleeves rotatably mounted on the output shaft and by an end guide flange with antifriction packings resting on the inner wall of the cylinder. Each slide-block carries an end guide lug capable of being received in a cavity of the opposite piston when the two pistons come close to each other.

3,672,261

APPARATUS FOR REMOVING FOAM BODIES FROM MOLDS

Jack H. Malek, Palos Verdes Peninsula, and Trevor Dawson, Hermosa Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 26, 1969, Ser. No. 880,315
Int. Cl. F01b 9/00
U.S. Cl. 92—137 9 Claims



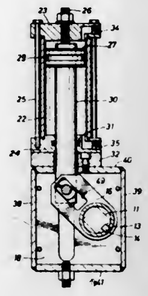
A device and method for removing foam bodies from molds which comprises an air cylinder for attachment to the mold, the air cylinder having a slidable piston therein, and clamp means associated with the piston for affixing to a portion of the mold or molded body to pull the body from the mold into the cylinder. Means is provided for communicating an inner cavity of the molded body with atmospheric pressure or vacuum, and means is provided for admitting pressurized gas to the mold to compress the foam body therein, facilitating withdrawal.

3,672,262

VALVE OPERATOR APPARATUS

Michael A. Karr, 9353 Rosstown Way, Houston, Tex.

Filed May 4, 1970, Ser. No. 34,153
Int. Cl. F01b 9/00; F16h 21/54
U.S. Cl. 92—140 3 Claims



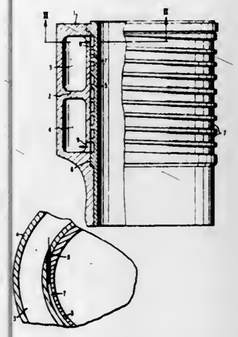
A pressure responsive valve operator which rotates a valve stem and which includes a piston connected with a piston rod. The piston rod carries a pin at its free end which is connected to a pair of yoke members on opposite sides of the piston rod. The connection is made by the use of sliding blocks in slots in the yoke members. Lateral forces on the piston rod are avoided by extending the ends of the connective pin into slots of a surrounding housing, there being sliding blocks in those slots which take up the lateral forces on the piston rod. The avoidance of lateral loading on the piston rod materially reduces the expense of the equipment in the elimination of oil seals, bearings, and the like.

3,672,263

CYLINDER BLOCK FOR LIQUID-COOLED INTERNAL COMBUSTION ENGINES WITH INSERTED CYLINDER LINER

Milorad Mirjanic, Im Vogelsang, Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed March 26, 1970, Ser. No. 22,837
Claims priority, application Germany, March 28, 1968, P 19 16 096.4
Int. Cl. F01b 31/08
U.S. Cl. 92—144 7 Claims



A cylinder block for liquid-cooled internal combustion engines which has an inserted cylinder liner whereby a possibly

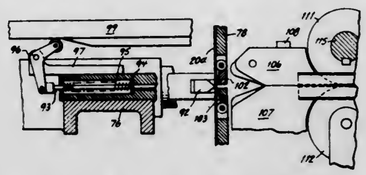
multiple grooving for the guidance of the cooling liquid is arranged in spiral shape between the outer surface of the cylinder liner and the inner surface of the cylinder block receiving the same; the grooving extends preferably with a relatively small pitch from an inlet to an outlet and extends either over the entire height of the cylinder liner or over only a part thereof.

3,672,264

POUCH FORMING MECHANISM

George M. Woodruff, Nyack; Oscar W. Stoeckli, Rye, both of N.Y., and Joseph G. Shando, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 610,367, Jan. 19, 1967, Pat. No. 3,513,618. This application March 12, 1970, Ser. No. 26,467
Int. Cl. B31b 1/28
U.S. Cl. 93—12 R 5 Claims



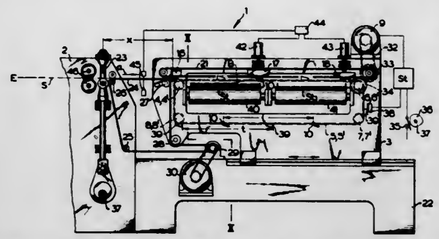
A mechanism for forming a pouch from a blank of web material includes a rectangular forming plunger provided with tucking fingers and operates to shape the blank into a pouch structure having a flat bottom and flat sides. The plunger is reciprocally driven between side edge folders and the tucking fingers form gusset flaps in the side edges of the blank during the advance of the blank to the folders.

3,672,265

APPARATUS FOR STACKING FLATTENED BAGS OF THERMOPLASTIC MATERIAL WHICH ARE MADE IN A BAG-MAKING MACHINE

August Schwarzkopf, Heinestrabe, Germany, assignor to Windmoller & Holscher, Westphalia, Munsterstrasse, Germany

Filed March 2, 1971, Ser. No. 120,161
Claims priority, application Germany, March 4, 1970, P 20 10 153.5
Int. Cl. B65h 33/00
U.S. Cl. 93—93 DP 7 Claims



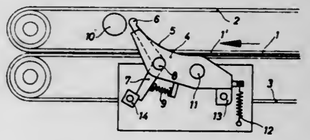
Stacking apparatus for flattened bags of thermoplastic material welded and severed from an intermittently fed two-ply web in a bag-making machine, which is comprised of a pair of conveyor chains carrying equally spaced bag-gripping bars disposed, when located in the conveying run of said chains, to be moved from a bag-receiving end of the apparatus substantially at the same level and in the same direction as the web is fed in the bag-making machine. The gripping bars are arranged to enter the conveying run successively spaced from a welding tool of the machine equal to the length or width of the bags being made so that, when the web is stationary, its leading end can be engaged by one of the gripping bars. Means are provided for closing successive gripping bars to engage the bags severed from the web. Also, means are provided for intermittently advancing the conveyor chains in sequence with the operating cycle of the bag-making machine by a distance equal to the spacing of the gripping bars along the chains. Then successive gripping bars are opened to release the bags. A stacking conveyor is disposed beneath the conveying run of the chains and receives successive bags in a superposed fashion when released by the successive gripping bars. The superposed bags are carried away by the stacking conveyor when a predetermined number of bags has been superposed to form a stack.

3,672,266

SYSTEM FOR ERECTING THE BOTTOM FLAPS OF FOLDING-BOX BLANKS

Hartmut Klapp, Tupschelde, Germany, assignor to Jagenberg-Werke AG, Duesseldorf, Germany

Filed March 10, 1971, Ser. No. 122,709
Claims priority, application Germany, April 11, 1970, P 20 17 471.4
Int. Cl. B31b 1/26
U.S. Cl. 93—49 R 6 Claims



In an apparatus for erecting the bottom flaps of folding-box blanks fed to an erecting station by a conveyor and including a pivotable erecting lever with a blank-contacting surface which causes said blank flap to be deflected relative to the balance of said blank, said erecting lever thereafter being pivoted under the force of said blank, a bell crank lever is pivoted to said erecting lever, one arm of said bell crank lever serving as a latch and locking said bell crank lever and said erecting lever against pivoting, the other arm of said bell crank lever including an abutment engaged by the leading edge of said box blank and functioning as a latch release, whereby pivoting of said erecting lever is permitted only after said blank has advanced to the location where its leading edge engages said abutment.

3,672,267

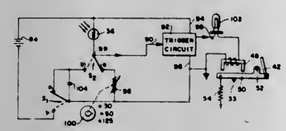
SEQUENTIAL CONTROL FOR CAMERA DIAPHRAGM AND SHUTTER

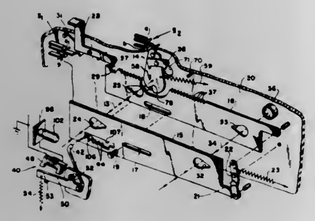
Donald M. Harvey, Webster, N.Y., and Randall T. McConaughey, Boulder, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,079
Int. Cl. G03b 7/08, 9/62
U.S. Cl. 95—10 CE 8 Claims

Exposure control apparatus comprises first and second blade members defining apertures and a photoelectric circuit that adjusts the blade members to form an exposure aperture of size according to the level of scene illumination. A photoelectric timing circuit integrates scene light with respect to time, and is actuated in response to adjustment of the blade members. The adjustment of the blade member and the initiation and termination of an exposure interval are controlled by a transducer that is actuated in response to a control signal from a trigger circuit. The transducer is adapted to adjust the blade members under the control of a voltage-dividing circuit,

and to actuate the shutter to uncover the exposure aperture simultaneously with the setting of the blade members to form the exposure aperture. The trigger circuit is then connected



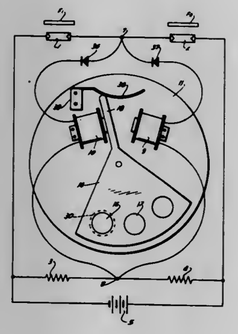


with the light-integrating circuit that controls actuation of the transducer to actuate the blade members to close the exposure aperture after the exposure interval determined by that circuit.

3,672,268
PHOTOGRAPHIC APPARATUS FOR USE IN DAYLIGHT AND ARTIFICIAL LIGHT

Josef Scheibel, Over-Morlen, and Karl-Heinz Schadt, Schwalbach, both of Germany, assignors to Niezoldi & Kramer GmbH, Munich, Germany

Filed May 15, 1969, Ser. No. 824,880
Claims priority, application Germany, May 16, 1968, P 17 72 445.7
Int. Cl. G01j 1/22
U.S. Cl. 95—10 CE 4 Claims

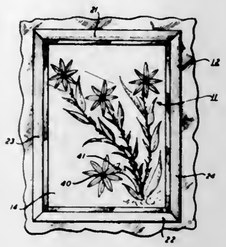


A camera wherein one or more corrective filters are moved into or from the path of incoming scene light when the spectral composition of such light matches or does not match the spectral sensitivity of film which is used in the camera. The filter or filters can be displaced by an electric circuit having one or more photosensitive resistors which can change the condition of a relay, electromagnet or transistor whereby the latter energizes one or more electromagnets which are directly or indirectly connected with the filter or filters.

3,672,269
SEQUENTIALLY OPERABLE HIDDEN CAMERA DEVICE

Phyllis Tabankin, 23 Taconic Road, Livingston, N.J.

Filed April 8, 1970, Ser. No. 26,611
Int. Cl. G03b 29/00
U.S. Cl. 95—11 4 Claims

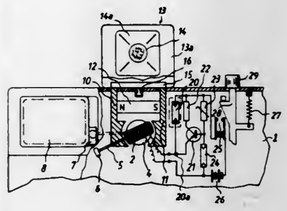


A sequentially operable hidden camera device, enclosing a camera therein with means to conceal the presence of the camera from the view of intruders, and which will trigger the camera by connection to an intruder detection system, to cause the camera to take a series of pictures of the intruder for identification purposes, and to deter the intruder by flashes connected with the operation thereof.

3,672,270
PHOTOGRAPHIC APPARATUS WITH BUILT-IN ELECTRICAL MOVING-COIL MEASURING INSTRUMENT

Karl Wagner, Ottobrunn, and Josef Ganser, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 26, 1971, Ser. No. 109,812
Claims priority, application Germany, Jan. 30, 1970, P 20 04 261.9
Int. Cl. G03b 17/18, 17/20, 15/03
U.S. Cl. 95—11 L 13 Claims

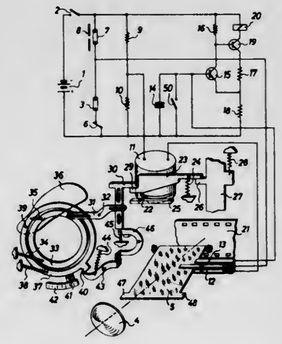


A photographic camera with a built-in exposure control assembly which utilizes a moving-coil electrical measuring instrument with a permanent magnet located without the coil. The measuring instrument is provided with two conductors consisting of magnetically conductive material and having pole shoes flanking the coil, median portions abutting against the poles of the permanent magnet and outer end portions which are accessible from without the housing of the camera and can attract a magnetically conductive yoke forming part of a flash unit or another camera accessory which is to be separably attached to the camera housing in a selected position. The coil has a pointer which is provided with a flag movable into and out of registry with a window in the view finder of the camera. The permanent magnet can influence the coil in such a way that the flag appears behind the window only when the yoke of the accessory is attracted by the outer end portions of the conductors. Alternatively, the coil can be influenced by the permanent magnet in such a way that the flag moves behind the window not only when the yoke abuts against the outer end portions of the conductors but also when the intensity of scene light decreases below a certain minimum value which is indicative that the camera cannot make satisfactory exposures at the prevailing scene brightness.

3,672,271
AUTOMATIC EXPOSURE CONTROL FOR PHOTOGRAPHIC APPARATUS

Karl Wagner, Ottobrunn, and Klaus Nicolay, Gruenwald, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 7, 1970, Ser. No. 62,035
Claims priority, application Germany, Aug. 20, 1969, P 19 42 285.6
Int. Cl. G03b 7/14
U.S. Cl. 95—10 CT 13 Claims

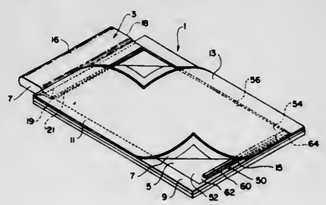


A moving-coil instrument having a pointer is connected diagonally of an electrical bridge of which two arms are photoconductors and respectively exposed to direct scene light and to scene light passing through the camera objective. The two photoconductors generate signals in response to the different light intensities, the moving-coil instrument operatively taking a position which is a function of the difference of the two signals to adjust the diaphragm opening during exposure while the photoconductor which receives direct scene light is switched into a time delay control circuit which determines the time of exposure.

3,672,272
PHOTOGRAPHIC FILM UNIT

Harold E. Cole, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1970, Ser. No. 43,322
Int. Cl. G03b 17/50
U.S. Cl. 95—13 10 Claims

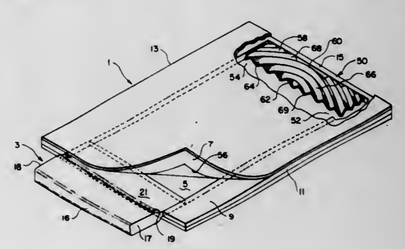


A self-processing photographic film unit including a fluid flow-controlling mechanism and trap for diverting processing fluid from the center toward the corners of the unit and for collecting any excess processing fluid at the corners. The mechanism and trap are best adapted for use in composite or integral film units and are permanently locatable entirely within the borders of the unit, making unnecessary their separation from the unit after processing.

3,672,273
PHOTOGRAPHIC FILM UNIT

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1970, Ser. No. 43,323
Int. Cl. G03b 17/50
U.S. Cl. 95—13 9 Claims

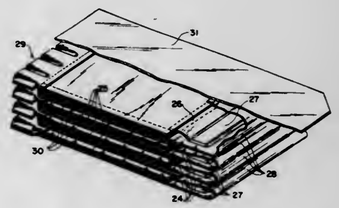


A self-processing photographic film unit which includes a fluid flow-controlling mechanism and trap for diverting processing fluid from the center toward the corners of the unit while collecting any excess processing fluid at both the center and the corners. The mechanism and trap are best adapted for use in composite or integral film units and are permanently locatable entirely within the borders of the unit making unnecessary their separation from the unit after use. The trap may be formed by a porous material, a plurality of ridges, or corrugations.

3,672,274
ASSEMBLAGE AND PACK FOR SELF-PROCESSING FILM UNITS

William P. Ewald; Hubert Nerwin, and Donald M. Harvey, all of 901 Elmgrove Road, Rochester, N.Y.

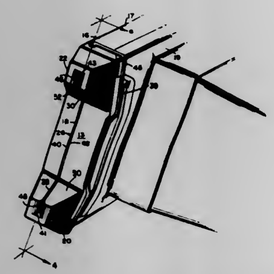
Filed Oct. 2, 1970, Ser. No. 77,502
Int. Cl. G03b 17/50
U.S. Cl. 95—13 4 Claims



An assemblage of self-processing film units and a film pack or magazine for containing such units. The assemblage includes a plurality of stacked film units each including a central portion of one thickness supporting photosensitive material, and end portion of another thickness supporting a trap or excess fluid collector, and another end portion of another thickness for supporting a rupturable pod. A reduction in the overall thickness of the stacked trap-end portions is accomplished by nesting each or most of the traps with the traps of

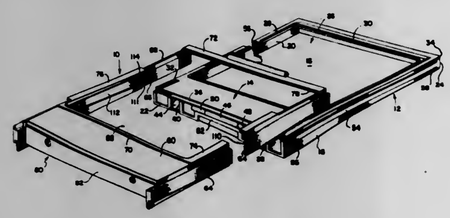
the adjacent film units in the stack. The magazine is configured and adapted to house photosensitive portions of the stacked film units in a flat condition behind an exposure aperture, while the pod and trap portions are located at the ends of the magazine, only one end of which need be thicker than the central portion to receive the thicker pods.

3,672,275
PHOTOGRAPHIC APPARATUS FOR PROCESSING FILM MATERIAL
Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 29, 1970, Ser. No. 50,381
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 17 Claims



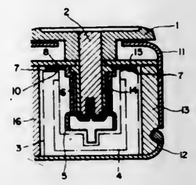
A photographic camera is provided with a narrow elongated slot in the housing wall through which film sheets are withdrawn, and includes margin guides which extend outwardly from a recessed medial portion of the exterior edges of the slot so as to guide and support the longitudinal margins of the film.

3,672,276
FILM CONTAINER
Irving Erlichman, Wayland, Mass., assignor to Polaroid, Cambridge, Mass.
Filed Feb. 24, 1970, Ser. No. 13,623
Int. Cl. G03b *19/10*
U.S. Cl. 95—19 36 Claims



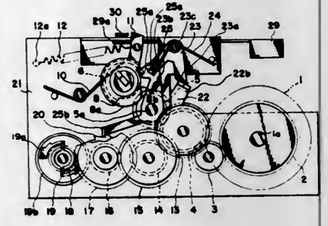
A film container designed for one-way insertion into a photographic structure having a support member especially adapted to receive the film container. The film container and support member are each provided with guide surfaces, e.g., a rail and a recess, which are adapted to mate in only one position of the film container and support member relative to each other. Upon mating, the film container is guided by these surfaces to a predetermined position within the photographic structure whereat one of the film units located within the film container is located in position for exposure. The guide surfaces restrict the path of movement of the container into the predetermined position to one which will minimize any possible damage to components of the photographic structure.

3,672,277
DEVICE FOR IDENTIFYING PHOTOGRAPHIC SIZE
Tatsuo Kobayashi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan
Filed May 26, 1970, Ser. No. 40,645
Claims priority, application Japan, June 3, 1969, 44/51627
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 R 5 Claims



A device for identifying the picture size to be taken by a camera by using a cartridge-mounted film. The device comprises a picture size identifying member operatively connected to a film winding knob of the camera, so as to rub and imprint a marking on the surface of the film cartridge in response to the rotation of the film winding knob.

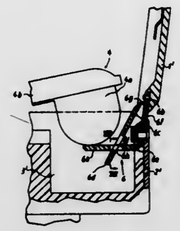
3,672,278
CONTINUOUS PHOTOGRAPHING SYSTEM IN A ROLL FILM CAMERA
Akira Yamanaka, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan
Filed June 23, 1970, Ser. No. 49,015
Claims priority, application Japan, July 2, 1969, 44/51745
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM 3 Claims



A continuous photographing system in a roll film camera in which, simultaneous with shutter release a film is automatically wound up by a single picture frame length and the shutter is charged to stop automatically, by means of a built-in driving source within the camera.

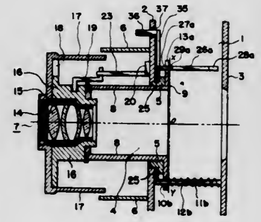
3,672,279
PHOTOGRAPHIC APPARATUS WITH EJECTOR MEANS FOR FILM-CONTAINING MAGAZINES
Hubert Hackenberg, and Reinhard Nicko, both of Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed April 27, 1971, Ser. No. 137,765
Claims priority, application Germany, April 29, 1970, P 20 21 125.0
Int. Cl. G03b *17/28*
U.S. Cl. 95—31 R 17 Claims

The body of a still camera has a chamber for a film-containing magazine and a one-piece ejector consisting of elastic synthetic plastic material. The ejector has an actuating arm which is connected to or constitutes a pivotable door serving to expose or to seal the chamber against entry of light, and an ejecting arm which brings about at least partial expulsion of a properly inserted magazine in response to movement of the actuating arm to that position which corresponds to open position of the door. A third arm of the ejector is bonded, glued or



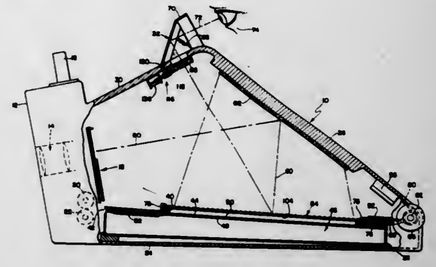
screwed to the camera body, and the three arms are integrally connected to each other by elastic hinges which constitute weakened portions of the plastic ejector. The actuating arm can be connected to the ejecting arm by coupling elements which cooperate to move the ejecting arm to operative position during a certain stage of movement of the actuating arm to that position which corresponds to open position of the door.

3,672,280
CAMERA WITH RETRACTABLE LENS BARREL
Toshinori Imura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan
Filed May 4, 1970, Ser. No. 34,126
Claims priority, application Japan, May 13, 1969, 44/43742
Int. Cl. G03b *17/04*
U.S. Cl. 95—39 3 Claims



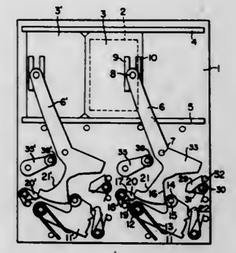
A plurality of guides 11 are mounted symmetrically about the optical axis of a camera to support a lens structure between picture taking and rest position. A spring is mounted around each guide to urge the lens barrel out from the camera casing. First interlocking members (28*a*), (28*b*) restrain the lens barrel at its rest position. Second interlocking members (27*a*), (27*b*) support the barrel at a selected picture taking position. A ring 25 is rotated to unlock the interlocking members from detents (13*a*), (13*b*) to allow the lens barrel to be moved.

3,672,281
REFLEX CAMERA
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed April 15, 1970, Ser. No. 28,567
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 37 Claims



A reflex camera having a specular reflecting surface within the optical path to the film plane. An operator mechanism positions a viewing surface closely proximate the film plane for focusing purposes. In a subsequent exposure mode configuration, the operator mechanism positions a reflective surface within the optical path in a position causing a coincidence of a focal plane with the film plane.

3,672,282
DEVICE FOR DRIVING CAMERA SHUTTER CURTAINS
Takeo Yamada, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Jan. 16, 1970, Ser. No. 3,336
Claims priority, application Japan, Jan. 30, 1969, 44/6297
Int. Cl. G03b *9/42*
U.S. Cl. 95—57 3 Claims



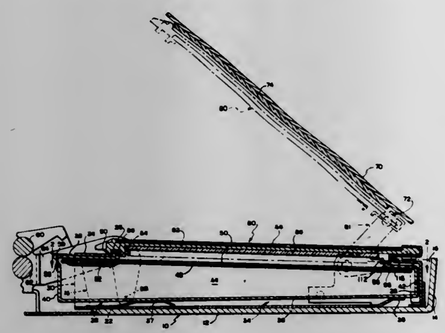
The working energy discharged by a driving spring for accelerating the shutter curtains and their associated moving members is mostly recovered by said springs during the deceleration stage for using the recovered energy for the next acceleration operation. The work required for the shutter charging is extremely reduced, while the shutter curtain travelling time is rather shortened.

3,672,283
PHOTOGRAPHIC APPARATUS
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 28,567, April 15, 1970. This application Nov. 12, 1970, Ser. No. 88,847
Int. Cl. G03b *19/02*, *19/12*
U.S. Cl. 95—11 R 6 Claims

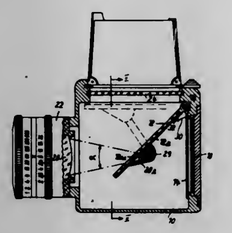
An interface between a film container and a reflecting member mounted within a camera of the single-lens reflex

type for defining a lighttight seal substantially at or closely adjacent to the exposure plane of the camera.

The camera includes a chamber for receiving a film container, a reflecting member mounted for movement between a first position in which it is located substantially parallel with and closely adjacent to the camera's exposure plane containing a photosensitive element and in which it cooperates with the film container to form a lighttight seal about the photosensitive element and a second position in which it directs an image toward the photosensitive element located in position for exposure within the film container. The lighttight seal allows access to the interior of the camera to be made without prematurely exposing one of the photosensitive elements.

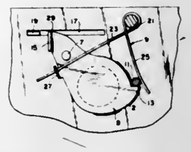


3,672,284
PHOTOGRAPHIC CAMERA
Gerhard Schwarz, Schaffhauserstrasse 12, 8 Munich, 49, Germany
Filed Aug. 4, 1970, Ser. No. 60,898
Claims priority, application Germany, Aug. 19, 1969, P 19 42 119.3
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **5 Claims**



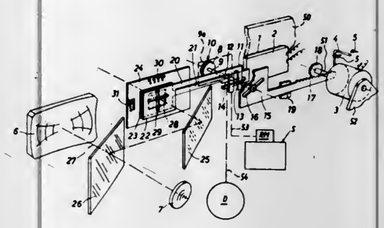
A photographic camera having a light sensitive element (e.g., a photoresistance of a photocell) for measuring the intensity of a particular beam of incoming light, such as the light coming through the photographic lens, when the construction is used with a single lens mirror reflex camera. The light sensitive element is not in the path of but is offset from the beam of light to be measured. Light from the beam to be measured is transmitted to the light sensitive element through a cable of optical fibers, the output end of the fibers being at the light sensitive element, and the input end thereof lying in the path of the beam of light to be measured, for example lying behind a partially reflecting and partially transmitting portion of the reflex mirror. When the mirror is in the viewing position, the input end of the cable or bundle of fibers receives light from the incoming beam and transmits such light to the light sensitive element. When the mirror is swung up to the picture taking position, the light transfer between the input end of the bundle of fibers and the light sensitive element is interrupted. The light sensitive element is in an electric circuit performing a metering or controlling function, and this circuit includes a switch closed to make the circuit operative when the mirror is in the viewing position, and opened to make the circuit inoperative when the mirror is swung up to the picture taking position.

3,672,285
SHUTTER MECHANISM
Jeffrey R. Stoneham, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,942
Int. Cl. G03b *9/10*
U.S. Cl. 95—59 **3 Claims**



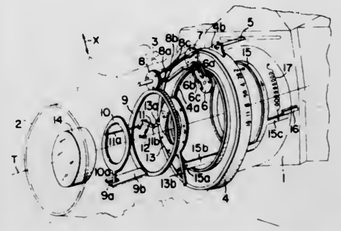
A shutter mechanism including a pivotally mounted shutter blade which is rotatable between closed and open positions, a spring arm having a fixed first end and a second end which is engageable with the shutter blade for biassing the blade to the closed position, and a tab carried by the shutter blade for engaging the spring arm between the first and second ends to stop the rotation of the shutter at the open position and to return the shutter blade to the closed position.

3,672,286
DEVICE FOR ADJUSTMENT OF SHUTTERS AND DIAPHRAGMS IN PHOTOGRAPHIC APPARATUS
Karl Wagner, Ottobrunn, and Helmut Durr, Munich, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 18, 1970, Ser. No. 73,352
Claims priority, application Germany, Sept. 19, 1969, P 19 47 428.3
Int. Cl. G03b *7/02*
U.S. Cl. 95—64 C **18 Claims**



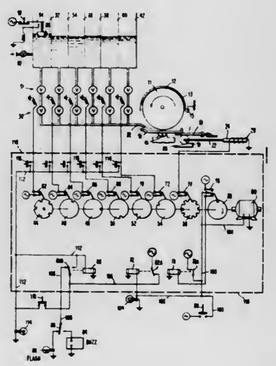
A photographic apparatus, particularly a still camera, wherein the upper right-hand corner portion of the front wall of the body supports a knob whose stem is confined to movements in a two-dimensional field. Vertical movements of the knob result in adjustments of the diaphragm, horizontal movements of the knob result in adjustments of the shutter, and movements of the knob in any other direction result in simultaneous adjustments of the shutter and diaphragm. The positions of the knob are observable in the view finder, and the knob can further rotate the moving coil instrument of an exposure meter so that the needle of the instrument moves with reference to stationary markers to indicate whether or not the selected combination of exposure time and aperture size is satisfactory for the planned exposure.

3,672,287
SHIFTABLE OBJECTIVE LENS
Takeshi Muryoi, Yokohama-shi, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,510
Claims priority, application Japan, Dec. 25, 1968, 43/94479; Dec. 25, 1968, 43/94481; Dec. 25, 1968, 43/94482
Int. Cl. G03b *5/02, 9/02*
U.S. Cl. 95—64 R **2 Claims**



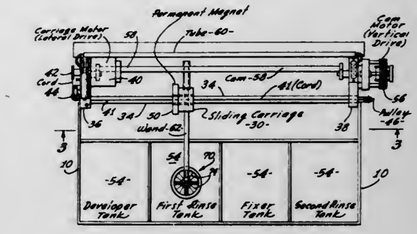
An objective lens interlocking with an exposure meter and a shutter in a camera wherein a parallel movement section including an objective lens system an aperture control ring, a diaphragm and an aperture adjusting cam member is arranged so as to move in unison in one predetermined direction in parallel with the film plane; and a rotation transmitting link mechanism is disposed between said parallel movement section and a stationary section with an aperture setting member of the objective lens so that the rotation of an aperture ring interlocked with exposure meter through an exposure meter coupling member on the aperture setting member may be transmitted to the exposure meter in all of the shifting direction. And the aperture control ring is interlocked with an automatic aperture controlling device of the camera.

3,672,288
AUTOMATED COLOR PRINT PROCESSOR
Thomas M. Deltoro, 721 East 213th Street, New York, N.Y.
Filed May 18, 1970, Ser. No. 38,318
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **9 Claims**



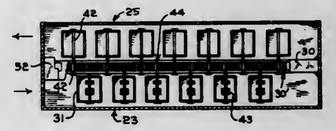
Developing and conditioning solutions, and wash water, are automatically delivered in sequence through a single supply conduit to a tray for application to an exposed photographic medium. The conduit has inlet connections arranged at spaced positions therein for the introduction of the different liquids in sequence, with an inlet opening at the extreme end opposite to the conduit outlet end for the introduction of water. The tray is automatically tilted and emptied before each introduction and use of a new liquid.

3,672,289
AUTOMATIC FILM PROCESSING APPARATUS
James W. Kelso, Pacific Palisades, Calif., assignor to Xatron Corporation, Los Angeles, Calif.
Filed Oct. 16, 1970, Ser. No. 81,202
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 D **12 Claims**



Apparatus for processing exposed film so as to develop, fix, wash and dry the film in a predetermined sequence and on a fully automatic basis. The exposed films are loaded into a carrier which is then set into the housing of the apparatus, and the films are successively dipped, or immersed, into a series of tanks within the housing by means of an elongated wand which supports the film carrier. The wand is carried on a laterally movable carriage, and a rotatable off-center cam is provided for causing the wand to move the film carrier vertically in and out of the aforesaid tanks. This dipping operation occurs at each of a plurality of predetermined lateral positions of the carriage. The tanks contain, for example, appropriate developing, rinsing and fixing solutions so as to carry out the film processing operations. The apparatus may be set to process a plurality of different types of film, each according to manufacturers' recommendations, by setting a dial on the control panel of the apparatus. The various dial settings provide pre-set timing for the various operations by the circuitry employed.

3,672,290
FILM PROCESSING APPARATUS
George W. Duesler, 221 Monticello Drive, Odessa, Tex.
Filed Oct. 13, 1969, Ser. No. 865,783
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **12 Claims**

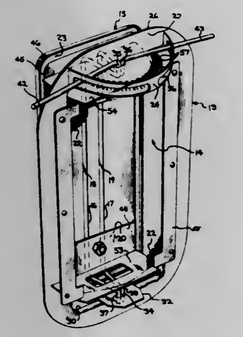


Film processing apparatus enclosed within a housing and having two spaced apart rows of treatment tanks, a light-proof room, a light trap which emits film from the light-proof room, a combination washing and re-exposure tank, and wherein each individual tank includes a temperature control and a fluid circulation means associated therewith.

A longitudinally extending gear train having shafts from ad-

jacent gears extending in opposite directions to adjacent tanks of each row thereof drives the film upwardly and downwardly through the tanks in a particular manner which prevents the emulsion side of the film from contacting a supporting surface throughout the entire process.

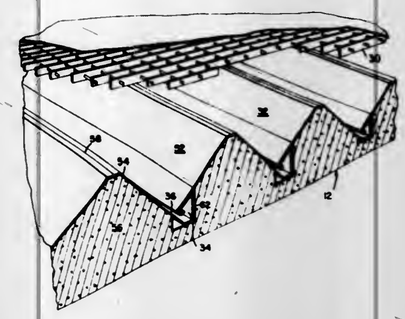
3,672,291
VENTILATOR UNIT
Anthony Kujawa, Jr., Toledo, Ohio, assignor to Production Research, Inc., Toledo, Ohio
Filed July 20, 1970, Ser. No. 56,324
Int. Cl. B60h *1/24*
U.S. Cl. 98—2.16 12 Claims



A ventilator mountable as a preassembled unit over a wall opening in a compartment such as, for example, the passenger compartment in a motor vehicle, truck cab, water craft, air craft, mobile home, truck camper, or the like, to regulate the passage or flow of air exchanged through the wall opening between the interior confines of the compartment and the ambient exterior atmosphere. The ventilator unit includes a frame member mountable around the bordering surface of the wall opening and provided with an open central section through which passage of air is regulated in selectively variable manner by a cover member which is shiftable between a closed and various selective open intake and/or exhaust positions by intercooperative means providing selectively shiftable pivot axes for opposite sides or sections of the cover member and cooperating therewith in such manner as to accommodate relatively independent raising and/or lowering of each of such opposite sides or sections of the cover member as well as relatively concurrent raising and/or lowering thereof between open and closed positions.

3,672,292
BLAST-ROOM FOR ABRASIVE BLASTING SYSTEM
Ted A. Arnold, Palo Alto, Calif., assignor to Vacu-Blast Corporation, Belmont, Calif.
Filed Sept. 22, 1970, Ser. No. 74,341
Int. Cl. B24c *9/00*
U.S. Cl. 98—33 15 Claims

A blast-room for an abrasive blasting system having a floor with closeable scavenging ducts and end or cross draft ventilation. The floor is comprised of a plurality of parallel floor members that form elongated troughs or valleys with sloped sides to trap falling abrasive and waste particles. Between each pair of adjacent floor members and extending below their lower edges is a duct member having an elongated opening which is periodically closeable by a controllable closure means such as an inflatable valve member that provides an air-tight seal. At one end of the floor the ducts have small permanent openings to permit air to enter and their other ends are connected to a suction fan capable of creating a conveying air velocity in the ducts when the closure means has closed. During operation of the blast-room the closure means remains open for a period of time while a quantity of abrasive and



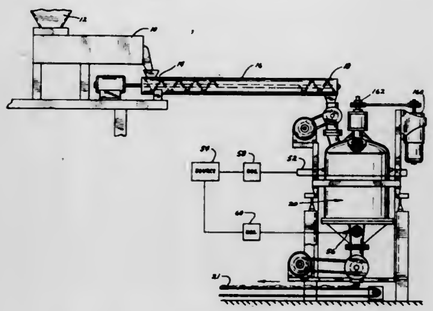
waste particles are collected in the conveying ducts, then periodically the duct closure means are closed so that the conveying air can remove the particles from the ducts.

3,672,293
REGISTERED LOUVER ASSEMBLY
Donald J. Goss, 6501 Glenallen Drive, Solon, Ohio, and Richard J. Oster, 10907 Parkhurst Drive, Cleveland, Ohio, assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed March 3, 1971, Ser. No. 120,433
Int. Cl. F24f *13/08*
U.S. Cl. 98—40 VM 9 Claims



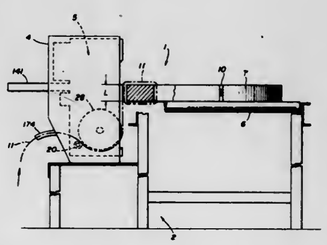
A registered louver assembly for directing air from a discharge assembly includes a front plate, a rear plate and a plurality of intermediate plates disposed between the front and rear plates. Each of the plates include a plurality of openings therein which are adapted to be aligned with openings in other of the plats so as to form a plurality of passageways through the plates. The intermediate and rear plates are movable relative to the front plate and to each other to incline the aligned passageways so as to direct air in different directions from the discharge assembly. A control rod is disposed through the plates and is operable in effect relative movement between the plates so as to incline the aligned passageways. A control wire is disposed on the front plate and the ends thereof pass through a pair of guides disposed on the rear plate. The control wire prevents skewing of the plates relative to each other by providing positive positioning of the plates in response to movement thereof by the control rod.

3,672,294
APPARATUS FOR TREATING GRANULAR MATERIAL
John O. Blixrud, St. Louis Park; Wayne I. Knigge, Bloomington; Stanley C. Rustad, Golden Valley, and Takuzo Tsuchiya, Minneapolis, all of Minn., assignors to General Mills, Inc.
Filed Feb. 22, 1971, Ser. No. 117,597
Int. Cl. A23b *9/00*
U.S. Cl. 99—237 R 20 Claims



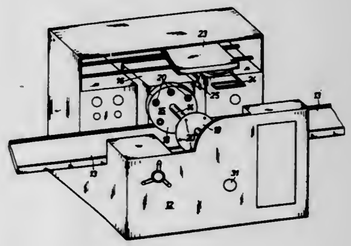
A vertically oriented pressure cooker for treating granular materials on a continuous basis. A cylindrical cooking chamber, having a flat bottom surface with a discharge opening centrally located therein, is at least partially filled with the material to be cooked, by introducing the material and pressurized steam into the top of the chamber. A vertical shaft is rotatably mounted within the chamber, and it has a pair of curved discharge arms secured to its bottom end, and a pair of leveling arms secured to it, proximate the upper part of the chamber. A cylindrical shield having a larger diameter than the diameter of the discharge opening surrounds the shaft. By rotating the shaft, a layer of material is transferred along the bottom surface of the chamber toward the discharge opening.

3,672,295
STRAPPING MACHINE
Frank C. Weller, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Aug. 13, 1970, Ser. No. 63,479
Int. Cl. B65b *13/16*
U.S. Cl. 100—4 12 Claims



A short-seat strapping machine has a strapping head including pairs of gripping jaws, sealing and shearing jaws, and gathering jaws, all aligned longitudinally of the strap, the machine having a loop-tensioning configuration wherein the gathering jaws are open and the sealing jaws are partially closed to take the place of the gathering jaws, thereby accommodating tensioning of the strap in a loop about an object wherein the portion thereof facing the head has a dimension longitudinally of the strap less than the distance between the outer ends of the gripping jaws and gathering jaws, but not less than the distance between the outer ends of the gripping jaws and shearing jaws; the gathering jaw and sealing jaws are linked together for simultaneous actuation to the loop-tensioning configuration.

3,672,296
SCREEN PRINTING MACHINE FOR PRINTING CYLINDRICAL AND CONICAL ARTICLES
Wilfried Kammann, 1 Bustedlerstrasse, Suedlengern, Germany
Filed June 5, 1969, Ser. No. 830,778
Claims priority, application Germany, June 11, 1968, K 61471; June 11, 1968, K 61472
Int. Cl. B41f *17/28, 17/20*
U.S. Cl. 101—38 A 1 Claim

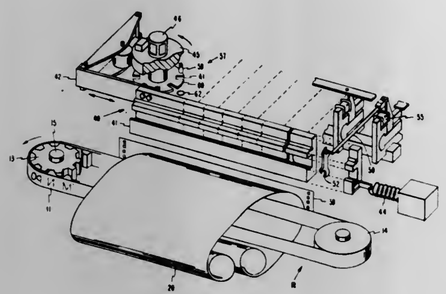


A screen printing machine for printing on cylindrical and conical articles. The machine has a reciprocating printing stencil with a fixed ductor for applying printing. There are provided holding devices for the articles means for rotating the holding devices while the articles are in contact with the printing stencil and means for adjusting the devices to bring the articles into a normal position for printing. The holding devices comprise receiving members, and a feeding device carrying the receiving members and actuated to move the articles to be printed in timed sequence. The receiving members are made of slidable material.

3,672,297
PRINTING CONTROL DEVICE IN HIGH SPEED CHAIN PRINTER WITH HAMMERS MOVABLE TO PLURAL PRINT POSITIONS
Neil C. Berglund; Robert W. King, and Kent W. Swearingen, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,190
Int. Cl. B41j *9/14, 5/30*
U.S. Cl. 101—93 C 17 Claims

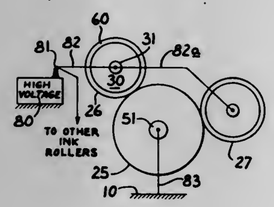
A high speed printer of the chain type in which the type characters on the chain are spaced apart a distance greater than the distance between adjacent print positions and in which the number of firing hammers is less than the number of print positions such that each hammer services several print positions. The attachment or control for the printer maintains

identity of the type character in front of a print position optioned to print by modifying a type character counter in ac-



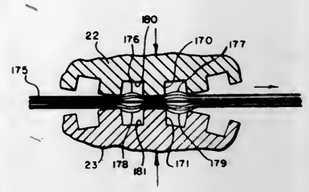
cord with scan being taken, print position and position of the firing hammers.

3,672,298
INK MIST SUPPRESSION FOR A ROTARY PRINTING PRESS
Robert B. Reif, Grove City, Ohio, assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Jan. 29, 1970, Ser. No. 6,677
Int. Cl. B41f *31/00*
U.S. Cl. 101—350 **2 Claims**



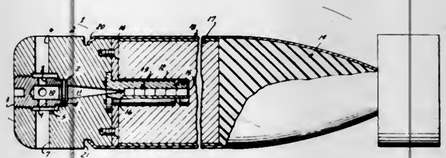
An ink mist suppressing arrangement for a printing press having a resiliently covered roller and cooperating cylinder carrying a film of ink and rotated at high speed in which the roller is insulated from the cylinder and charged with high voltage for the setting up of an electric field between the roller and cylinder for acting upon and returning ink mist particles to the film. The resilient surface layer on the roller may be formed of conventional material, for example synthetic rubber and in conventional thickness. No auxiliary wire or similar electrode, such as commonly used for establishing a corona discharge, need be employed.

3,672,299
MATCHED PLATE METHOD FOR PRINTING ON MULTIPLE PAPER PARTS
James B. Fulk, 18309 Lexington Drive, Monte Sereno, Calif.
Filed Nov. 12, 1970, Ser. No. 88,682
Int. Cl. B41f *5/04*
U.S. Cl. 101—426 **3 Claims**



The disclosure includes a method and apparatus for making graphic copies of appropriate indicia on multiple paper parts. The method and apparatus provide for passing two sets of the parts, in back-to-back relation and in unison, between exactly matching opposed embossed surfaces.

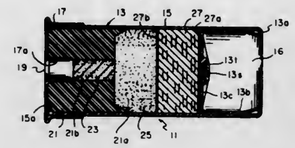
3,672,300
PRESSURE ACTUATED ACOUSTIC SIGNAL SOURCE
Carl A. Axelson, Beverly; John R. Hinves, Somerset, both of Mass., and Elton Y. McGann, Williamsburg, Va., assignors to The United States of America as represented by the Secretary of the Navy
Filed Nov. 16, 1970, Ser. No. 89,677
Int. Cl. F42b *21/00, 22/36*
U.S. Cl. 102—10 **5 Claims**



A bomb-type underwater signal source is disclosed having a detonating mechanism wherein the rupture of a shear disk assembly at a predetermined ocean depth permits the ambient hydrostatic pressure to compress the gas within a cavity and raise the temperature at one end of this cavity to a level sufficient to detonate first a confined secondary explosive positioned at this end of the cavity and then the main charge.

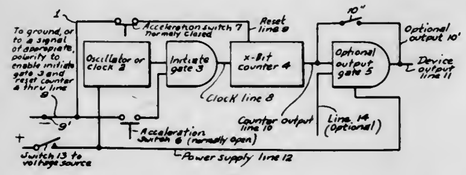
3,672,301
CARTRIDGE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Dec. 31, 1969, Ser. No. 889,616
Int. Cl. F42b *5/20*
U.S. Cl. 102—39 **8 Claims**

A blank or propellant gas cartridge having a casing of generally tubular form with a telescopically reverse in-folded star-crimp closed integral tubular end section, and within which is contained a blank propellent powder charge, with a readily rupturable low tensile strength discrete particulate mass adhesively self-bonded in a total initial restraining mass



form between the propellent powder charge and the in-folded telescoping star-crimp closed end of the casing.

3,672,302
ELECTRONIC DIGITAL ACCELEROMETER, FUZE, OR SAFETY AND ARMING MECHANISM
Donald N. Shaw, Mountain Lakes, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed April 27, 1970, Ser. No. 31,960
Int. Cl. F42c *11/06, 15/24, 15/40*
U.S. Cl. 102—70.2 R **7 Claims**

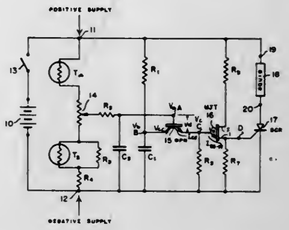


Electrical apparatus comprises an oscillator or clock to feed pulses through an initiate gate to a digital X-bit counter. The counter is normally maintained at a zero level, or empty state, in condition to receive and temporarily store a maximum number of pulses, by a normally closed switch in an input line. And, pulses normally are not fed to the counter due to an open switch in an input line to the initiate gate. Upon acceleration of the apparatus the normally open switch closes to actuate the initiate gate, and the normally closed switch opens to permit the counter to begin counting or storing pulses therein. When the number of pulses reaches a predetermined value after a predetermined time delay, the counter fires off a signal to an output line. This signal may be used directly to trigger actuation of another device or apparatus. Or, the signal may be fed into an output gate which will pass the signal to the apparatus only upon the application of another signal or pulse to the output gate.

The signal from the output line, or from the output gate, may be used to actuate explosive apparatus or to arm other devices.

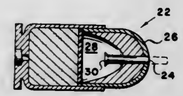
3,672,303
TEMPERATURE SENSING SQUIB FIRING DEVICE
John M. Brawn, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed May 28, 1970, Ser. No. 41,437
Int. Cl. F42c *11/06, 15/40, 19/06*
U.S. Cl. 102—70.2 R **4 Claims**

An atmospheric temperature sensing squib firing contrivance for igniting an explosive device at a specific outside temperature, comprising an atmospheric temperature sensor, a time delay safety function that prevents premature ignition, an enabling function that allows ignition when the desired input conditions are met, the ignition function, and an inside



temperature sensor that stabilizes the circuits against changing ambient temperature of the explosive device.

3,672,304
SPECIAL PURPOSE FIREARMS PROJECTILE
Patrick F. Rogers, Cupertino, and Warren L. Hendrickson, San Jose, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed March 30, 1970, Ser. No. 23,825
Int. Cl. F42b *11/02*
U.S. Cl. 102—92.3 **1 Claim**

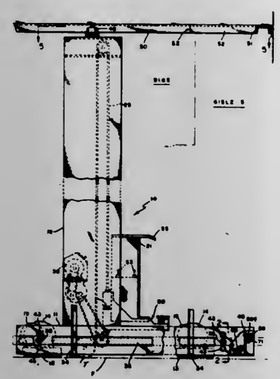


A small arms bullet with controlled flight characteristics fireable at high velocities from conventional small arms. The bullet has a projecting spike tip forming a supersonic shock wave cone. The bullet travels inside this shock wave cone and has low aerodynamic drag at supersonic velocities. The bullet is light weight and has a blunt drag face providing a high aerodynamic drag configuration for the bullet at subsonic flight velocities to rapidly decelerate the bullet after a preselected initial combat range, thereby reducing its long range danger to bystanders and property. Within the preselected combat range the shape and velocity characteristics of the bullet provide high "stopping power" yet a reduced lethality.

3,672,305
GUIDE MEANS FOR A TRAVERSING VEHICLE
Kenneth A. Richins, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio
Filed May 11, 1970, Ser. No. 36,308
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **9 Claims**

An air supported vehicle is guided by trackways at one or both sides thereof, in which the trackways contact guide rollers mounted on the vehicle. The rollers contact the trackway to prevent lateral movement while permitting variations in the vertical positioning of the vehicle by the air. Additional rollers on the vehicle may limit its vertical movement or lock it in a fixed vertical position relatively to the trackways. The vehicle may be moved away from the side trackways for guidance by other trackways and additional guides on the vehicle. The upper end of the vehicle is guided by upper trackways that are

formed to permit ready movement of the vehicle in an aisle, from one aisle to another and vertical movement of the vehicle within predetermined limits while preventing movement laterally of the vehicle during movement in an aisle.

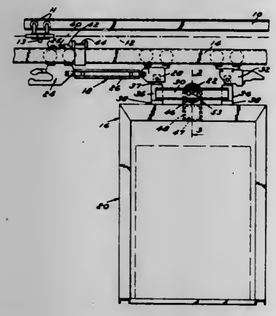


3,672,306

CONVEYOR CARRIER WITH PIVOTAL MOTION DAMPING LOAD SUSPENSION

Clarence A. Dehne, Farmington, and Harold A. Folsom, Livonia, both of Mich., assignors to Jervis B. Webb Company

Filed Nov. 10, 1970, Ser. No. 88,314
Int. Cl. B61b *3/00*
U.S. Cl. 104—89 **10 Claims**



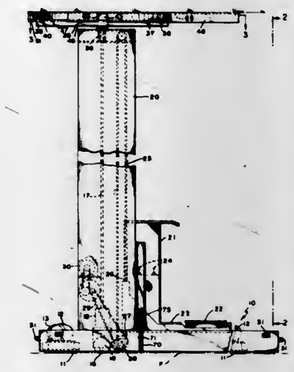
A pivotal motion damping suspension for the load carrying portion of a conveyor carrier includes a tubular bearing member secured to the load carrying portion and internally slideably engaged by a pair of bearing segments mounted on the track supported portion of the carrier. The bearing segments engage the tubular bearing member at circumferentially spaced locations thereon, and swinging motion of the load carrying portion in either direction produces an increased force normal to one of the bearing segments and an increase in the frictional resistance between such bearing segment and the tubular bearing member which brakes and dampens swinging motion.

3,672,307

VEHICLE WITH COORDINATED GUIDING AND SUPPORTING MECHANISM

Kenneth A. Richins, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed April 6, 1970, Ser. No. 25,908
Int. Cl. B61b *15/00*
U.S. Cl. 104—96 **10 Claims**



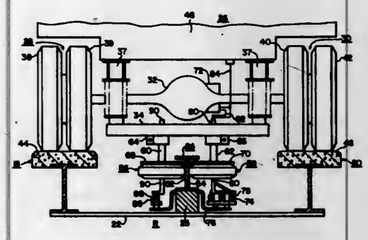
A load handling vehicle is equipped with a steering and traction wheel and an overhead guide assembly coacting with fixed overhead linear tracks. The steering and traction wheel and the guide assembly rotate together so as to guide the vehicle and support it in its movement in different paths. The overhead tracks are connected by a circular track to permit transfer of the guide assembly from one linear track to another.

3,672,308

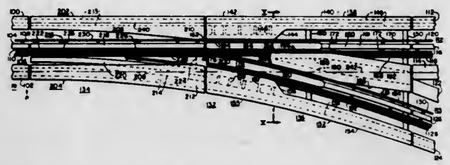
ROADWAY SWITCHING ARRANGEMENT FOR TRANSPORTATION SYSTEM HAVING CENTER GUIDERAIL BELOW TRACK LEVEL

William R. Segar, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 6, 1970, Ser. No. 87,428
Int. Cl. E01b *7/12*; B61b *13/04*; F01b *23/06*
U.S. Cl. 104—246 **9 Claims**



A switching arrangement for a transportation system employing flexible-tired self-propelled vehicles riding on roadways having laterally spaced tracks and a guide beam (guide rail) therebetween which is engaged by guide wheels carried by supports depending from the undercarriage of the vehicle.

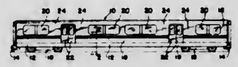


3,672,309

WELDED LIGHT ALLOY CAR CONSTRUCTION

William Van Der Sluys, Crown Point, Ind.; Thomas J. O'Neill, Evergreen Park, Ill., and Norman M. Szala, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,181
Int. Cl. B61d *17/08*
U.S. Cl. 105—401 **7 Claims**



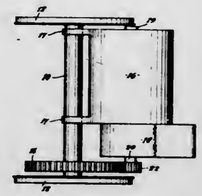
A railway passenger vehicle construction including longitudinally extending extruded wall portions having interlocking and abutting portions producing a smooth outer surface having a curvature eccentric with the curvature of the vehicle inner wall to improve the aerodynamic and structural properties of the vehicle walls. Adjacent extruded members are attached as by a weldment on their inside portions in a manner to prevent buckling and provide a finished external surface free of blemishes from weldments or other fastening means.

3,672,310

RAILWAY TRANSMISSION

John Henry Gooch, Goldsmith Cottage, Albourne, Hassocks, England

Filed Sept. 29, 1969, Ser. No. 861,711
Claims priority, application Great Britain, Oct. 16, 1968, 49,033/68
Int. Cl. B61d *9/34*, *9/48*; F16h *47/02*
U.S. Cl. 105—96.2 **5 Claims**



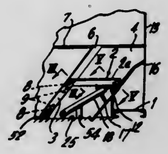
The invention provides a two speed transmission system for a diesel electric locomotive having a bogey or like live axle carrying means, a live axle journaled in said axle carrying means and connecting together a pair of driving wheels, an electrical traction motor held in spaced relation relative to said live axle by at least one steady arm pivoted on said live axle, means for supporting at least a part of the weight of said motor from said bogey and a driving unit connecting the shaft of said motor to said axle said driving unit including a disengageable positive coupling means such as a synchronous clutch in said driving connection between said motor shaft and said axle and a slip coupling such as a fluid coupling one element of which is connected to each element of said positive coupling means.

3,672,311

MOVABLE STAIR MOUNTING ARRANGEMENT FOR VEHICLES

Erwin Duba, Salzgitter-Bad, and Conrad Fischer, Salzgitter-Lebenstedt, both of Germany, assignors to Linke-Hofmann-Busch Waggon-Fahrzeug-Maschinen GmbH, Salzgitter-Watenstedt, Germany

Filed July 27, 1970, Ser. No. 58,555
Int. Cl. B61d *23/02*
U.S. Cl. 105—447 **12 Claims**



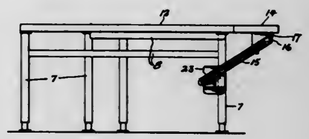
A mounting arrangement for a movable step of a multi-step entry for a vehicle, particularly for rail vehicles, includes a movable step member having a flat outwardly extending platform portion and an oblique inner end portion which rides in an oblique groove to permit the step to be shifted between an upward position at which the platform is level with the entrance way and a lower position in which it is slightly above a lower entrance step of the entry. The construction includes a mounting for a running roller which facilitates the running upward and downward movement of the guide for the step and a mounting for a support roller. The support roller is pivotally mounted on a bracket of the guide and it may be biased into engagement with the wall bounding the guide way for controlling the movement of the step. An apron is pivoted to the front end of the step platform and it includes a bracket having a roller which extends into a guideway so as to shift the apron inwardly and outwardly during the downward and upward movement of the platform. In this manner the apron closes the space between the platform and the bottom of the cut out entry of the vehicle.

3,672,312

WORK TABLE HAVING MULTIPOSITION EXTENSION BOARD

Robert F. Pettit, and James F. Wesnoskie, both of Reading, Pa., assignors to Teledyne, Inc., Los Angeles, Calif.

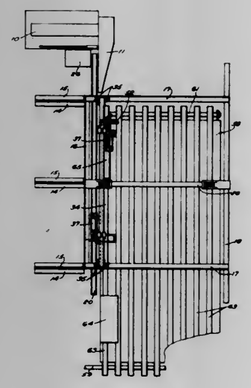
Filed Dec. 17, 1969, Ser. No. 885,801
Int. Cl. A47b *1/04*
U.S. Cl. 108—69 **5 Claims**



A work table having an extension board at an edge thereof and mounting mechanism by which the board may be positioned alternatively in any one of three positions, in one of which the board extends from the edge of the table, in another of which the board projects upwardly adjacent said edge of the

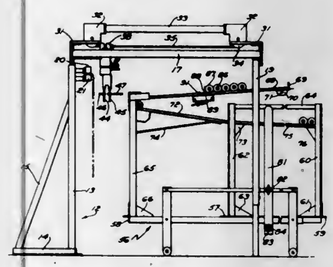
table to act as a limiting stop, and in the third of which the board is stowed beneath the table.

3,672,313
CLOTH TRANSFER DEVICE
Harry Firestein, Mamaroneck, N.Y., and Karl Tyas, Ocean Grove, Mass., assignors to Louis Hand Incorporated, Fall River, Mass.
Filed Sept. 25, 1970, Ser. No. 75,451
Int. Cl. D05b *33/02*
U.S. Cl. 112—121.15 6 Claims



In the manufacture of curtains, draperies, and similar textile items, it is often necessary to perform separate sewing operations on opposite seams of a piece of cloth. The operator turns a small hem and passes the edge of the cloth beneath the needle of a sewing machine. It may then be necessary to perform a similar operation on the opposite hem or even to attach a piece of buckram to the opposite hem. The apparatus of the present invention is designed to transfer the cloth from one operation to the next operation to minimize handling and to permit a single operator to perform the necessary sewing operations on both hems. The device grasps the length of cloth coming from the first sewing machine, turns it over to place the finished edge remotely from the line of travel and then feeds the opposite unsewed edge to a second machine which again hems the device or sews a piece of buckram thereto. Essentially, the carrying device comprises a pair of endless belts operating in contiguous relationship and driven from a common source. The endless belts are driven so that the cloth coming from the first sewing machine passes between them and is carried along the belts until a tripping bar is reached. At this point a pair of movable fingers grasp the side edges of the cloth. These fingers are mounted on a bar slidable on a frame at right angles to the movement of the cloth. The bar and fingers move at right angles along the frame and lay the cloth horizontally flat on a moving conveyor. The cloth has now been laid with the finished edge away from the original moving belts and the unfinished edge closest to them. Movement is parallel to but spaced from the original endless belts and the cloth is fed to an automatic device having an edge guider, of conventional design, which now proceeds with the second operation. A single operator is thus able to perform a sewing operation on opposite edges of the same piece of cloth without additional handling.

3,672,314
CLOTH STACKING DEVICE
Harry Firestein, Mamaroneck, N.Y., and Karl Tyas, Ocean Grove, Mass., assignors to Louis Hand Incorporated, Fall River, Mass.
Filed Sept. 18, 1970, Ser. No. 73,545
Int. Cl. D05b *33/02*
U.S. Cl. 112—121.29 7 Claims

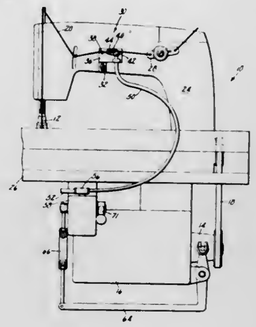


The apparatus is designed to grasp a length of cloth coming from a sewing machine and to drape it over a horizontal bar. A plurality of lengths of cloth can thus be stacked one above the other on a horizontal bar. Means are then provided for moving the bar out of position and moving an empty bar into position so that successive lengths of cloth from the sewing machine can be stacked. Essentially the carrying device comprises a pair of endless belts operating in contiguous relationship and driven from the same source. The endless belts are driven so that the cloth coming from the sewing machine passes between them and is carried along between the belts until a tripping bar is reached. At this point a pair of movable fingers grasps the side edges of the cloth and the stacking takes place. A frame is provided on which an elongated bar is slidably movable at right angles to the endless belts. The fingers which grasp each side edge of the cloth are mounted on this bar. As soon as the fingers grasp the cloth the bar moves at right angles to the belts along a frame. The bar on which the cloth is stacked is positioned in a separate frame mounted beneath the carrier frame for the bar. The bar carrying the fingers then moves over the rod mounted in the frame beneath it and carries the cloth over it. At a fixed position a switch is tripped and the fingers release the cloth so that it falls draped over the rod. The bar carrying the fingers then returns to its original position ready for the next piece of cloth issuing from the sewing machine. This is repeated until a sufficient amount of cloth is piled up or stacked on to the rod. The operator then presses a button and the rod is moved away to a remote position where it can be picked up. A fresh rod is now moved into position ready to receive the next piece of cloth.

3,672,315
AUTOMATIC ACTUATING MECHANISM
Adelbert W. Rockwell, Jr., Gloucester, Mass., assignor to USM Corporation, Boston, Mass.
Filed Aug. 3, 1970, Ser. No. 60,555
Int. Cl. D05b *69/36*
U.S. Cl. 112—219 R 2 Claims

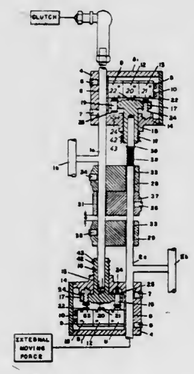
Fluidic mechanism is responsive to an event, for instance a contingency such as thread breakage in a sewing machine, to

operate a control member whereby a clutch is actuated, for instance to disconnect a drive motor from the sewing machine.



A transducer preferably in the form of a contractile bag is employed in the surveillant fluidic control circuit.

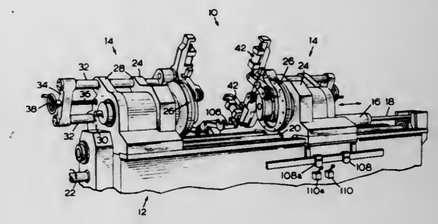
3,672,316
APPARATUS FOR JOINT CONTROL OF A CLUTCH AND ELECTRICAL SWITCHES
Ernst Becker, and Karl Notz, both of Darmstadt, Germany, assignors to Quick-Elektromotoren-Werk GmbH, Darmstadt, Germany
Filed Jan. 27, 1967, Ser. No. 612,129
Claims priority, application Germany, Jan. 28, 1966, P 15 38 049.1
Int. Cl. D05b *69/00*
U.S. Cl. 112—219 A 11 Claims



An apparatus for operating a clutch mechanism and automatically and mechanically therewith a plurality of switches for control of additional motors.

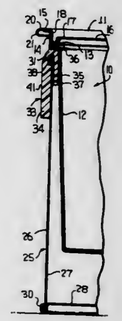
Two mechanical tie rods, one linked with its outer end to the clutch, the other operated by external power application upon its opposite outer end, engage electrical switches, which are mechanically connected with them for automatic selectively preset time-spaced motive operations of the clutch and the switches with a precalculated lost motion of the switch operations.

3,672,317
METAL SPINNING MACHINE
Roy Walker Lee Halling, Galt, Ontario, and Paul Kriisa, Willowdale, Ontario, both of Canada, assignors to Export Tool & Welding Co. Limited, Rexdale, Ontario, Canada
Filed Feb. 19, 1971, Ser. No. 116,930
Int. Cl. B21d *51/32*
U.S. Cl. 113—1 E 8 Claims



A metal spinning mechanism mountable on the bed of a spinning machine and operable for securing end caps to muffler cans and the like. The machine consists of a frame which forms a bed and a pair of rotatably driven head assemblies mounted on the bed. One of the head assemblies is slidably mounted on the bed so as to be moved towards and away from the other assembly. Each of the head assemblies includes a cam track extending in a predetermined path about the longitudinal axis of the head assembly and a pair of cam follower arms pivotally mounted on the housing. A first forming arm is pivotally mounted on one of the follower arms and a second follower arms is pivotally mounted on the second follower arm. Hydraulic drive means is provided for driving each of the forming arms towards the longitudinal axis of the spinning head so as to sequentially form the spinning metal to the required contour in use.

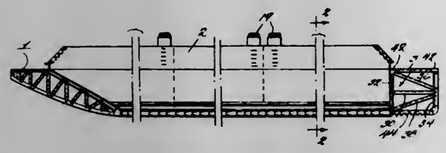
3,672,318
SUPPORT FOR HAM CANS DURING DOUBLE SEAMING
John B. Nicholson, Country Club Hills, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed May 1, 1970, Ser. No. 33,564
Int. Cl. B21d *19/00*
U.S. Cl. 113—30 15 Claims



This disclosure relates to a support for supporting ham or similar pear-shaped plastic cans during a double-seaming operation, and includes as a base thereof a standard or conventional metallic ham can body having a double seam at an uppermost end portion thereof, and a like contoured plastic rim snap-secured over the double seam, the rim including an

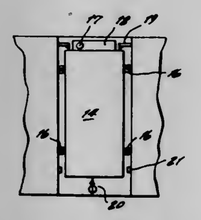
uppermost surface for supporting the plastic ham can by underlyingly engaging a flange thereof, and an outermost surface of an outermost one of a pair of legs of the rim defining a guiding surface for properly positioning the support relative to an associated end unit incident to a seaming operation.

3,672,319
LIQUID CARGO BARGE
Emile W. Platzer, P.O. Box 9788, Baytown, Tex.
Filed June 8, 1970, Ser. No. 44,524
Int. Cl. B63b *25/12*
U.S. Cl. 114—74 R 6 Claims



A double skin liquid cargo barge having a liquid cargo compartment which is semi-self-supporting, with the sides of the compartment bearing the load. The top of the compartment is supported by "skin tension" and the bottom by a combination of "skin tension," center line longitudinal supports and transverse saddles which provide predetermined support to the compartment.

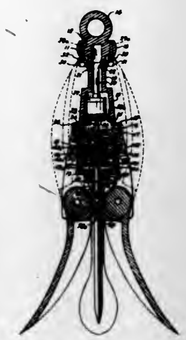
3,672,320
SHIP FOR CONTAINERIZED CARGO
Ray W. Mikk, 5-7459 13th Avenue, Burnaby, British Columbia, Canada
Filed July 27, 1970, Ser. No. 58,532
Int. Cl. B63b
U.S. Cl. 114—74 R 1 Claim



A system of loading and unloading a tanker vessel, the system including a plurality of containers each of which contains oil or other fluid, the containers being readily dropped into vertically extending chambers formed on the vessel.

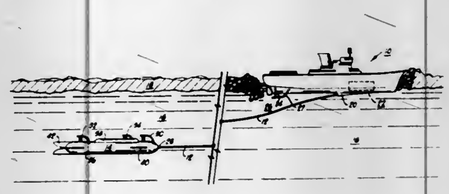
3,672,321
ANCHORS WITH POWERED, MOVABLE FLUKES
Donald F. Tuel, 10621 West 57th Terrace, Shawnee, Kans.
Filed June 1, 1970, Ser. No. 42,042
Int. Cl. B63b *21/24*
U.S. Cl. 114—208 R 8 Claims

Improved anchor constructions; anchors having each a plurality of powered movable flukes; power means for anchors with movable flukes operable to move said flukes from a fluke-stored position (where the flukes lie closely against the shank of the anchor) to an operating position with the flukes extending outwardly at substantially 90° from said shank to a collapsed or fluke-freeing position substantially 180° arcuate position away from the stowed position (whereby the flukes will have essentially no drag upon the bottom) one said power means comprising a hydraulic motor with suitable gearing to transmit power to said flukes; a second said power means comprising an electric motor with power therefrom also transmitted through suitable gearing to the flukes; a third said



power means comprising an hydraulic or pneumatic piston with the piston rod directly connected to the pivotal flukes; a next said power means comprising an electric solenoid power source driving a rod directly connected to the said pivotally movable flukes.

3,672,322
METHOD AND APPARATUS FOR TOWING A SUBMERSIBLE BARGE
Harold E. Van Der Linde, New York, N.Y., assignor to Continental Oil Company, Ponca City, Okla.
Filed May 20, 1970, Ser. No. 38,952
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B 7 Claims

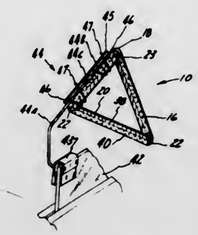


A method of and apparatus for towing a submersible barge through bodies of water having ice formation thereon. The method consists of towing a submersible barge by means of a length of cable which is drawn from a point situated at an ice-free point on the skin of a towing barge or ice breaker. Further, the submersible barge includes provision for harmless striking of objects and/or rapid response ballast control in order to hold the barge at selected, trouble-free depths when the towing ice breaker is forced to progress at uneven rates of forward motion.

3,672,323
EMERGENCY SIGN ASSEMBLY
Edward L. Hawes, 405 East Goulson, Hazel Park, Mich.
Continuation-in-part of Ser. No. 747,208, July 24, 1968, abandoned. This application Jan. 19, 1971, Ser. No. 107,721
Int. Cl. B60q
U.S. Cl. 116—28 10 Claims

A sign assembly for use with automobiles, trucks or the like to warn traffic that a vehicle ahead is disabled. The assembly includes a reflectorized, triangular sign which is collapsible for

storage and a clip and extension for fastening the sign to the upper edge of an automobile window and for positioning the

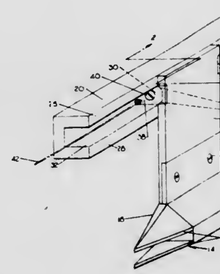


sign above the roof of the automobile so that it can be seen by approaching traffic.

ERRATUM

For Class 116—70 see:
Patent No. 3,672,325

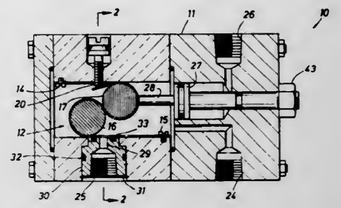
3,672,324
RELEASABLE MELTING MEANS FOR MOVABLE FLUID NOZZLE EXTENSION
Paul E. Schnedler, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio
Filed Dec. 28, 1970, Ser. No. 101,846
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 3 Claims



Fixed permanent mounting magnet having a face adapted to slidingly engage a plate of magnetic material which carries a jet nozzle extension. Releasable non-magnetic guide structure is provided to insure vertical location of the plate with respect to the magnet.

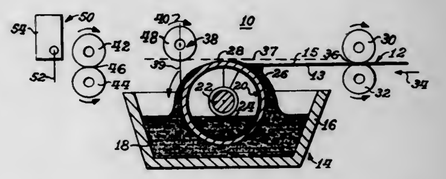
3,672,325
TRANSDUCER WITH VISIBLE OUTPUT
Robert S. Harrah, P.O. Box 14410, Houston, Tex.
Filed June 12, 1970, Ser. No. 45,624
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 20 Claims

An indicator which discloses the state of a rolamite which includes a housing, a band wound in reverse bights about a pair of rollers to form a cluster. The cluster moves between two positions in the housing. The present invention incorporates a shield on the side of the housing, the shield including a pair of openings which permit visual inspection of the position of the rolamite. Preferably, the rollers are color coded to



enhance visual inspection. A transducer means operates the rolamite.

3,672,326
METHOD AND APPARATUS FOR APPLYING LIQUID DEVELOPER TO COPY SHEETS
John J. Schulze, Prospect Heights, Ill., assignor to Addressograph-Multigraph Corporation, Mt. Prospect, Ill.
Filed Oct. 13, 1970, Ser. No. 80,381
Int. Cl. G03g *13/00*
U.S. Cl. 118—8 9 Claims

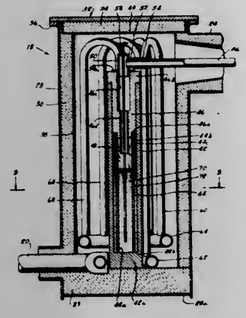


Apparatus and method for developing electrostatically imaged copy sheets by the application of a liquid developer to the imaged surface thereof includes a cylinder mounted for rotation in a predetermined direction and at a predetermined speed while being dipped into a supply of developer liquid. A copy sheet is passed over the cylinder in the direction of rotation of the latter with the imaged surface of the copy sheet in contacting relation with the liquid coated surface of the cylinder. A sensor downstream of the cylinder along the copy sheet path detects the leading edge of the copy sheet and in response thereto reverses the direction of rotation of the cylinder until such time as the trailing edge of the sheet passes the sensor. In a preferred embodiment, the cylinder includes an internal auger which stirs the supply of developer liquid during rotation of the cylinder to maintain toner particles in the developer liquid in suspension. The outer surface of the cylinder includes a plurality of glass beads, each having a diameter in the range of 0.002 to 0.010 inches for carrying a predetermined quantity of developer liquid for application to the copy sheets.

3,672,327
VAPORIZATION OF METAL FOR VACUUM METALIZING
John M. Roblin, Cleveland; Frank J. Cole, Parma, and William A. Reed, West Richfield, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Oct. 31, 1966, Ser. No. 590,921
Int. Cl. C23c *13/12*
U.S. Cl. 118—48 15 Claims

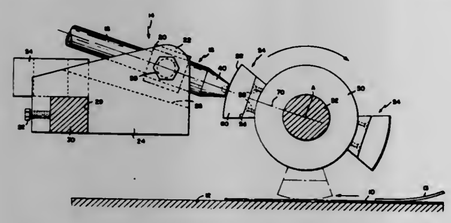
Vaporizing apparatus and method for the vaporization of metal for vacuum deposition. A relatively thin shell of liquid metal to be vaporized is provided such as through inner and outer concentric vessels which communicate with each other.

The thin shell of liquid is heated and boils and evaporates to provide metal for vaporization. The thin shell of liquid is generally formed within the space between the inner and outer concentric vessels. The space within the inner vessel contains liquid which is typically molten but substantially non-boiling.



The boiling shell of liquid fills the space between the inner and outer containers so as to provide substantially constant volume of metal for vaporization. Baffle means are provided for removing droplets of liquid normally from within the vapor.

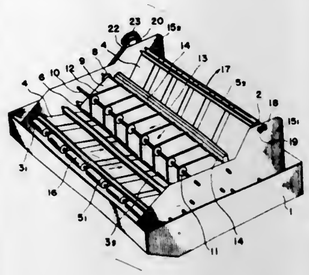
3,672,328
MEANS FOR APPLYING ADHESIVE TO PAPER BAGS OR THE LIKE
Emanuel S. Kardon, c/o American Bag & Paper Corp., Grant and Ashton, Philadelphia, Pa.
Filed Sept. 23, 1970, Ser. No. 74,665
Int. Cl. B05c *1/16*
U.S. Cl. 118—221 **7 Claims**



Means for applying adhesive to paper bags or the like in which a rotating cylinder carries an arcuate applicator member which intermittently comes into contact with a valve controlled adhesive dispenser head to receive adhesive therefrom and subsequently transfer it to a paper bag or the like moving along a conveyor bed.

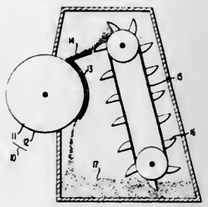
3,672,329
DEVELOPING DEVICE FOR ELECTROSTATIC DUPLICATORS
Yorio Yamanoi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 6, 1970, Ser. No. 34,994
Claims priority, application Japan, May 16, 1969, 44/45131
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **3 Claims**

A developing device comprising a continuous belt for carrying exposed photosensitive paper, an electrically conductive belt supported to be driven at the same speed in parallel spaced relationship therewith through a developing solution. A number of string-like insulating members are supported on the surface of the conductive belt facing the surface of the carrying belt. The insulating members and the conductive belt are



driven into contact with a cleaning member mounted adjacent thereto.

3,672,330
APPARATUS FOR DEVELOPING A LATENT ELECTROSTATIC IMAGE
Masamichi Sato, and Isoji Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation of Ser. No. 694,467, Dec. 29, 1967, abandoned.
This application June 4, 1970, Ser. No. 41,767
Claims priority, application Japan, Dec. 29, 1966, 42/437
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **7 Claims**

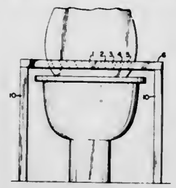


A cascade apparatus for developing a latent electrostatic image which comprises flowing a cascade developer between the upper surface of a photoconductive insulating layer containing a latent electrostatic image and a flexible developing electrode positioned so as to cover said layer by gravity and developing the latent electrostatic image while maintaining a constant and small space between said developing electrode and latent electrostatic image surface of the photoconductive insulating layer.

3,672,331
DOG TOILET
Charles Brody, and Rhoda Sharon Brody, both of 18-65 211th Street, Apt. 5C, Bayside, N.Y.
Filed March 27, 1970, Ser. No. 14,080
Int. Cl. A01k *15/00*
U.S. Cl. 119—1 **1 Claim**

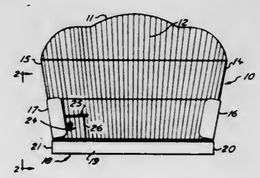
A platform with legs and a central opening may be placed over a conventional toilet bowl so that a dog or other domestic

animal can use the facility without coming in physical contact with the toilet. The central opening comprises a plurality of



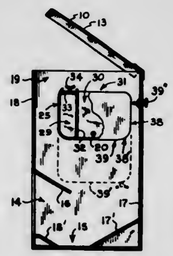
removable concentric ring shaped inserts for accomodating animals of different sizes.

3,672,332
DISPOSABLE FLOOR DISPENSER FOR BIRD CAGE
Hugh W. MacLeod, 2244 East Pender Street, and Gardner J. MacLeod, 2741 Venables Street, both of Vancouver, British Columbia, Canada
Filed Dec. 14, 1970, Ser. No. 97,650
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **10 Claims**



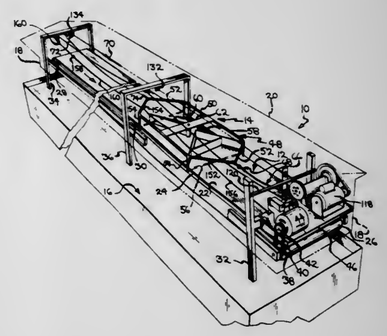
A disposable floor dispenser or accessary for fitting in a bird cage without structural modification to the cage. The dispenser has a spindle jammed between cage sidewalls to rotatably mount a roll of floor material, and a flap extending downwards and urged against the cage floor. Floor material from the roll passes between the flap and the floor, reducing inadvertent unrolling of the roll.

3,672,333
METHOD OF FEEDING AND WATERING ANIMALS
Marcus L. Bates, 6904 N. Russell Avenue, Odessa, Tex.
Continuation of Ser. No. 831,600, June 9, 1969, Pat. No. 3,581,711
Filed March 5, 1971, Ser. No. 121,474
Int. Cl. A01k *05/00*
U.S. Cl. 119—51.5 **4 Claims**



Method of automatically feeding and watering animals by the provision of apparatus having a main housing within which there is disposed a plurality of pivotally mounted upwardly opening spaced apart enclosures, with each enclosure including a food containing chamber and a water containing chamber therein. Overlying the chambers there is disposed a water conveying means comprised of individual sloped troughs, each arranged in series relationship with respect to one another, so as to intercept and convey water from a first enclosure to a last enclosure, whereupon the water fills the water chamber thereof causing the center of gravity to change. This action-forces the last enclosure to rotatably invert, thereby depositing the water and food contained therein into a food receptacle or feeding trough. Each of the enclosure means is sequentially inverted in a similar manner, thereby making food and water available to animals at predetermined intervals of time.

3,672,334
APPARATUS FOR DISTRIBUTING ANIMAL FEED
Lyle W. Scheppele, Dubuque, Iowa, assignor to Toledo Stamping & Manufacturing Co., Toledo, Ohio
Filed March 2, 1970, Ser. No. 15,782
Int. Cl. A01k *05/00*
U.S. Cl. 119—52 B **12 Claims**

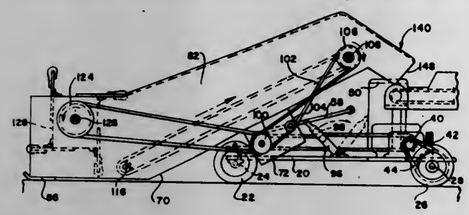


A cattle feeder is provided with an improved drive arrangement. The feeder includes a conveyor belt which carries feed and a carriage movable on the belt to discharge the feed off the sides of the belt. The improved drive arrangement for the carriage includes a sprocket at one end of the conveyor engaging a link chain connected to the carriage. Guides adjacent the sprocket maintain the chain properly oriented with respect thereto. One end of the chain is connected directly to the carriage and the other end preferably is connected to the carriage through a length of cable which extends around an idler pulley at the opposite end of the conveyor belt.

3,672,335
METHOD AND APPARATUS FOR GATHERING AND CONFINING LIVE POULTRY
Dickerson H. Sanders, 170 Stanton Way, Athens, Ga.
Filed Oct. 16, 1970, Ser. No. 81,377
Int. Cl. A01k *29/00*
U.S. Cl. 119—82 **25 Claims**

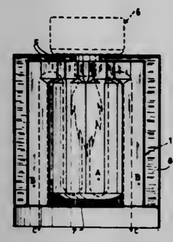
A mobile self-propelled gathering device is manually guided through an area having live birds therein. Pushing means is provided at the forward end of the gathering device and engages the birds from above and pushes the birds rearwardly onto a conveyor means which extends upwardly and rearwardly for conveying the birds away from the pushing means. The birds are discharged at the upper rear portion of the conveyor means downwardly onto a generally horizontally ex-

tending conveyor portion which in turn conveys the birds to a further conveyor portion extending to a vehicle from whence



the birds are removed from the conveyor portion and placed in suitable shipping contains on the vehicle.

3,672,336
HEAT GENERATOR OF THE SMOKE-TUBE TYPE
Giuseppe Joannes, Rivoli, Italy, assignor to Gruppo Finanziario Termico Fin-Term S.p.A, Turin, Italy
Filed May 26, 1970, Ser. No. 40,655
Claims priority, application Italy, May 26, 1969, 51998 A/69
Int. Cl. F22b 7/12
U.S. Cl. 122—149 **4 Claims**

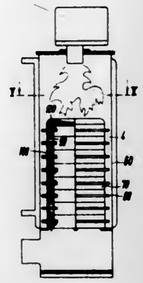


A heat generator of the smoke-tube type which includes a furnace and a plurality of smoke tubes. Both the furnace and the tubes are made of a single metal sheet which is folded. The tubes are arranged circularly around the furnace or a part of the furnace. The shape of the tubes is such that there is communication between the tubes and the furnace for reversing the flow of the smoke. The tubes are of a constant or of a variable cross section.

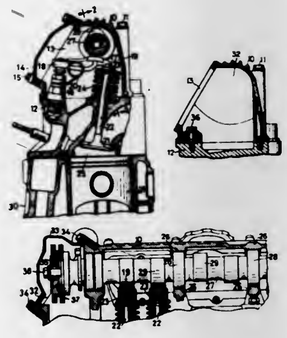
3,672,337
HEATING VESSEL
Gustav Ospelt, Vaduz, St. Johanner, and Wolfgang Kunkel, Triesen, both of Liechtenstein, assignors to Gustav Ospelt Hovalwerk AG, Vaduz, Liechtenstein
Filed July 6, 1970, Ser. No. 52,423
Int. Cl. F22b 13/02
U.S. Cl. 122—156 **2 Claims**

A furnace having a fireplace surrounded by a substantially cylindrical water boiler shell for burning of liquid or gaseous fuel by means of a burner joining a fireplace, comprising a water boiler shell, a burner disposed at one end of the water boiler shell on the end side of the latter.

At least one annular channel is provided and a hood is arranged at one ed of the furnace and feeding off flue-gases from the end of the water boiler shell disposed opposite the burner in axial direction of the furnace through the at least one channel to the other end of the furnace. At least one wall of the annular channel has a plurality of annular- or screw-like indentations and projections and at least one wall of the annular channel engages a water tank connected for water communications with the water boiler shell.

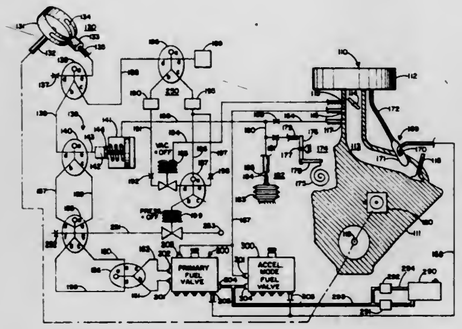


3,672,338
INTERNAL COMBUSTION ENGINE WITH OVERHEAD VALVE MECHANISM
Yuichi Yamanouchi, Yokohama, Japan, assignor to Isuzu Motors Limited
Filed Dec. 19, 1969, Ser. No. 886,528
Claims priority, application Japan, Dec. 27, 1968, 43/114134
Int. Cl. F01l 1/18, 1/20
U.S. Cl. 123—90.27 **1 Claim**



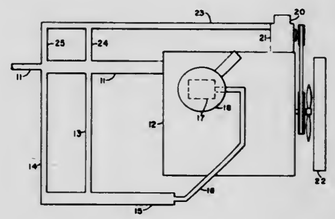
An internal combustion engine in which overhead valves are operated by rocker arms pivotally mounted on lash adjusters, comprising a rocker cover secured by bolts to a cylinder head mounted on an engine block, bearing members integrally cast with the rocker cover on the inner wall of said rocker cover, a cam-shaft rotatably carried on said bearing members, manually controllable lash adjusters mounted on the cylinder head, wherein the valves are operated by moving the rocker arms on said lash adjusters through cam lobes provided on said camshaft. The rocker cover is provided with two openings one at one side and one at the forward end thereof covered by removable covers.

3,672,339
FUEL INJECTION APPARATUS
Jeffrey M. Lazar, Warminster, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 24, 1970, Ser. No. 13,633
Int. Cl. F02m 7/00; F02d 31/00
U.S. Cl. 123—119 R **7 Claims**



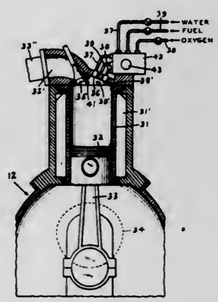
A fluidically controlled fuel injection system wherein fuel is delivered to the engine in pulses, the repetition rate of the pulses corresponding to engine speed, and the duration of the pulses being determined primarily by engine manifold vacuum. Pneumatic means may be provided to compensate the fuel injection system for variations in air temperature, engine temperature, and atmospheric pressure.

3,672,340
EXHAUST FEEDBACK AND CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES
Georg A. Bomba, Concord, Calif., assignor to Fred J. Walker, Berkeley, Calif., a part interest
Filed May 18, 1970, Ser. No. 38,278
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A **18 Claims**



An exhaust feedback and control system for internal combustion engines. At least one feedback pipe is connected at one end to the engine exhaust pipe and at the other end to the engine intake for diverting a fractional portion of the engine exhaust and delivering it to the combustion chamber. An air pipe is connected to the engine air pump for delivering air under pressure through at least one passage to the exhaust pipe at a location in juxtaposition with the feedback pipe for diluting the fractional portions of diverted exhaust with air. The arrangement also provides for cooling of the exhaust and for damping pressure variations in the feedback line. A muffler-filter is interposed between the exhaust pipe and tail pipe.

3,672,341
AIR POLLUTION-FREE INTERNAL COMBUSTION ENGINE AND METHOD FOR OPERATING SAME
Richard D. Smith, Palo Alto, and Dale A. Furlong, Sunnyvale, both of Calif., assignors to Combustion Power Company, Inc., Palo Alto, Calif.
Continuation-in-part of Ser. Nos. 796,089, Feb. 3, 1969, and Ser. No. 820,941, May 1, 1969. This application July 30, 1970, Ser. No. 59,571
Int. Cl. F02d 19/00; F02b 33/00; F02c 3/20
U.S. Cl. 123—119 E **34 Claims**



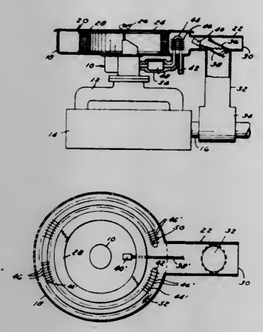
An air pollution-free internal combustion engine and method for operating such engine are provided in which the engine has at least one cylinder, an exhaust port and exhaust valve, fuel, oxygen gas and water spray injectors, a piston in the cylinder, means for cyclically opening and closing the exhaust valve, a fuel storage and supply system for feeding hydrogen gas or a liquid hydrocarbon to the fuel injector, an oxygen storage and supply system for feeding substantially pure oxygen to the oxygen gas injector, means for igniting the injected mixture of fuel and oxygen, and a water recovery system for recovering water from the exhaust discharged from the cylinder and for recycling the recovered water to the water spray injector.

In a typical engine cycle, the exhaust valve is closed prior to completion of the exhaust stroke to entrain some exhaust gas in the cylinder as a working fluid. Oxygen is then injected into the cylinder after the exhaust valve closes and before the piston reaches top dead center on the exhaust stroke, and while relatively low pressures exist in the cylinder. Fuel is next progressively injected under pressure into the oxygen contained in the cylinder so that that fuel burns progressively as it is injected to preclude knocking problems. After combustion is substantially completed, the exhaust valve opens just before the piston reaches bottom dead center on the power stroke whereupon water is injected into the cylinder to cool the cylinder walls, piston, dome, combustion chamber wall and exhaust gas. A portion of the exhaust gas is then discharged from the cylinder through the exhaust port on the exhaust stroke.

3,672,342
SYSTEM FOR CONTROLLING AIR AND FUEL TEMPERATURE
William K. Ojala, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 2, 1970, Ser. No. 68,836
Int. Cl. F02m 31/08
U.S. Cl. 123—122 B **2 Claims**

Liquid fuel on its way to the carburetor passes through a small heat exchanger located in the air cleaner downstream of an air temperature control mechanism that mixes heated and

ambient air to produce air having a temperature within a relatively narrow range. The heat exchanger heats or cools the



liquid fuel as necessary to supply liquid fuel having approximately the same temperature range.

3,672,343

CENTRIFUGAL REGULATOR SYSTEM FOR FUEL-INJECTION COMBUSTION ENGINES

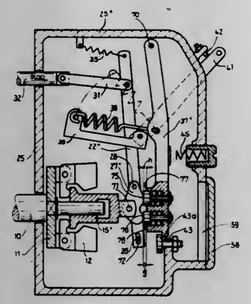
Josef Biechl, Sindelfingen, and Karl Konrath, Ludwigsburg-Hoheneck, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 14, 1970, Ser. No. 80,684

Claims priority, application Germany, Oct. 31, 1969, P 19 54 834.6

Int. Cl. F02d 1/04

U.S. Cl. 123—140 MC **5 Claims**



A centrifugal regulator for an internal combustion engine having a fuel injector controllable by actuation of a control rod. Movement of the governor sleeve upon a variation in rpm is transferred to a spring-biased rocker arm, which is pivoted on an intermediate lever between a fixed pivot thereof and a link connecting it with the control rod. Various types of relationship between fuel injection rate and rpm are obtained by means of differently placed adjustable or resilient stops provided on a spring-urged support arm and on which the rocker arm may swing when transferring sleeve movement to the intermediate lever and the control rod.

3,672,344

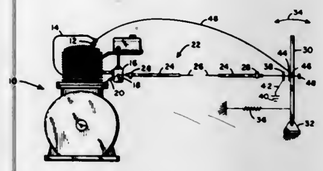
SAFETY DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.

Filed Sept. 11, 1970, Ser. No. 71,600

Int. Cl. F02b 77/08

U.S. Cl. 123—198 DB **6 Claims**



A safety device for an internal combustion engine of the type having a gas control valve on the carburetor connected by a suitable linkage to a manually operable throttle control member. A pair of electrical contacts are respectively fixed to the linkage and to the throttle control member. One of the pair of contacts is connected to electrical ground and the other of the pair of contacts is connected to the ignition of the internal combustion engine. A suitable spring normally returns the valve to a closed position when the throttle control member is released. If the linkage should stick with the flow control valve in the open position, when the throttle control member is released, the contacts close to ground the ignition and stop the engine.

3,672,345

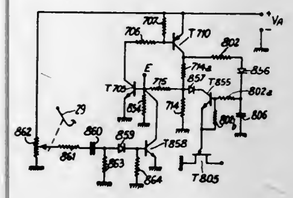
ELECTRONIC INJECTION-CONTROLLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Louis A. Monpetit, L'Etang-la-Ville, France, assignor to Societe des Procedes Modernes d'Injection Sopromi, Les Mureaux, France

Filed April 2, 1970, Ser. No. 25,094

Int. Cl. F02b 3/00, 33/00

U.S. Cl. 123—32 EA **1 Claim**



The injection controlling circuit in an internal combustion engine of a known type comprising a flip-flop controlled by the rotation of the engine so as to generate at predetermined moments injection-controlling signals, in association with a circuit producing end-of-injection signals in accordance with the operative parameters of the engine, means are provided to terminate the injections whenever there is a too sudden modification in the admission of fuel to the engine. To this end, the acceleration pedal controls the slider of a potentiometric voltage divider and a sudden shifting of said slider charges a condenser which prevents operation of the flip-flop. This is accomplished for by the application of a pulse by the transiently charged condenser to the base of a transistor which is thus rendered conductive and which grounds the input of the flip-flop through its collector-emitter circuit connected between said input and ground.

3,672,346

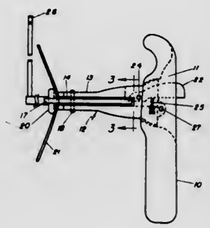
ARCHERY BOW STRING DRAW AND RELEASE DEVICE

Robert D. Plumb, Le Roy, Minn.

Filed Sept. 30, 1970, Ser. No. 76,861

Int. Cl. F41c 19/00, 11/02

U.S. Cl. 124—35 **10 Claims**



An archery bow string release is provided which includes a string draw and release mechanism which is pivotally mounted to a handle member by a universal pivot such as a ball joint. The bow string draw and release device has only one pivoted arm that is biased into engagement with an immovably fixed jaw so as to retain a bow string therebetween. The fixed jaw has a straight jaw that permits a bow string to move when released in a forward direction without any interruptions. The biased jaw has a forward end portion that presents the only impediment to a drawn bow string.

3,672,347

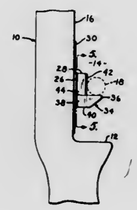
ARROW REST

Holless W. Allen, Billings, Mo.

Filed Dec. 3, 1970, Ser. No. 94,806

Int. Cl. F41b 5/00

U.S. Cl. 124—41 **5 Claims**



The shaft of an arrow is supported in the sight window of an archery bow by an arrow rest comprising a flexible finger which shifts laterally as it is engaged by the feathers of the arrow after release. The finger is attached to a bendable spacer tab and is movable therewith to a position desired by the archer where the shaft of the arrow is aligned with the path of the bowstring. The tab is formed of sufficiently heavy plate stock to be rigid and remain in the desired position under lateral force that may be applied thereto as the arrow is shot.

3,672,348

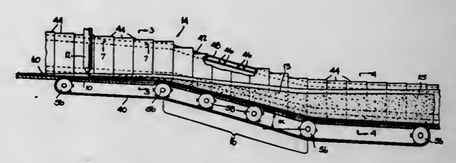
APPARATUS FOR REGULATING THE UPPER SURFACE CONTOUR OF EXPANDED CELLULAR PRODUCTS

Charles Ferstenberg, Paramus, N.J., assignor to Tenneco Chemicals, Inc., New York, N.Y.

Division of Ser. No. 750,034, Aug. 5, 1968, Pat. No. 3,560,599. This application April 27, 1970, Ser. No. 41,659

Int. Cl. B29f 1/00

U.S. Cl. 425—364 **4 Claims**



Control of upper contour of foamed materials formed in an open top mold by selective control of lateral pressure to the rising foam and a conveyor type molding apparatus for achieving this control in continuous production.

3,672,349

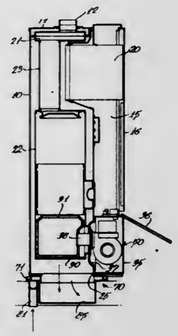
MOBILE HOME AIR CONDITIONING UNIT

Ray Derringer, Port Edwards, Wis., assignor to Preway Inc.

Filed Oct. 5, 1970, Ser. No. 77,809

Int. Cl. F24h 3/02

U.S. Cl. 126—110 AA **8 Claims**



A mobile home air conditioning unit having a mounting structure whereby the unit can be mounted in a mobile home with a base assembly oriented relative to the circulating air duct work and an outside air intake and with the unit casing and base assembly being constructed for mounting of the unit onto the base assembly in one of several different rotatively oriented positions as required for proper location and orientation of the unit in the mobile home. Additionally, when the unit is a furnace, a sealed burner box therefor carries a burner assembly and coacts with the base assembly and the furnace structure whereby the burner box can be interchanged simply, dependent upon use of gas or oil fuel by mounting of a burner box having the desired burner assembly.

3,672,350

GAS WATER HEATER

Andre Denis, 23 Rue de Coq., Marseille, France

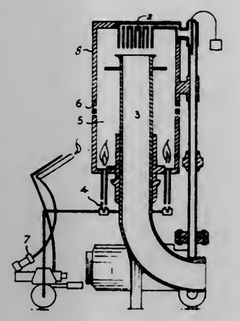
Filed May 19, 1970, Ser. No. 38,776

Int. Cl. F24h 4/00

U.S. Cl. 126—350 **1 Claim**

A gas-operated water heater comprises a housing and an upright open-ended mixing tube defining a combustion

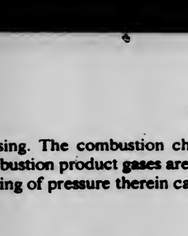
chamber in the housing. The combustion chamber has gas burners, and the combustion product gases are drawn into the mixing tube by lowering of pressure therein caused by directing a spray of finely-divided water particles down the tube. Heat exchange between the combustion gases and the water takes place in the tube, and both water and gases flow out at the lower end of the tube.



3,672,351
DISPOSABLE BLOOD TEST DEVICE

Richard W. Ubersax, 1921 Greve Avenue, Spring Lake Heights, N.J., and Andrew Truhan, R.D. #3, Box 392 T, Somerset, N.J.

Filed Aug. 17, 1970, Ser. No. 64,509
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 G 4 Claims



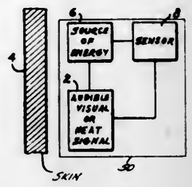
A disposable device for testing the contents of accessible body cavities is provided by a glove of impermeable material having a pad of bibulous material impregnated with a test composition affixed to the thumb of the glove in a position contactable by the tip of any of the fingers thereof. The test pad may be affixed either to the base of the thumb of the glove or to the inner surface of the distal end thereof or to both positions. When the pad of bibulous material is impregnated with a blood diagnostic composition the device is useful in the detection of occult blood in accessible body cavities such as the rectum.

3,672,352
IMPLANTABLE BIO-DATA MONITORING METHOD AND APPARATUS

George D. Summers, 8 Park Overlook Court, Bethesda, Md.

Filed April 9, 1969, Ser. No. 814,760
Int. Cl. A61f *5/00*
U.S. Cl. 128—2 R 18 Claims

A system for monitoring a condition of a body function or organ or device implanted within a body includes a sensor or transducer responsive to that condition or a change in it connected to a signal means capable of producing an audible, visual or heat signal of variable intensity indication to control the energization of the signal means from a source of energy.

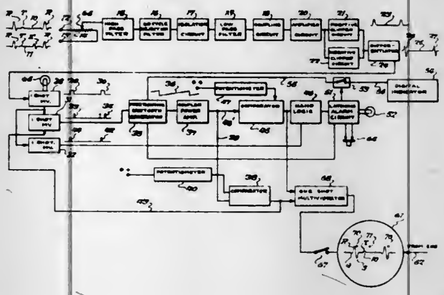


The sensor and signal means and the source of energy may be implanted within the body with the signal means sufficiently near the surface of the skin so that its energized state may be detected from outside the body.

3,672,353
ECTOPIC HEARTBEAT DETECTOR

Edward A. Crovella, Snyder, N.Y., and C. Verne Barfield, Mableton, Ga., assignors to Cardiac Electronics, Inc., Clarence, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,661
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A 1 Claim

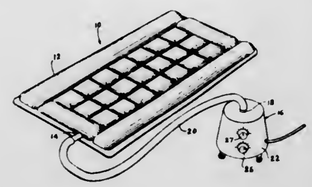


A critical ectopic beat detector for providing a warning that an ectopic beat is approaching a critical portion of a heartbeat including first circuit means for monitoring a heartbeat including means for providing a first signal representative of a normal portion of said heartbeat and a second signal representative of an ectopic beat, second circuit means for measuring the time relationship between said fist and second signals, and third circuit means for providing a third signal in the event said time reaches a predetermined value to thus provide a warning that said ectopic beat is approaching said critical portion of said heartbeat, including instrumentation for presetting said predetermined value into the circuit so that the equipment may be utilized with equal facility for different patients having different heartbeat patterns, and also including an arrangement for monitoring the heartbeat on a scope and placing on the scope an indication that the ectopic beat has approached within a predetermined time of said predetermined critical portion of the heartbeat so as to enable an accurate visual observation of the change in pattern of the heartbeat.

3,672,354
REST-INDUCING DEVICE

Robert L. Weber, New Canaan, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sept. 4, 1970, Ser. No. 69,834
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 3 Claims

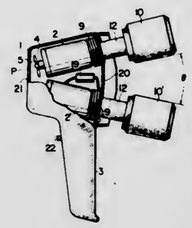


Air pump gives a pulse cycle at human heartbeat frequency to air mattress to simulate the prenatal womb experience to an infant supported thereon.

3,672,355
ELECTRO-MASSAGER

Hiroshi Ogawa; Sigeto Yamane; Hisasi Nakagawa, and Akinari Uchida, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 101,687
Claims priority, application Japan, Dec. 26, 1969, 44/104403
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 10 Claims



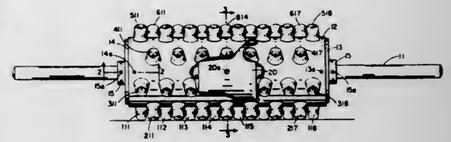
An electro-massager comprising a casing having a handle, a pair of motors disposed in the casing for actuating a pair of vibrating heads, each including an eccentric balance weight therein, which are, respectively, rotatably coupled with the motors through flexible coupling means, whereby the eccentric balance weights are subjected to rotation in the vibrating heads thereby to both vibrate and massage the objective portion of the body inserted therebetween.

3,672,356
ABDOMINAL MUSCLE EXERCISE DEVICE

Saul Possick, 14 Boylston Street, Randolph, Mass.

Filed Dec. 10, 1970, Ser. No. 96,834
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 3 Claims

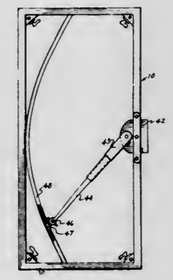
An abdominal muscle exercise device comprising a cylinder on a shaft adapted to be held by the hands. The surface of the cylinder is covered with protrusions which exercise the abdominal muscles when the device is rolled over the abdomen.



3,672,357
MASSAGE APPARATUS

William G. Ferguson, 2518 Broad Avenue, Altoona, Pa.

Filed Oct. 20, 1970, Ser. No. 82,427
Int. Cl. A61h *7/00*
U.S. Cl. 128—49 1 Claim



A massage apparatus having a frame with supporting means adapted to position the frame in substantially parallel relationship with respect to and over a bed, a massage applicator, power means to move the applicator and guide means on the frame defining a prescribed path through which the applicator may move with respect to the frame to provide massage treatment to a person lying on the bed below the frame.

3,672,358
MASSAGE DEVICE

Eugene J. Majewski, 121 North Elmore Avenue, Park Ridge, Ill.

Filed Dec. 2, 1970, Ser. No. 94,416
Int. Cl. A61h *11/00*
U.S. Cl. 128—58 1 Claim

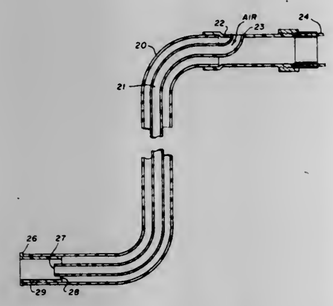
A massage device consisting of a plurality of rollers having projections, the rollers being mounted for rotation on a carrier, rotation occurring when the rollers are placed in contact with a portion of the body to be massaged and the carrier is moved in a direction normal to the axis of rotation of said rollers, the said projections preferably being of resilient material

although firm enough to press into the fleshy and muscular portions of the body to produce massaging action when



reciprocated over a portion of the body causing the rollers to rotate.

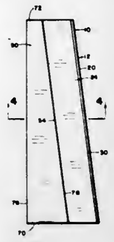
3,672,359
WHIRLPOOL BATH ATTACHMENT
Charles Krohn, 43-23 Colden Street, Flushing, N.Y.
Filed July 28, 1970, Ser. No. 58,946
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **6 Claims**



Substantially coaxial conduits provide a jet of water from the outer conduit along with relatively large bubbles from the inner conduit. The emission end of the inner conduit terminates upstream the emission end of the outer conduit, and there is a restriction in the outer conduit upstream the end of the emission inner conduit.

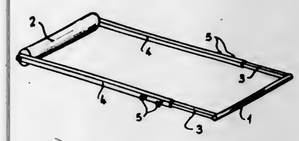
3,672,360
SPINAL AREA BACK SUPPORTER AND MASSAGING DEVICE
Arthur C. Langhammer, 901 North Linn Street, Glenwood, Iowa
Filed June 1, 1970, Ser. No. 42,302
Int. Cl. A61h 7/00
U.S. Cl. 128—67 **10 Claims**

A central area back supporter and massaging device having an elongated and resilient central supporting portion, an intermediate means or rear portion attached to the central supporting portion, the rear portion being adapted to engage other parts of the back other than the vertically elongated spinal depression area, the central supporting portion protruding so far forwardly of the remainder of the device that when a user's back presses thereagainst substantial excess pressure will be felt by the user in the areas of the sides of the vertical spinal



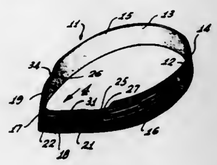
depression as compared with the pressure against the remainder of the user's back.

3,672,361
EXERCISING APPARATUS
Aime Fourneron, 5, rue Verguin, Roussillon, France
Filed Jan. 5, 1971, Ser. No. 104,089
Claims priority, application France, Jan. 5, 1970, 7001307
Int. Cl. A61f 5/00
U.S. Cl. 128—71 **18 Claims**



An exercising device particularly for stretching the vertebral column which includes a bar grippable by the user and a second bar or surface engageable in the region between the users thighs and torso, the spacing between the two bars may be variable. The bars may be supported on a table.

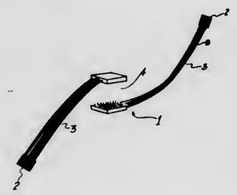
3,672,362
FACE LIFTING BAND
Lorraine A. Basche, 17071 Courtney Lane, Huntington Beach, Calif.
Filed July 10, 1970, Ser. No. 53,931
Int. Cl. A61f 5/08
U.S. Cl. 128—76 B **4 Claims**



A face lifting band disposable on the head and hideable under the natural hair of the wearer or a wig or other hair covering and serving to immediately tighten the facial skin and remove lines therefrom and, operating over a period of time, to strengthen the facial muscles. The band has side and front portions formed of highly elastic webbing having on its inner face an adhering velour-like or velvet-type material. The back of the band is an insert inclining downwardly to a point and formed of two pieces of lower elasticity than the main portion of the band. The insert pieces are joined together at the center back and to the ends of the main webbing at an angle to the

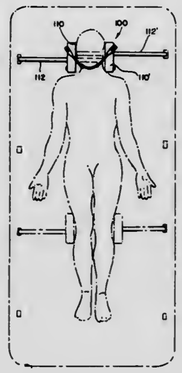
axes of the inserts and the main webbing. The inserts may have a lesser width than the main webbing whose corners thereat are bent over and sewn to provide a smooth contour. Anchoring means for the back of the band may be placed on the inside surface thereof.

3,672,363
FACIAL DEVICE AND METHOD OF USING THE SAME
George Masters, 4400 Lindell Boulevard Apt 6C, St. Louis, Mo.
Filed April 9, 1970, Ser. No. 26,886
Int. Cl. A61f 5/08
U.S. Cl. 128—76 B **2 Claims**



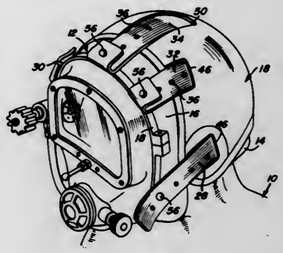
A device for lifting and spreading the skin on a subject's face comprising a plurality of skin attachment means, elongated strap means secured at one end thereof to said skin attachment means, and coupling means secured to the opposite end of said strap means adapted to couple said device with another proximate cooperating facial device.

3,672,364
ORTHOPEDIC TENSION UNIT
Philip A. Rankin, 903 E. Holaway Drive, Tucson, Ariz.
Filed Jan. 28, 1971, Ser. No. 110,722
Int. Cl. A61f 13/00
U.S. Cl. 128—134 **10 Claims**



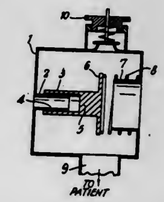
This can be succinctly defined as an anatomical, compressible weight immobilizer, comprising orthopedic strap tension weights which are adapted to immobilize a portion of an injured patient's anatomy against disposition or dislocation, while the patient is reclining. To the portable orthopedic strap tension weighted components is secured a cervical chin strap supplement, in one embodiment. The unit with attachments is applicable to a stretcher or hospital bed or operating table and may be used alternately in the transport of the patient or in the retention of the patient in position for examination, operation or ambulatory movement.

3,672,365
BAND MASK HELMET
Bevly Boone Morgan, 3319 Braeman Road, Santa Barbara, Calif.
Filed July 10, 1970, Ser. No. 53,912
Int. Cl. B63c 11/12
U.S. Cl. 128—141 R **13 Claims**



A stiff forwardly and downwardly opening head protective helmet to be utilized by a diver provided with a face mask. The helmet includes forward marginal edge portions provided with peripherally spaced openings and is thus adapted to be utilized in conjunction with a head sling engaged with the back of the head of the wearer of the helmet beneath the latter and provided with forwardly extending tension members whose forward ends include structure for removable attachment to corresponding peripheral portions of the associated face mask, the tension members being threaded through the openings formed in the forward marginal edge portions of the helmet. When the helmet is utilized in conjunction with the aforementioned head sling and the tension members of the sling are constructed of elastic material, the head sling may be provided with portions thereof to be disposed inwardly of the helmet and of dimensions too great to pass through the openings in the marginal edge portions of the helmet and in this manner attachment of the forward ends of the tension members to the marginal portions of the face mask with the tension members in tensioned condition will result in the tension members not only serving to yieldingly bias the associated face mask rearwardly against the face of the wearer but also to yieldingly bias the helmet forwardly upon the head of the wearer of the associated face mask.

3,672,366
VALVE AND CIRCUIT FOR INTERMITTENT POSITIVE PRESSURE BREATHING APPARATUS
Geoffrey Barnett Burchell, 10 Nelmes Road Hornchurch, Essex, and Richard William Victor Morel, Hendron, Hitthen Hutch Lane, Kent, both of England
Filed Sept. 29, 1967, Ser. No. 671,810
Claims priority, application Great Britain, Nov. 28, 1966, 53,251/66
Int. Cl. A62b 7/00
U.S. Cl. 128—145.8 **27 Claims**



An apparatus for producing intermittent positive pressure comprises a high-pressure nutrient gas supply, a valve device

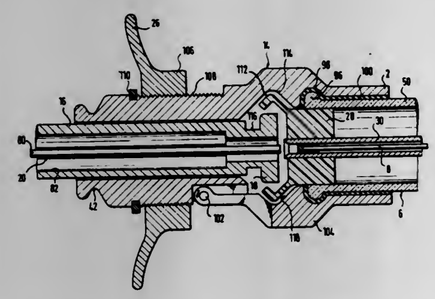
connected to the supply and operable by the gas, and a conduit connected downstream of the valve device to lead gas under low pressure towards a patient or a space between a breathing bag and a surrounding casing. The valve device controls gas flow through the conduit and opens and closes with relatively sudden pressure change. The valve device can include a housing having a tubular, high-pressure gas inlet and a low-pressure gas outlet, a member in the housing co-axial with the inlet and longitudinally movable thereon with clearance, a valve closure at one end of said member movable therewith between a first position closing the outlet end of the inlet and leaving open the inlet end of the outlet and a second position closing that inlet end and leaving open that outlet end, a compression spring urging the valve closure into the first position, and a duct communicating with the housing interior and the clearance, and with the open outlet, and leading to outside the housing.

3,672,367
RETAINING CLIP FOR CATHETER SHEATH
Henry M. Scislowicz, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed May 25, 1970, Ser. No. 40,010
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **7 Claims**



Disclosed herein is a retaining clip for the sheath used to protect a catheter tube from contamination during insertion of the guiding needle. The clip is designed to snap over the hub of the needle and at the same time clasp the mouth of the sheath about the hub. The clip includes a curved body portion and a pair of curved depending legs. An upturned neck extends from the body portion to facilitate removal of the clip after the needle has been inserted.

3,672,368
SYRINGE
Lothar Schwarz, 1 Belchenstrasse, Karlsruhe, Germany
Filed June 8, 1970, Ser. No. 44,216
Claims priority, application Germany, June 10, 1969, P 19 29 317.5
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 N **11 Claims**



A hypodermic syringe comprising, a body assembly, a space being defined in said body, a preparation container receivable in said space, a tube extending through said preparation container, a hollow needle positioned within said tube, a seal on the end of said tube through which said needle is extrudable, an auxiliary plunger slidable within said body assembly and adapted to be moved into said tube to extrude said needle and an actuating plunger slidable within said body assembly and adapted to act on said container to expel said preparation through said extruded needle.

3,672,369
HYPODERMIC SYRINGE
Alexander M. Brown, Daytona Beach, Fla., assignor to Sherwood Medical Industries, Inc.
Filed Dec. 18, 1969, Ser. No. 886,195
Int. Cl. A61m *35/00, 5/22, 5/32;* **A61j** *7/00*
U.S. Cl. 128—218 P **3 Claims**

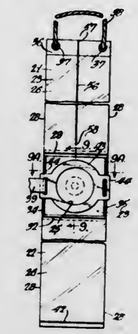


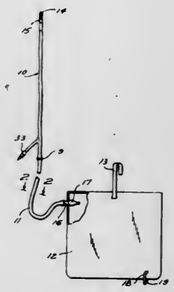
A syringe of the hypodermic type including a unitary barrel member having a large upper bore and a small lumen at the lower end thereof communicating with the bore, the lower end of the barrel member being adapted to receive a needle, with a piston assembly slidable in the barrel member and having a sealing portion sealingly engaged the large bore and shaped to discharge all of the medicant from the large bore, there being provided a plunger fixed to the piston assembly and complementary to as well as coextensive in length with the barrel member lumen for the purpose of discharging all of the medicant from the lumen minimizing medicant loss in the syringe.

3,672,370
COLOSTOMY IRRIGATOR
Arthur E. Marsan, 6700 Escondido Drive, El Paso, Tex.
Filed March 20, 1970, Ser. No. 21,287
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 **21 Claims**

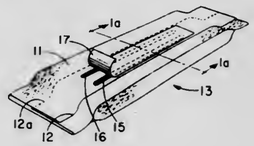
This invention is characterized by the provision of an irrigator for colostomy and similar conditions, comprising a container for the irrigating liquid and a drain for the discharge from the patient, combined in an assembly including a short-length catheter for injecting the irrigating liquid, the assembly

comprising a single article of manufacture which functions in irrigating in all positions of the patient including upright ambulatory, the irrigator being designed for low cost of manufacture so that it is disposable after use.





3,672,371
SANITARY NAPKIN WITH IMPROVED ADHESIVE FASTENING MEANS
Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 8, 1970, Ser. No. 35,753
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **5 Claims**

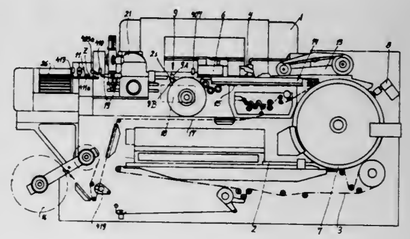


A sanitary napkin provided with improved pressure sensitive adhesive means for attaching the napkin to a supporting garment. The adhesive is applied to the bottom surface of the napkin and comprises at least two narrow parallel lines covered by a single overlying protective release sheet. Each strip has substantially less width and total surface area when compared with the width and area of adhesive strips or patches formerly used for attachment purposes. A typical adhesive pattern applied to an 8 × 2⅝ in. napkin comprises a pair of centrally disposed parallel strips, each strip being approximately 6 in. long and one-eighth in. wide, and spaced about three-eighth in. from each other. The two strip pattern uses less adhesive, yet is more effective in preventing displacement of the napkin and in counteracting the shear forces exerted on the napkin by normal leg motion. The arrangement prevents failure of the wrapper when the protective sheet is removed by the user. It also reduces considerably the incidence of adhesive transfer to the garment at the time when the napkin is removed from the garment for disposal.

3,672,372
URINARY DRAINAGE METHOD
Henry J. Heimlich, 3850 Clifton Avenue, Cincinnati, Ohio
Division of Ser. No. 776,591, Nov. 18, 1968, Pat. No. 3,605,749. This application May 11, 1971, Ser. No. 142,322
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **7 Claims**

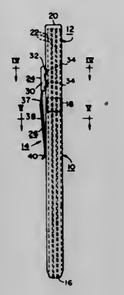
One end of a tubing, e.g., a catheter, is inserted into a patient's bladder, and the other end connected to a urine collection receptacle. At least a portion of the tubing has a degree of limpness such that it normally assumes a flat collapsed condition. As a result, a column of urine cannot remain in the tubing.

3,672,373
METHOD AND MEANS FOR REGULATING THE OPERATION OF APPARATUS FOR THE PRODUCTION AND PROCESSING OF CIGARETTES OR THE LIKE
Ernst Dogl; Albrecht Funck, both of Bayreuth; Dieter Wellach, and Hans-Georg Winkler, both of Hamburg, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany
Filed Jan. 5, 1970, Ser. No. 535
Claims priority, application Germany, Jan. 8, 1969, P 19 00 701.3
Int. Cl. A24c *05/34*
U.S. Cl. 131—21 R **25 Claims**



The operation of a production line including a cigarette making machine and a filter cigarette machine is regulated by a shift register which transports signals serving to initiate the starting and stoppage of various assemblies in the production line in a predetermined sequence. The shift register also serves to transport further signals produced by detectors which track filter cigarettes and their components. Such further signals are transmitted to an ejecting device which segregates those cigarettes which exhibit one or more defects or which are likely to exhibit defects because they are produced during certain stages of operation of the production line. The detectors scan the splices in a web of cigarette paper, the seam on the wrapper of a cigarette rod, plain cigarettes, filter rods, filter plugs and filter cigarettes.

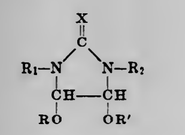
3,672,374
CADDY FOR HOLDING PIPE CLEANERS
Henry Mancuso, 430 Barclay Road, Rosemont, Pa.
Filed June 24, 1970, Ser. No. 49,278
Int. Cl. A24f 09/08
U.S. Cl. 131—243 4 Claims



Two tubular members are separably joined together to serve respectively as the bottom and top sections of a caddy for holding several pipe cleaners. The top section is provided with a flat head for use in tamping tobacco into the bowl of a pipe, and with a resilient sheet metal appendage for use in scraping the bowl of, and for use in clipping the caddy to, a shirt or coat pocket.

3,672,375
TREATMENT OF DAMAGED HAIR WITH METHYLOL COMPOUNDS
Gregoire Kalopissis; Henri Philippe De Beaulieu, both of Paris; Jean-Louis Abegg, Le Perreux, and Giuliana Ghilardi, Paris, all of France, assignors to Societe anonyme dite: L'Oreal, Paris, France
Filed Aug. 19, 1969, Ser. No. 851,473
Claims priority, application Luxembourg, Aug. 26, 1968, 56768
Int. Cl. A61k 7/06; A45d 7/04
U.S. Cl. 132—7 5 Claims

Cosmetic composition for use in treating damaged hair. The composition comprises, as the active component a methylol compound of the formula:



in a suitable cosmetic carrier, in which formula:

X represents either an oxygen atom or a sulfur atom or an NH group;

R and R' are identical or different and represent either a hydrogen atom or a lower alkyl radical; and

R_1 and R_2 represent either a methyl hydroxy group or a methyl alkoxy group, e.g. methyl alkoxy wherein the alkoxy contains up to five carbon atoms or more.

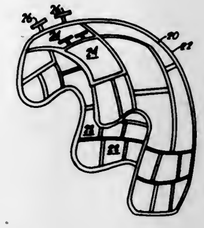
Typically the methylol compound is

N,N'-dihydroxymethyl glyoxalurea or

N,N'-dihydroxymethyl glyoxalthiourea.

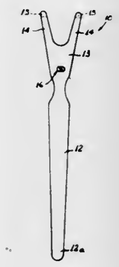
The composition is applied at an acid pH and is advantageously made up in solid form for mixing with water or water-and-alcohol solutions when used. The compositions are used by impregnating the hair with a mixture thereof and water or water-and-alcohol solution followed by drying with heat.

3,672,376
HAIR SETTING ASSIST
Thomas J. Pariagreco, Ho-Ho-Kus, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,702
Int. Cl. A45d 1/00
U.S. Cl. 132—9 4 Claims



A hair setting assist device comprises a removable rigid cap having spaced regions at which pivot pins are disposed for receiving forms for curls and other locations containing supports to which independent rollers can be secured.

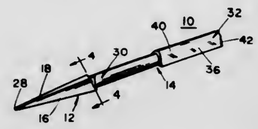
3,672,377
DENTAL CARE APPLIANCE
Paul G. Greenacre, 330 Driveway, Apt. 505, Ottawa, Ontario, Canada
Filed Jan. 5, 1971, Ser. No. 104,014
Int. Cl. A61c 15/00
U.S. Cl. 132—92 R 1 Claim



An elongated handle is provided at one end with a bifurcated head including a pair of spaced arms having notched extremities to receive a length of dental floss. A floss anchoring button is slidable in an opening in the head and has passages in which floss may be inserted and tensioned, so that when the button is slid in one direction in the opening, the floss is anchored in its tensioned condition. Auxiliary dental care attachments such as a brush, mirror, et cetera, are removably applicable to the outer end of the handle.

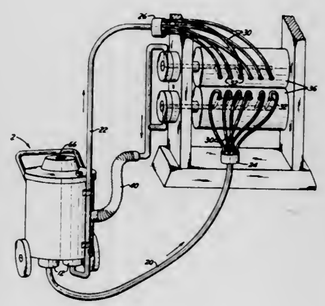
3,672,378
TOOTHPICK DEVICE
Ralph H. Silverman, 7701 Arcadia, Morton Grove, Ill.
Filed May 5, 1971, Ser. No. 140,181
Int. Cl. A61c 15/00
U.S. Cl. 132—93 6 Claims

A molded plastic toothpick device includes a picking end having a triangular cross-section with two of the legs of the triangle being equal in length. The two walls of the picking end are concave and curved complementary to the shape of the teeth for easy insertion into the spaces therebetween. The picking end is tapered to a blunt free end. A handle formed integrally with the picking end includes a first cylindrical portion for rotating the device in the fingers to correctly insert the device in spaces between both the upper and lower teeth. An end portion of the handle has three flat walls and a curved wall to insure a stable grip on the device once the picking end has



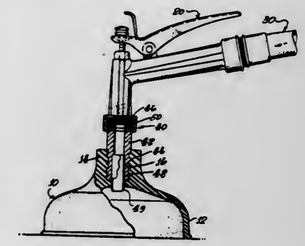
been inserted between the teeth and for good maneuverability. The end surface of the handle portion is roughened to provide an abrasive for removal of minor stains from the surface of the teeth. The toothpick device may be impregnated with a pleasant tasting substance during the molding process if desired.

3,672,379
VACUUM-SYSTEM CLEANING CIRCULATION DEVICE
Hans J. Seipel, 381 Matthews Road, Boardman, Ohio; Walter F. Gancarz, 731 W. Indianola Avenue, Youngstown, Ohio, and Donald J. Aves, 190 Hilltop Boulevard, Canfield, Ohio
Continuation-in-part of Ser. No. 832,718, June 12, 1969, abandoned. This application Feb. 14, 1971, Ser. No. 112,699
Int. Cl. B08b 5/02, 9/00
U.S. Cl. 134—168 R 6 Claims



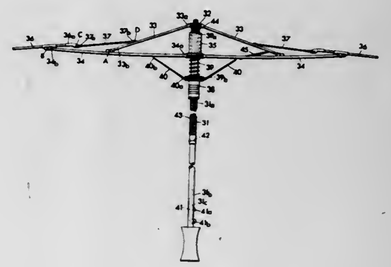
Equipment is disclosed that conveniently provides effective cleaning of envelope-folding, paper-converting or similar machinery containing perforated cylinders having a hollow interior and communicating with a vacuum system, for the manipulation or conveyance of one or more pieces of substantially imperforate sheet-like materials held against the exterior of the cylinders by ordinary atmospheric pressure. Equipment is provided comprising a reservoir chamber, pump means for forcing liquid from the chamber to a manifold, individual means communicating with the manifold for conveying liquid to the interior of the cylinders, and means connected with the vacuum system associated with the cylinders in the vicinity of the main pump, for returning liquid to the reservoir chamber, which is preferably evacuated. This yields effective cleaning of dirt, dust and lint not only from the perforations but also from valve faces, elbows, and other constrictions in the vacuum system.

3,672,380
CLEANING DEVICE
Frank Schuster, 16682 Juarez Drive, Rancho Bernardo, San Diego, Calif.
Filed Aug. 20, 1969, Ser. No. 851,698
Int. Cl. B08b 3/02
U.S. Cl. 134—172 2 Claims



This is a device for cleaning by the use of water or other liquids in which the cleaning is accomplished by a jet of liquid properly contained to avoid splashing and to concentrate the cleaning effect, in which a rubber cup is used to confine and assist in cleaning.

3,672,381
COLLAPSIBLE UMBRELLA CAPABLE OF AUTOMATIC OPENING
Nobutoshi Kida, 1-27 Minami Nonincho, Osaka, and Kazo Saito, 9-374 Ohtori Naka-machi, Sakai, both of Japan
Filed July 23, 1970, Ser. No. 57,579
Claims priority, application Japan, Aug. 19, 1969, 44/65041; Nov. 14, 1969, 44/90147
Int. Cl. A45b 25/14, 25/16
U.S. Cl. 135—22 6 Claims



This invention discloses a collapsible umbrella capable of automatic opening which comprises a center rod which is contractile and provided with an automatic umbrella opening mechanism; a rib assembly comprising a support rib, a receiving rib, an end rib and a connecting rib which are so assembled that they are adapted to form a quadrilateral in the open position of umbrella, said receiving rib being adapted to be held at substantially right angles with the center rod of the umbrella in said open position, one or more corners of said quadrilateral being made slidable and/or one or more sides of said quadrilateral being made contractile and extensible. Such an umbrella is capable of automatical and instantaneous opening by one-touch operation. In addition, such an umbrella is capable of presenting a good appearance in its open position and being collapsed neatly in its closed position.

3,672,382
AUTOMATICALLY OPENABLE AND CLOSABLE UMBRELLA

Yoshio Sato, Nagareyama, Japan, assignor to Kabushiki Kaisha Ideal, Tokyo, Japan

Filed March 3, 1971, Ser. No. 120,427
Claims priority, application Japan, April 21, 1970, 45/34199
Int. Cl. A45b 25/14
U.S. Cl. 135—24 3 Claims



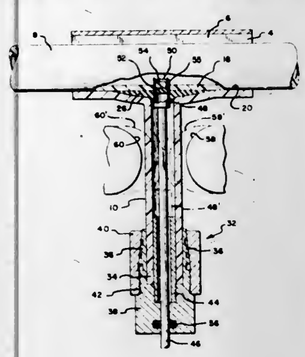
An improvement of an automatically openable and closable umbrella of the type comprising a shaft composed of relatively telescoping shaft members, rings mounted on said shaft and carrying inner ends of ribs, supporting spokes and tension springs for automatically closing the umbrella, a compression spring mounted within said shaft and adapted to extend the telescoping shaft members thereby to change the relative positions of said rings and automatically open the umbrella, and latches for controlling the operation of the tension and compression springs, wherein the improvement resides in the provision of a steppedly extensible rod assembly mounted within said shaft and adapted to steppedly allow the expansion of said compression spring in order to avoid abrupt one-stroke expansion of the spring which will cause an excessive shock to the structural elements of the umbrella.

3,672,383
METHOD AND APPARATUS FOR TAPPING PIPELINE

John Omer Trimble, Malvern, and Henry William Demler, Sr., Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 25, 1970, Ser. No. 40,235
Int. Cl. F16e 41/04; B23b 41/08
U.S. Cl. 137—15 5 Claims

A generally T-shaped tap coupling is positioned in encircling relationship over a pipeline, and is heat shrunk thereover. The tap coupling includes a tap line portion receiving drilling apparatus therethrough which removes a coupon from the sidewall of the pipeline. The drilling apparatus with the coupon retained is partially withdrawn from the tap line portion. A clamping device collapses the sidewall of the tap line portion to prevent escape of conveyed material from the pipeline. The tap line portion is then permanently connected to a coupling of a tap line. The clamping device is removed

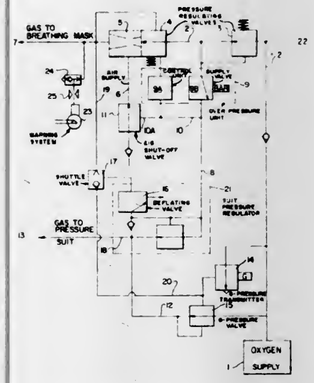


thereby permitting material from the pipeline to flow through the tap coupling into the tap line.

3,672,384
BREATHING GAS REGULATOR FOR AVIATORS

Ivan A. Hellquist, Rotebro, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Sept. 15, 1970, Ser. No. 72,340
Claims priority, application Sweden, Sept. 18, 1969, 12810/69
Int. Cl. G05d 16/00
U.S. Cl. 137—39 3 Claims

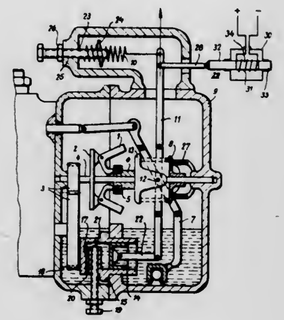


A breathing gas regulator for an aviator comprises an oxygen supply, a first pressure reducing valve, a second pressure reducing valve, and a branch line intermediate the two pressure reducing valves for conveying gas to pressurize the aviator suit in the event of cabin pressure failure. The second pressure reducing valve acts as a demand regulator supplying breathing gas at a normal breathing pressure of about 20 mm water column. The breathing gas outlet includes an air injector open to the cabin at cabin altitudes of up to 6 km for mixing air with the oxygen. The branch line includes a pressure responsive valve which shuts off the air supply at a cabin altitude of 6 km. Thus, the regulator supplies 100 percent oxygen at higher cabin altitudes. The branch line also includes a pressure-responsive control for increasing the breathing gas pressure in the event of a loss of cabin pressure. In that event, the control unit increases the gas pressure supplied by the demand regulator an amount necessitated by the altitude. The branch line supplies gas to pressurize the suit and the amount of this pressure is conveniently set by controls as a function of breathing gas pressure. For example, suit pressure may be approximately 3.5 times breathing gas pressure. The device preferably includes a g-susceptible valve for pressurizing the suit to counter the effect of g-forces to which the aviator is subjected. In this event, suit pressure is controlled by suitable means, such as a shuttle valve, such that it will be a function of breathing gas pressure or the magnitude of a gas signal produced by the g-forces, whichever is greater.

3,672,385
CENTRIFUGAL SPEED GOVERNOR, ESPECIALLY FOR PRIME MOVERS

Max Matzen, Leverkusen-Schlebusch, Germany, assignor to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed April 13, 1970, Ser. No. 27,788
Claims priority, application Germany, April 11, 1969, P 19 18 411.3
Int. Cl. G05d 13/10
U.S. Cl. 137—53 7 Claims

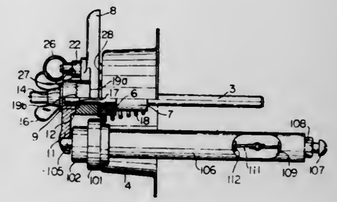


A centrifugal speed governor in which the flyweights through the intervention of a spring-loaded adjusting sleeve and a linkage act upon a control member such as a fuel control member while in addition to the governor spring proper there is provided an additional spring associated with adjusting members having linked thereto lever means which, through a delaying member, is yieldably journalled in the housing of the governor, said lever means in addition to being adjustable by a spring operable from the outside of the governor is connected to holding means of magnetizable material, said holding means being axially movable in a magnetic field.

3,672,386
FUSE MELT TYPE DAMPER DEVICE FOR INTERCEPTING FLOW THROUGH A DUCT

Hisashi Mochida, Suita, Japan, assignor to Daito Mfg. Co. Ltd., Osaka, Japan

Filed June 2, 1970, Ser. No. 42,828
Claims priority, application Japan, June 6, 1969, 44/53069
Int. Cl. F16k 17/38; F23n 3/04
U.S. Cl. 137—77 8 Claims

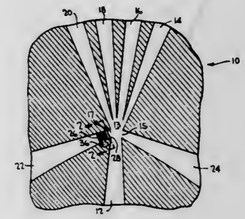


An improved fuse melt type damper device used for a damper and capable of effecting interception of a flow medium through a conduit upon instruction from a remote control center in addition to a function of an automatic interception of the flow through detection of overheating of the medium.

3,672,387
MAGNETICALLY CONTROLLED PROPORTIONAL FLUID AMPLIFIER

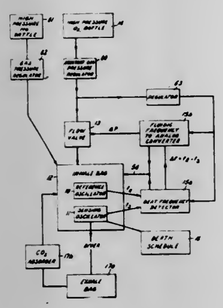
Fred T. Harris, Rockville, Md., and Edwin L. Resler, Jr., Ithaca, N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 1, 1970, Ser. No. 77,166
Int. Cl. F15c 1/04, 1/14, 3/00
U.S. Cl. 137—81.5 4 Claims



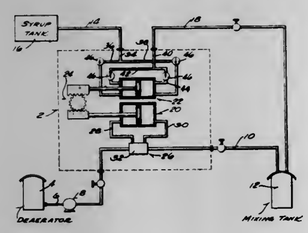
A proportional fluid amplifier that utilizes a magnetic fluid as control means for the proportional amplification therein. The magnetic fluid is placed in one of the two control ports of the amplifier and under the influence of an externally applied magnetic field is made to partially block the control port which, in turn, creates a low pressure region that causes switching of the power stream from one output channel to another. The magnitude of the externally applied magnetic field is proportional to the amount of blockage effected by the magnetic fluid in the control port, and thus to the magnitude of the low pressure region created therearound. In this way, the low pressure region can be controlled directly by external electrical apparatus and the power stream can be deflected to any one of a plurality of output channels as desired.

3,672,388
SENSOR AND CONTROL SYSTEM FOR CONTROLLING GAS PARTIAL PRESSURE
Carl G. Ringwall, Scotia, and Rasik P. Shah, Schenectady, both of N.Y., assignors to General Electric Company
Filed June 19, 1969, Ser. No. 834,718
Int. Cl. G01n 9/24; G05d 11/16
U.S. Cl. 137—88 **18 Claims**



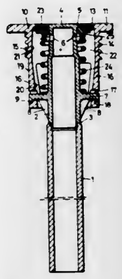
A sensor consisting of two electro-fluidic delay line oscillators generates a signal for controlling the partial pressure of a first gas in a multi-gas mixture. A sealed delay line of the first oscillator is filled with a known gas and functions as a reference oscillator. An apertured delay line of the second (sensing) oscillator is immersed in the gas mixture and the first gas flow thereto is controlled to obtain the sensing oscillator frequency equal to the reference frequency. Any difference frequency is proportional to the deviation of the actual first gas concentration from a predetermined value. A change in the partial pressure of the first gas, due to an environmental change, is compensated for by a predetermined change in the length of the sensing oscillator delay line and control of the first gas flow to regain the equal frequency condition.

3,672,389
LIQUID PROPORTIONING DEVICE
Alexander McConnell, Hales Corners, and Fay D. Bickel, New Berlin, both of Wis., assignors to "Automatic" Sprinkler Corporation of America, Cleveland, Ohio
Filed Sept. 10, 1970, Ser. No. 71,071
Int. Cl. G05d 11/00
U.S. Cl. 137—99 **11 Claims**



A device for substantially continuously mixing or blending two liquids in predetermined ratios to one another, comprising a first two-way acting piston-cylinder unit connected between a source of a first of the liquids under pressure and an outlet line to a mixing tank through a spool-type rotary reversing valve and reciprocable by the first liquid under the control of the reversing valve to deliver metered volumes of the first liquid to the mixing tank, a second two-way acting piston-cylinder unit connected between a source of the second of the liquids and another outlet line to the mixing tank through one-way flow valve controlled conduits and driven for reciprocating action by the first piston-cylinder unit to deliver metered volumes of the second liquid to the mixing tank through gear means which include a pair of paralleling, slidably mounted racks connected to the piston elements of corresponding of the piston-cylinder units and a rockable or rotatable ring gear mounted between and in meshing relation with the racks. The rock axis of the ring gear is defined by a precision bearing having a worm and screw adjustment and may be infinitely varied through such adjustment to regulate the "throw" of the ring gear towards the second piston-cylinder unit for purposes of obtaining a desired relationship in the operating strokes of the two units and a consequent desired ratio or proportion in the liquids being delivered thereby into the mixing tank.

3,672,390
DRAW-OFF TUBE
Elbert Gravesteijn, Abcoude, Netherlands, assignor to Amstel Brouwerij N.V., Amsterdam, Netherlands
Filed July 14, 1970, Ser. No. 54,809
Claims priority, application Netherlands, July 16, 1969, 6910931
Int. Cl. B67d 5/54
U.S. Cl. 137—212 **5 Claims**

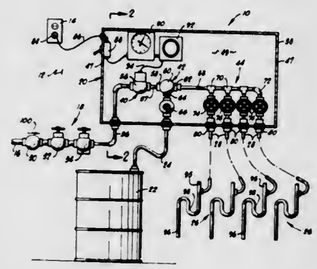


A draw-off tube having an extension to which there is detachably connected a head comprising a screwthreaded casing surrounding said extension coaxially, which screwthreaded casing admits of being screwed in the bung hole of a cask of beer. A movable ring valve is provided between the inner wall of the casing and the outer wall of the extension, which ring valve has its outer circumference adapted to simultaneously free or close a compressed gas passage and its inner circumference adapted to simultaneously free or close a beer passage formed by openings adjacent the closed end of the extension.

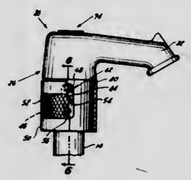
3,672,391
AUTOMATIC CHEMICAL FEEDER APPARATUS
Richard W. Livingston, 10100 Raytown Road, Kansas City, Mo., and George L. Michaels, 8505 Booth Street, Kansas City, Mo.
Filed Jan. 2, 1970, Ser. No. 239
Int. Cl. B08b 9/06; F16k 19/00
U.S. Cl. 137—240 **3 Claims**

This invention is a chemical feeder apparatus operable to automatically discharge a chemical mixture into a plurality of sewer trap assemblies in order to remove any impurity such as grease build up. More particularly, this invention is a chemical feeder apparatus operable to receive an inlet fluid and mix the same thoroughly with a chemical solution through a concen-

trate valve structure for discharge therefrom through a plurality of outlet control valves for cleansing purposes and including a timing mechanism for pre-selected periodic actuation thereof.



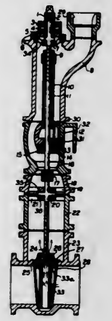
3,672,392
YARD HYDRANT
Noel M. Anderson, P.O. Box 392, Storm Lake, Iowa
Continuation-in-part of Ser. No. 857,886, Sept. 15, 1969, abandoned. This application July 15, 1970, Ser. No. 55,109
Int. Cl. E03b 9/08; F16k 35/00
U.S. Cl. 137—288 **10 Claims**



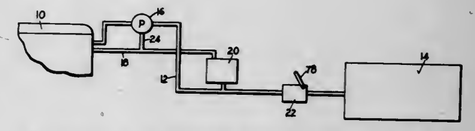
A yard hydrant wherein no separate operating handle component is used or required and the operation of a valve assembly is accomplished by a movable spout head. A vertically disposed flow pipe disposed within a standpipe has a valve means at its lower end and is secured at its upper end to the hydrant head. Water under pressure reaching the valve will normally elevate the valve to closed position with the flow pipe and hydrant head being elevated accordingly. The valve means is either full open or full closed and is opened by depressing the hydrant head to correspondingly depress the flow pipe and open the valve. Means are provided to releasably lock the hydrant head and valve in depressed or full on position. Upon release of the head from depressed position, water pressure on the valve automatically elevates it to closed position. An adjustment means in the head relative to the top of the flow pipe is provided for regulating the volume of flow, if desired.

3,672,393
HYDRANT VALVE ASSEMBLY
Hans Klassen, Zedernstr. 7, 4048 Grevenbroich, Germany
Filed Jan. 23, 1970, Ser. No. 5,434
Int. Cl. E03b 9/08; F16k 31/50, 37/00
U.S. Cl. 137—307 **3 Claims**

A gate valve, particularly the gate valve of a hydrant including a shut-off valve cooperating with the gate valve, is provided with a bleed passageway so that with the gate valve in the closed position, a small stream will flow from the upstream side of the valve into the valve housing, indicating, when the housing is open, that the gate valve is closed.

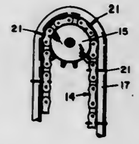


3,672,394
FUEL SYSTEM FOR DIESEL ENGINES
Curtis L. Erwin, Jr., 5805 S.E. Gladstone Street, Portland, Oreg.
Filed May 22, 1970, Ser. No. 39,701
Int. Cl. F16k 49/00
U.S. Cl. 137—338 **19 Claims**



The system of the invention is designed for treating liquid which may comprise as one instance means for cooling liquid. Such is accomplished by a novel cooling tank. The system has particular application in Diesel engines and also may be used as cooling systems for the liquid used in cooling machine tools. The system may include a meter arranged to measure consumption of fuel, particularly in the Diesel system. Where the system is used with Diesel engines and a meter is used, a by-pass is provided around the meter which includes a valve so that the by-pass can be used when it is desired that the flow be not measured.

3,672,395
CHAIN-HOSE ATTACHMENT CLIPS
William Fuetsch, 77 Corte Ramon, Greenbrae, Calif.
Filed Aug. 6, 1970, Ser. No. 61,667
Int. Cl. B65h 75/36
U.S. Cl. 137—355.16 **4 Claims**



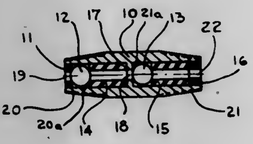
A flexible hose is attached at longitudinally spaced points to a link chain by a plurality of clips, so that the hose is carried by

the chain, as for example, around a sprocket. The hose is coplanar with the chain and located at the outside of the chain in relation to passage of the chain around the sprocket. Each clip is substantially U-shaped and includes a hose embracing bight portion with a pair of leg portions which are in supporting engagement with transversely spaced link members of the chain. The arrangement is particularly suitable for use on fork lift trucks having a chain actuated carriage with a hydraulically actuated device for moving the forks.

3,672,396
METERING VALVE

Richard S. Paullukonis, 6660 Greenbriar Drive, Cleveland, Ohio

Filed Dec. 2, 1970, Ser. No. 94,276
Int. Cl. F16k *15/18*
U.S. Cl. 137—512 7 Claims

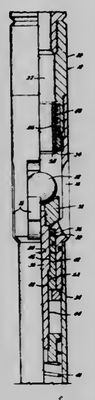


A valve for transmitting minute amounts of lubricant flow, be it grease or oil or other viscous fluid, from supply to receiver means, such as a bearing in a machine, having a short piece of elastomer tubing and a ball conveniently placed inside the valve body to perform the dual function of directional checking and volume metering without the use of springs.

3,672,397
WELL SAFETY VALVE

Fred E. Watkins, and Gilbert H. Tausch, both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Jan. 11, 1971, Ser. No. 105,226
Int. Cl. F16k *15/04*
U.S. Cl. 137—529 2 Claims

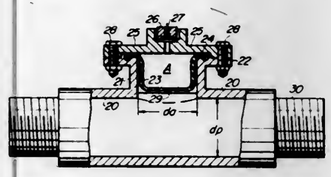


A well safety valve for use in a well tubing for closing the flow of fluids through the tubing when the fluid pressure in the tubing decreases to a predetermined amount. A valve housing adapted to be positioned in the tubing and having a passageway therethrough for the flow of well fluid and a valve element below a valve seat with a piston positioned below and supporting the valve element. The piston being exposed to pressure in the passageway and extending into a closed cylinder which includes means acting in a direction to seat the valve element when the pressure in the tubing falls to a predetermined value. The cross-sectional area of the valve element being greater than the cross-sectional area of the piston to keep the valve closed after closure. Selective adjustment means on the piston and cylinder for selecting the pressure at which the valve will close.

3,672,398
ACCUMULATOR FOR ABSORBING A PULSATION OF PUMP PRESSURE

Ken Ichiryu, Hitachi, and Mitsuaki Takenoshita, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 15, 1970, Ser. No. 55,147
Claims priority, application Japan, July 23, 1969, 44/57687
Int. Cl. F16l *55/04*
U.S. Cl. 137—586 5 Claims

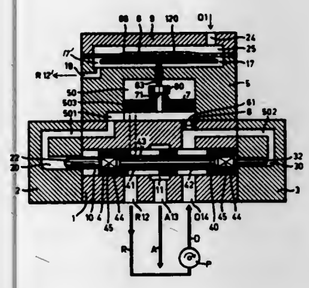


An accumulator to be provided in a conduit leading from a pump for absorbing a pulsation of pump pressure, which is so constructed that the ratio of the diameter of the accumulator neck da to the diameter of the conduit dp is not smaller than 0.5, i.e. $da/dp \geq 0.5$ and the ratio of the length of the neck dL to the diameter of the conduit dp is not larger than 0.5, i.e. $dL/dp \leq 0.5$.

3,672,399
HYDRAULIC OR PNEUMATIC CONTROLLED TWO STAGE SLIDE VALVE

Eduard Furrer, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Jan. 7, 1971, Ser. No. 104,555
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.62 4 Claims



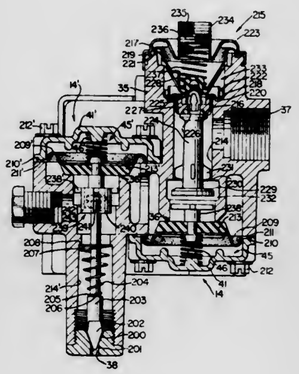
A fluid-operated, in particular hydraulically or pneumatically controllable, two-stage slide valve arrangement including an outlet stage arrangement for alternately communicating in flow relationship an outflow conduit with a pressure conduit and return flow conduit of a fluid-operated system is described and comprises a sleeve valve member having opposed end faces and respective coaxially extending displacement piston member acting upon each end face of said sleeve valve member, with the effective cross-sectional area of both said

displacement piston members differing from one another, the outlet stage arrangement alternately connecting said outflow conduit with said pressure conduit and said return flow conduit when the displacement piston member with the smaller effective cross-sectional area is continuously impinged by a predetermined pressure of a fluid medium delivered by said pressure conduit. A forwardly arranged control stage arrangement alternately couples the other displacement piston member with the larger effective cross-sectional area to the pressure conduit and the return flow conduit, said control stage arrangement including a first diaphragm means for coupling the displacement piston member of larger effective cross-sectional area of the outlet stage arrangement with the pressure conduit, and a second diaphragm means for coupling such displacement piston member of larger cross-sectional area with the return flow conduit. Both diaphragm means have an opening and at least one valve means serves for alternately closing and opening at least one opening of one of said diaphragm means, the valve means includes at least one to-and-fro movable valve body member cooperating with said one diaphragm means and a valve membrane for moving said valve body member. There is also means for selectively operating the valve membrane and thus said valve body member for closing and opening at least said one opening of said one diaphragm means.

3,672,400
PNEUMATICALLY OPERATED VALVE MEANS AND FUEL CONTROL SYSTEM UTILIZING THE SAME

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed July 27, 1970, Ser. No. 58,284
Int. Cl. F16k *31/12*
U.S. Cl. 137—630.22 18 Claims

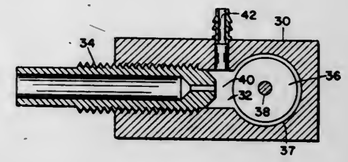


A pneumatically operated valve means having a housing means provided with an inlet separated from an outlet by a valve seat, the outlet having an orifice through which the entire fuel flow from the inlet must pass when the valve seat is open. A pneumatically operated valve member is carried by the housing for opening and closing the valve seat. A metering pin has one end cooperating with the orifice for controlling fuel flow therethrough and is operatively interconnected to the valve member to be moved thereby for providing different levels of fuel flow through the housing.

3,672,401
FLUID FLOW RESTRICTOR HAVING A VARIABLE COEFFICIENT OF RESTRICTION

Herbert M. Eckerlin, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y.

Filed July 15, 1968, Ser. No. 744,945
Int. Cl. F15d *1/02*
U.S. Cl. 138—43 4 Claims

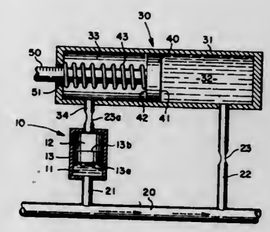


A valve for controlling fluid pressure and volume of flow in fluid systems utilizing a nozzle which issues a stream of fluid into a housing against the surface of an adjustable die. The length of gap separating the nozzle and die can be changed to effect a change in the coefficient of restriction of the valve without producing a significant change in the functional relationship between fluid volume flow and pressure drop therein. A substantially square root functional relationship is maintained by the valve over a range of gap lengths up to about 10 percent of the nozzle diameter.

3,672,402
AUTOMATIC PRECHARGE ADJUSTER

John W. Bloemer, Mentor, Ohio, assignor to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed Sept. 14, 1970, Ser. No. 71,947
Int. Cl. F16l *55/04*
U.S. Cl. 138—31 8 Claims

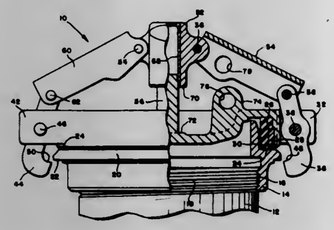


An automatic precharge gas pressure adjuster for a hydraulic desurger for automatically adjusting the precharge gas pressure in response to operating changes in system fluid pressure thereby maintaining a constant volume of precharge gas in the desurger. The adjusting unit comprises a cylinder divided into two chambers by a spring-biased differential-area piston. The system fluid pressure communicates with the chamber facing the first or largest area piston face while precharge gas communicates with the chamber facing the second or smallest area piston face. To assure the precharge gas pressure will be adjusted for changes in system operating pressure only, and not for mere surges, snubbing restrictions are placed in the means connecting the hydraulic system with the precharge gas adjusting unit.

3,672,403
CAP AND SEALING MEANS THEREFOR

Fred A. Wilson, Florence, Ky., and Norman T. Allen, Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Filed July 27, 1970, Ser. No. 58,603
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 8 Claims

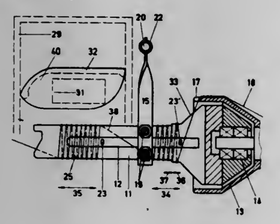


A cap and sealing means therefor for capping and sealing the end of a pipe is disclosed. The cap includes a pair of pivotally mounted locking arms for coengagement with an adaptor ring, the adaptor ring being mounted on the end of the cap to be sealed. The locking arms and adaptor ring have cooperative flat surfaces to insure a firm lock. A sealing ring is mounted in the cap for sealing engagement with the flat portion of the adaptor ring when the cap and adaptor ring are in locking engagement. Each locking arm is pivotally interconnected with a single movable element wherein movement of the single element permits engagement or disengagement of the locking arms with the adaptor ring.

3,672,404
DEVICE FOR PRODUCING THREAD WINDINGS ON A LOOM

Edgar H. Strauss, Rutl, Zurich, Switzerland, assignor to Rutl Machinery Works Ltd. (formerly Caspar Honegger), Zurich, Switzerland

Filed Feb. 2, 1971, Ser. No. 111,932
Claims priority, application Switzerland, March 18, 1970, 4049/70
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 8 Claims

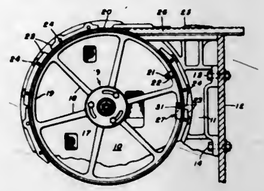


A device on a loom for the production of thread windings of predetermined length which comprises a winding element, a rotor means for winding a thread about the winding element, the winding element having a winding zone on which the thread is wound and a delivery zone from which the thread is delivered to a means, e.g. a shuttle, for inserting the thread into an open shed, and displacement means for periodically displacing a given number of turns of the thread wound on the winding zone as a thread winding to the delivery zone. The winding zone comprises a measuring portion for the thread to be wound on that has a cross-section of substantially constant circumference and a narrower portion that is adjacent to said measuring portion having a cross-section of smaller circumference.

3,672,405
TAPE WHEEL FOR SHUTTLELESS LOOMS

Maurice R. Flamand, Cumberland, R.I., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed May 27, 1971, Ser. No. 147,364
Int. Cl. D03d *47/18*
U.S. Cl. 139—122 R 4 Claims

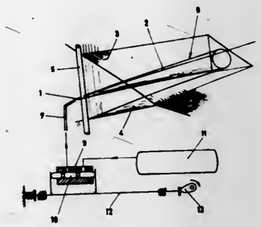


An improved tape wheel for shuttleless looms having an expansion joint formed in the rim thereof for the purpose of preventing expansion of said rim in a radial direction when subjected to the heat generated by a flexible tape which during the performance of its intended function is continuously being wrapped about and thence extended from said rim.

3,672,406
METHOD FOR TRANSPORTING A WEFT THREAD THROUGH A SHED AND LOOM FOR PERFORMING SAID METHOD

Geert Jan Vermeulen, Beethovenlaan 34, Deurne, Netherlands

Filed Oct. 22, 1970, Ser. No. 83,175
Claims priority, application Netherlands, Oct. 22, 1969, 6915973
U.S. Cl. 139—127 P 3 Claims



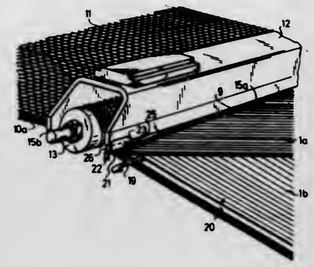
A method for transporting a weft thread through a shed using one or more jet nozzles for a flowing transport fluid characterized in that the jet nozzle is fed by a cyclically varying quantity of transport fluid.

3,672,407
TEMPLE FOR LOOMS

Paul Luber, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 4, 1970, Ser. No. 60,871
Claims priority, application Switzerland, Aug. 12, 1969, 12219/69
Int. Cl. D03j *1/22*
U.S. Cl. 139—295 5 Claims

A temple for looms includes, mounted on the bar at which the newly woven cloth is deflected out of the weaving plane to pass over a stretching element, a finger-like guide member adjustable lengthwise of the temple in the plane of the cloth for control of the edge warps. The guide member is carried on a

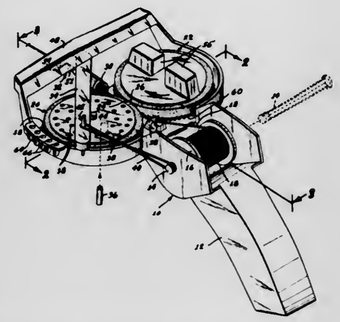


support displaced perpendicularly out of the weaving plane to separate the edge warps from the weaving plane.

3,672,408
WIRE BENDING DEVICE

Philip B. Dubrfuil, Redondo Beach; Stephen Bartok, Torrance, and William R. Crawford, Canoga Park, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 12, 1970, Ser. No. 88,785
Int. Cl. B21f *1/00*
U.S. Cl. 140—102 5 Claims

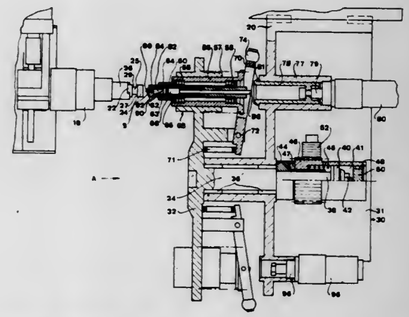


A device which can bend wire in any one of numerous regular patterns so that the wire can be dipped into a plastic solution to form simulated flowers, comprising a frame which can hold a spool of wire that is fed through guides that bend it in a selected pattern. The device includes a pair of wheels with contacting peripheries for feeding the wire into a pair of guides, one being a stationary guide and the other a movable guide that pivots in a regular pattern to determined the shape in which the wire will be formed. The movable guide is mounted at one end of a pivotally mounted arm whose other end is moved by a programmable cam arrangement. The programmable cam arrangement includes several holes formed in one of the wheels, pins which can be inserted into any of the holes, and a spring that urges the arm against the pins so that as the wheel rotates the pins pivot the lever to turn the movable guide.

3,672,409
WIRE COILING APPARATUS

Walter Angst, Kloten, Switzerland, assignor to Meteor AG, Glattbrugg, Switzerland

Filed April 15, 1969, Ser. No. 816,256
Claims priority, application Switzerland, April 19, 1968, 5847/68
Int. Cl. B21f *3/00*
U.S. Cl. 140—92.2 5 Claims

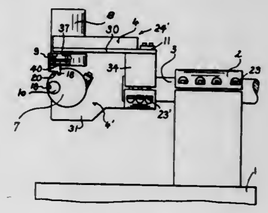


There is disclosed a wire coiling or winding apparatus comprising a turret table means and a plurality of winding mandrels rotatably and drivingly mounted at said turret table means. A drive mechanism drivingly engages with one of said winding mandrels when the turret table means has assumed a predetermined position. A winding spindle is continuously coupled with the drive mechanism, said winding spindle having an axis piercingly extending through the pitch circle of said turret table means and parallel to the axis of rotation thereof. Means are provided for mounting said winding mandrels at said turret table means for axial displacement, and there are means for selectively engaging and disengaging from said winding spindle through axial displacement that winding mandrel momentarily located at said predetermined position of said turret table means.

3,672,410
APPARATUS FOR FORMING RETAINING MEMBERS

Konrad Scheckel, Hagen-Kabel, Germany, assignor to Heetmann & Finkensiep KG, Hagen-Kabel, Germany

Filed July 22, 1970, Ser. No. 57,106
Claims priority, application Germany, July 23, 1969, P 19 37 340.1
Int. Cl. B21f *35/02*
U.S. Cl. 140—103 11 Claims



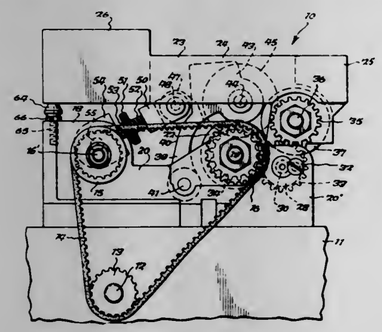
Apparatus for forming retaining members on a helical spring having a helical coil section and two tangentially extending ends has a pair of motor-driven bending assemblies arranged facing each other. Each assembly has a pair of fluid motors, one of which bends one of the tangentially extending

ends of the spring into a direction which is parallel to the axis of the coil section and the other of which forms the retaining member on the bent spring end. Mounting means is arranged adjacent to and between the two bending assemblies and is arranged to releasably hold at least a portion of the helical coil section of the spring and is positioned to permit the spring ends to be bent and formed by the respective bending assemblies. The fluid motors, which may be either hydraulic or pneumatic, are adjustably mounted in respective clamping stands, and may be locked in a desired position.

3,672,411
STRAIGHTENING MACHINE FOR ELONGATED WORKPIECES

John F. Kopczyski, 1671 Sweeney Street, North Tonawanda N.Y.

Filed May 18, 1970, Ser. No. 38,129
Int. Cl. B21f 1/02
U.S. Cl. 140—147 18 Claims



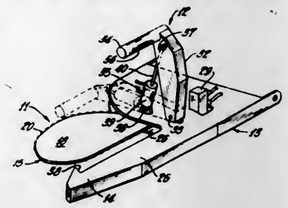
A machine for straightening an elongated workpiece including a base, a first series of axially spaced rolls mounted on said base, a second series of axially spaced rolls mounted in contiguous relationship to the first series on a pivotable frame which is pivotally mounted on said base and which includes a counterweight for biasing the second series of rolls toward the first series of rolls, and a third series of axially spaced rolls mounted on a pivotable carrier for movement toward and away from the first and second series of rolls so as to permit a workpiece to be admitted between the three series of rolls when the third series is in an away position and to thereafter move into engagement with the workpiece so that it is rolled by the three series of rolls and thereafter pushed through the space between the first and second series as a result of the continued movement of the third series of rolls toward the first and second series. The three series of rolls may include rolls having a steel hub and a plastic rim. Alternately the rolls may be fabricated entirely from plastic material. Electric circuit means are provided so as to pass an electric current through a workpiece while it is being rolled for testing purposes.

3,672,412
APPARATUS FOR FELLING TREES

Alva Z. Albright, Woodstock, Ontario, Canada, assignor to Eaton Yale & Towne Canada Limited, London, Ontario, Canada

Filed Jan. 4, 1971, Ser. No. 103,482
Int. Cl. A01g 23/08; B27b 17/02; B27g 19/00
U.S. Cl. 143—32 N 6 Claims

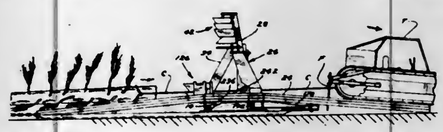
A chain saw adapted to be mounted on a vehicle such as a skidder, and a pusher bar mounted on the chain saw frame and operable to apply a felling force against the tree as the saw cuts through it. The pusher bar includes a hollow support member which surrounds the pusher actuating mechanism to both protect the mechanism and permit the pusher bar to be folded flat against the frame to minimize the overall height of the attachment.



3,672,413
DEVICE FOR DELIMBING TREES

Eino J. Jouppi, Isabella, Minn.

Continuation-in-part of Ser. No. 3,941, Jan. 19, 1970, abandoned. This application Nov. 23, 1970, Ser. No. 91,875
Int. Cl. A01g 23/02
U.S. Cl. 144—2 Z 23 Claims

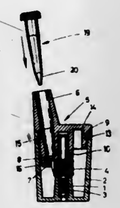


A device for delimbing felled trees with which a tree is drawn through the device and a blade cradle for supporting the trunk of the tree and for cutting off the branches on substantially the lower or underhalf of the tree as the tree progresses through the device, together with a similar blade cradle mounted on a swinging arm which when lowered causes the blades to engage the upper half of the tree and cut off the limbs, the tree being drawn by a tractor and the swinging arm being lowered by mechanism actuated by the movement of the tree.

3,672,414
LEAD SHARPENER

Gerald W. Dahle, Marienhberg 19, Coburg, Germany

Filed Dec. 5, 1969, Ser. No. 882,554
Claims priority, application Germany, Dec. 10, 1968, P 18 13 636.2
Int. Cl. B43l 23/00
U.S. Cl. 144—28.11 3 Claims

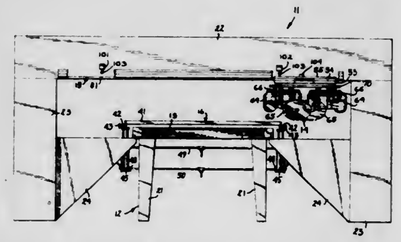


A lead sharpener which may be carried in the pocket of a coat and comprises a head with an inclined lead-holder channel which is partly inserted in and rotatable relative to a housing and about a fixed milling cutter in the housing so that the tip of the lead to be sharpened revolves about the cutter. The main weight of this head is located within the housing so as to attain a flywheel effect as closely as possible to the milling cutter when the head is turned to sharpen the tip of a lead.

3,672,415
WOODWORKING MACHINE

Leif A. Holan, Winona, Minn., assignor to William Wernz; Rudolph Miesbauer and Leif A. Holan, Stockholders of Winona Industries, Inc., Winona, Minn., part interest to each

Filed Sept. 25, 1969, Ser. No. 861,001
Int. Cl. B27l 5/00; B27b 7/02
U.S. Cl. 144—136 13 Claims

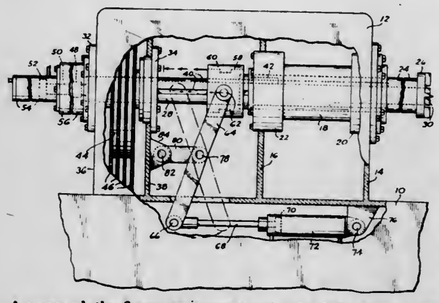


A woodworking machine is disclosed that forms a plurality of properly oriented grooves in a wood panel to effect simple cabinet fabrication. The panel rests on a horizontal table having an alighment fence and a plurality of selective operable stops that enable placement of the panel on the table in a plurality of predetermined grooving positions. A clamping device holds the panel in one of the positions, and a groove is then formed by a cutting assembly including a pair of rotary cutters both of which are disposed at 45° with respect to the table and at 90° with respect to each other. The machine includes means for lowering the cutting assembly to a desired position above the table and advancing the assembly with respect to the panel to form the groove. The assembly is then elevated to a non-cutting position and returned to its initial position. The machine also includes means for automatically actuating the stops in a preselected sequence to effect the formation of a plurality of properly placed grooves.

3,672,416
DRIVE ASSEMBLY FOR DUAL CHUCK VENEER LATHES

Gaylard O. Reed, 8636 S.W. 14th Ave., Portland, Oreg.

Filed April 3, 1970, Ser. No. 25,387
Int. Cl. B27l 5/02
U.S. Cl. 144—209 R 5 Claims

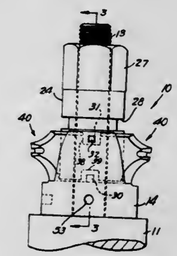


A veneer lathe frame supports a pair of axially aligned log-supporting chuck assemblies each including a pair of rotary chuck-supporting spindles arranged concentrically for independent longitudinal reciprocation. The inner spindle is connected to a rotary drive source and is coupled to the outer spindle for rotating the latter. The inner spindle is connected through a thrust bearing to an axially aligned hydraulic drive cylinder unit and the outer spindle is connected through a thrust bearing and floating drive link to a laterally positioned hydraulic drive cylinder unit.

3,672,417
COMBINATION SHAPER BLADE AND SUPPORT THEREFOR

Roberto Lugo, Av. Nacional, 45, Panama City, Panama

Filed May 12, 1970, Ser. No. 36,529
Int. Cl. B27g 13/12
U.S. Cl. 144—218 4 Claims

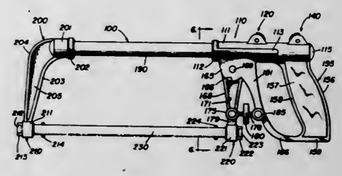


A combination blade and support therefor in which the blade is eccentrically positioned with respect to the spindle and plane of the shaper blade extends at an oblique angle to the axis of rotation. The shaper blade is adjustable endwise with respect to its support to selectively present the cutting edges at each end to the work. The shaper blade cutting edges at each end of the blade may carry the same pattern or different patterns corresponding to the direction of rotation. The angular relationship of the plane of the blade to the axis of rotation reduces the shock load of the cut by having the blade enter the work gradually in a slice rather than abruptly as a chop. The support applies a firm, secure wedge-grip to the blade.

3,672,418
ADJUSTABLE HANDSAW CONSTRUCTION

Raymond C. Dreier, 3450 N. Lakeshore Drive, Chicago, Ill.

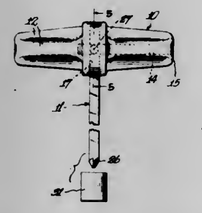
Filed Jan. 11, 1971, Ser. No. 105,539
Int. Cl. B27b 21/06
U.S. Cl. 145—34 R 7 Claims



A handsaw including a handle having a first telescoping member thereon, a beam having a second telescoping member on one end thereof cooperating with the first telescoping member, the handle and beam carrying means for holding a blade therebetween, and first and second longitudinally spaced apart stop members mounted on the handle in association with the first telescoping member for engaging the second telescoping member so that the handsaw may be quickly adjusted to accommodate two different lengths of saw blades by

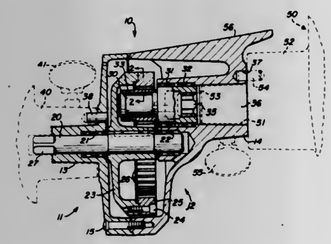
engaging one of the first and second stop members with the second telescoping member. Means for orienting the first and second telescoping members are also provided.

3,672,419
HAND TOOLS
Alvin G. Fischer, 4516 E. Pleasant Valley Road, Independence, Ohio
Filed Oct. 6, 1970, Ser. No. 78,463
Int. Cl. B25g 3/06
U.S. Cl. 145—65 6 Claims



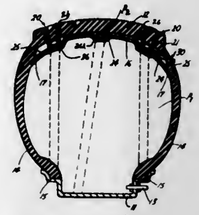
A hand tool, and particularly a screw driver, comprising a handle and a detachable shank. The handle has intersecting longitudinal and transverse openings, and either opening receives either end of the shank. A single holding means, in the form of a spring-pressed ball detent, is contained within the handle and is cooperable with the shank end to hold the shank assembled with the handle.

3,672,420
SPEED INCREASING APPARATUS
Richard S. Hartley, and Franklin Douglas Houser, both of Troy, Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio
Filed May 25, 1970, Ser. No. 40,303
Int. Cl. B02c 18/00
U.S. Cl. 146—182 8 Claims



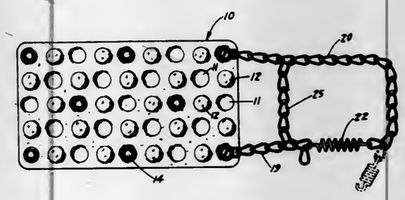
Apparatus for stepping up the speed of the power takeoff on food preparing machines to obtain better performance from attachments for such machines, such as food slicers. A large diameter internally toothed gear is driven by the food machine power takeoff and in turn drives a small diameter gear mounted on a shaft which provides a high speed power takeoff for the attachment. A protuberance is formed on the body of the speed increaser adjacent the point of connection of an attachment thereto which prevents the connection of a low speed attachment, such as a grinder, which could cause damage to the food preparing machine if inadvertently used in combination with the speed increaser. Additionally, the small diameter gear is friction mounted on the output shaft to prevent damage to the machine if excessive countertorque is applied to the attachment.

3,672,421
SNOW TIRE WITH RETRACTABLE STUDS
James R. Anderson, Minneapolis, Minn., assignor to Research Incorporated, Minneapolis, Minn.
Filed May 15, 1970, Ser. No. 37,745
Int. Cl. B60c 11/16
U.S. Cl. 152—208 4 Claims



A tire, particularly for operation in icy conditions which has studs that are mounted so they can be retracted or extended pneumatically without changing the external configuration or shape of the tire, and can be extended without utilizing any external pressure sources.

3,672,422
VEHICLE TRACTION DEVICE
Frank J. Greipel, 49 E. Larpenteur, St. Paul, Minn.
Filed Oct. 9, 1970, Ser. No. 79,599
Int. Cl. B60c 27/00
U.S. Cl. 152—222 5 Claims

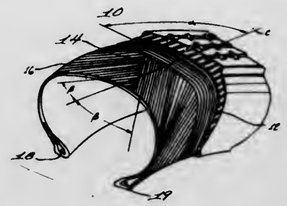


A traction device for use with automotive vehicles to assist in extrication of the vehicle from ice, snow, sand or mud, or the like. The traction device comprises a rigid or semi-rigid plate having an upper traction surface for engagement by the vehicle tire and having projecting members on the opposite surface adapted to bite or dig into the ice, snow, mud or sand in which the vehicle is stuck. Flexible means, such as chains, secured to the traction plate are provided for the purpose of firmly securing the traction mat to the vehicle tire at the interface with the material in which the vehicle is stuck. This causes the traction device to engage the tire temporarily but firmly for sufficient time to permit the traction plate to become firmly set into engagement with the ice, snow, mud or sand. Thereupon, further engagement between the moving tire tread and traction plate permits the vehicle to be readily extricated.

3,672,423
RADIAL, BIAS PLY TIRE
Alexander Duduk, 2300 S. 24th Road Apt. #731, Arlington, Va.
Continuation-in-part of Ser. No. 789,242, Jan. 6, 1969, abandoned. This application April 7, 1970, Ser. No. 26,411
Int. Cl. B60c 9/06
U.S. Cl. 152—356 19 Claims

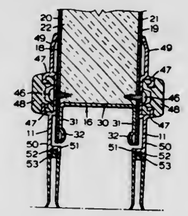
A tire construction is disclosed wherein there is a combination of radial and bias plies, there typically being twice as many bias plies as radial plies. In a preferred embodiment for

passenger car utilization, three plies are employed, a radial ply being disposed outside two bias plies. Both the bias and radial plies are preferably 12s × 12z twist for 1,260/2 and 840/3 denier cords and 10S × 10Z twist for 1,100/2 and 840/2 denier cords, while either of these twists may be employed with 1,100/3 denier cords. The angle of the bias ply in the cured



crown is preferably 35° and the radial ply preferably 90°. The preferred thermal shrinkage at 190° C. of both plies is approximately 17 percent (12 tpi). With these specific parameters, a cooperative structure between the radial and bias plies is effectuated which facilitates manufacture of these tires especially with respect to conventional radial ply tires.

3,672,424
MOVABLE PARTITION WALL
Mortimer Brown, Terra Cotta, Ontario, Canada, assignor to Ram Partitions Limited, Brampton, Ontario, Canada
Filed March 3, 1971, Ser. No. 120,398
Int. Cl. E06b 7/16
U.S. Cl. 160—40 5 Claims



In a movable partition wall consisting of a plurality of panels suspended from a ceiling track, the ceiling track is concealed by a box-like enclosure consisting of two complementary mouldings of vinyl plastic. The panels may be individual, or articulately connected in pairs or in concertina fashion. Each panel is formed with a kick plate which is combined with a flexible strip keyed to the kick plate to hide fastenings and to constitute a buffer. The edge mouldings of each panel are secured in position by being clipped into channel-shaped frame members and frictionally retained thereby.

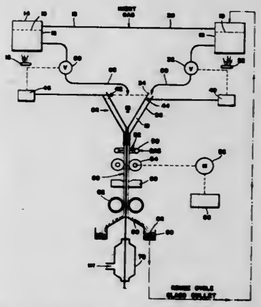
3,672,425
CURTAIN SUSPENSION DEVICES WITH AN ELECTRIC MOTOR DRIVE
Hans Schulze-Robbecke, and Alfred Tiedtke, both of Remscheid, Germany, assignors to Riloga-Werk Julius Schmidt, Remscheid, Germany
Filed July 16, 1970, Ser. No. 55,353
Claims priority, application Germany, July 18, 1969, P 19 36 521.0
Int. Cl. A47h 5/032
U.S. Cl. 160—331 16 Claims

A curtain suspension device comprising an upper rail member and a lower rail member joined together and mounting a drive motor for drawing curtains supported by the device, the drive motor being mounted on one of the members



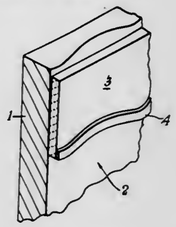
and the members being so shaped that they define a space to accommodate a drive pulley arrangement to act upon draw cords for the curtains.

3,672,426
PROCESS OF CASTING FILAMENT
Rodney H. Cornish, Chicago Heights; James T. Staulcup, and Richard M. Chaney, both of Chicago, all of Ill., assignors to Belden Corporation, Chicago, Ill.
Filed Oct. 8, 1969, Ser. No. 864,796
Int. Cl. B22d 11/10, 11/12
U.S. Cl. 164—5 7 Claims



A process and apparatus for producing metal filament directly from the molten state employing molten glass as a movable mold. The molten glass and metal flow in the same direction through a concentric housing and exit at the same velocity. The glass surrounds the metal and both materials solidify. The apparatus includes a stripping mechanism for removing the glass from the surface of the solidified metal.

3,672,427
METHOD OF LINING CONTOURED MOULDS AND HEAD BOXES WITH DEFORMABLE LINING ELEMENT
Kenton Parkes Cooley, and Edward John Jago, both of Cleveland, Ohio, assignors to Foseco International Limited, Birmingham, England
Filed Jan. 4, 1971, Ser. No. 103,681
Claims priority, application Great Britain, Jan. 6, 1970, 638/70
Int. Cl. B22d 7/10
U.S. Cl. 164—6 4 Claims



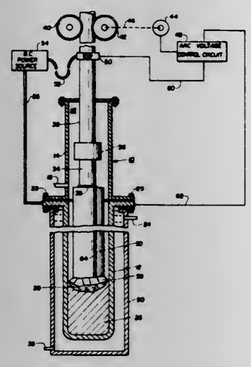
Ingot mould heads and head boxes are lined with slabs or sleeves of deformable lining material. The lower edge only of

the slab or sleeve is deformed to fit tightly against the wall of the mould or head box and may be held in such deformed condition by means of a clip.

3,672,428
POWER PARTITION CONTROL FOR CONSUMABLE ELECTRODE FURNACES

Joseph W. Tommaney, Valencia, Pa., assignor to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Filed Dec. 29, 1967, Ser. No. 694,657
Int. Cl. B22d 27/02
U.S. Cl. 164—52 5 Claims

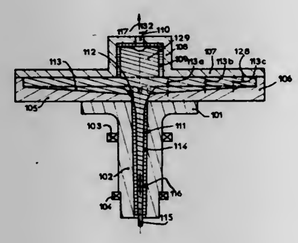


System for controlling the power division between the electrode and molten pool in a consumable electrode furnace by the addition of metallic compounds to the melt for the purpose of stabilizing the arc and shifting the power partition and heat distribution between the electrode and molten pool, whereby the heat in the pool is reduced and that generated at the electrode to melt the same is increased.

3,672,429
METHOD FOR THE CENTRIFUGAL CASTING OF METAL IN A ROTATING HORIZONTAL SHELL

Pierre Lajoye, 40 rue de la Vacquiniere, Montigny les Metz Moselle, France

Filed Sept. 15, 1969, Ser. No. 858,057
Claims priority, application France, Sept. 17, 1968, 6850397; Oct. 11, 1968, 6850493; Aug. 25, 1969, 6928972
Int. Cl. B22d 13/04
U.S. Cl. 164—63 7 Claims

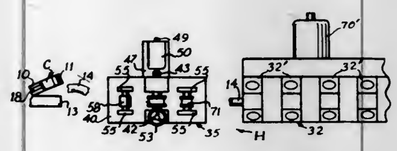


A process for centrifugal casting of metal components in a mold revolving around a vertical axis by supplying liquid metal into a cavity in the mold and rotating the mold to cause the liquid metal to be transferred radially outwardly in the cavity by centrifugal force, while simultaneously applying a vacuum to the cavity for degassing the molten metal during casting thereof to prevent oxidation of the molten metal while it is being supplied into the cavity through radial channels formed in the bottom there.

3,672,430
METHOD OF PRODUCING A HOT-FORMED COPPER-BASE PRODUCT

Daniel B. Cofer, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Continuation-in-part of Ser. No. 633,670, April 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 498,773, Oct. 20, 1965, abandoned, and a continuation-in-part of Ser. No. 816,127, April 14, 1969, which is a continuation of Ser. No. 613,245, Feb. 1, 1967, abandoned, which is a division of Ser. No. 390,666, Aug. 19, 1964, Pat. No. 3,317,994. This application Feb. 2, 1970, Ser. No. 7,778
Int. Cl. B22d 11/06
U.S. Cl. 164—76 13 Claims



A method of producing a hot-formed copper-base product from a molten metal. In a hot-formed copper-base product produced by the method, the copper-base metal has copper oxide inclusions which are substantially uniformly dispersed and has a substantially uniform fine grain structure. In the form of a rod of tough pitch copper, the hot-formed copper-base product produced by the method is superior to prior art hot-formed copper-base products for drawing into wire and for other uses. When used to produce a hot-formed copper-base product in the from of a rod of tough pitch copper, the method includes substantially completely solidifying a molten copper-base metal to obtain a cast metal and hot-forming the cast metal into rod, the hot-forming being initiated while the cast metal is in substantially that condition in which it solidified and being of sufficient degree to substantially completely destroy the columnar dendritic structure of the cast metal.

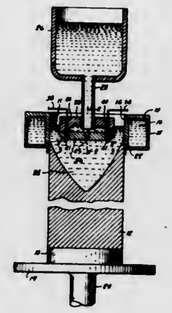
3,672,431
APPARATUS AND PROCEDURES FOR CONTINUOUS CASTING OF METAL INGOTS

Neil Barton Bryson, Kingston, Ontario, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Sept. 25, 1970, Ser. No. 75,561
Int. Cl. B22d 11/10
U.S. Cl. 164—82 5 Claims

In continuous casting of aluminum ingots by delivering molten metal downwardly to an axially vertical mold while withdrawing cast ingot continuously from the lower end of the mold, the supplied molten metal impinges against a baffle positioned immediately beneath the metal delivering tube in the mold. The major flow of molten metal impinges against a baffle positioned immediately beneath the metal delivering tube in the mold. The major flow of molten aluminum is

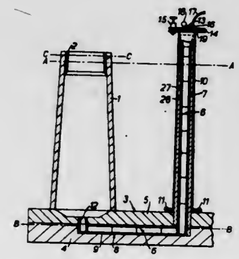
directed laterally by the baffle, but a minor flow of the metal passes directly downward into the mold through a small central hole in the baffle, this hole being aligned with the mold axis.



3,672,432
BOTTOM POURED INGOTS

Roy Widdowson, Chesterfield, and Gene Donald Speceley, Penistone, near Sheffield, both of England, assignors to The British Iron & Steel Research Association, London, England

Filed Dec. 3, 1970, Ser. No. 94,689
Int. Cl. B22d 27/14
U.S. Cl. 164—119 4 Claims



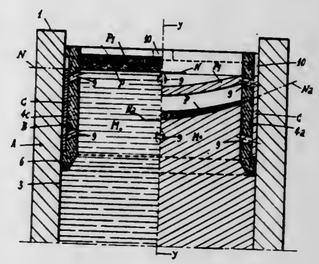
In the known bottom poured method of casting steel ingots molten metal is poured down a runner system communicating with the bottom of the ingot mould. With the invention the runner system is made pressure tight and a pressurized gas is applied to the top of the upstanding runner of the runner system to displace some of the metal in the runner system into the mould. The mould may be of the bottle top type with a heat conducting plug for making a non-gas tight closure at the top of the mould, and pressurized gas may be applied so that metal in the mould contacts the plug.

3,672,433
PROCESS OF CASTING AN INGOT AND STRIPPING MOLD VERY SHORTLY THEREAFTER

Henri Joan Daussan, rue du Fort, Longeville les Metz Moselle, France

Filed May 25, 1970, Ser. No. 40,187
Claims priority, application France, June 2, 1969, 6918293
Int. Cl. B22d 7/10, 29/00
U.S. Cl. 164—123 3 Claims

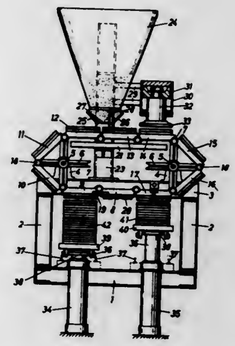
The disclosure relates to a process for the treatment of metal ingots in which ingot molds are intended to be stripped from ingots very shortly after filling and to a device for carrying out said process. A heat-insulating and/or exothermic lining is fixed prior to casting on the internal surface of the ingot mold in the vicinity of the upper portions thereof, in order that said lining should remain attached to the ingot at the time of stripping of the mold; the bottom portion of the lining is applied with zero clearance against the internal wall of the ingot mold along an impervious contact surface, whereas a narrow peripheral gap is formed above said mold impervious contact surface between the internal wall of the ingot mold and the lateral surface of the lining; said peripheral gap is further adapted to communicate on its top portion with the atmosphere and also to communicate with the space inside the lining through lateral openings, which permit filling of said peripheral gap with molten metal at the latest when the cast metal bath has reached its top level within the ingot mold.



3,672,434
MACHINE FOR PRODUCING CASTING MOULDS

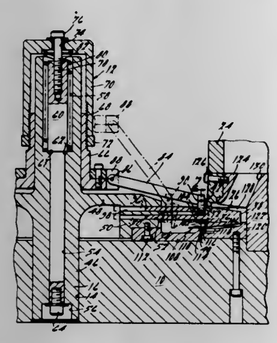
Herbert Grolla, Laasphe, Germany, assignor to Heinrich Wagner Maschinenfabrik, Laasphe, Germany

Filed July 9, 1970, Ser. No. 53,347
Claims priority, application Germany, July 11, 1969, P 19 35 282.0
Int. Cl. B22c 15/02, 25/00
U.S. Cl. 164—187 6 Claims



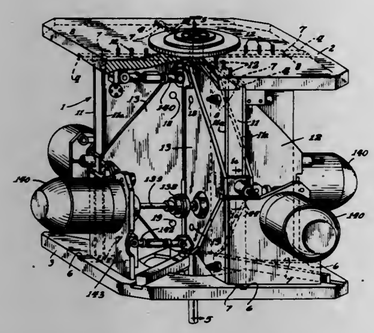
A machine for producing casting moulds comprises a multilink chain, each link being a flat plate which carries a moulding box. The chain is circulated to carry empty moulding boxes beneath a sand filling device followed by a compacting device and filled and patterned moulding boxes are ever tually removed from the chain and stacked on a lifting platform.

3,672,435
MOLD PATTERN
Ronald H. Buck, Jr., Farmington, and Ted Zbikowski, Southfield, both of Mich., assignors to Eaton Corporation
Filed March 23, 1970, Ser. No. 21,758
Int. Cl. B22c 7/00, 9/22
U.S. Cl. 164—247 10 Claims



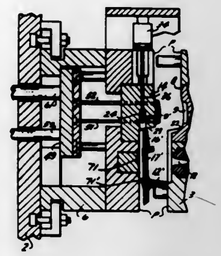
A permanent type non-expendable pattern for making refractory molds in which portions of the pattern are retractable from a projected position in which they are disposed in the cavity to be filled with the refractory molding material and a retracted position in clearance relationship relative to the refractory mold material, enabling an extraction of the pattern from the refractory mold produced. The retractable pattern sections, when in the projected position, are locked in accurate registration with the frame of the pattern, but upon initiation of retraction, are unlocked so as to enable pivoting movement of the sections, whereby they can be withdrawn from the mold cavities formed without damaging the mold surfaces.

3,672,436
VIBRATING WALL CONTINUOUS CASTING MOLD
James N. Wognum; Emil Simich, and Alvin L. Winkler, all of Chicago, Ill., assignors to Interlake Steel Corporation, Chicago, Ill.
Division of Ser. No. 643,562, June 5, 1967, Pat. No. 3,528,487.
This application Nov. 28, 1969, Ser. No. 877,542
Int. Cl. B22d 11/00, 27/08
U.S. Cl. 164—260 12 Claims



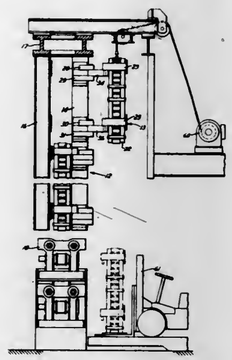
Apparatus for continuous casting of metal having a cavity formed by a plurality of flexible mold sections which minimize the problems of mold warpage by thermal expansion. Resilient backup for the mold sections for controlling mold cavity contour, improved mold section operating means and arrangement therefor is also provided.

3,672,437
DIE CASTING MOLD
Charles H. Bennett, Mt. Gilead, Ohio, assignor to Koehring Company, Milwaukee, Wis.
Filed Nov. 20, 1969, Ser. No. 878,464
Int. Cl. B22c 31/00
U.S. Cl. 164—265 10 Claims



A mold for producing decorative name plates or the like by die casting comprises a mold cavity in a fixed die part, gates for the mold cavity in a movable die part, internal runners within the movable die part feeding the gates, an external runner system on the fixed die part feeding the internal runners from a sprue cavity in the fixed die part, and a mechanism for breaking casting material solidified in the runners from casting material solidified in the gates and thereafter removing the casting solidified in the mold cavity in one piece with solidified casting material loosely lodged in the gates.

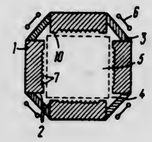
3,672,438
GUIDE-ROLL RACK AND SUPPORTING STRUCTURE THEREFOR
Gottfried Hofmann, Brentwood Borough, Allegheny County, and James T. Stull, Jackson Township, Butler County, both of Pa., assignors to United States Steel Corporation
Filed Sept. 23, 1970, Ser. No. 74,806
Int. Cl. B22d 11/00
U.S. Cl. 164—282 9 Claims



A guide roll rack and supporting structure for use in a continuous casting machine. The rack is formed in vertically aligned sections. The supporting structure includes pairs of

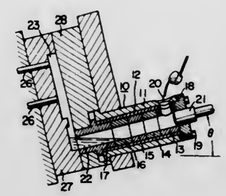
vertically spaced arms hinged to the support columns. The rack sections are removably carried on the arms, whereby the rack sections can swing with the arms from an operative position in the machine to a position outside the machine for easy removal and replacement.

3,672,439
MOULD FOR CASTING INGOTS OF RECTANGULAR CROSS SECTION IN THE METAL CONTINUOUS CASTING PROCESS
Anatoly Ivanovich Manokhin, ulitsa Kandratjuka, 10, kv. 40, and Leonid Alexandrovich Sokolov, Baikalskaya ulitsa, 40/17, kv. 42, both of Moscow, U.S.S.R.
Filed Feb. 4, 1969, Ser. No. 796,329
Int. Cl. B22d 11/12, 27/04
U.S. Cl. 164—283 3 Claims



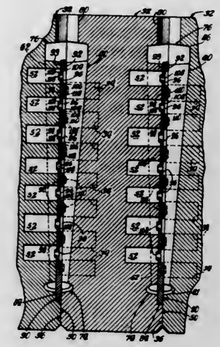
A mold for casting ingots of rectangular cross section in a continuous metal casting process, which is provided with a means for controlling heat withdrawal from the surface of an ingot both in its corners and on its face thereby allowing a skin of a uniform thickness to be obtained along the entire perimeter of an ingot on its emergence from the mold, with the quality of the cast ingots being materially improved.

3,672,440
APPARATUS FOR DIE CASTING FERROUS METALS
Yasushi Miura; Nobuo Kashiwagi, and Zenichi Mochizuki, all of Numazu-shi, Shizuoka-ken, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Chuo-ku, Tokyo-to, Japan
Filed June 13, 1969, Ser. No. 832,989
Int. Cl. B22d 17/04
U.S. Cl. 164—312 1 Claim



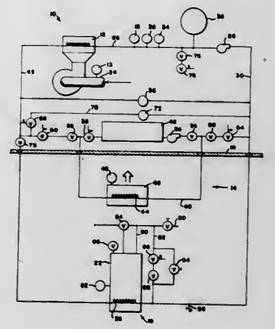
In a die casting machine for injection moulding metals of high melting points into a metal mold by means of an injection cylinder connected to the metal mold at one end and a plunger inserted into the injection cylinder from the opposite end, the injection cylinder comprises an outer cylindrical sleeve of high heat conductivity and is provided with a molten metal pouring opening near said opposite end and an inner cylindrical lining removably fitted in the outer sleeve, the inner lining including a plurality of sections of short axial length which are clamped together into the cylindrical lining, one of the sections positioned at the opposite end being provided with a molten metal pouring opening aligned with that of the outer sleeve.

3,672,441
MOLD ASSEMBLY FOR VALVE LIFTERS
Milton K. Wells, and Arthur S. Hedberg, both of Park Ridge, Ill., assignors to Wells Manufacturing Company, Skokie, Ill.
Filed Jan. 12, 1970, Ser. No. 2,071
Int. Cl. B22c 9/02, 9/20, 9/22
U.S. Cl. 164—351 12 Claims



A mold assembly for valve lifters defined by a plurality of identical mold sections arranged in abutting relation. The front and rear faces of each mold section have a plurality of horizontal mold cavities arranged in vertical rows across their widths. Each face has a number of runner passageways which are in communication with the mold cavities in the abutting opposing face to provide a complete mold pattern formed at each parting line between abutting mold sections.

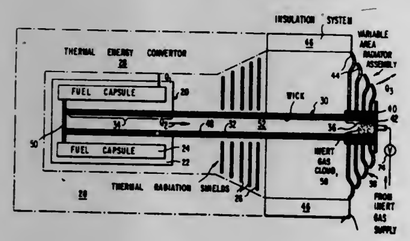
3,672,442
MODULAR AIR CONDITIONING AND HEATING SYSTEM
Kanwal N. Singh; Stephen P. Cremean, both of Columbus, and Donald R. Scott, Grove City, all of Ohio, assignors to Columbia Gas System Service Corporation, New York, N.Y.
Filed Oct. 5, 1970, Ser. No. 78,116
Int. Cl. F24f 3/00
U.S. Cl. 165—22 15 Claims



An air conditioning and heating system for selectively heating or cooling a building while simultaneously heating the water supply for the building has a module adapted to be positioned outside the building, which module contains a boiler for supplying a heated heat transfer medium to first and

second heat transfer means within the building, and a water chiller for selectively supplying a chilled heat transfer medium to the first heat transfer means. The air conditioning system includes valve control mechanisms for selectively controlling the supply of heated and chilled transfer mediums to the first heat transfer means to selectively heat and cool air within the building, while the heated heat transfer medium supplied to the second heat transfer means warms the water supply for the building.

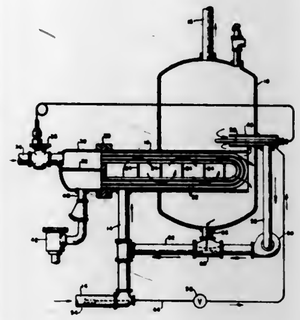
3,672,443
THERMAL CONTROL AND POWER FLATTENING FOR RADIOISOTOPIC THERMODYNAMIC POWER SYSTEM
Walter B. Bienert; William J. Levedahl, and Alan J. Streb, all of Baltimore, Md., assignors to Teledyne, Inc., Los Angeles, Calif.
Continuation of Ser. No. 506,206, Nov. 3, 1965. This application Jan. 28, 1969, Ser. No. 797,368
Int. Cl. F28d *15/00*; G05d *23/00*
U.S. Cl. 165—32 1 Claim



A thermal control device utilizing the heat pipe principle. Heat receiving and heat rejecting surfaces are spaced from each other along the length of the heat pipe. In a preferred form, a radioisotope fuel capsule is in thermal conducting relationship with the heat receiving surface and a noncondensible gas is mixed with the working fluid of the heat pipe. A noncondensible gas automatically expands as the threshold temperature of the system drops to block off more of the heat rejecting surface. In other alternate preferred embodiments, a nonvaporizable liquid is utilized in lieu of a noncondensible gas to reduce the area of the heat receiving surface as the threshold temperature of the system drops or a second material is mixed with the working fluid which changes to a solid phase to block the flow of the working fluid between the heat rejecting and heat receiving surfaces as the threshold temperature of the system drops.

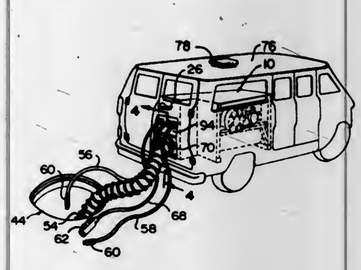
3,672,444
WATER HEATING SYSTEM
Leonard F. Lowe, East Stroudsburg, Pa., assignor to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.
Filed June 3, 1970, Ser. No. 43,160
Int. Cl. F28f *27/00*
U.S. Cl. 165—39 15 Claims

A water heating system is provided, comprising in combination, a water storage tank having a heated water outlet and a heater shroud extending into the tank and being open at its inner end and closed at its outer end. A heater is disposed within the shroud and operates under control of a heat supply regulator. A main conduit system includes a continuously operating pump having its intake end in fluid communication with the interior of said tank at an upper level thereof and its discharge is arranged to deliver water into the outer closed end portion of the shroud. A feed water supply inlet is arranged in closed communication with said main conduit system; a water temperature sensor is disposed in the region of water withdrawal into said main conduit system, and, is operable to regulate the heat supply. A branch outlet conduit leads from the lower level of the tank into the main conduit line; and a feed water by-pass conduit is arranged to have its intake in communication with the feed water inlet and to deliver into said tank in close proximity to the temperature sensor. The



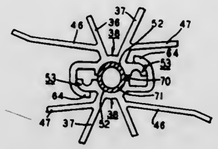
branch outlet and bypass conduit devices are provided with means whereby improved sensitivity and accuracy of control of the heat supply is acquired, in response to heated water withdrawals from the system.

3,672,445
UNDERGROUND SERVICE MODULE
Theo L. Carson, 1120 10th St., Denver, Colo.
Filed Aug. 31, 1970, Ser. No. 68,341
Int. Cl. B60h *3/00*
U.S. Cl. 165—42 18 Claims



A self-contained module is mounted in an electrified van truck and powered thereby and has an air conveying tube, compressed air hoses and electrical wires that are extensible therefrom through a modified panel section of the truck so as to supply conditioned air, operating compressed air and electrical outlets to workmen in a manhole or other underground working area. Air is passed vertically through the module from the vented top of the truck over a heat exchanger or refrigeration coil and conveyed to the workmen through the extensible tube which is locked in a collapsed position within the module for storage and transportation. An air compressor supplies a volume of compressed air which air is directed to a receiver from which low pressure dry air and high pressure air, selectively admixed with a lubricator, are regulatingly passed through the air hoses that are mounted on automatic recoil reels in the module and have outer ends carrying air chucks with a remote control switch for the compressor being provided.

3,672,446
AMBIENT AIR VAPORIZER
Alan R. Tibbetts, Costa Mesa, and Donald R. Tucker, Lakewood, both of Calif., assignors to Airco, Inc.
Filed Jan. 21, 1969, Ser. No. 792,593
Int. Cl. F28b *1/14*
U.S. Cl. 165—183 11 Claims

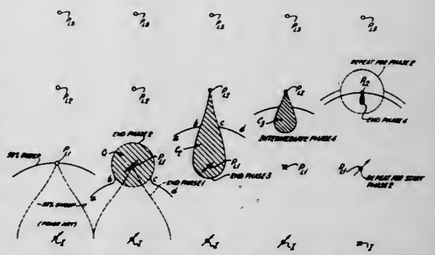


This invention relates to a finned assembly for a heat exchanger comprising an extended surface portion, an elongated tubular member, said extended surface portion comprising two identical parts, each having an internal cylindrical surface adapted to engage said tubular member and each having radially extending locking members adapted to engage locking members on the other of said parts. The invention further relates to methods and apparatus for attaching said extended surface portion to said member.

3,672,447
MARINE WELL DRILLING METHOD AND APPARATUS
David C. Kofahl, Bakersfield, Calif., assignor to Richfield Oil Corporation, Los Angeles, Calif.
Continuation of Ser. No. 628,727, Dec. 17, 1956, abandoned. This application Sept. 10, 1968, Ser. No. 772,888
Int. Cl. E21b *7/12*, *43/01*
U.S. Cl. 166—.6 8 Claims

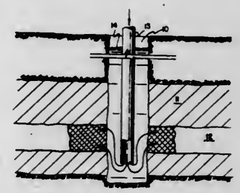
Method and apparatus for drilling an underwater well using subsurface wellhead equipment. A landing base is lowered at the lower end of a conductor pipe toward an underwater bottom. A guide frame is positioned above the landing base. A rotary driven tubular member, passed through the guide base is connected to the conductor pipe to drill the conductor pipe into the underwater bottom after the landing base rests on the bottom. The tubular member is removed after the conductor pipe is cemented and a bit is guided into the conductor pipe to drill hole for a surface casing having a mandrel at its upper end to which blowout preventers may be connected by a hydraulically actuated connector.

3,672,448
INTERFACE ADVANCE CONTROL IN SECONDARY RECOVERY PROGRAM BY RESHAPING OF THE INTERFACE BETWEEN DRIVING AND DRIVEN FLUIDS AND BY THE USE OF A DYNAMIC GRADIENT BARRIER
Donald L. Hoyt, Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Continuation-in-part of Ser. Nos. 786,565, Dec. 24, 1968, Pat. No. 3,592,265, and Ser. No. 786,568, Dec. 24, 1968, Pat. No. 3,593,787. This application Dec. 30, 1970, Ser. No. 102,815
Int. Cl. E21b *43/16*
U.S. Cl. 166—245 16 Claims



The interface between driving and driven fluids in a secondary recovery operation is reshaped after a cusp has developed by injection of a fluid via wells controlling the flow gradients, and the arrival of the injected driving fluid into the vicinity of a production well is delayed by the imposition of a dynamic gradient barrier of produced formation fluids.

3,672,449
SELECTIVELY REDUCING THE PERMEABILITY OF A THIEF ZONE BY ELECTROLESS METAL PLATING
Edwin A. Richardson, and Russell C. Ueber, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Continuation-in-part of Ser. No. 817,722, April 21, 1969, abandoned. This application Dec. 16, 1970, Ser. No. 98,872
Int. Cl. E21b *33/13*
U.S. Cl. 166—292 5 Claims

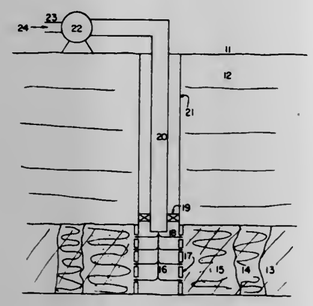


In selectively plugging a thief zone within a reservoir interval, solutions for activating and effecting an electroless metal plating are injected so that most of the injected fluid enters the thief zone. The composition and amount of the plating materials are adjusted to deposit sufficient metal to reduce the permeability of the thief zone.

3,672,450
METHOD FOR IN SITU COMBUSTION IGNITION
Pratip Bandyopadhyay, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Jan. 28, 1971, Ser. No. 110,492
Int. Cl. E21b *43/24*
U.S. Cl. 166—260 8 Claims

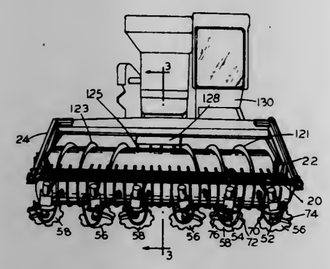
A slug of material comprising an emulsion of water and carbon black with or without additives is injected into the vicinity about a proposed oxidant injection well in a fireflood pattern.

A downhole heater or other suitable ignition means is introduced into the vicinity of the wellbore to be ignited. The initiation of a combustion drive or fireflood is enhanced by the



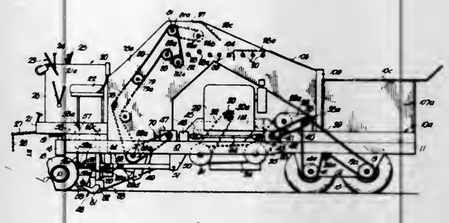
presence of the carbon black material. Through injection of an oxidant, the carbon black ignites, forming an intense heat source about the wellbore from which the formation hydrocarbons are rapidly ignited.

3,672,451
BEAN HARVESTER
Addison C. Sheckler, Bonta Bridge Road R.D. #1, Cato, N.Y.
Filed May 22, 1970, Ser. No. 39,841
Int. Cl. A01d *25/04*
U.S. Cl. 171—58 3 Claims



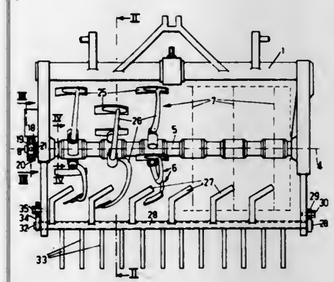
Harvester for beans and the like having a mobile support for parallel rows of bean plants, a pair of convex laterally disposed disks rotatably mounted on the support having peripheral notches, and being spaced apart and spaced to correspond substantially to the spacing of adjacent plant rows, and having their axes tilted transversely and rearwardly and having their convex faces adjacent their peripheries adapted to ride on the ground inwardly and forwardly of the disk centers, means for rotating the disks so their adjacent peripheries move rearwardly at the approximate forward speed of the support, stripper means overlying the adjacent areas of each disk adapted to move the plants of two rows into a common windrow between the disks, stripper plates disposed over the concave sides of each of the disks in an area opposite to the stripper bar areas, and a floating spring counterbalance support connected to the mobile support employing parallelogram linkages.

3,672,452
APPARATUS FOR HARVESTING SOD
William W. Miner, P.O. Box 392, Cranbury, N.J.
Division of Ser. No. 618,765, Feb. 27, 1967, Pat. No. 3,519,082. This application Dec. 30, 1969, Ser. No. 889,034
Int. Cl. A01b *45/04*
U.S. Cl. 172—19 16 Claims



An ambulatory apparatus cuts sod from a sod field in a continuous strip and includes a reciprocating cutting head assembly mounted substantially at the forward end of the apparatus. A conveying means conveys the strip cut by the cutting head assembly interiorly of and to the rear of the apparatus and into contact with a flail which strikes off excess attached soil from the underside of the soil strip. A severing apparatus cuts the sod strip into sod pads of a preselected size and a folding device folds the severed sod pads prior to same being placed on a pallet supporting area located at the rear of the apparatus.

3,672,453
MACHINE FOR DIGGING SOIL
Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to Landbouwwerktuigen-en Machinefabriek H. Vissers W.V., Rotterdam, Netherlands
Filed Feb. 10, 1970, Ser. No. 9,688
Claims priority, application Netherlands, Feb. 13, 1969, 6902245
Int. Cl. A01b *33/02, 33/10*
U.S. Cl. 172—39 2 Claims



A machine for digging soil is provided, comprising a rotor, spades mounted tiltably on said rotor and retaining members which prevent dug-up clods of being moved further around with said spades instead of being moved to the ground.

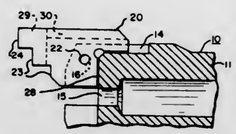
For preventing damage of machine parts the spades and retaining members are so shaped that in every tilted position of said spades they can pass between said retaining members which are disposed adjacent one another.

3,672,454
SONIC TOOL APPARATUS
Keith L. Likins, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio
Filed June 13, 1969, Ser. No. 833,131
Int. Cl. B06b *1/02*
U.S. Cl. 175—56 7 Claims



A means for improving the drilling rate of sonic and ultrasonic drills. Specifically, a sonic transducer, a tool, and a mechanical spring are used in combination to increase the amplitude of gross motion of the tool to better remove the particles and dust taken from the work surface. Reference is made to the claims for a legal definition of the invention.

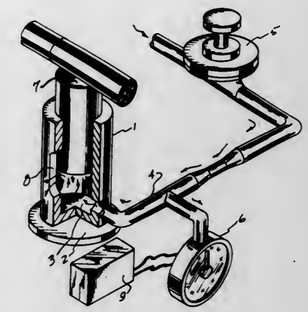
3,672,455
DRAG BITS
James L. Foster, Jr., Ligonier Township, Westmoreland County, Pa., assignor to Tarton Industries, Inc.
Filed April 14, 1970, Ser. No. 28,417
Int. Cl. E21c *13/00*
U.S. Cl. 175—412 6 Claims



An earth drilling bit of the drag type is provided having a body with a plurality of radial slots at one end, each having a portion extending across said one end from the axis, a plurality of L-shaped wings removably fitted in said slots and held in place by resilient means extending through passages in the body and wings.

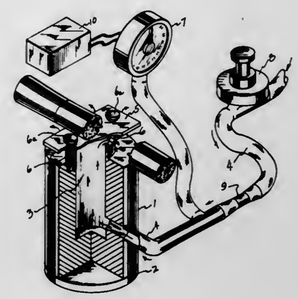
3,672,456
DEVICES FOR WEIGHING SMALL OBJECTS
Benny Lee Hester, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed June 24, 1971, Ser. No. 156,176
Int. Cl. G01g *5/04*
U.S. Cl. 177—201 4 Claims

Device for rapidly weighing small, light weight objects comprising a vertical annular member having a duct open at its upper end and having a movable cylindrical member located therein. Air supply means are provided for feeding air to the bottom of the chamber to raise the cylindrical member. An escape slot is positioned in the wall of the chamber to allow for the escape of air therethrough when the bottom of the cylindrical member rises above the lowermost portion of the slot. Means are connected to the air supply means (e.g., a gauge) for determining the difference in pressure therein when an object to be weighed is placed on top of the cylindrical member



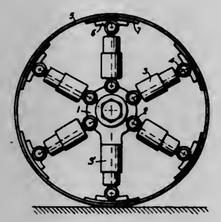
and depresses the same to reduce the effective area of the slot. The device is especially suitable for weighing very light objects, such as cigarettes.

3,672,457
DEVICES FOR WEIGHING SMALL OBJECTS
Benny Lee Hester, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed June 24, 1971, Ser. No. 156,177
Int. Cl. G01g *5/04*
U.S. Cl. 177—201 5 Claims



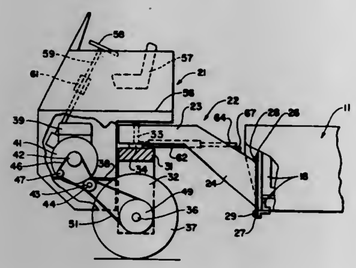
Device for rapidly determining the weight of light weight objects comprising a tubular member having a vertical duct therethrough for the passage of air. The duct is open at the top of the member and connected to means for supplying air for passage through the duct and out through the top of said member. Connected to the top of the member is a platform restricted in its lateral movement and adapted to be moved vertically to a predetermined point above said member to allow air from the duct in said member to exit beneath the platform, which platform is thereby suspended by the pressure of the exiting air. A calibrated pressure gauge is associated with the air supply means which registers the difference in pressure in the air supply means when an object to be weighed is placed on the platform and depresses the platform. The weighing device is particularly suited for rapid quality control procedures in the manufacture of light weight objects, such as cigarettes.

3,672,458
DRIVER WHEEL OF VEHICLE
Julius Mackerle, Prague, Czechoslovakia, assignor to Ustav pro vyzkum motorovych vozidel, Prague, Czechoslovakia
Filed Feb. 16, 1970, Ser. No. 11,411
Claims priority, application Czechoslovakia, Feb. 17, 1969, 1058/69
Int. Cl. B62d 57/02
U.S. Cl. 180—8 F 7 Claims



A self-propelled driver wheel for a vehicle comprising a plurality of linearly expandable spokes uniformly arranged about a central hub, each spoke being separately joined to a supply of fluid under pressure and being provided with distributor means for selectively distributing the fluid to the spokes whereby on expansion thereof the wheel is caused to turn.

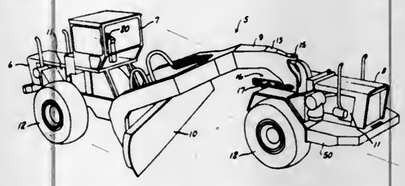
3,672,459
SINGLE WHEEL, SELF-PROPELLING ATTACHMENT
Everett V. Rankins, 329 Flores Court, Manteca, Calif.
Filed July 1, 1970, Ser. No. 51,597
Int. Cl. B62d 61/08
U.S. Cl. 180—13 4 Claims



For attachment to farm implements of the type of balers, rakes, spraying equipment and the like, a wide single wheel is mounted on an axle rotatable within an inverted U-frame. A tongue is connected to the center of the U-frame about a vertical pivot, the rear end of the tongue being bolted to the implement. A prime mover for the axle is mounted on the U-frame, as is a cab for the operator and controls.

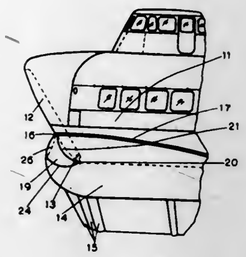
ERRATUM
For Class 180—67 see:
Patent No. 3,672,048

3,672,460
CONTROL MEANS FOR POWER STEERING SERVO
Harry H. Takata, Golden Valley, Minn., assignor to Raygo, Inc., Minneapolis, Minn.
Filed Feb. 16, 1971, Ser. No. 115,642
Int. Cl. B62d 5/06
U.S. Cl. 180—79.2 B 5 Claims



A vehicle having a pair of units relatively swingable by a steering servo features a differential device comprising a housing that confines two bevel gears to coaxial rotation independently of it and one another and confines a bevel pinion meshing with them to rotation on an axis transverse to theirs. The servo energization control is mounted on one unit, the other unit is connected on its swinging axis with one bevel gear. The other bevel gear is connected with the movable member of the energization control. The housing is connected with a steering wheel to rotate with its turning.

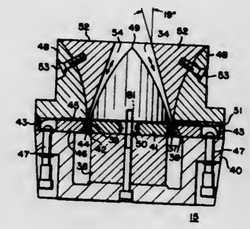
3,672,461
FLEXIBLE SKIRT ASSEMBLIES FOR AIR CUSHION VEHICLES
Lavis Albert Henry Riddle, and Thomas Craig, both of East Cowes, Isle of Wight, England, assignors to British Hovercraft Corporation Limited, Yeovil, Somerset, England
Filed Oct. 8, 1969, Ser. No. 864,693
Claims priority, application Great Britain, Nov. 22, 1968, 55,453/68
Int. Cl. B60v 1/16
U.S. Cl. 180—127 11 Claims



An air cushion vehicle having flexible skirts, the vehicle being provided with a cabin having a pivotally mounted access door arranged to act as a loading ramp, wherein a portion of the flexible skirt is attached to and passes over part of the access door.

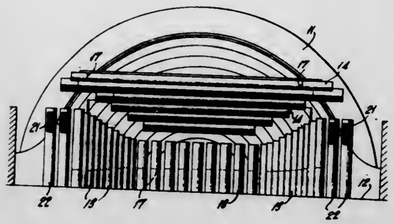
3,672,462
APPARATUS FOR CONTROLLING SONIC ENERGY DISTRIBUTION
John H. Auer, Jr., Fairport, N.Y., assignor to General Signal Corporation, Rochester, N.Y.
Filed Oct. 20, 1969, Ser. No. 867,621
Int. Cl. G01s 9/00; H04r 1/28
U.S. Cl. 181—.5 R 17 Claims
An electromechanical transducer is provided for producing pulses of sonic energy and respondingly generating electrical signals relative to received sonic energy wherein a driver

generates the sonic pulses; and an improvement for projecting the sonic energy in a peculiar controlled pattern is a wave guide interposed at the output of the driver for controlling the propagation of the pulses by setting up substantially a line source of sonic energy which emanates the sonic energy in an operating pattern of at least a minimum intensity near the point of greatest breadth of the pattern.



There has been provided an electromechanical transducer for projecting sonic energy in a peculiar pattern including a head mounted at the output of the transducer and a wave guide having a transverse slot therethrough adapted to cooperate with the head for directing the propagation of the sonic energy to substantially complete sonic coverage within a limited range.

3,672,463
ACOUSTICAL SYSTEM EMPLOYING TUBULAR RESONATORS
Christopher Jaffe, 167 E. Rocks Road, Norwalk, Conn., and Frank O. Gehry, 1524 Cloverfield Blvd., Santa Monica, Calif.
Filed Nov. 9, 1971, Ser. No. 196,914
Int. Cl. F01n 1/02; E04b 1/99; H04r 1/28
U.S. Cl. 181—30 15 Claims



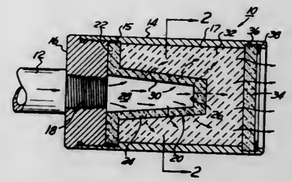
Improved dispersion of the sound from an orchestra toward an audience and reinforcement of the lower frequencies in said sound are achieved through the use of tubular resonators positioned around and above the orchestra. Resonating chambers are formed in the ends of the tubes by means of transverse partitions. Electrically-driven speakers may be positioned in said tubes.

3,672,464
MUFFLER FOR INTERNAL COMBUSTION ENGINE
Douglas W. Rowley, St. Paul, and John A. Campbell, Minneapolis, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Sept. 16, 1970, Ser. No. 72,678
Int. Cl. F01n 1/00
U.S. Cl. 181—44 6 Claims
A muffler for internal combustion engines which employs a converging-diverging nozzle and a length of perforated tubing to effect sound attenuation with minimum back pressure. The perforated tube is axially disposed in a cylindrical casing, projecting forwardly from the muffler outlet and defining alternate flow passages. The nozzle member is disposed in the perforated tube, its mouth positioned at the tube inlet and spaced downstream from the muffler inlet. An imperforate



baffle disposed in the annular passage between the perforated tube and cylindrical casing intermediate the ends of the nozzle member lengthens the passage with respect to the alternate, causing the divided gas flows to travel different distances prior to recombination and exhaust.

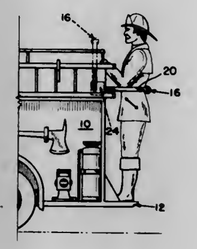
3,672,465
GAS EXHAUST SILENCER
Leland Francis Blatt, and Frank H. Wiesenhofer, both of 31915 Groesbeck Highway, Fraser, Mich.
Filed Oct. 15, 1970, Ser. No. 81,051
Int. Cl. F01n 1/10, 7/16
U.S. Cl. 181—50 7 Claims



An air exhaust silencer comprises a housing having an air inlet and an air outlet defined by baffle members made of a porous material; a sound absorbing material is disposed in the housing between the baffle members; the air enters through the inlet port and is broken up by the porous inlet baffle for distribution through the sound absorbing material and exhaust through the porous outlet baffle at which the air flow is further broken up to thereby considerably reduce the noise level of the exhausted air passing through the silencer.

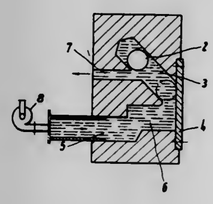
ERRATUM
For Class 181—58 see:
Patent No. 3,672,773

3,672,466
SAFETY APPARATUS
Jacob C. Beck, Welcome, N.C., assignor to Safety Devices, Inc., Welcome, N.C.
Filed Jan. 4, 1971, Ser. No. 103,597
Int. Cl. E06c 7/18
U.S. Cl. 182—3 9 Claims



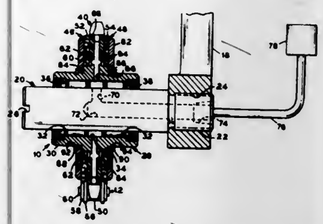
A safety apparatus adapted to be mounted above the rear support platform of a fire fighting vehicle for retaining fire fighting personnel thereon includes a safety bar mounted upon arm members which are displacable from a first position forwardly of the support platform to a second operative position wherein the bar is horizontally disposed rearwardly of fire fighting personnel standing upon the rear platform.

3,672,467
APPARATUS, SUCH AS A DRAWING UNIT OR A CALENDER DRYER
Heinz Fleissner, Egelsbach, near Frankfurt am Main, Germany, assignor to Vepa AG, Basel/Schweiz, Switzerland
Filed July 28, 1970, Ser. No. 58,980
Claims priority, application Germany, Aug. 20, 1969, P 19 42 330.4
Int. Cl. F16n 3/00
U.S. Cl. 184—1 C 7 Claims



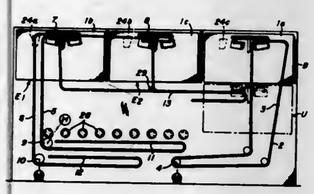
The present disclosure relates to an oil circulation indicating instruments which comprise a housing, a plurality of boreholes angularly disposed within said housing in an upwardly-downwardly direction, said boreholes communicating at their lower end with a common channel disposed in said housing, additional boreholes communicating with each of said angularly disposed boreholes and with the elements to be lubricated, a movable float means disposed in each of said angularly disposed boreholes and adapted to be raised to a point above said additional boreholes or lowered to a point below said additional boreholes, and a central lubricant supply pipe communicating with said common channel for the introduction of the lubricant thereto.

3,672,468
LUBRICATING IDLER FOR ROLLER CHAINS OR THE LIKE
John D. Schuster, 6067 Sylvan Green Road, Sylvania, Ohio
Filed Aug. 3, 1970, Ser. No. 60,460
Int. Cl. F16n 7/12
U.S. Cl. 184—15 A 6 Claims



A lubricating device for a roller chain is provided. The device includes a sprocket for the roller chain with a pair of lubricating discs mounted on each side of the sprocket and extending a distance sufficient to engage the side plates of the chain when the teeth of the sprocket engage the chain. The lubricating discs preferably are slightly compressed when engaging the chain side plates to thereby be more effective in depositing lubricant on the chain. The lubricant can be supplied from a passage located centrally in an axle on which the sprocket and lubricating discs rotate, with passages extending radially through the sprocket and communicating with the lubricating discs and with the axle passage.

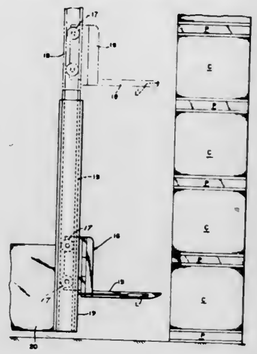
3,672,469
DEVICE FOR SELF-SERVICE STORES
Werner Potrafke, Hufeisenstrasse 6, 4320 Hattingen, Germany
Filed Oct. 6, 1970, Ser. No. 78,474
Int. Cl. E04h 3/04
U.S. Cl. 186—1 A 9 Claims



An arrangement for self-service stores, in which containers loaded with goods selected by a customer are by chain means including stud means moved from a check-out station to an unloading station for withdrawal by the customer of the checked-out goods, while each container is provided with entraining means cooperating with stud means of said chain means, said entraining means being so controlled as to block and free the entraining means for respectively transporting and freeing the respective container.

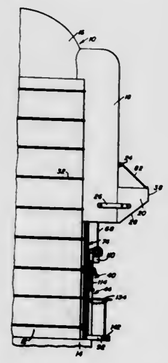
3,672,470
PHOTOELECTRIC CONTROL FOR LOAD HANDLING DEVICE
Frederick F. Ohntrup, Plymouth Meeting, Pa., and Louis E. Pecsi, Dept Ford, N.J., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio
Filed Nov. 26, 1969, Ser. No. 880,216
Int. Cl. B66b 9/00
U.S. Cl. 187—1 8 Claims

A load handling device carrying light sensitive means and a light source moves relatively to a load with a focused beam from the light source scanning the load. The light sensitive means receives light of said beam reflected from the load, and any variations of the reflected light because of variations in the load, will cause the light sensitive means to particularly



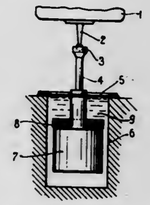
condition a control circuit for the load handling device. By utilizing a light sensitive means such as two photoelectric cells, variations in ambient light do not significantly affect the operation of the light sensitive means and control circuit.

3,672,471
SILO ELEVATOR
Leonard J. Badding, Vinton, Iowa, assignor to Veda, Inc., Long Lake, Minn.
Filed Nov. 13, 1969, Ser. No. 876,528
Int. Cl. B66b 11/04
U.S. Cl. 187—27 23 Claims



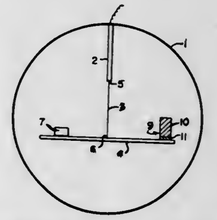
A silo elevator including a first stationary section for support from an upper portion of one side of a silo and a second section for movement up and down that one side of the silo. One of the sections includes guide means from which the central portion of an elongated flexible tension member is supported for longitudinal shifting relative thereto and the other section includes a pair of winding members driven at the same effective peripheral speed and upon which the opposite end portions of the tension member are wound. Further, the tension member and first section include coacting abutment means spaced along the path of movement of the central portion of the tension member relative to the guide means for limiting longitudinal shifting of the tension member relative to the guide means.

3,672,472
VIBRATION DAMPERS FOR RAPIDLY ROTATING BODIES OF REVOLUTION
Johannes Lagerwey, Leidschendam; Hendrik J. Ijlstra, Weesp, and George F. J. Andriesse, Amsterdam, all of Netherlands, assignors to Reactor Centrum Nederland, (Stichting), an Institute of the Netherlands
Filed Sept. 15, 1970, Ser. No. 72,257
Claims priority, application Netherlands, Sept. 22, 1969, 69.14317
Int. Cl. F16f 7/10
U.S. Cl. 188—1 B 3 Claims



Vibration damper for a fast spinning body of revolution, comprising a hermetically closed vessel, a damping member coupled with said body through a deformable wall portion of said vessel, an elastically compressible solid body contained in said vessel and liquid filling the space left in said vessel completely.

3,672,473
PENDULUM SYSTEM
Cornelis M. Verhagen, c/o Datawell N.V., Zomerlustraat 4, Haarlem, Netherlands
Filed Dec. 30, 1970, Ser. No. 102,875
Int. Cl. F16d 57/00; F16f 9/00
U.S. Cl. 188—266 6 Claims

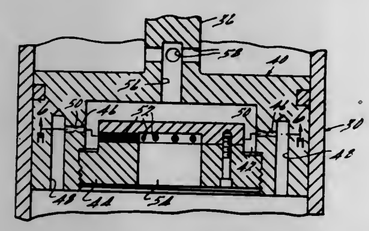


The invention provides a pendulum system for stabilization purposes, provided with a liquid-filled vessel and a body suspended therein, said body being of synthetic material having a density deviating little from 1 g/cm³ the liquid being water containing substances such as glycerol, and/or sorbitol and/or glycol dissolved therein and the density difference of liquid and synthetic material being smaller than 1 percent of the material density in the temperature range from −5° C to +35° C.

3,672,474
FLUID FLOW DEVICE FOR A SHOCK ABSORBER
Endre A. Mayer, and Bernard R. Teitelbaum, both of Birmingham, Mich., assignors to The Bendix Corporation
Filed Feb. 16, 1970, Ser. No. 11,715
Int. Cl. F16f 9/34
U.S. Cl. 188—282 7 Claims

A fluid flow device which will produce a tailored flow-rate to pressure difference relationship including a laminar and an

orifice restriction connected to a radial and a tangential inlet respectively of a vortex valve, with both connected in parallel to the upstream pressure source. Flow across the assemblage will be such that the vortex valve will act like a smaller orifice



at lower flows and a larger orifice at higher flows, or vice versa, due to the shifting of the respective shares of the total flow accommodated by the laminar and orifice restrictions. This arrangement is incorporated into a shock absorber to produce an improved output damping characteristic.

3,672,475

DASH POT INCLUDING TEMPERATURE SENSITIVE VALVE MEANS

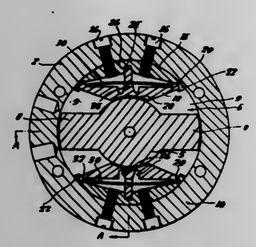
Alan Richard Brine Nash, 39, Abbot's Ride, Farnham, Surrey, England

Filed July 7, 1970, Ser. No. 52,933

Claims priority, application Great Britain, July 7, 1969, 34,154/69

Int. Cl. F16f 9/52

U.S. Cl. 188—277 **9 Claims**



A dashpot or damper has means for compensating for changes of viscosity in the damping fluid due to changes of temperature. Restricted flow paths for the damping fluid that determine the damping force are composed in part of members that are displaceable with changes of temperature so that the cross-sectional areas of the flow paths vary at different temperatures and compensate at least partially for the concurrent fluid viscosity changes.

3,672,476

ELECTROMAGNETIC CLUTCH-BRAKE DEVICES

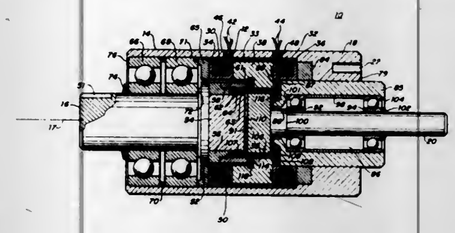
James R. Hendershot, Amherst, N.H., assignor to Vibrac Corporation, Chelmsford, Mass.

Filed Sept. 4, 1970, Ser. No. 69,839

Int. Cl. F16d 37/02

U.S. Cl. 192—21.5 **18 Claims**

A combination magnetic particle clutch and brake device comprising a rotatable output shaft having a single magnetic coupling member mounted thereon for rotation therewith, the coupling member comprising a hollow cylindrical portion having an axis of rotation substantially coincidental with, the axis of rotation of the shaft and an annular portion extending substantially radially of the cylindrical portion. The brake section of the device includes a stationary magnetic armature and one of the portions of the member, while the clutch section includes a rotor and a stator and the other of the portions of the member. Means connect the stationary armature and the stator as a unit. Driving coils are provided for establishing mag-



netic flux paths through the armature and one portion of the coupling member and through the rotor and stator and the other portion of the coupling member. The armature and the rotor are spaced from and surround the coupling member so as to define a single continuous space which is filled with magnetic particles. Sealing means are provided for substantially preventing magnetic particles from escaping from the space.

3,672,477

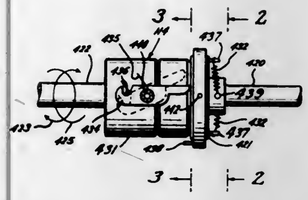
CLUTCH

John J. Moran, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.

Division of Ser. No. 737,065, June 14, 1968, Pat. No. 3,622,279. This application June 21, 1971, Ser. No. 154,988

Int. Cl. F16d 41/02, 41/07, 41/08

U.S. Cl. 192—27 **1 Claim**



In a spring loaded cam type clutch having a driving and driven member, the improvement for providing two-way drive by providing a reversing pin connected to one of the members and a spring loaded pawl pivotally mounted on the second member for bypassing the reversing pin in the forward direction, but engaging the reversing pin and driving the driven member in the reverse direction.

3,672,478

HYDRAULICALLY OPERATED WET-TYPE FRICTION CLUTCH

Hans-Walter Riese, Dittelbrunn, and Gerhard Friedrich, Schweinfurt, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 11, 1971, Ser. No. 142,133

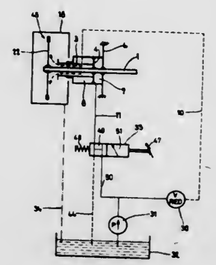
Claims priority, application Germany, May 13, 1970, P 20 23 252.4

Int. Cl. F16d 25/00, 13/72

U.S. Cl. 192—86 **9 Claims**

The release mechanism of a wet-type friction clutch is actuated by a piston which divides the cavity of a cylinder into two

compartments. One compartment is connected to an oil pump through a control valve which either admits high-pressure oil to the compartment or vents the compartment to a sump. The other compartment is continuously supplied with oil under lower pressure by the sump pump through a pressure reducing



valve, and the oil flows from the other compartment to a nozzle which directs it toward the engageable friction faces of the driving and driven clutch members. When the high-pressure compartment is vented, the oil in the other compartment acts on the piston to retract the clutch release bearing from the release levers or the diaphragm spring of the clutch.

3,672,479

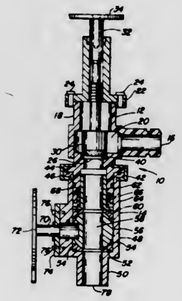
APPARATUS FOR PROVIDING A PREDETERMINED VOLUME OF LIQUID

Owen J. Schwertfeger, Chicago, and Frank D. Brill, Norridge, both of Ill., assignors to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Oct. 2, 1970, Ser. No. 77,546

Int. Cl. G07f 13/00

U.S. Cl. 194—13 **9 Claims**



The intake orifice of a screw type valve is connected to a liquid reservoir. Mounted at the output orifice of the screw valve by detachable spring clips is a ball valve. The rate of liquid flow through the screw valve can be preset by adjustment of the handle of the screw valve. The ball valve may be actuated from an off to an on position for a preset period of time by an electrically actuated solenoid and linkage. The total volume of liquid flowing through the apparatus for each actuation of the solenoid is a function of the rate of liquid flow through the screw valve divided by the time of actuation of the ball valve.

3,672,480

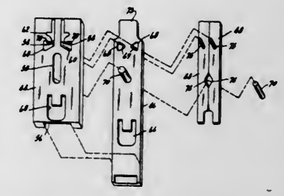
TAPE CARTRIDGE DISPENSER

Louis John Crossley, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.

Filed July 23, 1970, Ser. No. 57,616

Int. Cl. G07f 5/00

U.S. Cl. 194—92 **10 Claims**



A tape dispenser including a drum having a plurality of tape cartridge boxes mounted on oppositely disposed vertical pins provided on the outer periphery of the drum, a flange positioned around the upper portion of the drum to prevent vertical movement of the boxes with respect to the pins and including a slot for removing one box at a time from the drum, a locking spring plate mounted to block the slot and having a release recess which is moved into alignment with the slot to allow for the vertical movement of a box on the pins, and a key actuated release mechanism connected to said locking spring plate and actuated by a lettered key which allows for movement of the locking plate to release a tape cartridge box from the drum. The release mechanism includes a slide housing having a pair of guide slots, an index slide positioned for movement in the housing and including a pair of triangular openings, a pair of arms mounted for movement with the slide and having rivets extending through said triangular openings and said guide slots, and a spring connected to the arms to bias said arms to a locking position with respect to said housing and slide. The special key is used to move the arms with respect to the slide to thereby release the slide for movement relative to the housing.

3,672,481

VARIABLE MAGNETIC FLUX COIN-SENSING DEVICES

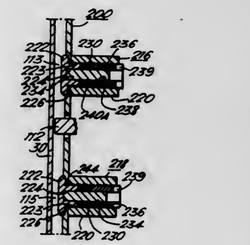
Willard A. Hastie, Aylmer East, Quebec, and Austin Hastie, Ottawa, Ontario, both of Canada, assignors to Coin Verifiers Company Limited, Ottawa, Ontario, Canada

Filed Dec. 8, 1969, Ser. No. 883,131

Claims priority, application Canada, Dec. 6, 1968, 037,067

Int. Cl. G07f 3/02

U.S. Cl. 194—101 **17 Claims**



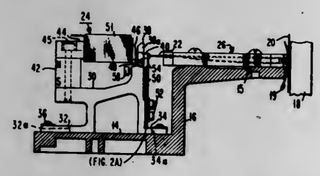
An improvement is herein provided, in a coin-sorting apparatus wherein a coin is caused to move down a chute defined by an inclined runway and a pair of substantially parallel plates. The improvement comprises a magnet having a

slide face physically and magnetically coupled to the magnet positioned in the chute so that a coin moving in the chute is in direct, sliding, face-to-face contact therewith. The magnet includes a magnetic flux adjusting means including a casing of a non-magnetic, non-magnetizable material, with the magnet and the magnetic flux adjusting means mounted in the casing, the magnet and the flux adjusting means being relatively slidably mounted with respect to each other. By adjusting the strength of the magnet by the magnetic flux adjusting means, two conditions are caused to prevail, namely firstly that the magnet will attract and hold all coins made of iron or steel or other ferromagnetic metals and those coins made of nickel or other paramagnetic metal having a smooth face; and secondly that the magnet will attract but merely retard the speed of movement of coins made of nickel or other paramagnetic metal and having an imprinted face.

3,672,482
WIRE MATRIX PRINT HEAD

Philip A. Brumbaugh, Endicott; Richard H. Harrington, Vestal; Stanley E. Nemier, Endicott, and Thomas C. Nielsen, Endwell, all of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,278
Int. Cl. B41j *3/12*
U.S. Cl. 197—1 R **7 Claims**

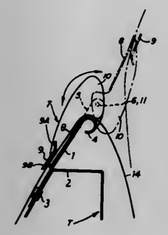


A Z-shaped support having upper and lower shelves carries a plurality of electromagnetically controlled print wire actuators on its lower shelf for actuating a plurality of print wires which are attached to the actuator armatures and are converged into a vertical array by a wire guide attached to the upper shelf.

3,672,483
CONTINUOUS STATIONERY GUIDE MEANS

Edward W. Gill, and Derek A. Vincent, London, both of England, assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,358
Int. Cl. B41J *15/00*
U.S. Cl. 197—133 **1 Claim**

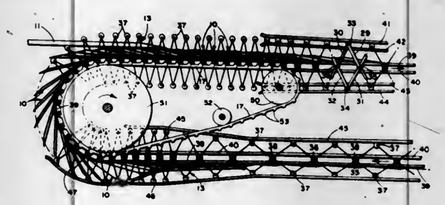


Guide means for attachment to a typewriter so that continuous stationery can be guided to the platen of the typewriter comprises a backing plate which is adapted to be secured to the typewriter and a guide plate pivotally secured to the backing plate. The guide plate has a throat through which continuous stationery passes to the typewriter. The guide plate is pivoted upwardly, so that the leading edge of the continuous stationery is lifted from the platen, when it is required to type an additional letters and envelopes.

3,672,484
PASSENGER CONVEYOR

Attilio E. Angioletti, and Sergio G. Marocco, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 780,921, Dec. 3, 1968, Pat. No. 3,583,543. This application Sept. 21, 1970, Ser. No. 73,691
Claims priority, application Italy, Sept. 30, 1969, 22681 A/69
Int. Cl. B66b *9/12*; B65g *21/12*
U.S. Cl. 198—16 **14 Claims**

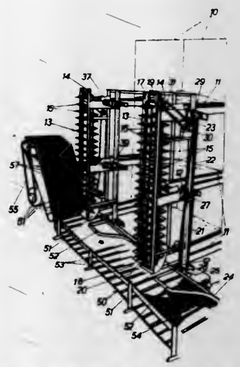


A passenger conveyor having a high speed central zone joined at the respective ends by initial and terminal zones having gradually building up and slowing down speeds obtained by respectively elongating and shortening the support surface formed by the conveyor. The elongation and shortening takes place by virtue of the relative sliding movement of adjacent plates moved by a main drive means with which each plate engages and is temporarily connected thereto. The plates travel along a closed circuit and passenger convenience handles are also provided to move along with the plates to aid the passengers. The upper path of the conveyor is rectilinear while the lower return path has a rectilinear central portion and downwardly sloped end portions. Auxiliary drive means are provided at each end of the conveyor to transfer the plates between the upper and lower portions.

3,672,485
EGG COLLECTING APPARATUS

Anthony George Walters, Ford, near Shrewsbury, England, assignor to Salopian Industries (Metals) Limited, Shrewsbury, Shropshire, England

Filed July 2, 1970, Ser. No. 52,053
Int. Cl. A01k *31/14*; B65g *47/08, 47/12*
U.S. Cl. 198—26 **19 Claims**



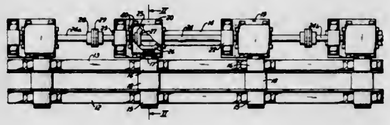
Egg collecting apparatus for collecting eggs delivered to one end of a row of tiered battery cages by delivery conveyors

serving each tier, which apparatus includes an elevator which collects eggs from at least some of the delivery conveyors and discharges them all at one level.

3,672,486
ROLLER CONVEYOR

Frank Kennedy, Mount Lebanon Township, County of Allegheny, and Thomas C. Roberts, Johnstown, both of Pa., assignors to United States Steel Corporation

Filed Sept. 14, 1970, Ser. No. 72,056
Int. Cl. B65g *13/02*; F16h *57/02*
U.S. Cl. 198—127 **8 Claims**

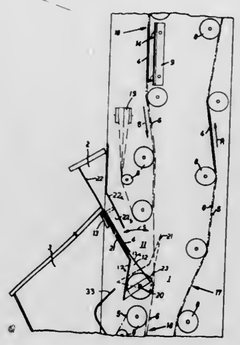


A roller conveyor of the type in which the rolls are driven from a line shaft. The roll shafts and line shaft have cooperating bevel gears which are placed within light weight housings. All bearings in which the shafts are journaled are separate from the gear housings to avoid need for precision in constructing the housings. Each shaft is journaled in only a single "held" bearing, and the other bearings are "free" to enable the shafts to be shifted axially for adjustment or removal. The line shaft is formed in sections joined end-to-end.

3,672,487
VERTICAL CONVEYORS

Erich Schneider, Wiesensteig, Germany, assignor to Organisation Ralfs KG, Wiesensteig, Germany

Filed March 6, 1970, Ser. No. 17,242
Claims priority, application Germany, July 29, 1969, P 19 38 388.1
Int. Cl. B65g *15/4*
U.S. Cl. 198—165 **7 Claims**

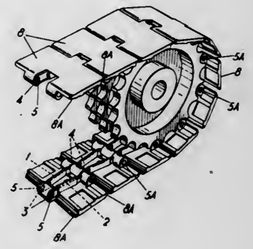


A vertical conveyor having a pair of endless belts forming a run between which articles are conveyed. Infeed and discharge chutes are located along the run at a point where one of the belts is removed to interrupt and expose the run. Switch means are provided at the exposed portion to divert the containers to or from the run.

3,672,488
CONVEYORS

Bernard Collins, Stanmore, England, assignor to Bernard Collins Limited, Borehamwood, Hertfordshire, England

Filed Nov. 20, 1970, Ser. No. 91,435
Int. Cl. B65g *17/00*
U.S. Cl. 198—189 **6 Claims**

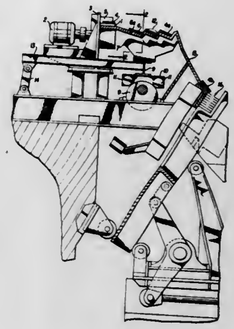


This invention relates to endless or continuous link conveyors having a series of platforms or supports linked to each other. The links in the present invention are fundamentally metal embedded within plastics materials, the exposed surfaces of the platform or support being of plastics material.

3,672,489
EXIT ROLLWAY FOR ROLLED BARS OR RODS IN PARTICULAR FLAT OR PROFILED BARS, WITH TRANSVERSE CONVEYANCE DEVICE

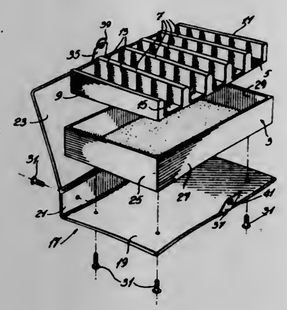
Otto Karl Buchheit, St. Ingbert (Saar), Germany, assignor to Moeller & Neumann G.m.b.H., St. Ingbert (Saar), Germany

Filed Jan. 2, 1970, Ser. No. 46
Claims priority, application Germany, Jan. 4, 1969, P 19 00 447.8
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **3 Claims**



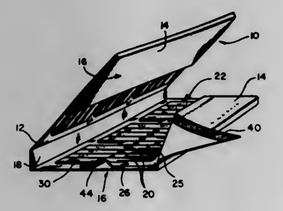
An exit rollway in particular for flat bars or rods, provides lateral conveyance of the moving bars or rods by means of an oscillating grate system known for cooling beds, wherein grate members extending from the stationary grate and from the displaceable grate are provided with a plurality of slide channel sections of equal lengths having chamfered entry ends.

3,672,490
SLIDE LIBRARY ALBUM
Gerard Desmarais, and Claude Desmarais, both of Ville Mont Royal, Quebec, Canada, assignors to Desmarais & Frere Ltee, Montreal, Quebec, Canada
Filed May 18, 1970, Ser. No. 38,395
Int. Cl. B65d 85/48; A45c 11/00
U.S. Cl. 206—1 R 1 Claim



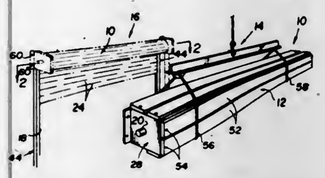
The invention relates to a slide library album of the type intended to hold a plurality of slides in rows inside the album and also possibly in small stacks in each row. The album comprises a container, slide holding tray which is received in the container and a case adapted to enclose the container with the slide holding tray. The assembly has means, such as split rivets, to fixedly amount the container on the case, and fastening means, such as a snap fastener, to close the case around the container with the slide holding tray. In this manner, when the case is closed, the slide library album can be stored upstanding on a bookshelf.

3,672,491
PAPER MATCH BOOK ASSEMBLY
Jui-Chang Liu, Taipei, and Teng Chan, Nan Tu Sein, both of Taiwan, assignors to Lin-Huey Chang and Ya-Ya Hung, Taipei, Taiwan
Filed Oct. 8, 1970, Ser. No. 79,146
Int. Cl. A24g 27/12, 27/20
U.S. Cl. 206—29 6 Claims



A match book assembly having a cover forming packets of match sticks, each of which is provided with a separate igniting means to insure proper ignition of a match when it is struck by being withdrawn from the packet. The packets are permanently closed to prevent accidental ignition of the unused matches as a match is being lit. The match sticks are formed by cuts through a paper board so that the heads of the match sticks are surrounded by the paper board sheet. Preferably, the match sticks are arranged in a plurality of groups, each group being separated from an adjacent group by a space in the paper board which is relatively wider than the space which separates each of the match sticks within a group. In addition, a side of each of the match sticks is defined in the paper board by misaligned, overlapping cuts through the paper board sheet. The length of the cut defining the head portion of the match stick is preferably less than the length of the cut defining the tail portion of the match stick, so that the strip between the cuts is disposed nearer to the head of the match stick than to the end opposite the head.

3,672,492
FACTORY-ASSEMBLED OVERHEAD DOOR
Samuel Irving Sherr, Malverne, N.Y., assignor to North American Door Corp., Lindenhurst, N.Y.
Filed Feb. 9, 1971, Ser. No. 113,930
Int. Cl. B65d 85/20; E06b 9/08
U.S. Cl. 206—46 H 4 Claims



A factory -assembled overhead door, preferably of the "rolled steel" type, having side mounting members by which the door is mounted in place traversely along the top of a door opening. The side mounting members additionally cooperate with removable structure to form a protective enclosure about the door. This enclosure enables both safe transportation and greatly facilitated installation of the door since it provides protection against crushing or the like until after the completion of the installation of the door.

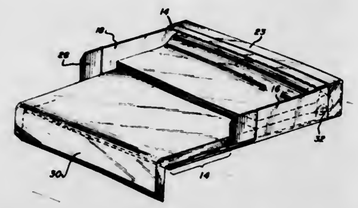
3,672,493
FOIL WRAPPED COIL SPRING
Henry J. Modrey, Eagle Drive, Stamford, Conn.
Filed April 23, 1970, Ser. No. 31,075
Int. Cl. B65d 85/00
U.S. Cl. 206—46 H 7 Claims



An open coil compression spring is enveloped by frangible pliable metal foil forming a continuous wall enveloping all windings of the spring and secured against axial sliding on the spring. A thus shrouded or wrapped spring can be packaged or stored in bulk without danger of nesting or tangling with other springs. Prior to delivering the springs to a point of utilization the shroud thereon is removed by stripping the foil off the spring.

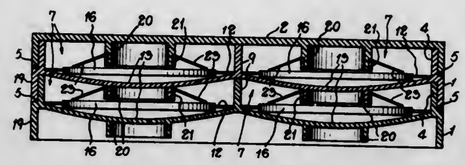
3,672,494
COMBINATION SHIPPING CONTAINER AND DISPENSER FOR PLASTIC FILM
Harry P. Elchin, Western Springs, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 24, 1970, Ser. No. 49,367
Int. Cl. B65h 55/00
U.S. Cl. 206—57 R 17 Claims

A plurality of plastic films such as plastic bags are packaged in a disposable, compact shipping container which also serves as a self-contained dispenser. The container-dispenser combination comprises a generally rectangular carton having a substantially horizontal dispenser base panel when the combination is disposed in a normal dispensing position. The front end panel is integrally hinged to the dispenser base panel and is releasably openable so as to be coplanar therewith. An elongated leash rod is internally secured athwart and between the main panels near the rear end panel. A restraining member



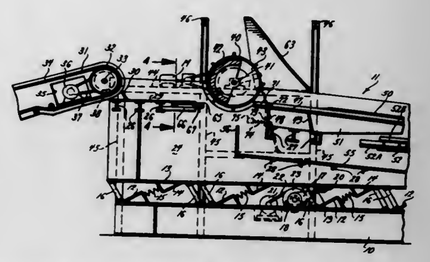
cooperates with the leash rod to engage and restrain the plastic films folded thereover. One end section of the plastic film is overfolded on the leash rod and the other end section is overfolded on itself near the openable front end panel. For dispensing purposes the openable front end panel is opened, the adjacent films unfolded thereon and the innermost films successively pulled from the dispenser one-by-one.

3,672,495
PACKAGING EPITAXIALLY COATED SEMICONDUCTOR DISKS
Rudolf Bauer, Munich; Herbert Jacob, Burghausen, Upper Bavaria, both of Germany, and Werner Braun, Palos Verdes Peninsula, Calif., assignors to Wacker-Chemie GmbH, Munich, Germany
Filed Feb. 6, 1970, Ser. No. 9,228
Claims priority, application Germany, April 1, 1969, G 69 13118
Int. Cl. B65d 71/00
U.S. Cl. 206—65 F 2 Claims



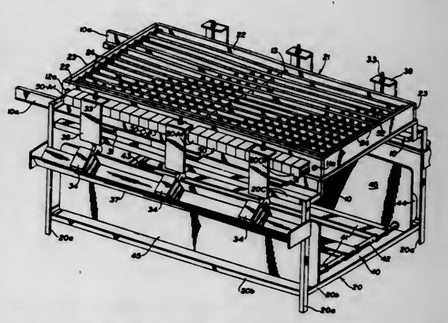
A package for storing and shipping epitaxially coated semiconductor disks comprising a plurality of similar trays which are adapted to be nested one on top of the other. An upstanding vertical rim extends about the upper face of each of the trays and a narrow horizontal ledge extends about each of said trays beneath said rim. A second rim projects vertically downward from the outer edge of the horizontal ledge of each tray, and this rim fits snugly over and frictionally engages the upstanding rim of the tray which is stacked therebeneath. The upper face of each tray contains upstanding partitions which form a plurality of similar storage compartments in the tray. Each of said compartments has a flat horizontal floor and a circular dished portion for storing a semiconductor disk within such compartment. The said dished portion, which constitutes most of the floor of each compartment, has an outer rim sunk slightly below the outer flat part of the floor to restrain the semiconductor disk from being dislodged when said tray is placed on an incline. A cover is provided for the topmost tray, and a plurality of downwardly curved resilient petals are provided on the bottom of each tray for resiliently holding each semiconductor disk in its assigned storage compartment. Means are also provided to facilitate the insertion of forceps or tongs into the various compartments, when the nested trays are unstacked, to permit the semiconductor disks to be readily removed.

3,672,496
SCRAP MATERIAL PROCESSING APPARATUS
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher & Pulverizer Co., Inc., St. Louis, Mo.
Filed March 26, 1970, Ser. No. 22,990
Int. Cl. B03c 1/30
U.S. Cl. 209—38 9 Claims



Apparatus for processing scrap material in a manner to separate magnetic from non-magnetic material and unusable foreign materials from the magnetic material, and to control the size of the final product of magnetic material such that oversize magnetic material may be collected and recycled for further reduction.

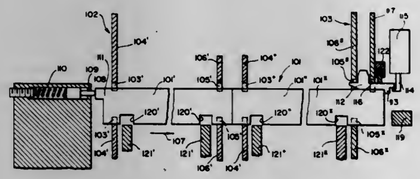
3,672,497
RANDOM ACCESS ARTICLE SELECTION OF SYSTEM AND APPARATUS THEREFOR
William J. Lambert, 2270 Boving Road, Lancaster, Ohio
Filed July 13, 1970, Ser. No. 54,352
Int. Cl. B07c 3/18
U.S. Cl. 209—80.5 9 Claims



Method and apparatus are disclosed for effecting selection of an article or item stored in a random access system. Each article or item is provided with codifying indicia in accordance with the selected number system with the indicia comprising two independent components that are termed "number" indicia and "complemental number" indicia. In an illustrative embodiment the articles comprise sheet-form cards which are formed with a series of key-form slots arranged along one marginal edge portion with each of the slots designed to incorporate and combine both the number indicia and the comple-

mental number indicia. Selection and removal of a numerically identifiable card is mechanically accomplished through selective operation of a similar number of selector bars with each bar cooperatively engageable with a respective key-form slot in the card. Mechanical minipulation of the selector bars in accordance with the selected number system effects a combined operation of retaining within a storage area all cards having a designating number greater than a selected number and retaining all cards having a designating number less than the selected number. In effect in this mechanical example, mechanical displacement of the selector bars in accordance with a specific numerical designation simultaneously releases all cards having a numerical designation less than this number as well as the card with the selected numerical designation and effects reengagement of the selected bars thus manipulated with all cards having a numerical designation less than the selected number.

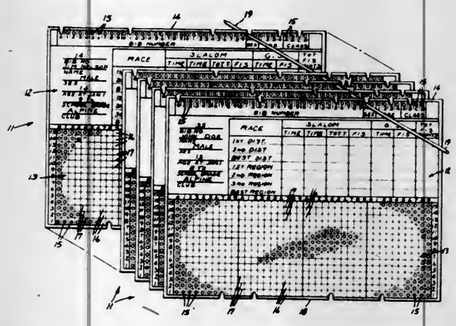
3,672,498
CARD SORTING DEVICE AND METHOD
John H. Lanahan, Whitesboro, and William W. Abram, Utica, both of N.Y., assignors to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,900
Int. Cl. B07c *5/00*
U.S. Cl. 209—80.5 **4 Claims**



The capacity of a card sorting device in increased. The device includes a card storage area for holding a plurality of edge-aligned cards in vertical orientation for separation of certain cards from the remaining cards. A plurality of elongate code bars are located below the lower aligned edges of the cards and extend transverse to the cards. The device includes means for displacing certain selected code bars laterally of the device and means to move the laterally displaced code bars upwardly into adjacency with the lower edges of cards in the device. Cards having notches in their lower edges in alignment with the selected code bars are moved downwardly with respect to the remaining cards which are restrained from downward motion by the selected code bars, thus effecting card separation. The capacity of such device is enlarged according to the present invention by providing each elongate code bar as a plurality of individual longitudinally aligned sections each of which is mechanically coupled, such as by direct abutment, to an adjacent code bar section for lateral motion therewith. In this way, a very large number of cards can be provided for a given code bar size without the necessity of providing elaborate guide means for aligning each code bar in proper position in the device. In another sense, capacity is increased by obviating the necessity of utilizing massive code bars which would reduce the number of notches that could be effectively provided in an edge of a given card.

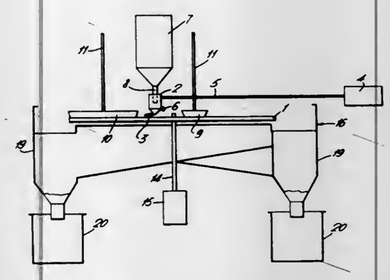
3,672,499
MULTIPLE USE SORTING CARD
Lorne W. Nelson, 10118 Dupont Ave. S., Minneapolis, Minn.
Filed Dec. 17, 1970, Ser. No. 99,082
Int. Cl. B07c *5/06*
U.S. Cl. 209—80.5 **7 Claims**

A multiple use information card for use with a plurality of other such cards in needle probe sorting. The card consists of a primary body portion having a peripheral edge in which information is encoded by punching, and a plurality of detachable row strips each of which represents a separate information field. The row strip disposed at the card periphery is punched with certain information, usually of a non permanent nature,



which permits its use as a data storing device in the sorting process. When the non permanent information has no further use the row strip is severed from the card, thus presenting a new peripheral edge and information field.

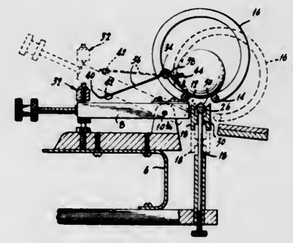
3,672,500
APPARATUS FOR GRADING PARTICLES ACCORDING TO THEIR SPHERICITY
Michael Richard Hayes, Kirkham, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Aug. 21, 1970, Ser. No. 65,963
Claims priority, application Great Britain, Aug. 25, 1969, 42,231/69
Int. Cl. B07b *13/10*
U.S. Cl. 209—116 **6 Claims**



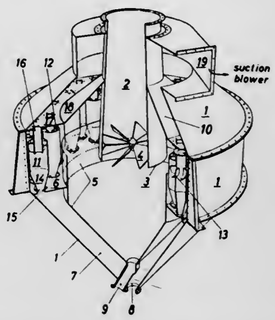
Particles, such as nuclear fuel particles, are graded according to their sphericity by feeding them at a controlled rate to the central region of a rotating table and collecting them in a collector as they drop over the edge of the table. A double hopper system is provided, the lower one of which may be vibrated, so that particles can be fed by gravity one after the other to the table.

3,672,501
EGG STABILIZER
Otto C. Niederer, Bear Tavern Road, Titusville, N.J.
Filed Dec. 21, 1970, Ser. No. 99,955
Int. Cl. A01k *43/00*
U.S. Cl. 209—121 **17 Claims**

Equipment for grading eggs by weight wherein a balance beam is provided with an egg support on which an egg to be weighed is deposited by egg moving means. Means are located adjacent and above the egg support in position to be engaged by an egg deposited on the support and serve to stabilize and position the egg with respect to the balance beam so as to render the weighing operation more accurate and permit increased speed in operation of the equipment. The egg stabilizing means also cooperates with egg discharging means located below the egg support to aid in discharging an egg from the egg support when the balance beam is tilted.



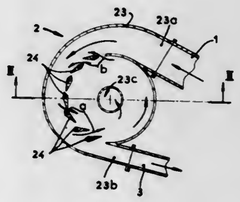
3,672,502
APPARATUS FOR PURIFYING DUST LOADED WASTE GASES
Hans Jurgen Janich, Beckum, Germany, assignor to Polysius G.m.b.H., Neubeckum, Germany
Continuation of Ser. No. 783,469, Dec. 13, 1968, abandoned. This application March 27, 1970, Ser. No. 20,873
Int. Cl. B04c *5/28*
U.S. Cl. 209—144 **5 Claims**



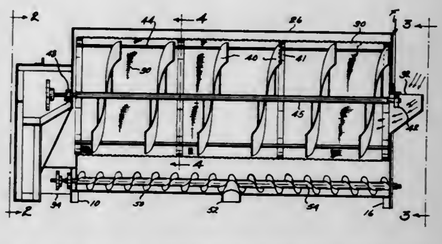
An apparatus for purifying waste gases of furnaces, which comprises a substantially centrally located waste gas feeding pipe leading into a pre-separator and having twist producing means arranged in its lower end while cyclones distributed around said pre-separator have inlet means communicating with said pre-separator and also have first outlet means for releasing fine separated dust into a collecting chamber and furthermore have second outlet means communicating with a purified gas collecting chamber.

3,672,503
CENTRIFUGAL SEPARATOR FOR FIBROUS MATERIAL
Andre Mark, 54, Cours Lafayette, 69, Lyon, Rhone, France
Filed May 15, 1969, Ser. No. 824,949
Claims priority, application France, May 15, 1968, 6850019
Int. Cl. B04c *1/00*
U.S. Cl. 209—144 **2 Claims**

A centrifugal separator with a circular inner chamber and an outer chamber of decreasing cross section from a relatively large tangential inlet to a relatively small tangential outlet. The two chambers communicate through a semicircular arrangement of individually adjustable blades forming a portion of the boundary between the chambers extending between the tangential inlet and outlet.



3,672,504
GRAIN CLEANER
Dale F. Grimes, Jr., 924 Edwards, St. Marys, Ohio
Filed March 5, 1970, Ser. No. 16,892
Int. Cl. B07b *1/24*
U.S. Cl. 209—255 **1 Claim**



An apparatus for cleaning grain including a partially open-ended elongated cylindrical screen cage for receiving grain. A grain inlet chute and a grain outlet chute are disposed at the respective ends of the cage. The screen cage has a mesh slightly smaller than the grain particles. Encompassed within the cage and secured thereto is a grain feed screw that churns the grain and feeds it through the cage from the inlet chute to the outlet chute. As the grain is so moved, dirt particles intermixed in the grain fall through the sides and bottom of the cage onto a dirt receiving receptacle disposed below the cage thereby cleaning the grain. Disposed in the dirt receptacle is a feed screw that feeds dirt to a dirt outlet chute in the receptacle. The cage may have an exhaust fan for removing dust and fine dirt particles from the cage to further clean the grain. In a modification of the invention, the grain feed screw rotates within the cage and is not attached thereto.

3,672,505
CLEANING AND SORTING MACHINE FOR PARTICULATE MATERIALS
Leon G. Feterl, Salem, S. Dak.
Continuation-in-part of Ser. No. 801,729, Feb. 24, 1969, abandoned. This application Aug. 31, 1970, Ser. No. 68,311
Int. Cl. B07b *1/24*
U.S. Cl. 209—264 **8 Claims**

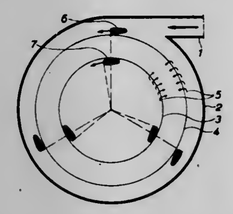
A cleaning and sorting machine for removing particle trash, such as dockage, from desired larger particulate material of substantially uniform size, employs an elongate and generally cylindrical driven separating drum having a screen periphery of a predetermined mesh, for retaining the desired larger particles. The drum, mounted on a horizontal axis, has mounted

therein a series or multiplicity of stationary slide baffles with peripheries of said baffles in spaced relation to the inner periphery of the drum and the baffles are declined from their upper portions to their lower portions in the direction of discharge of the machine, and constitute the only means for moving or progressing the particulate material from the entrance at one end of the drum to the discharge at the other



end. The screen successively lifts particles over a substantial segmental area of the drum and thereafter, with gravity, dropping all particulate material upon the baffles with attendant rolling and sliding action and the said declined baffles are preferably densely perforated with sieve-like apertures of substantially the mesh of the drum screen to constitute a further separation step in the progress of all particulate material through the machine.

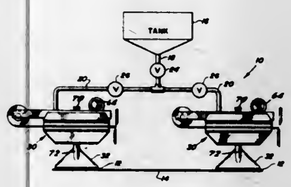
3,672,506
PRESSURE STRAINER DEVICE
Ahti Syrjanen, Valkeakoski, Finland, assignor to Jylhavaara Osakeyhtio, Valkeakoski, Finland
Filed May 6, 1970, Ser. No. 34,974
Int. Cl. B07b *1/20*
U.S. Cl. 209—273 2 Claims



A pressure strainer for cellulose, paper or equivalent pulp suspension, comprising two concentric strainer cylinders for passing acceptable pulp under pressure from the outside of the outer cylinder and from the inside of the inner cylinder into the space between cylinders, whereat in connection with each cylinder there has been provided at least one blade revolving about the cylinder' common axis and having a substantially drop-shaped cross section and which sweeps close to the surface of the strainer cylinder on the side where the pump to be strained is located, whereby the blades in the course of their motion produce in the strainer cylinder with their leading end a pressure pulse and with their trailing end, a vacuum pulse. The blades in association with different strainer cylinders are located with such displacement with reference to each other, or have such mutual angular spacing, that the pressure pulse from the blade of one of the two strainer cylinders enhances the vacuum pulse from the blade of the other strainer cylinder.

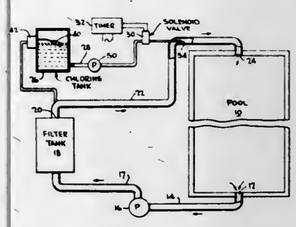
Owing to the use of two concentric straining cylinders, large effective straining surface is achieved, in comparison with the size of the device. The blades which sweep close to the surface of the strainer cylinders cause, owing to their drop-shaped form, in the strainer cylinder pressure pulse, or a pressure wave circling around the strainer cylinder, which boosts the flow of acceptable pulp through the strainer cylinder. With their trailing end, again, they produce a vacuum pulse, or a vacuum wave circling around the strainer cylinder, which detaches from the cylinder any larger particles, or particles to be rejected, which adhere to its surface, so that these cannot plug the holes in the strainer. A strainer device illustrative of the use of essentially drop-shaped blades which sweep close to the surfaces of the strainer cylinders with which they are associated, is disclosed, for example in S. M. Solomon et al., U.S. Pat. No. 3,387,708, issued June 11, 1968.

3,672,507
FILTER APPARATUS AND METHOD
Henry Pauli, Jr., Rte. 4, Box 334, Appleton, Wis.
Filed April 20, 1970, Ser. No. 30,103
Int. Cl. B01d *29/02*
U.S. Cl. 210—77 11 Claims



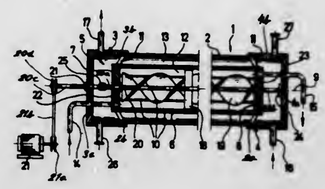
An apparatus and method for filtering hot fluid material including a filter system having a filter formed from a continuous screen passing through a closed cavity through which the material flows. The cavity is defined by a cover and bottom member having sealing members which engage the screen to define the filter portion of the screen disposed within the cavity. The filter may be changed rapidly without cooling of the filter unit simply by loosening the bottom from the cover thereby releasing the screen and pulling the screen through the cavity until a clean portion thereof is disposed in position to be engaged by the sealing members to form a filter therefrom.

3,672,508
SWIMMING POOL CHLORINATOR APPARATUS
James O. Simon, 2215 W. 12th St., Marion, Ind.
Filed Jan. 20, 1970, Ser. No. 4,287
Int. Cl. B01d *35/00*
U.S. Cl. 210—128 5 Claims



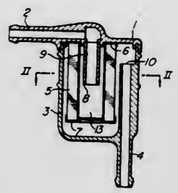
The automatic apparatus for chlorinating a swimming pool utilizes a timing device for actuating a solenoid valve to enable chlorine, which is supplied by gravity from a chlorine tank, to enter the circulating line at a point either before or after the circulating pump which directs fluid from the pool to the filter tank. In a preferred embodiment, the chlorine enters the circulating line at the output side of the filter tank. A check valve may be substituted for the solenoid valve in which case a chlorine pressure pump is installed between the chlorine tank and the check valve.

3,672,509
DIALYSIS APPARATUS
Paul Buchmann, Basel, Switzerland, and Monique Beringer, St. Louis, France, assignors to Solco Basel AG, Basel, Switzerland
Filed June 22, 1970, Ser. No. 48,113
Claims priority, application Luxembourg, July 8, 1969, 59.061
Int. Cl. B01d *13/00*
U.S. Cl. 210—321 2 Claims



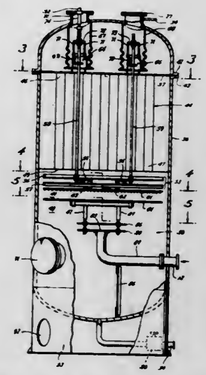
A dialysis apparatus having at least one unit in which an outer generally cylindrical tube forms a through-flow vessel closed at its ends with caps provided with inlet and outlet conduits for the fluid. A semipermeable foil or membrane forms an inner coaxial tube and is supported within the outer tube while having means for passing another liquid through its interior. The dialysis unit may be ganged in banks connected in cascade, the banks being shiftable to afford access to the individual units for replacement or otherwise.

3,672,510
FUEL FILTER
Nobuo Saito, Saitama-ken, and Kyoji Namiki, Urawa, both of Japan, assignors to Kabushiki Kaisha Tsuchiya Seisakusho, Toyko, Japan
Filed Aug. 24, 1970, Ser. No. 66,309
Claims priority, application Japan, May 19, 1970, 45/42090
Int. Cl. B01d *29/00*
U.S. Cl. 210—438 4 Claims



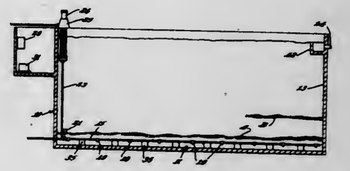
A fuel filter for engines of automobiles comprising a closed casing, a filter element in the casing, a fuel inlet pipe extending through the wall of the casing and opening in the casing for introducing the fuel to be filtered into the space around the element, and a fuel outlet pipe extending through the wall of the casing and opening within the filter element at a level lower than that of the opening of the fuel inlet, the said fuel outlet pipe being formed with a small by-pass opening in the upper portion of the wall of the fuel outlet pipe extending in the filter element, so that the water content of the fuel when accumulated and frozen in a cold season will not clog the fuel inlet of the filter, and that sufficient fuel supply for a cold start of the engine will be ensured through the said by-pass opening.

3,672,511
TREATER FOR RESOLVING DISPERSIONS
Frederick D. Watson, and Joseph D. Winslow, Jr., both of Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.
Division of Ser. No. 717,133, March 29, 1968, Pat. No. 3,528,907. This application April 20, 1970, Ser. No. 29,811
Int. Cl. B01d *21/10, 21/24*
U.S. Cl. 210—519 8 Claims



A treater for resolving a dispersion containing immiscible external (hydrocarbon) and internal (water) liquid phases in a closed container with an upright flow axis. Upper and lower outlets, and an intermediate distributor inlet, open into the container. A plurality of unobstructed vertical cells having open-ended inlets provide the sole fluid communication between the upper outlet and the distributor inlet. Each cell terminates at a transverse header having metering orifices which provides for substantially uniform flow conditions in the cells whereby fluid flows upwardly at uniform rates in all fluid flowing through the cells toward the upper outlet of the container.

3,672,512
STATIC THICKENER AND HYDRAULIC RAKE THEREFOR
Roy H. Werner, Pittsburgh, Pa., assignor to Barrett Haentjens & Co., Coraopolis, Pa.
Filed Aug. 6, 1970, Ser. No. 61,688
Int. Cl. B01d *21/24*
U.S. Cl. 210—523 4 Claims



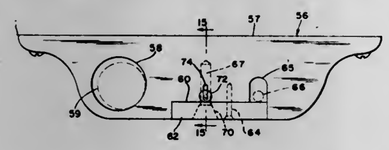
Hydraulic rake for water treatment settling basins of static thickeners. The rake includes a series of statically mounted pipes arranged along the basin, below the sludge level in the basin, in a pattern to provide uniform coverage of the entire floor area of the basin. Fluid pressure or electrically operated valves are connected with certain of the pipes to selectively connect the pipes to the intake of an underflow pump. One pipe may be connected to the pump through its open valve to

remove the settled matter above it through spaced nozzles in the pipe. A next pipe may then be connected to the underflow pump to remove the settled matter above it. This is repeated in a preselected order to completely rake or sweep the floor of the basin and remove solids as settling down toward the basin floor.

3,672,513
FISHING POLE SUPPORTS

Franklin D. Riddle, Greenville, S.C., and John T. Willis, Miami, Fla., assignors to Southern Machinery Company, Green, S.C.

Filed Sept. 21, 1970, Ser. No. 73,999
Int. Cl. A47f 7/00
U.S. Cl. 211—60 R 3 Claims

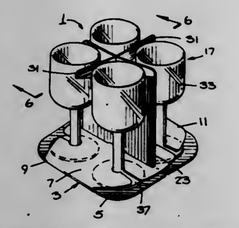


A pair of coacting reversely mounted support brackets receive the butt and rod ends of a pair of fishing poles in reverse direction to support the same securely beneath the roof of a cabin cruiser or the like. The poles are stored out of the way in overhead positions. Positive locking means on the brackets assure that the poles will not drop due to vibrations or movement of the boat. The locking means are releasable manually.

3,672,514
BLANK AND DISPLAY STAND FOR STEMWARE

William Henry Tucker, Columbus, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Aug. 3, 1970, Ser. No. 60,560
Int. Cl. A47j 47/16; A47g 29/00
U.S. Cl. 211—73 2 Claims



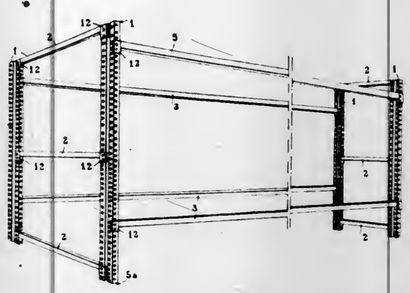
A display stand for stemware having a base with a floor portion and a upper portion. The upper portion has recesses to receive the stem of the stemware. An upright portion connected to the lower portion of the base fits through a slot in the upper portion of the base and has fingers mounted on its upper portion which act as separators for the bowl of the stemware.

3,672,515
PALLET STORAGE SECTIONAL FRAME STRUCTURES

Pierre Rous, 61, Boulevard Carnot, 31 Toulouse Haute Garonne, France

Filed Dec. 7, 1970, Ser. No. 95,671
Claims priority, application France, Dec. 15, 1969, 6943321
Int. Cl. A47f 5/10
U.S. Cl. 211—176 5 Claims

This frame structure intended more particularly for the storage of palletized loads comprises uprights of substantially rectangular cross-sectional contour with a waisted or constricted formation centrally of the major faces which constitutes an inner reinforcing rib and consequently an external groove, with spaced perforations formed throughout the height of the upright in the two portions of said major faces which are separated by said groove and also in the minor faces thereof, whereby, when the uprights are disposed with their minor faces parallel to the front and rear faces of the frame

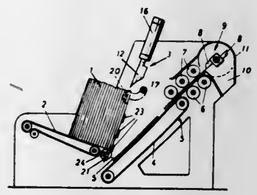


structure, and by pairs across said front and rear faces, each pair being interconnected by a cross member and adjacent pairs by longitudinal members, a frame structure comprising two or more rows disposed in the front-to-rear direction can be obtained, each upright being also adapted to receive two longitudinal members at a same level or at different levels in said two portions, said cross members and longitudinal members being formed with end lugs engageable in said perforations.

3,672,516
MACHINE FOR SEPARATING A SHEET FROM A SHEET PILE

Leif Roland Nordstrand, Malmo, Sweden, assignor to Kamas Kvarnmaskiner AB, Malmo, Sweden

Filed Sept. 21, 1970, Ser. No. 73,972
Claims priority, application Sweden, Sept. 23, 1969, 13047/69
Int. Cl. B65g 59/00
U.S. Cl. 214—8.5 A 4 Claims

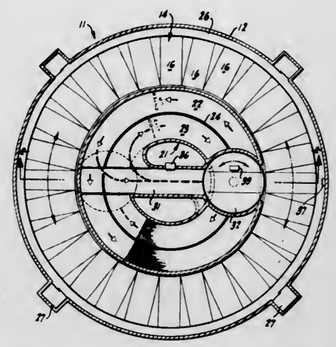


A method and a machine for separating a sheet from a bale of sheets of paper pulp and the like while using a separation body having wedge-shaped configuration in side projection, the said body being adapted to penetrate into the bale while cutting off one sheet therefrom. The bale of sheets is supported during the separation process by two sets of arms which are movable on continuously driven chains into alternative contact with the bale.

3,672,517
ROTARY VEHICLE PARKING SYSTEM WITH RAMP AND TURNTABLE ARRANGEMENT

Charles R. Salloum, 120 Ellis St., San Francisco, Calif.

Continuation-in-part of Ser. No. 750,952, April 12, 1968, Pat. No. 3,613,909. This application April 1, 1970, Ser. No. 24,699
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 A 7 Claims

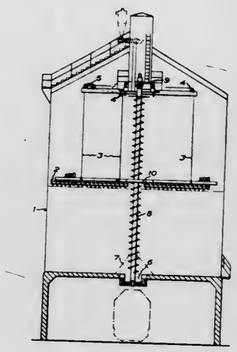


A multilevel parking system employing rotary parking platforms for maximized parking density and particular ramp and turntable arrangements for simplified access and egress with improvement economy of construction.

3,672,518
ARRANGEMENTS IN SILOS FOR STORING VAULT-FORMING MATERIALS

Sven A. Andersson, Malmo, Sweden, assignor to Ingeniorsfirman Nils Weibull AB, Malmo, Sweden

Filed May 19, 1970, Ser. No. 38,808
Int. Cl. B65g 65/38
U.S. Cl. 214—17 DB 4 Claims

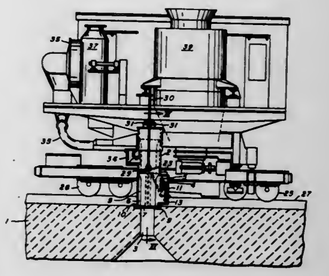


In silos for storing freely running materials with a tendency to form vaults when taken out of such a silo or container through a bottom opening by means of a horizontally rotating scraper, the arrangement of a central vertical rotary screw and preferably means for removing and replacing any broken part of the shaft of such a screw without the need of emptying said container for repair.

3,672,519
CHARGING CAR FOR COKE OVENS

Erich E. W. Pries, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Aug. 5, 1970, Ser. No. 61,167
Claims priority, application Germany, Feb. 27, 1970, P 20 09 300.9
Int. Cl. F23k 3/00
U.S. Cl. 214—35 R 5 Claims

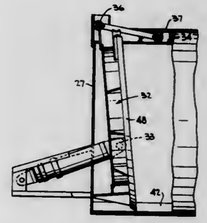


A charging car for coke ovens of the type in which coke is conveyed through feed pipes into holes extending through the tops of the ovens, characterized in that the covers can be removed from the holes, coal charged into the ovens and the covers replaced without permitting the escape of dust and smoke into the atmosphere. This is accomplished in accordance with the invention by means of gripping devices which are located in housings connected to the sides of sleeves which surround the feed pipes. These gripping devices are pivotal from vertical positions to horizontal positions to remove or replace charge hole covers which normally cover the charge holes extending through the tops of the ovens.

3,672,520
REFUSE PACKER BODY

Roy Norman Linville, Richmond, Va., assignor to Truck Equipment Corporation, Richmond, Va.

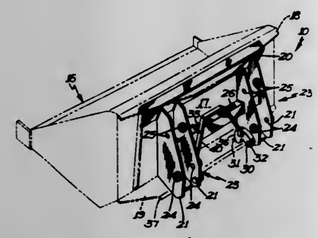
Filed Aug. 14, 1970, Ser. No. 63,850
Int. Cl. B65f 3/00
U.S. Cl. 214—82 10 Claims



Refuse packer body for the accumulation and compaction of refuse has a tilting packer blade that permits the over-all length of the packer body to be shortened and the center of gravity of the loaded body to be moved forward.

3,672,521
QUICK ATTACHMENT DEVICE

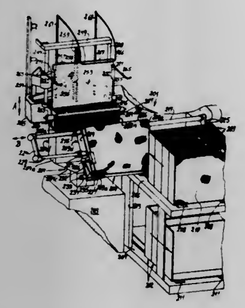
James J. Bauer, Lisbon, N. Dak.; James L. Werner, De Lamere, N. Dak., and Leland E. Erickson, Milnor, N. Dak.
Continuation-in-part of Ser. No. 772,695, Nov. 1, 1968, abandoned. This application Nov. 5, 1969, Ser. No. 874,235
Int. Cl. B66f 9/00
U.S. Cl. 214—145 9 Claims



An adapter assembly for quickly attaching and releasing an implement from a pair of spaced actuating arms, useful typically to mount a bucket to the loader arms and tilt cylinders of a front-end loader. The adapter assembly is permanently pinned to the loader arms and tilt cylinders of the front-end loader and releasably attached to the bucket. It is characterized by an elongate member extending substantially the distance between the loader arms and means spaced from the elongate member for releasably securing the adapter assembly to the bucket. The elongate member seats under an acute overhang at the upper rear wall of the bucket and the lower portion of the adapter is releasably secured to a protruding shelf at the lower rear wall of the bucket.

3,672,522
APPARATUS FOR FEEDING ROD SHAPED ARTICLES TO CONSUMING MACHINES

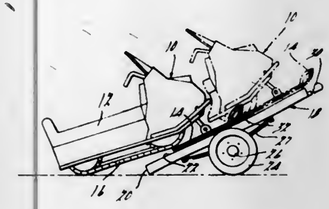
Gunter Wahle, Hamburg, and Alois Kasparek, Reinbek, both of Germany, assignors to Hauni-Werke Korber & Co. Kg., Hamburg, Germany
Filed July 30, 1970, Ser. No. 59,493
Claims priority, application Germany, Aug. 2, 1969, P 19 39 395.4
Int. Cl. B65g 1/08
U.S. Cl. 214—302 10 Claims



A feeding apparatus which delivers batches of arrayed cigarettes to the magazine for a packing machine. The panels of the magazine are formed with vertical recesses for the rigid bars of a confining device which supports an inverted cigarette tray during evacuation of its contents into the magazine. The tray can be lifted and lowered by a frame at the upper end of the confining member. The internal surfaces of the bars are flush with the internal surfaces of the respective panels of the magazine and the width of as well as the distances between the bars which are adjacent to the ends of the cigarettes are less than the diameter of a cigarette. The lateral walls of the confining device may comprise single or twin bars whereby the length of a cigarette exceeds the width of a single bar or the distance between the twin bars.

3,672,523
SNOWMOBILE TRAILER

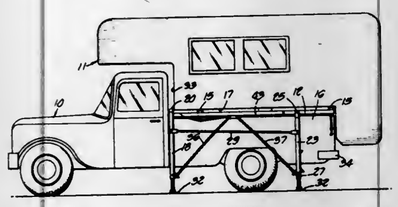
Fred R. Albert, 6060 State Road, North Street, Mich.
Filed April 27, 1970, Ser. No. 31,940
Int. Cl. B60p 1/28
U.S. Cl. 214—506 6 Claims



In combination with an apparatus for transporting snowmobile vehicles having one or more ski-like members, means on the apparatus defining a snowmobile vehicle support surface, a retaining element for releasably securing a snowmobile vehicle upon the surface, means for supporting the element for movement between a retracted position extending generally coplanar with the surface and an elevated position projecting upwardly from the surface and adapted for engagement with the ski-like member of a snowmobile supported on the surface, and means for resiliently biasing the element toward the elevated position, whereby a snowmobile vehicle may be traversed forwardly along the surface and the element will be biased to the retracted position as the ski-like member travels thereover, and the element will be biased to the elevated position once the member has traveled thereacross and will engage the rearward end of the member to prevent rearward movement of the vehicle along the surface.

3,672,524
SUPPORT ASSEMBLY FOR CAMPER

Martin B. Conrad, 1980 Paquita Drive, Carpinteria, Calif.
Filed Nov. 23, 1970, Ser. No. 91,954
Int. Cl. B60p 3/32, 1/64
U.S. Cl. 214—515 1 Claim

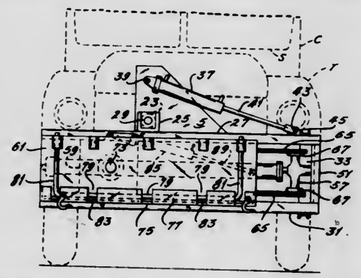


A support assembly for a camper unit normally carried on the body of a pickup truck is provided with laterally spaced horizontal side rails. These side rails rest on the truck body and support the camper unit along its side edges. Two forward

posts are secured to a transverse horizontal member at their upper ends and this member is pivotally connected to the side rails at their forward ends. Two rear posts are each pivoted at the upper end to one of the side rails, respectively, and a second transverse horizontal member extends between the rear posts and is secured to them at a location below their pivotal connections to the side rails. A pair of tie rods each pivotally connect a forward post to a rear post. The camper unit may thus be raised off the truck body by resting the lower ends of the posts in inclined position on the ground and then moving the truck body rearward to bring the posts to vertical position. Each post is provided with an adjustably extensible foot piece. Angular tension elements maintain the posts in vertical position.

3,672,525
FORK LIFT APPARATUS

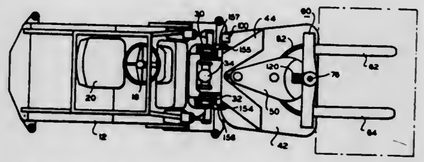
Alvin C. Schaedler, 1005 N. 17th St., Belleville, Ill.
Filed Oct. 15, 1970, Ser. No. 81,058
Int. Cl. B66f 9/20
U.S. Cl. 214—674 13 Claims



A fork lift apparatus for mounting on the front of a highway truck has its mast structure arranged to pivot about a longitudinal axis on the front of the truck for movement from a low-level horizontal traveling position to vertical and longitudinally inclined operating positions, mounting the fork supporting apron on the mast for pivoting about a longitudinal axis to provide for transverse tilting of the forks, and pivotally mounting the forks in variable positions on the apron for pivoting about vertical axes to permit their folding to a position transverse of the truck when they are not in use.

3,672,526
FRONT AND SIDE LOADING ATTACHMENT FOR LIFTING TRUCKS

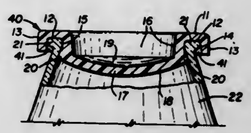
Howard C. Hansen, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Aug. 6, 1970, Ser. No. 61,672
Int. Cl. B66f 9/14
U.S. Cl. 214—730 19 Claims



A front and side loader attachment for lift trucks with an upright in which the fork section is connected to the upright by a member movable angularly in a horizontal plane from one side of the carriage to the other side. The member is pivoted at one end on a line substantially in the longitudinal center of the carriage, and the fork section is movable to and from lateral positions on a line perpendicular to the longitudinal center line and is adapted to be skewed to various angles between the two lateral positions. A load distributing system is preferably incorporated in the carriage consisting generally of spaced racks mounted on the upright and one or more shafts with pinions meshing with the racks.

3,672,527
PLASTIC CLOSURE FOR CONTAINERS

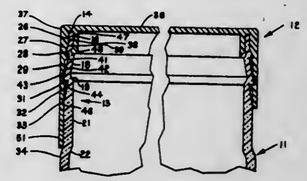
Ray E. Bly, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.
Filed Jan. 25, 1971, Ser. No. 109,210
Int. Cl. B65d 41/22, 41/32
U.S. Cl. 215—41 6 Claims



A plastic closure for containers comprising a top provided with depending inner and outer skirts, said skirts having facing surfaces which non-sealingly contact surfaces of a bottle neck adjacent its edge, said inner skirt merging into an annular radially projecting sealing member surrounding and integral with a concavo-convex closure web, said sealing member engaging a restricted area of the inner surface of the bottle neck. The closure may be removed by use of a cap lifter or the top of the closure may be provided with weakening means which divide the top into an outer and an inner ring, the outer ring being severed from the inner ring in one segment of the top and the top having an unweakened area opposite the severed segment which connects the outer ring to the rest of the closure for lifting the closure from the bottle.

3,672,528
NECK FOR WIDE-MOUTH JAR AND CAP THEREFOR

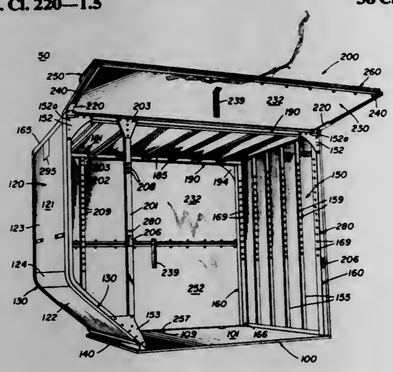
George W. Faulstich, c/o Cap Snap Seal, Inc., 800 Alameda Street, San Carlos, Calif.
Continuation-in-part of Ser. No. 24,708, April 1, 1970. This application Dec. 18, 1970, Ser. No. 99,607
Int. Cl. B65d 41/32
U.S. Cl. 215—46 A 10 Claims



A wide-mouth jar of plastic or glass has an exterior neck finish comprising two circumferential, vertically spaced buttressed beads, the lower being of greater diameter than the upper. The plastic cap which fits on the neck has a flat-top disk with a peripheral skirt, the interior of which is formed with two circumferential beads dimensioned to engage immediately under the radial flanks of the beads of the neck. The wall of the skirt is weakened immediately above the lower cap bead in a circumferential internal groove which connects with two downward slanted internal grooves extending to the bottom of the skirt. A first finger grip tab depends from the bot-

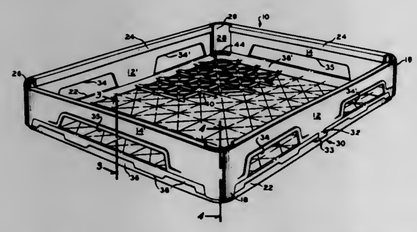
tom of the skirt to one side of the slanted groove to tear the cap along the grooves. A second tab depends from the bottom of the skirt between the downward slanted grooves to pry the cap off the neck.

3,672,529
CARGO CONTAINER
Donald W. Feddersen, Northbrook, and Everett L. Markowski, Morton Grove, both of Ill., assignors to Air Cargo Equipment Corporation, Tulsa, Okla.
Filed Nov. 14, 1969, Ser. No. 876,654
Int. Cl. B65d 87/00
U.S. Cl. 220—1.5 38 Claims



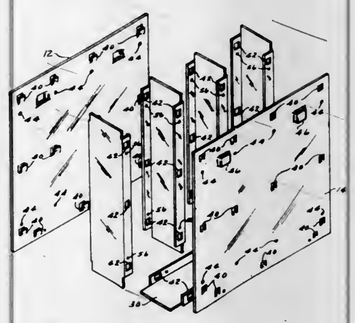
A container for transporting goods by airplane comprises a top wall, a bottom wall, and a pair of opposed side walls all bounded by rigid framework and cooperating to define a pair of openings which are respectively closed by stowable door structures, each of the door structures including a pair of door brackets pivotally mounted on the top wall framework and two hingedly interconnected door panels one of which is slidably mounted on the door brackets, the door structures being movable between a closed position completely closing the openings and a stowed position folded atop the container, and two latch assemblies on each door structure for holding it in the closed position; adjustable shelves are mounted on the framework within the container.

3,672,530
TRAY COLLAR AND TRAY-COLLAR COMBINATIONS
Orville J. Bridenstine, Wayzata, Minn.; Melvin S. Shutt, and Harry A. Brookshire, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Dec. 31, 1969, Ser. No. 889,669
Int. Cl. B65d 11/10
U.S. Cl. 220—4 R 23 Claims



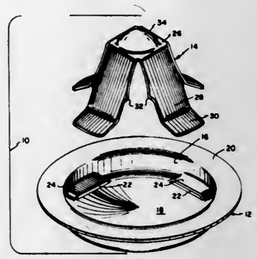
A collar adapted to extend the height of the walls of a pallet tray when placed on said pallet tray. Said collar is provided with means to engage the walls of the tray and means for securing the collar to the tray. Combinations of said tray and said collar are also disclosed.

3,672,531
RECEPTACLE
Martin H. Balven, Florissant, Mo., assignor to Emerson Electric Co., St. Louis, Mo.
Filed March 2, 1970, Ser. No. 15,508
Int. Cl. B65d 7/24, 25/04, 25/22
U.S. Cl. 220—4 R 18 Claims



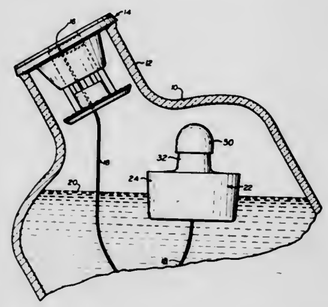
A receptacle for holding objects such as welding rods is disclosed which includes side walls, a bottomwall and partitions defining a box having a plurality of compartments, the walls and partitions being separate members which consist of two different kinds of parts. The members are provided with interfitting slots and tabs so that the members can be readily assembled into the form of a box and disassembled as desired, and without the necessity of screws or bolts and nuts.

3,672,532
HIGH TOLERANCE HOLE-PLUG FOR SHEET METAL
Phillip D. Becker, Southbury, Conn., assignor to Buell Industries, Incorporated, Waterbury, Conn.
Filed April 14, 1971, Ser. No. 133,851
Int. Cl. B65d 45/00
U.S. Cl. 220—25 13 Claims



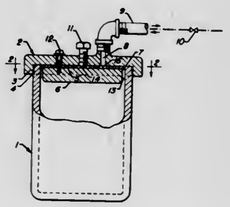
The invention pertains to a hole-plug for closing an access aperture in a sheet or plate-like support member. An externally flanged cup configured to be loosely received in the aperture, with the flange overlying the margin thereof, is clamped to the support member by a malleable metal spider positioned within and crosswise of the bottom of the cup. Initially the mid-portion of the spider is arched centrally outwardly from the cup bottom, and the legs of the spider are reversely arched with the tips disposed in registering slots formed in the cup wall. Flattening the arched mid-portion of the spider toward the bottom wall of the cup when the plug is placed in the hole to be closed causes the legs of the spider to expand radially outwardly and their tips to curl back into clamping engagement with the opposite surface of the support member engaged by the peripheral flange of the cup.

3,672,533
FLOATING VENT DEVICE
Jack H. McKean, Mission, Kans., assignor to Chemagro Corporation, Kansas City, Mo.
Filed Dec. 3, 1970, Ser. No. 94,701
Int. Cl. B65d 51/16
U.S. Cl. 220—44 R 8 Claims



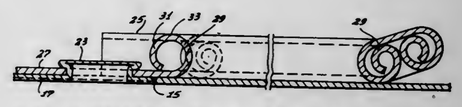
The invention is a floating vent device comprising a pair of members together defining a chamber, a gas permeable porous carbon body subdividing said chamber into two zones of which a first is provided with at least one aperture; a float connected with said pair of members so as to permit them to float above a body of liquid, and a tube projecting axially through said float, through said first zone and in air-tight fashion through said carbon body into said second zone. The other end of the tube is connected to a closure for a container and communicates with the outside atmosphere through an orifice in the closure.

3,672,534
CLOSURE FOR HIGH PRESSURE CHAMBER
John F. Brennan, Des Plaines, Ill., and Universal Oil Products Company, Des Plaines, Ill.
Filed June 19, 1970, Ser. No. 47,852
Int. Cl. B65d 53/00
U.S. Cl. 220—46 P 4 Claims



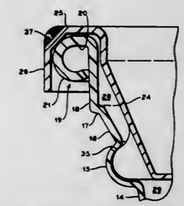
A closure system for a high pressure chamber which is particularly designed to permit the use of an interior glass coating or other non-metallic liner material. The closure design includes a demountable cover for a chamber opening, a gasket member which will extend around the interior periphery of the opening, and an inner "piston" member, which will assist in providing a sealing of the gasket member around the chamber opening. A release bolt provides for pushing inwardly against the inner piston member so as to let fluid pressure into or out of the chamber from a port located centrally in the cover member at a zone opposed by the piston member.

3,672,535
RING TAB FOR EASY-OPEN CAN
J. B. McGuire, Palos Verdes Peninsula, Calif., assignor to Ermal C. Fraze, Dayton, Ohio
Filed Dec. 18, 1970, Ser. No. 99,603
Int. Cl. B65d 17/24
U.S. Cl. 220—54 10 Claims



A tab for use with an easy-open can end in which the attachment portion of the tab is formed integral with the inner tab bead and is passed below the outer tab bead and extends to a position beyond the outer periphery of the outer bead for attachment to a tear strip by suitable means such as an integral rivet. The attachment portion is sufficiently long to prevent a sharp bending of the tear strip in the area immediately adjacent the rivet.

3,672,536
CONTAINER AND CLOSURE THEREFOR
Alfred W. Kinney, Kansas City, Mo., and James W. Williams, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Feb. 5, 1970, Ser. No. 8,981
Int. Cl. B65d 43/10, 21/02, 51/16
U.S. Cl. 220—60 R 8 Claims

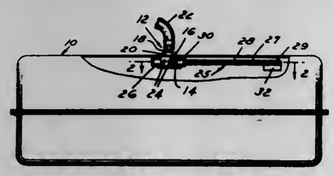


A container with a closure retention groove is provided with a rigid stacking ring structure of reduced height, comprising a vertical wall section extending upwardly from the outer periphery of a horizontal lower stacking shoulder to the inner periphery of a horizontal annular rim. A compressional camming wall section extends inwardly and downwardly from the inner periphery of the lower stacking shoulder to the upper extent of the closure retention groove. A closure for the container can be formed so that the portion of the closure between the closure rim and the retention bead grips the portion of the container between the retention groove and the container rim, to secure the closure to the container.

3,672,537
FUEL TANK VAPOR SEPARATOR SYSTEM HAVING PIVOTING ARM VAPOR PICKUP
Ernest W. Kitzner, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 14, 1970, Ser. No. 63,873
Int. Cl. B65d 25/00
U.S. Cl. 220—85 VR 5 Claims

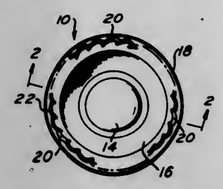
A hollow arm pivots in a plane substantially parallel to the fuel tank roof about a pivot member located in the center of the roof. Buoyant material attached to the outer end of the

arm urges that end to any vapor space existing above the liquid regardless of tank attitude. Excess fuel vapors pass



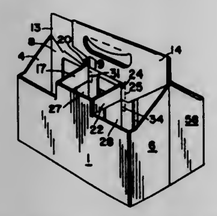
through the passage in the arm and are conducted to the engine combustion chambers.

3,672,538
DISPOSABLE DISH MEANS
Karl Wiedemann, Cherry Hill, N.J., assignor to Melitta, Inc., Cherry Hill, N.J.
Filed Sept. 25, 1970, Ser. No. 75,639
Int. Cl. B65d *21/02, 7/48*
U.S. Cl. 220—97 C 4 Claims



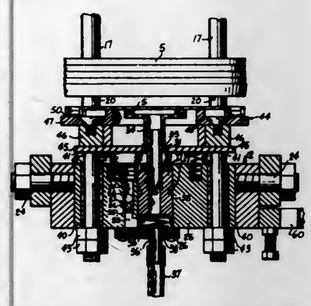
A disposable dish, such as a plate, saucer or bowl, having a rim around the edge of a central portion. The rim has a plurality of spaced upstanding ribs thereon. The dishes are adapted to be stacked together in a pile with the upper surface of the ribs engaging the bottom surface of the rim of the next uppermost dish so as to space the dishes apart and allow for ease of individually removing the dishes from the stack even if the stack of dishes are compressed together.

3,672,539
ARTICLE CARRIER
Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation
Filed Dec. 3, 1969, Ser. No. 881,668
Int. Cl. B65d *75/00*
U.S. Cl. 220—113 10 Claims



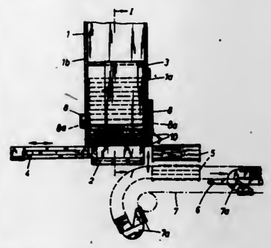
A basket style article carrier having full depth partition structure is formed from a single unitary blank. A partition element comprises a partition strip foldably joined to one side wall and to a handle panel through a relief tab arranged to render the partition strip extensible, and a transverse partition panel struck from longitudinal partition structure is adjoined thereto by a partition relief tab so that the effective length of the partition strip may be increased so as to afford hand gripping space adjacent the handle of the carrier. The longitudinal partition structure is arranged to extend to the bottom wall of the carrier and access to a locking tab disposed adjacent the bottom edge of the longitudinal partition structure is afforded by means of a hinge line adjoining the lowermost portion of the longitudinal partition structure to the upper part thereof so that when the carrier is set up the bottom wall engages and brushes to one side the lowermost portion of the longitudinal partition structure thereby to expose the locking notch for engagement by the end edge of the bottom wall. The carrier is strengthened by means of a medial partition panel which is struck from the pair of medial panels which form the longitudinal partition structure and folded downwardly along a diagonal fold line and is secured to an auxiliary reinforcing panel struck from one of the handle panels and folded downwardly into flat face contacting relationship to the medial partition.

3,672,540
CAPPING APPARATUS
Richard A. Newport, c/o Benewah Creamery E. 408 Sprague Ave., Spokane, Wash.
Division of Ser. No. 631,033, April 14, 1967, Pat. No. 3,511,025. This application March 20, 1970, Ser. No. 21,258
Int. Cl. B65b *1/00*
U.S. Cl. 221—63 10 Claims



An apparatus for applying closures to receptacles, particularly designed for applying caps to cylindrical cartons. A vacuum device receives the caps from a magazine and places each cap on a carton centered by a conveying and positioning apparatus.

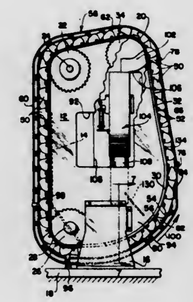
3,672,541
FEEDING DEVICE FOR CIGARETTES FOR CIGARETTE PACKING MACHINES
Otto Niepmann, Gevelsberg, Germany, assignor to Maschinenfabrik Fr. Niepmann & Co., Gevelsberg, Germany
Filed July 1, 1969, Ser. No. 838,253
Claims priority, application Germany, July 2, 1968, P 17 57 970.3
Int. Cl. B65g *59/00*
U.S. Cl. 221—68 5 Claims



An apparatus in which cigarettes are ejected in batches in an endwise direction from chutes in which the cigarettes are

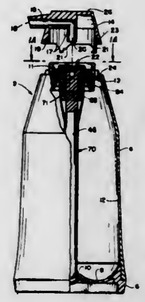
disposed in vertical stacks. To permit high speed of operation, the cigarettes are urged downwardly in the chutes by air jets so that following the ejection of a batch of cigarettes from the chutes, the next batch to be ejected will move quickly into ejection position. To prevent tilting of the cigarettes in the chutes, the ends of the cigarettes next to drop into ejection position are engaged by a stop member until the ejecting member is withdrawn from beneath the cigarettes, whereupon the stop member is withdrawn and the cigarettes dropped to ejection position while remaining horizontal. The supply of compressed air to the nozzles is preferably regulated so as to take place at about the instant the cigarettes are to drop to ejection position.

3,672,542
BOBBIN SEGREGATING AND ORIENTING APPARATUS
David G. Cruickshank, Kingstown, and David T. Guerin, Warwick, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed July 18, 1969, Ser. No. 842,948
Int. Cl. B23q *7/12*
U.S. Cl. 221—161 21 Claims



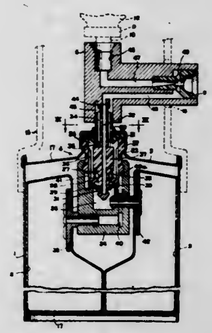
Apparatus for segregating a jumbled mass of bobbins and delivery of the bobbins one at a time in axial orientation. A chain conveyor includes a plurality of buckets for receiving bobbins. These buckets open inwardly and together form the bottom of a hopper which receives the jumbled bobbins. As the conveyor is driven, a bucket receives a bobbin from the hopper and carries the bobbin upwardly along a substantially straight path to a discharge chute at an upper portion of the apparatus. The buckets have a particular cross-sectional configuration so that when they are on the straight upwardly extending path they will retain only one bobbin having a rounded cross-section and within a particular range of diameters varying from an empty bobbin core to a full bobbin. If a second bobbin is picked up by a bucket it will drop from the bucket along the straight path and fall back into the hopper. By varying the inclination of the buckets along the straight portion of the path, the range may be varied. A bobbin in the hopper may tend to align itself with its axis parallel to the direction of movement of the buckets and would thus block the buckets from receiving bobbins having their axes transverse to the path of movement of the buckets. Such a parallel bobbin is flipped over so that it falls back onto the hopper with its axis transverse to the path of movement of the buckets. Bobbins are fed into the hopper responsive to a reduction in weight of the bobbins in the hopper and the hopper is driven intermittently to deliver bobbins one at a time responsive to an external demand.

3,672,543
FLOWABLE SUBSTANCES DISPENSER
William H. Roper, Los Angeles; Robert N. Ross, Fountain Valley, and Gabor Vlasovits, Anaheim, all of Calif., assignors to Plant Industries, Inc., Anaheim, Calif.
Filed Feb. 11, 1971, Ser. No. 114,427
Int. Cl. B67d *5/06*
U.S. Cl. 222—183 11 Claims



In a fluid dispenser of the expansible member or bladder type wherein the memory of the material furnishes the dispensing force, a unitary mandrel and valve closure member acts to pretension the expansible member and to act as the valve closure, the axial movement of which permits the fluid contained within the expansible member to be dispensed.

3,672,544
MULTI-COMPONENT PRODUCT DISPENSER
Jean Marand, Norwalk, Conn., assignor to Ciba-Geigy Corporation
Filed June 22, 1970, Ser. No. 48,336
Int. Cl. B65d *83/14*
U.S. Cl. 222—94 26 Claims

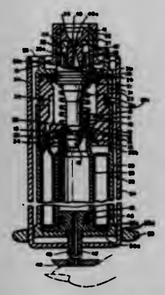


A dispenser for spraying a multi-component product includes a product container housing the product components. The components are mutually isolated and are put in communication with product passages through a valve of the container. The stem of the valve is connected to a coupler-aspirator. An aerosol propellant cartridge is also connected to the coupler-aspirator. When the propellant cartridge is depressed, both the valve thereof and the container valve are opened. The product components are then combined and aspirated by the propellant through the coupler-aspirator.

3,672,545
AIR PRESSURE OPERATED DISPENSER

Jean Marand, Norwalk, Conn., assignor to Ciba-Geigy Corporation

Filed June 9, 1970, Ser. No. 44,694
Int. Cl. B67d 5/54
U.S. Cl. 222—193 8 Claims

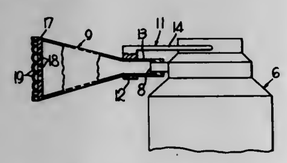


A dispensing device in which the product to be dispensed is aspirated and sprayed by the discharged pressurized air. A valve assembly has a product flow path therethrough and a compressed air flow path therethrough. The valve stem of the assembly is actuated to open the flow paths, and aspirating means is provided at the upper end of said stem for bringing one end of each of said flow paths together. A piston-cylinder assembly is provided on the device having a cylinder with one end around the end of the compressed air flow path, a piston slidable in the cylinder, and a piston rod on said piston and extending out of the other end of said cylinder. A product containing sac has a neck thereon sealed around the end of the product flow path. An actuator means is connected between the piston rod and the valve assembly for moving the valve stem relative to the valve body for opening the flow paths when the piston is moved to the inner end of the cylinder adjacent the valve assembly to provide a predetermined amount of compressed air.

3,672,546
FOAM DISPENSING HEAD

Emil T. Ruhle, 7050 S. 92nd St., Franklin, Wis.

Filed Feb. 20, 1970, Ser. No. 12,926
Int. Cl. B65d 83/14
U.S. Cl. 222—402.12 1 Claim



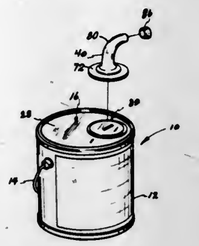
A foam dispensing head for attachment to a pressurized container. The spout is a diffuser which decreases the velocity of the foam and permits the spout to be placed directly against the surface on which the foam is to be applied.

3,672,547
CONTAINER WITH REPLACEABLE PLUG AND POURING SPOUT

Robert L. Kozlowski, 29989 Woodhaven Lane, Southfield, Mich.

Filed Dec. 30, 1969, Ser. No. 889,169
Int. Cl. B65d 25/48
U.S. Cl. 222—567 3 Claims

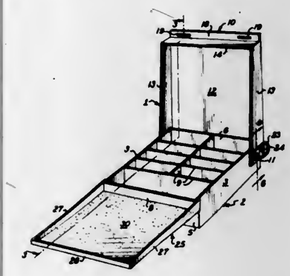
A lid for a paint can and the like, the lid having a circular aperture formed therein adjacent one edge. A removable plug is provided for closing the aperture formed in the lid. When it is desired to pour material from the container, the plug is removed from the aperture in the lid and a pouring agent is placed over the aperture.



3,672,548
TACKLE BOX

Gus H. Mavrakis, 135 Burlington Ave., Billings, Mont.

Filed April 5, 1971, Ser. No. 131,038
Int. Cl. A45c 11/00
U.S. Cl. 224—5 G 6 Claims



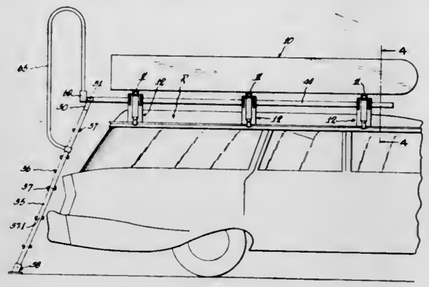
An improved tackle box adapted to be supported on the front of the user by means of shoulder straps is disclosed. The tackle box comprises three basic component parts. These include (1) a receptacle having a number of partitioning walls (2) a support member in the form of an outer cover for said receptacle and (3) a combined shelf and supplemental cover for said receptacle. The front wall of the receptacle includes a forwardly extending offset position that cooperates with the side and front wall of the shelf to provide a tray having continuous, upstanding side walls. The offset portion of the front wall of the receptacle also serves as stop means for limiting the pivotal travel of the shelf. The tackle box is sturdy and durable in construction, yet is relatively simple and easy to manufacture.

3,672,549
CAR TOP CARRIER AND ACCESS LADDER

Andro J. Chorey, 8315 Gibson Road, Canfield, Ohio

Filed Dec. 15, 1969, Ser. No. 884,882
Int. Cl. B60r 3/00, 9/04
U.S. Cl. 224—42.1 E 4 Claims

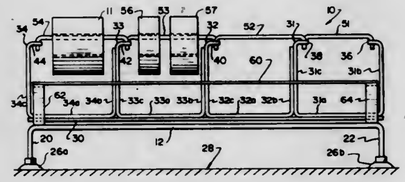
A car top rack and an access ladder assembly is herein disclosed. The rack is removably mounted on the roof of the car by bracket supports which provide for adjustment to conform to the contour of the car roof and to provide for leveling of the carrier. The ladder forms part of the structure and may be stored between rails which extend longitudinally of the car, for transportation purposes. The access ladder may be easily moved from its stored position to a position wherein it extends downwardly from the rear portion of the car top rack, with its lowerend engaging the ground, whereby ready access to the carrier, and the material supported thereby, is effected.



3,672,550
MULTI-TAPE DISPENSER

Michael R. Greco, 5005 W. Belden, Chicago, Ill.

Filed July 7, 1969, Ser. No. 839,184
Int. Cl. B65h 35/10; A47k 10/32
U.S. Cl. 225—34 14 Claims



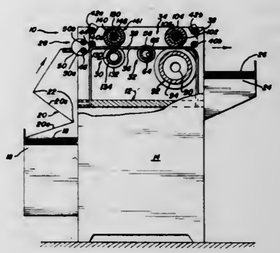
A tape dispenser including a supporting framework having at least one open space defined between two plate portions which support a rod member mounting at least one roll of tape. Each of the plate portions has at least one aperture therein and the rod member is C-shaped having a middle portion and two end portions which extend transversely of the middle portion and which are releasably received and firmly held in the apertures.

3,672,551
BURSTER WITH INTERRUPTED DRIVE

Charles L. Peterson, Crystal Lake, Ill., assignor to Uarco Incorporated

Filed Nov. 4, 1970, Ser. No. 86,731
Int. Cl. B65h 35/10
U.S. Cl. 225—100 6 Claims

An improved burster for separating continuous form stationery along transverse lines of weakening wherein the infeed and outfeed rollers are maintained a fixed distance apart, with the outfeed rollers being driven at a faster rate of speed than the infeed rollers. A limited lost motion connection is interposed in the drive to the infeed rollers to allow the infeed rollers to establish an idler relationship relative to the outfeed rollers when the stationery strip is gripped between both sets of rollers so that the infeed rollers rotate at a rate of speed which approaches that of the outfeed rollers. When the limit of the lost motion idler relationship is established the speed of the infeed rollers is rapidly reduced, causing severance of the strip of stationery along the transverse line of weakening.



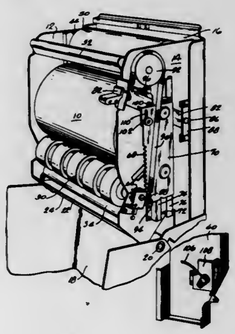
ERRATUM

For Class 226—108 see:
Patent No. 3,672,655

3,672,552
DISPENSER FOR WEB OF PERFORATED TOWELING SHEETS

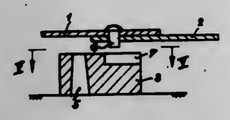
Archie S. Krueger, and Norman J. Slye, both of Green Bay, Wis., assignors to Alwin Manufacturing Company, Inc., Green Bay, Wis.

Filed Feb. 3, 1970, Ser. No. 8,235
Int. Cl. A47k 10/38; B65h 17/22
U.S. Cl. 226—129 8 Claims



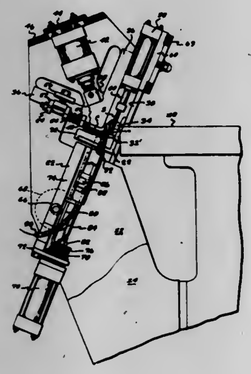
A hard rolled web of paper toweling or the like has spaced transverse rows of perforations defining separate sheets. A dispenser for advancing the web from its storage cabinet comprises a lever which does not directly actuate the web but stores energy in a spring. After predetermined handle movement, a trip releases the spring for actuation of a feed roll to eject a precisely predetermined length of web. When a new roll is inserted, the remaining end of the old roll is ejected along with corresponding components of the new roll, it being found that this disposition of the remainder of the original web satisfies consumers by temporarily supplying multiple plies, thus using such a remainder to good advantage by tending to prevent consumers from re-cycling the lever and spring to withdraw a second length of toweling.

3,672,553
APPARATUS TO PRODUCE A RIVETED CONNECTION
Erich Doring, Thalbachstra 8, Moosburg, Upper Bavaria, Germany
Continuation-in-part of Ser. No. 643,154, June 2, 1967, abandoned. This application July 6, 1970, Ser. No. 52,414
Claims priority, application Germany, June 15, 1966, D 50 326
Int. Cl. B21j 15/36
U.S. Cl. 227—62 6 Claims



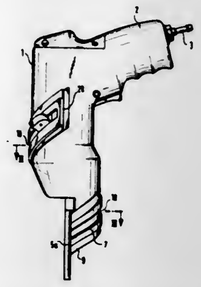
An apparatus wherein a riveted connection is formed between two strips. A rivet is held in an upper die member or dolly directly above a lower die member having an opening therein. Superposed strips are positioned adjacent the lower die member covering the opening therein. Relative movement between the die members causes the body of the rivet to punch a hole through the superposed strips. The extending end of the rivet body is then deformed to form a closure head portion whereby the strips are rigidly connected.

3,672,554
MEANS FOR SECURING DOOR FRAME COMPONENTS
Roy E. Smith, Atlanta, Ga., assignor to Textron, Inc., Providence, R.I.
Filed Dec. 28, 1970, Ser. No. 102,035
Int. Cl. B25c 7/00; B27f 7/02
U.S. Cl. 227—93 9 Claims



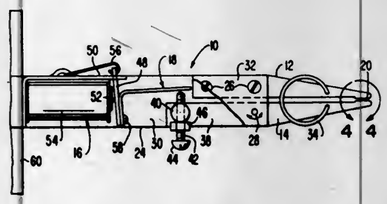
Apparatus is provided for securing a door frame casing piece to a side jamb rapidly and effectively. The apparatus operates to hold the casing piece and side jamb in door frame relation while causing the side jamb to be toenailed to the casing piece and the casing piece to be square nailed to the side jamb. The nailing is done by respective fastener forming and inserting means, at least one of which is uniquely arranged to actuate feeding of a fastener length of wire stock, forming of a fastener from the fed length, and insertion of the formed fastener, from the working stroke of a reciprocating plunger.

3,672,555
NAILING TOOL
Jurgen Korth, Berenbostel, Germany, assignor to Bukama GmbH, Hanover, Germany
Filed Aug. 19, 1970, Ser. No. 65,136
Claims priority, application Germany, Aug. 23, 1969, P 19 43 000.3
Int. Cl. B25c 1/00
U.S. Cl. 227—120 7 Claims



In a portable pneumatic fastener driving device a magazine which receives fasteners joined in a strip is arranged helically around the tool body. The outer wall of the magazine is provided with a longitudinal slot for guiding a spring-loaded slide which effects the feed of the fasteners towards the drive track. The slot is covered by a coil spring wound on a reel which is attached to the slide.

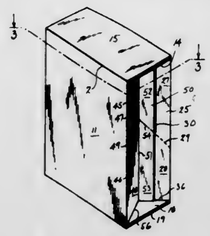
3,672,556
WIRE CLAMP
John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif.
Filed July 13, 1970, Ser. No. 54,500
Int. Cl. B23k 37/04
U.S. Cl. 228—47 9 Claims



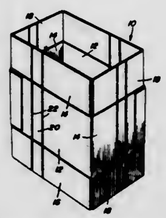
An improved wire clamp for use with a wire-bonding machine to sever wires of the order of 1 to 10 mils wherein the wire clamp includes a pair of relatively shiftable jaws, a power device, and spring means for effecting relative movement of the jaws when the power device is actuated. The tension of the spring means can be adjusted to vary the pressure exerted on a wire between the jaws. The clamp has means thereon for attaching the same to a wire-bonding machine.

3,672,557
CARTON WITH PULL-SPOUT WALL CONSTRUCTION
Robert A. Krzyzanowski, Milwaukee, Wis., assignor to Milprint, Inc., Milwaukee, Wis.
Filed March 2, 1970, Ser. No. 15,610
Int. Cl. B65d 5/72, 5/54
U.S. Cl. 229—17 R 3 Claims

A carton, and a blank therefor, with one wall constructed of two panels hinged together along a central or axial fold line to form a V-shaped infolded carton wall having a transverse fold line about which a portion of the wall can be hinged to form a pour spout construction. The V-shaped carton wall may also have a pull tab to facilitate actuation of the spout construction.

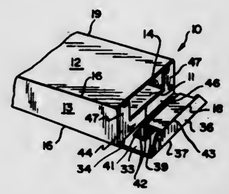


3,672,558
ADJUSTABLE CORRUGATED SHIPPING CONTAINER AND/OR ADJUSTABLE CARDBOARD SHIPPING CARTON
Bernard G. Johnson, 232 Cedar St., Neenah, Wis.
Filed Feb. 3, 1970, Ser. No. 8,368
Int. Cl. B65d 5/08
U.S. Cl. 229—37 R 1 Claim



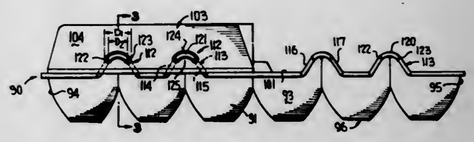
Each of the four panels, and the upper and lower flaps associated therewith, of a shipping carton incorporate a full height foldable section which enables a selective reduction in the length and/or width of the carton, in conjunction with an increase in the rigidity of the carton and without affecting the ability of the flaps to close and seal the opposed ends of the carton.

3,672,559
CARTON WITH PRODUCT HOLDING FEATURE
George P. Webinger, Minneapolis, Minn., assignor to Container Corporation of America, Chicago, Ill.
Filed May 22, 1970, Ser. No. 39,830
Int. Cl. B65d 5/10
U.S. Cl. 229—39 R 1 Claim



A carton having a tuck flap so-constructed and arranged as to engage a surface of a product and hold same in position. A carton sleeve has a closure flap with extensions therefrom, these being folded and secured into position to define a structure engageable with the said surface.

3,672,560
LOCKS FOR EGG CARTON COVERS
Harold W. Voorhis, Upper Nyack, and Bradford Post, West Nyack, both of N.Y., assignors to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,361
Int. Cl. B65d 5/66
U.S. Cl. 229—44 4 Claims

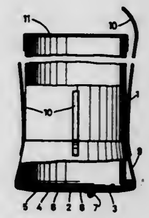


This disclosure relates to one-piece molded plastic egg cartons in which a cover is hingeably connected to a carton body, and side walls of the cover and carton body remote from the hinge means are provided with interlocking means for maintaining the cover in its closed position. The interlocking means are defined by posts which project above the terminal edge of the carton body and are interlockably received within recess means or openings of the carton side wall. The posts and covers are preferably constructed from flexible and reboundable material to permit temporary deformation incident to the opening and closing of the carton.

ERRATUM

For Class 229—44 R see:
Patent No. 3,672,693

3,672,561
DISPENSING CONTAINER
Junzo Sakamoto, Toyonaka; Tadashi Nozaki, Kyoto; Yoshifumi Tsuji, Osaka, and Masaharu Shimada, Hamamatsu, all of Japan, assignors to Oji Paper Co., Ltd.; Daido Yoshiten Ltd. and Taiyo Kogyo Company Limited, Tokyo, Japan
Filed March 22, 1971, Ser. No. 126,644
Claims priority, application Japan, March 23, 1970, 45/27802
Int. Cl. B65d 5/70
U.S. Cl. 229—51 D 3 Claims



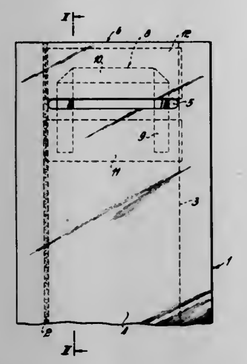
This invention relates to a reinforced disposable container which comprises a cylinder of paper, plastic, metal, canvas or plastic-coated metal sheet with panels at opposite ends, the panel at one end having an opening with closure means. A fabric reinforcement surrounds at least a part of the cylinder

and the panel at the one end with an opening therein coextensive with the opening in the panel to permit removal of the closure and dispensing of the contents in the container.

3,672,562
CARRYING BAG OF PLASTICS MATERIAL SHEETING

Frank Bonse, 453 Ibbenburen-Dorenthe, Am Wasserwerk 24, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed July 9, 1970, Ser. No. 53,373
Claims priority, application Germany, July 15, 1969, P 19 35 987.6
Int. Cl. B65d *33/10*
U.S. Cl. 229—54 C **7 Claims**

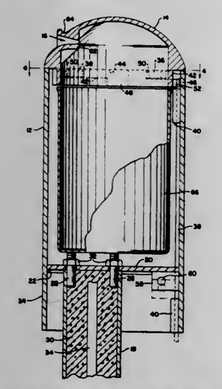


A known carrying handle consisting of a flat strip of plastics material folded to a U-shaped configuration is secured at its leg end portions to one wall of the bag at such a distance below the open rim of the bag that the central portion of the handle does not protrude beyond the open rim of the bag when the latter is flattened. The other wall of the bag is formed with a lead-out slot in that area which is in register with the unattached portions of the leg of the handle. The lead-out slot is parallel to the open rim of the bag and has a length which is approximately as large as the width of the carrying handle.

3,672,563
VALUABLES DEPOSITORY

Jack A. McMath, Ft. Thomas, Ky., assignor to Dover Corporation, Cincinnati, Ohio

Filed Oct. 14, 1970, Ser. No. 80,539
Int. Cl. E05g *1/04*
U.S. Cl. 232—1 R **5 Claims**

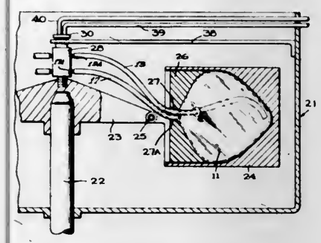


A valuables depository for receiving and storing valuables such as money or the like is disclosed. The valuables depository provides a non-accessible receptable into which the valuables are placed. A lock means is provided to prevent theft of the valuables from the depository. Closure means are also provided so that the depository may be left unattended wherein there is no outside opening from which valuables may be removed or stolen.

3,672,564
ROTARY FLUID SEAL AND DISTRIBUTION MEANS FOR CENTRIFUGES

Charles A. Schlutz, and David Bellamy, Jr., both of Glenview, Ill., assignors to Baxter Laboratories, Inc.

Division of Ser. No. 672,125, Oct. 2, 1967, abandoned, which is a continuation-in-part of Ser. No. 366,994, May 13, 1964, Pat. No. 3,347,454. This application Nov. 12, 1969, Ser. No. 871,242. The portion of the term of this patent subsequent to Oct. 17, 1984, has been disclaimed.
Int. Cl. B04b *9/12*
U.S. Cl. 233—26 **4 Claims**

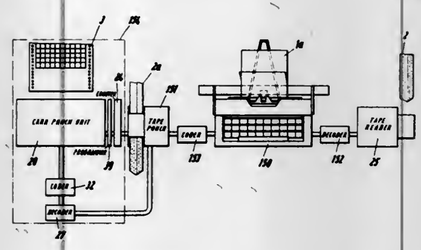


A rotary seal for a centrifuge particularly usable in the process of cell washing for transferring fluid between a rotary member and a stationary member of an apparatus adapted to contain fluids. The rotary seal member comprises a hollow first housing, and a second housing disposed in the first housing in spaced relation therewith to define an annular chamber. One of the housings is rotatable in concentric relation relative to the other housing. A plurality of sealing means are transversely mounted between the first and second housings to divide the annular chamber into several separate sealed portions, and conduits lead from the exterior of both the first and second housings to separate sealed portions of the annular chamber.

3,672,565
PUNCHED TAPE CONTROLLED CARD PUNCHER

Gerhard Ritzerfeld, Schorlemer Allee 14, Berlin-Dahlem, Germany

Division of Ser. No. 842,958, June 18, 1969, Pat. No. 3,630,433. This application Jan. 26, 1971, Ser. No. 109,810
Claims priority, application Germany, July 19, 1969, P 17 74 580.1
Int. Cl. G06k *1/18, 1/22*
U.S. Cl. 234—36 **9 Claims**

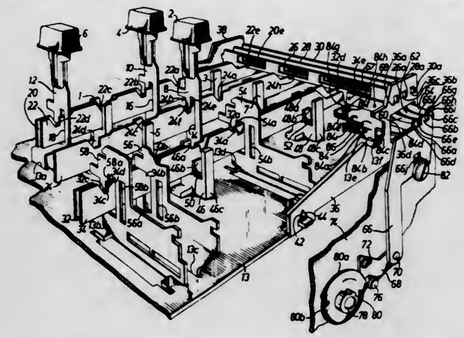


A card punching arrangement in which information stored on punched tape is transferred to lines of a card punched by a card puncher. Signals from a tape reader are applied to a coding circuit for translating the code from the tape into a code suitable for recording on the card. A counter with forward and reverse counting features is connected to a card puncher by way of a programmable selector in the form of a plug board to facilitate variation in the program. The information stored on the tape and recorded on card stock may include all of the symbols found on the conventional keyboard of a typewriter.

3,672,566
DEVICE FOR A BUSINESS MACHINE

Mats Erik Mattsson, Sollentuna, and Claes-Goran Lindelow, Taby, both of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed March 13, 1970, Ser. No. 19,409
Claims priority, application Sweden, March 20, 1969, 3868/69
Int. Cl. G06c *25/00*
U.S. Cl. 235—60.49 **8 Claims**

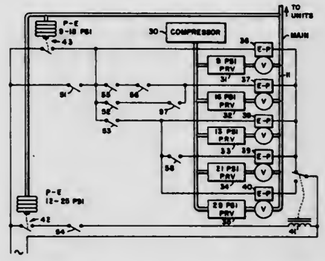


A memory device in a cash register keyboard including resilient means cooperating with memory slides to prevent setting of these slides until a machine cycle initiating key is entirely depressed. This is accomplished by the resilient means (leaf springs) being connected to the memory slide and being forced to bear against a stopping means until said key is entirely depressed. The stopping means is withdrawn from the moving path of the springs by starting the machine. By this arrangement, it is impossible to enter incorrect information in the cash register by displacing memory slides before a machine cycle has been started.

3,672,567
MULTI-UNIT PNEUMATIC CONTROL SYSTEM

Frederick D. Joesting, Park Ridge, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 19, 1970, Ser. No. 82,034
Int. Cl. G05d *23/00*
U.S. Cl. 236—1 C **17 Claims**



A pneumatic unit ventilator control system utilizing a diaphragm logic memory circuit for winter-summer changing over to allow the running of a single main from the pressure source to the units. Depending upon the magnitude of the main pressure input to the memory circuit, and upon previous alterations of the main pressure, either summer or winter control will be achieved. Recycling means are included in the system to assure the return of the system to the desired mode of operation after a fluid pressure failure or a changeover from one mode of operation to another.

3,672,568
HUMIDIFIER

Allen M. Foote, Box 1610, Hendersonville, N.C.

Filed Aug. 12, 1970, Ser. No. 63,483
Int. Cl. G05d *22/02*
U.S. Cl. 236—44 **9 Claims**

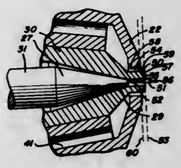


A humidifier including a water receptacle, and an electric heating unit extending across the open top of the water receptacle with a flat wick hung over the electric heater and having the ends thereof disposed in the water to cause water to become engaged and evaporated by the heating unit due to capillary action. A portion of the heating unit is left exposed to produce thermo-convection current which forces moisture to rise. The humidifier is adapted for general utility but is especially constructed for use in musical instruments such as pianos or the like having an enlarged cabinet-like structure which enables the humidifier to be mounted directly in the interior of the cabinet-like structure for maintaining proper humidity conditions therein when combined with a humidistat and dehumidifier.

3,672,569
ELECTROSTATIC SPRAY GUN NOZZLE AND AIR CAP

Robert G. Smead, St. Charles, and Louis J. Bentsen, Arlington Heights, both of Ill., assignors to Graco Inc., Minneapolis, Minn.

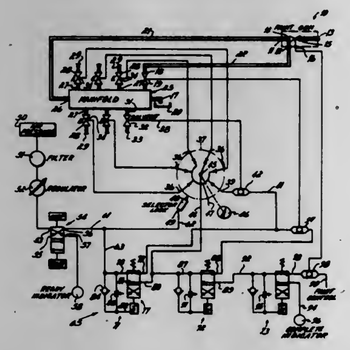
Filed July 16, 1970, Ser. No. 55,539
Int. Cl. B05b *5/02*
U.S. Cl. 239—15 **12 Claims**



In an electrostatic spray gun, the nozzle serves as the electrostatic charging electrode with a recessed forwardly facing

surface that joins a first sharp annular edge adjacent the coating material ejected from the nozzle and a second annular sharp edge adjacent the ejected atomizing air. An air cap surrounding the nozzle provides an annular parallel air ejection passage. Preferably, the sharp edges of the nozzle protrude slightly forwardly of the termination of the air ejection passage formed by the air cap.

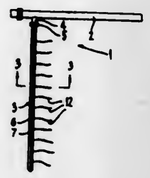
3,672,570
SEQUENCE CONTROL OF COLOR CHANGE
Don R. Scarbrough, Elyria, and Burton J. Vilagi, Amherst, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Filed Sept. 4, 1970, Ser. No. 69,662
Int. Cl. A01g 27/00
U.S. Cl. 239—70 **24 Claims**



A pneumatically controlled color change system for use with automatic multi-color paint spray apparatus and the like wherein an entirely pneumatically controlled system employing a pneumatic timer including pneumatic sequence valves controls a quick-color change system in which a plurality of colors of paint are connected to various inputs of a manifold, each through a check valve which isolates each of the manifold ports from each other and in which a source of solvent is connected to another input of the manifold. An exceedingly high-speed system is provided in which a metered charge of solvent only partially filling the system is injected through the manifold and forced through the system with the new color to be selected, thereby purging the system of the old color. High-speed valve timing is provided in the order of magnitude of 1 second per valve of the sequence.

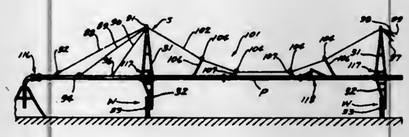
3,672,571
TRICKLE IRRIGATION SYSTEM
John Charles Goodricke, Launceston, Tasmania, Australia, assignor to A.C.I. Operations Proprietary Limited, Melbourne, Victoria, Australia
Filed Aug. 11, 1970, Ser. No. 62,797
Claims priority, application Australia, Aug. 11, 1969, 59322/69; Aug. 14, 1969, 63819/69
Int. Cl. A01g 27/00
U.S. Cl. 239—145 **10 Claims**

A system for irrigating a crop by a method commonly known as the trickle irrigation method or "drip" irrigation. The device has a primary duct to which irrigating water is supplied and at least one secondary duct either extending alongside in parallel relationship with the primary duct, or extending away from the primary duct. When the secondary ducts are situated to extend alongside the primary duct they are internally partitioned into a number of chambers. Each chamber is in fluid communication with the primary duct via at least one flow restricting transfer passage and is also provided with a plurality of flow restricting outlet passages. The number of outlet passages exceeds the number of transfer passages for a particular chamber. When the secondary ducts extend away from the primary duct the flow restricting transfer passage is provided in its connection to the primary duct and the secondary duct has a plurality of outlet passages. With the above systems the pressure of the irrigating water supplied is reduced



by both the transfer and outlet passages and by being progressively sub-divided into a plurality of streams and thus the irrigating water issues from the system in the form of a plurality of low pressure trickles or drips. Lengths of small bore tubing may be placed in the outlet passages to allow further pressure reduction while the heights of the outlets of the small bore tubes may be adjustable above the secondary duct to enable more precise adjustment of the output from the system.

3,672,572
ROUGH GROUND SELF-PROPELLED SPRINKLING IRRIGATION APPARATUS
Larry M. Delfs, Omaha, Nebr., assignor to Valmont Industries, Inc., Valley, Nebr.
Filed July 27, 1970, Ser. No. 58,424
Int. Cl. A01g 25/02
U.S. Cl. 239—212 **10 Claims**

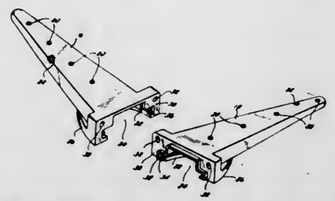


A self-propelled water sprinkling apparatus for irrigating a relatively large section of land wherein an elongated main water distributing pipe is revolved about one end as a pivot by a plurality of self-propelled support stations automatically maintained in alignment, with the apparatus capable of traveling over unduly irregular terrain or rough ground without inducing excessive stresses in the distributing pipe, the pivot or at the support towers by the introduction of flex joints in the distributing pipe at particular locations, and of a unique cable suspension arrangement for supporting the distributing pipe.

3,672,573
DISHWASHER SPRAY ARM WITH INTEGRAL BEARING
Wendell D. Morgan, Marion, Ill., assignor to Fedders Corporation, Edison, N.J.
Filed March 3, 1971, Ser. No. 120,555
Int. Cl. B05b 3/06
U.S. Cl. 239—261 **10 Claims**

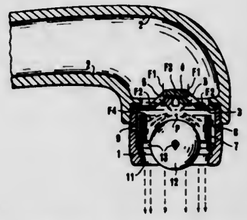
An upstanding water post in a dishwasher has a cylindrical outer surface with an outwardly-extending circumferential flange. First and second hollow members molded from plastic, each having a bottom wall, a portion of which is horizontal, and an opening at one end defined partially by the inner edge of a vertical abutting surface and partially by the inner edge of a cylindrical surface formed in the horizontal portion of the bottom wall. The cylindrical surfaces of the first and second

members have a horizontal bearing slot formed therein, and the members are positioned so that the bearing slots receive the outwardly-extending flange of the water post to provide a



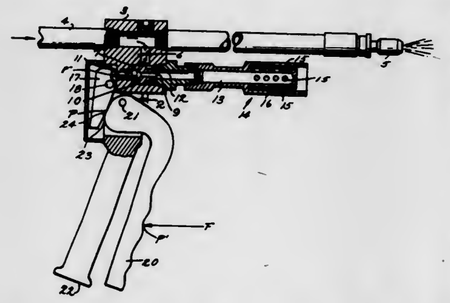
bearing for rotatably supporting the members. The first and second members are sealed together by a tongue and groove molded in the abutting surfaces of the respective members.

3,672,574
DEVICE FOR AERATING A JET OF WATER
Alfons Knapp, Bleicherstrasse 3, Biberach, Riss, Germany
Filed Sept. 29, 1970, Ser. No. 76,548
Claims priority, application Italy, July 20, 1970, 69486 A/70
Int. Cl. E03c 1/08
U.S. Cl. 239—428.5 **15 Claims**



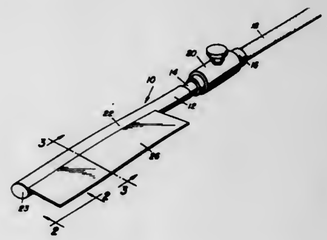
A device for aerating a jet of water, wherein a subdivider member divides the water flow into a number of partial flows and directs said partial flows one against the other such as they impact violently and atomize one another within a chamber wherein exterior air may enter through openings of the body of the device for being absorbed in the atomized jet of water.

3,672,575
HYDRO BLAST SAF-T-GUN
Jack F. Hinrichs, Missouri City, Tex., assignor to Hydro-Services, Inc., Missouri City, Tex.
Filed Feb. 1, 1971, Ser. No. 111,553
Int. Cl. B05b 15/00
U.S. Cl. 239—445 **5 Claims**



A high pressure water gun has a main conduit through which the high pressure water is directed which ends in a restricted nozzle for increasing the velocity of the water exiting therefrom. A cross-channel connects the main water conduit and a water dumping conduit which has a relatively low pressure outlet. The cross-channel has a floating valve positioned therein which is actuable between a seated and unseated position in a response to the movement of a pin valve. In turn, the pin valve is moved by a pivotably mounted lever under the influence of a force supplied by the cam surface of the handle lever.

3,672,576
BUTCHER'S PNEUMATIC BONE DUST VACUUM CLEANER
Leo J. Jefferson, and Lenard J. Crosby, both of Hollywood, Fla., assignors to Lenard J. Crosby and Harold E. Cook, Hollywood, Fla., part interest to each
Filed April 14, 1970, Ser. No. 28,385
Int. Cl. B05b 1/26
U.S. Cl. 239—521 **4 Claims**

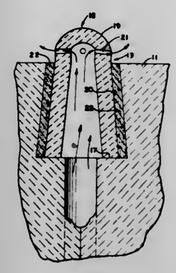


This cleaner is a device for use by a butcher for vacuum cleaning bone dust off the surface of the meat and bone after he has used a saw to cut through the bone in the meat. It utilizes a vacuum created by pneumatic pressure from a conventional pneumatic pressure hose connected to any suitable source of pressure, the hose being provided with a conventional pressure control valve. The cleaner is connected to the pressure hose by a conventional detachable coupling. The cleaner consists of a somewhat flattened tube, more or less oval in cross-section, and has one end open for attachment to the pressure hose, and its other end is closed. A rigid skirt, substantially the length of the oval portion of the tube, is secured longitudinally along one shorter side of the oval tube, and a series of spaced apart, elongated slits are provided in the tube closely adjacent and beneath the skirt, so that air pressure passing therethrough provides jets of air parallel to and closely beneath the skirt, the slits being located so as to be an extension of approximately the maximum diameter of the oval tube. The cleaner is passed closely over the surface of the cut meat and bone, and the pressure jets create a vacuum on the meat surface thus pulling up the bone dust from the meat surface into the jet stream and blowing it parallel to the bottom of the skirt. A dust receptacle, preferably with an overhanging lip extending over the meat block on which the meat is located, serves to receive the dust as the cleaner is swept over the meat surface and meat block surface picking up and blowing the dust into the dust receptacle.

3,672,577
FLUID BED GRID PLATE ASSEMBLY
Walter W. Kramer, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.
Filed Oct. 15, 1970, Ser. No. 80,888
Int. Cl. B05b 1/06
U.S. Cl. 239—557 **9 Claims**

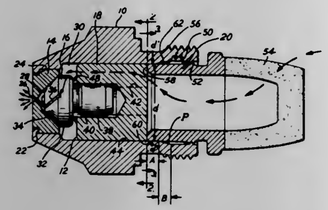
This invention relates to a grid plate assembly for a fluid bed reactor including an apertured grid plate having nozzle elements in the apertures. The apertures and nozzle elements are

structured to prevent dislodgement of the nozzle elements from the grid plate during use of the assembly yet permit ready



removal of the nozzle elements from the apertures when desired.

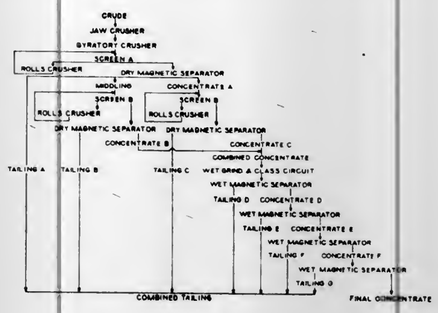
3,672,578
NOZZLE
Alex Wayne, Des Moines, Iowa, assignor to Delavan Manufacturing Company
Filed Aug. 20, 1970, Ser. No. 65,545
Int. Cl. B05b *1/14*
U.S. Cl. 239—590 8 Claims



In a fluid nozzle the clearance between the nozzle body and an orifice retaining member is reduced in a zone between the spray orifice and passages in a fluid distributor and the threads by which the retaining means is threaded into the nozzle body such that the clearance is smaller than the minimum cross sectional dimension of either the spray orifice or the passages in the fluid distributor which distribute the fluid to be sprayed in the spray orifice to prevent clogging by particulate contaminants present on the threads.

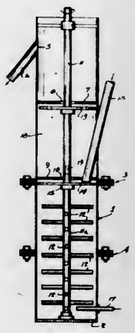
3,672,579
PROCESS FOR BENEFICIATING MAGNETITE IRON ORE
James E. Lawver, Edina, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.
Filed Aug. 10, 1970, Ser. No. 62,423
Int. Cl. B02c *21/00*
U.S. Cl. 241—24 5 Claims

A process for upgrading low-grade magnetite-containing iron ore with minimum fine grinding. The dry ore is first comminuted to between about three-fourths inch and 10 mesh particle size and magnetically separated. The dry tailing is discarded and the concentrate is ground to between about 20 and 100 mesh and again subjected to dry magnetic separation. The dry tailing is again discarded and the concentrate is then finely ground according to conventional practice and subjected to wet magnetic separation. About 90 percent or more



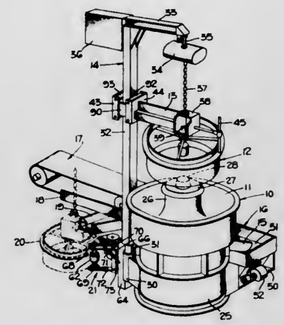
of the tailing is discarded dry without fine grinding, permitting easy disposal without possible ecological damage due to lake and stream pollution.

3,672,580
SYSTEM FOR FEEDING GRINDING MEDIA TO CONTINUOUS ATTRITION MILL
John David Nye, Prescott, Ontario, Canada, assignor to Ferrox Iron Ltd., Prescott, Ontario, Canada
Filed Dec. 8, 1970, Ser. No. 96,128
Int. Cl. B02c *17/16*
U.S. Cl. 241—79 5 Claims



A system is described for feeding grinding balls to a continuous attrition mill of the type comprising a vertical cylindrical vessel having an inlet in the lower portion thereof, an annular suppression plate with an axial opening mounted in an upper region of the vessel, a horizontally rotatable disc mounted immediately below the suppression plate and a plurality of rotatable impellers within the vessel. The grinding ball feeding system of the invention comprises a pipe extending downwardly through a separate opening in the suppression plate and terminating a small distance above the rotatable disc. The pipe is arranged in relationship to the rotatable disc such that during operation the rotating disc draws the balls from the lower end of the pipe and delivers these to the outer walls of the vessel where they tend to sink down towards the bottom without interfering substantially with the operation of the mill.

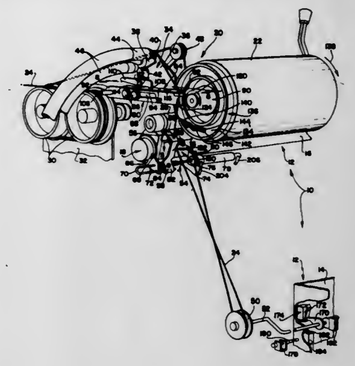
3,672,581
DRIVING APPARATUS FOR HOIST PAN
James P. Denight, Cincinnati, and George A. Burgess, Fairfield, both of Ohio, assignors to Sweco, Inc., Los Angeles, Calif.
Filed May 19, 1969, Ser. No. 825,861
Int. Cl. B02c *19/00*; B65g *7/00*
U.S. Cl. 241—101 R 6 Claims



A material handling system for vibratory finishing or grinding mills into which are placed materials and abrasive media and wherein the materials are operated upon. In a finishing mill the materials are parts which are finished, polished, or deburred, and in a grinding mill the materials usually are chemicals which are reduced in size. The system includes a vibratory mill into which such materials and media are placed, a vibratory screen separator for separating the materials from media after completion of the operation thereon, a hoist pan for handling the media or material and media, and a jib hoist system for moving and positioning the pan. Media or material and media are loaded into the pan, and same is lowered to the top of the finishing machine causing the load to be evenly dumped into the finishing machine. After the finishing operation, the material may be moved or transported in any suitable manner to any further operation stage, and the media is returned to the hoist pan. A pan driving mechanism is provided for rotating the pan as the media is supplied thereto from the separator or mill such that the pan is evenly loaded. Several bottom-dumping pan configurations are disclosed which provide a relatively even discharge of the media into the mill when the pan engages the mill.

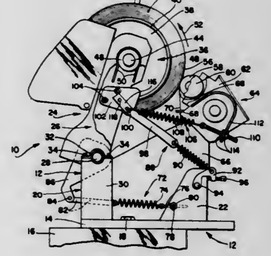
3,672,582
YARN HANDLING
James N. Allam, Woonsocket, and Joseph J. Morrocco, III, Cranston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.
Filed Feb. 19, 1970, Ser. No. 12,583
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 R 20 Claims

A take-up machine having a rotating spindle on which a tube is releasably clamped for winding of a strand of yarn onto the tube to form a yarn package. The machine automatically threads the strand of yarn onto the spindle to start winding of the yarn onto the tube and, if desired, first winds a tailing end about an end of the tube, and then winds a body of yarn on the tube to form the yarn package. A variable speed spindle drive is automatically operated at a manually pre-set constant speed during thread-up and immediately upon thread-up is switched



to a speed different from the constant pre-set speed and conventional control of the winding speed.

3,672,583
WINDING APPARATUS AND METHOD
Robert E. Harrison, West Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Aug. 18, 1970, Ser. No. 64,673
Int. Cl. B65h *54/52*
U.S. Cl. 242—18 R 10 Claims

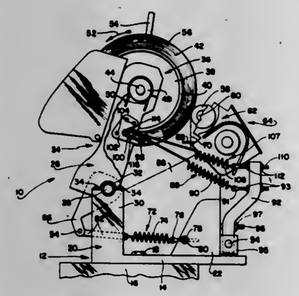


Apparatus and a method for winding a package positioned on a spindle assembly and held against a roller bail with substantially continually decreasing winding pressure as winding progresses and the spindle assembly moves across dead center with gravity first urging the package toward the roller bail and then away from the roller bail. Upon initiating winding, a primary spring functions to urge the package away from the roller bail as the spindle assembly approaches dead center and the weight of the package increases. Later, second and third springs come into play to urge the package against the roller bail. Preferably, the second spring comes into play and counteracts the primary spring well before the spindle assembly reaches dead center and the third spring comes into play when the spindle assembly is proximate dead center.

3,672,584
WINDING APPARATUS

Frank A. Macedo, Pawtucket, and Thomas W. Perrino, Johnston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Aug. 27, 1970, Ser. No. 67,408
Int. Cl. B65h 54/52
U.S. Cl. 242—18 R 10 Claims

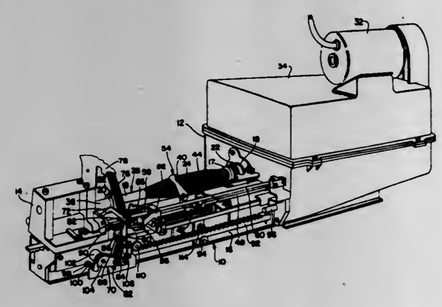


Apparatus for winding a package rotatably mounted on a spindle assembly and held against a roller bail with selectively adjustable decreasing winding pressure as winding progresses and the spindle assembly moves across dead center, with gravity first urging the package toward the roller bail and then away from the roller bail. Upon initiating winding, a primary spring urges the package in a direction away from the roller bail to reduce winding pressure and then second and third springs urge the package against the roller bail. The second and third springs are connected with a lever or, alternatively, each is connected with a respective lever, for adjusting the point at which these springs come into play to regulate the winding pressure.

3,672,585
WINDING APPARATUS

James A. Kerrigan, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Oct. 20, 1970, Ser. No. 82,456
Int. Cl. B65h 54/14
U.S. Cl. 242—27 6 Claims

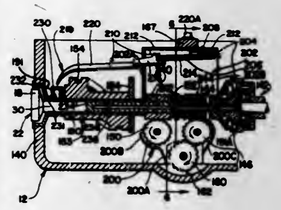


A winding machine, such as a UNIFIL loom winder, manufactured by Leesona Corporation, Warwick Rhode Island 02887, has a spindle assembly for receiving and rotating a bobbin, and a traversing assembly including a traversing member having a pair of jaws releasably threadedly secured to a traverse rod, during winding, for guiding a strand of yarn being wound onto the bobbin. The traversing and spindle assemblies are driven by mechanism within a casing of the winder. This mechanism includes a continuously driven drive shaft connected by a clutch with a spindle shaft which rotates the bobbin and rotatably receives cams for operating the threaded traverse rod to provide the traversing member with builder and reciprocating motions. When the clutch is drivingly engaged it supports an end of the spindle shaft, and when the clutch is disengaged this end of the spindle shaft is supported on a unit which journals the shaft for axial movement. At the end of winding of a bobbin, bobbin doffing and donning operations are initiated, the clutch between the drive shaft and the spindle shaft is released, the jaws are released from the traverse rod and the traversing member is returned to its starting point, the yarn is cut between the traversing member and the doffed, filled bobbin, and the cut yarn is engaged for winding onto an empty bobbin previously donned into the winder. When the traversing member has been returned to its starting position, the clutch again drivingly engages the drive shaft and spindle shaft whereupon the cycle is repeated.

3,672,586
WINDING APPARATUS

Robert E. Morton, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Oct. 28, 1970, Ser. No. 84,816
Int. Cl. B65h 54/14
U.S. Cl. 242—27 8 Claims

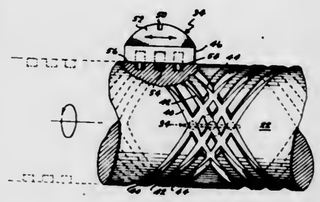


A winding machine, such as a UNIFIL loom winder, manufactured by Leesona Corporation, Warwick, Rhode Island 02887, has a spindle assembly for receiving and rotating a bobbin, and a traversing assembly including a traversing member releasably threadedly secured to a traverse rod, during winding, for guiding a strand of yarn being wound onto the bobbin. Upon completion of winding, the traversing member is released from the traverse rod and the traversing member is returned to its starting point, the yarn is cut between the traversing member and the doffed, filled bobbin, and the cut yarn is engaged for winding onto an empty bobbin previously donned onto the winder. The traversing and spindle assemblies are driven by mechanism within a casing of the winder. This mechanism includes a continuously driven drive shaft connected by a clutch with a spindle shaft during winding, and disengaged at the termination of winding. A power take-off from the spindle shaft drives cams rotatably received on the spindle shaft for rotating and reciprocating the threaded traverse rod to provide the traversing member with builder and reciprocating motions. Lubrication of the rotatable cam and spindle shaft, and other portions of the mechanism within the casing, is provided by a rotating slinger which projects atomized lubricant upwardly through a duct and onto aprons of an upper duct from which the lubricant flows through channels and passages to lubricate the cam and spindle shaft. When the traversing member has been returned to its starting position, a cycling mechanism causes the clutch to again drivingly engage the drive shaft and spindle shaft whereupon the cycle is repeated.

3,672,587
TRAVERSE CAM AND FOLLOWER FOR WINDERS

John H. Pierce, Charlotte, N.C., assignor to R. H. Bonligny Inc., Charlotte, N.C.

Filed Jan. 5, 1971, Ser. No. 104,110
Int. Cl. B65h 54/30
U.S. Cl. 242—43 4 Claims

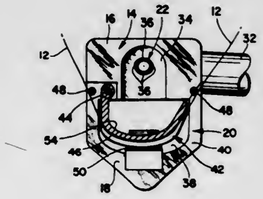


A traverse cam and follower is provided for winding machines that is capable of operating at high winding speeds to much better advantage than has heretofore been possible. The traverse cam is characterized by a reversing spiral of three grooves, and the follower by a shoe for riding in the central groove to serve as a crossing guide and by stud elements spaced at each side of the shoe for riding in the outer grooves to bear the cam thrust. This arrangement allows excellent control of the follower during reversal at the end of each stroke, results in remarkably smooth and quiet operation, and adapts well to use in traverse cams of considerably smaller diameter than is usual, which lighten the traverse mechanism substantially and lower cam surface speed so as to lessen follower wear materially.

3,672,588
STRAND CONTROL APPARATUS

William M. Bense, Barrington, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 8, 1970, Ser. No. 70,004
Int. Cl. B65h 57/00
U.S. Cl. 242—45 18 Claims

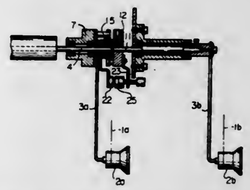


An apparatus and a method embodied in a guide for an advancing strand of yarn. The guide retains the strand on a receiver which is supported on a cushion of air. The receiver is pivotally retained between opposed members extending from a base of the guide. The strand urges the receiver toward the base and the cushion of air, which is introduced between the members proximate the base, urges the receiver away from the base. As the air is vented about the receiver the advancing strand is substantially out of contact with the air to prevent removal of coatings from the strand or entanglement of filaments of the strand. Response of the receiver to variations in the force exerted thereon by the strand may be programmed by regulating venting of the air about the receiver.

3,672,589
DETECTION ARRANGEMENT OF WINDING SPEED ON A TAKE-UP WINDER

Shoji Nakai, and Akio Higuchi, both of Osaka, Japan, assignors to Kabushiki Kaisha Kamitsu Seisakusho, Itami-shi, Hyogo-ken, Japan

Filed May 18, 1970, Ser. No. 38,418
Claims priority, application Japan, May 21, 1969, 44/38749
Int. Cl. B65h 59/38
U.S. Cl. 242—45 7 Claims

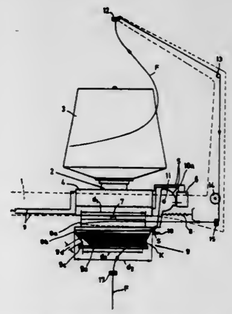


Improvement in or relating to an arrangement for detecting winding speed of running strandular materials on a multiple packages on a common spindle type take-up winder having multiple compensator arms with dancer rolls for the strandular materials independently operable, upon speed deviation of the strandular materials, on a common shaft connected to a unit for controlling the spindle rotational speed and the detection is carried out with possible minimum tension fluctuation within and/or between the strandular materials.

3,672,590
THREAD STORAGE AND DELIVERY DEVICE FOR TEXTILE MACHINES

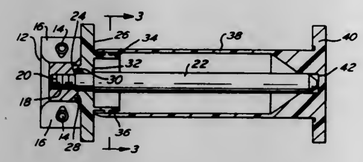
Karl Isac Joel Rosen, Villa Haga, Ulricehamn, Sweden

Filed Oct. 10, 1969, Ser. No. 865,302
Claims priority, application Sweden, Oct. 14, 1968, 13807/68; Germany, March 7, 1969, P 19 11 735.2
Int. Cl. B65h 51/20
U.S. Cl. 242—47.12 17 Claims



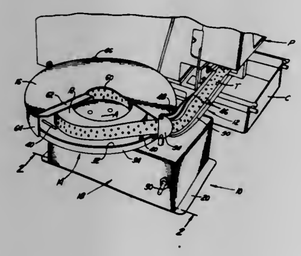
A thread storage and delivery device for conveying a thread from a spool to a working point on a textile machine. The thread is delivered to a storage drum in a substantially tangential direction in the region of a slide cone. The thread is drawable from the storage drum in an axial direction while the force serving to draw the thread from the spool is imparted to the thread by means of a friction driving surface which is looped at least once by the thread. The storage drum has a storage section which is smaller in diameter than the remainder portion thereof and the thread turns are conveyed from the slide cone in an axial direction into the storage section to form at that point a double layer, or multiple layer coil from which the thread can be drawn out.

3,672,591
DISPENSING HOLDER FOR PAPER ROLLS AND THE LIKE
James G. Davis, 41 Lincoln Ave., Yeadon, Pa.
Continuation-in-part of Ser. No. 853,787, Aug. 28, 1969, Pat. No. 3,593,936. This application Aug. 14, 1970, Ser. No. 63,682
Int. Cl. A47k *10/22, 10/24*
U.S. Cl. 242—55.2 4 Claims



A holder and dispensing means for rolls of paper and the like which comprises a support at one end and a sleeve rotatably connected to the support and constructed to snugly receive the core of the roll. The roll rotates together with the sleeve without bouncing or wobbling on the sleeve. The sleeve also acts as an anchor when a piece of the paper strip is pulled off the roll at one of the score lines.

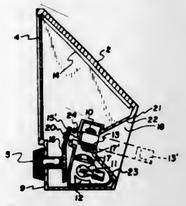
3,672,592
TAPE WINDING MEANS
William A. Nichols, 5617 Hawthorne, Montclair, Calif., and Ralph E. Simpson, 604 E. Arrow Hwy., Upland, Calif.
Filed March 2, 1970, Ser. No. 15,616
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.21 7 Claims



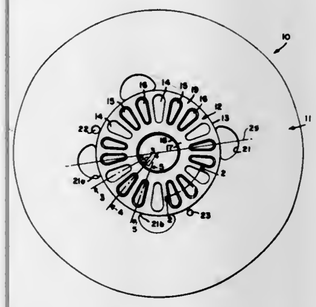
Tape guide means receive longitudinally moving tape in a horizontal position and impart a twist thereto for delivering it edgewise to a rotary tray driven at a speed faster than the tape. The tray bottom has angled ridges which frictionally engage the delivered tape and impel it adaxially to cause the tape to coil and form into a roll. The ridges also jostle the roll during formation for tightening the coiled tape into a compact roll.

3,672,593
SELECTIVE SCANNING CONTROL FOR PROJECTION APPARATUS
Frederick G. Knowles, Rochester, and Clarence R. Taylor, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 3, 1970, Ser. No. 8,309
Int. Cl. B65h *17/02*; G09f *11/24*
U.S. Cl. 242—67.4 6 Claims

Apparatus is disclosed for scanning and projecting a set of images carried by a filmstrip wherein the strip may be transported in either direction by a single control knob. Rotation of the control knob causes a main or first drive shaft to be moved to either a first or second position and to there respectively engage either second and third shafts. In turn, the second and third shafts are respectively coupled to take-up members about which the filmstrip may be wound.

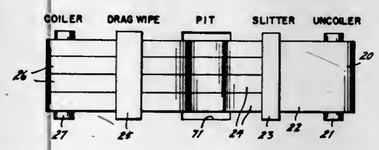


3,672,594
REEL
Robert W. Selleck, San Jose, and Philip H. Allen, Los Gatos, both of Calif., assignors to Cycle Equipment Company, Los Gatos, Calif.
Filed Dec. 15, 1969, Ser. No. 885,142
Int. Cl. B65h *75/14*
U.S. Cl. 242—71.8 3 Claims



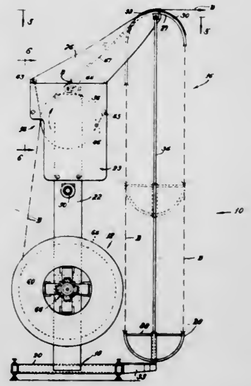
A reel half having an outer flange and an inner hub including a plurality of sets of flange spacing portions of different heights or elevations, the reel half being reversible to form either half of a reel and two reel halves being capable of assembly with differing heights of said flange spacing portions in contact so as to provide reels of different widths.

3,672,595
DRAG WIPE
Richard Jablin, Blue Bell, and Robert G. Leister, Ambler, both of Pa., assignors to Allan Wood Steel Company, Conshohocken, Pa.
Division of Ser. No. 801,004, Feb. 20, 1969, Pat. No. 3,559,862. This application March 20, 1970, Ser. No. 21,370
Int. Cl. B65h *23/10, 35/02*
U.S. Cl. 242—75.2 3 Claims



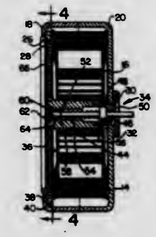
A mechanism for slitting and coiling work sheet or strip including a slitter from which a plurality of work mults of different thickness is obtained, a drag wipe engaging the various mults coming from the slitter and providing generally uniform frictional drag on the different mults, a common winder receiving the various mults and winding them into coils, and a looping pit interposed between the slitter and the drag wipe for receiving loops of some of the mults. In a preferred form a table means selectively covers the looping pit in order to aid in threading in the forward ends of the mults.

3,672,596
FEEDING DEVICE FOR STRAPPING MACHINE
Anton R. Hoffmann, Lake Forest, Ill., assignor to A. J. Gerrard & Company, Des Plaines, Ill.
Filed July 3, 1969, Ser. No. 839,010
Int. Cl. B65h *23/08, 25/32*
U.S. Cl. 242—75.43 7 Claims



A feed device for supplying a continuous length of strapping band from a supply reel having an accumulator assembly and an intermittent drive assembly. The accumulator assembly stores a variable segment of the strapping band to provide a constant supply of the strapping band to a strapping machine. The intermittent drive assembly starts to feed strapping band into the accumulator upon the stored segment reaching a certain low value at a rate greater than the withdrawal rate from accumulator and continues this feeding process until the stored segment reaches a certain high value.

3,672,597
MEMO TAPE
Jervis C. Williamson, R.F.D. #5, P.O. Box 196, Norwich, Conn.
Filed Feb. 1, 1971, Ser. No. 111,316
Int. Cl. G01b *3/10*; B43l *1/12*
U.S. Cl. 242—107 R 6 Claims



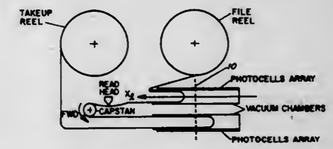
A memo measuring device of the type comprising a housing and a coiled extendible and retractable measuring tape therewithin. The housing has front and rear shells and means connecting the same and a front housing opening extends throughout the major portion of the face area of the housing. A small opening is provided in the rear housing shell. A waxed plate disposed within the housing adjacent the front shell opening has a transparent sheet thereover for dimensional notations and other memoranda. A stem extending rearwardly from the plate is hollow and opens through the rear shell opening. A plunger within the stem opening has an associated return spring and a front end portion engageable with the transparent sheet. Manual finger pressure urging the plunger forwardly displaces the transparent sheet from the waxed plate and clears the memoranda thereon.

3,672,598
COVER FOR SPOOL
Ivan H. Saveth, Bayside, N.Y., assignor to Thermoformed Plastics Corporation, Flushing, N.Y.
Filed Jan. 28, 1970, Ser. No. 6,361
Int. Cl. B65h *75/26, 75/10*
U.S. Cl. 242—118.2 7 Claims



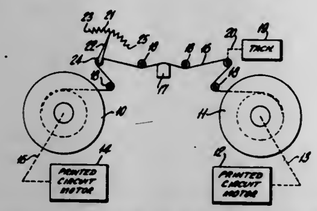
A protective cover for a thread receiving spool designed to protect it from crushing during the thread receiving operation and a method of making the same is disclosed. The cover is generally conical in shape and has a plurality of inwardly directed ribs which rest against the outer surface of the spool when the cover is placed around it. The outer surface of the conical cover is the thread receiving surface of the combination. The cover is formed by molding a suitable material, such as polystyrene, into the desired shape and is held in conical shape by lapped joints forming a vertical seam in the finished cover.

3,672,599
TAPE STORAGE BUFFER
Mario A. Torres, Anaheim, Calif., assignor to California Computer Products, Inc., Anaheim, Calif.
Filed Aug. 14, 1970, Ser. No. 63,872
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—184 4 Claims



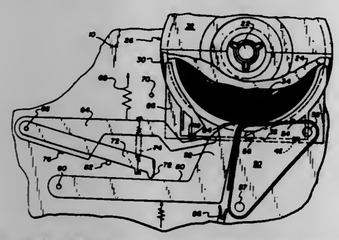
Variable center positioning can be used to increase the effective storage length of a vacuum buffer chamber. Both position and velocity are controlled in accordance with the direction of capstan rotation so as to maintain the loop at the top or bottom of the vacuum chamber.

3,672,600
REEL-TO-REEL TAPE STORAGE APPARATUS
Robert A. Carlson, 230 Newton Road, Plainview, N.Y., and Thomas P. Foley, 12 James Lane, Huntington, N.Y.
Filed April 2, 1969, Ser. No. 812,767
Int. Cl. B65h *25/04, 25/22;* G11b *15/48*
U.S. Cl. 242—186 3 Claims



The disclosure describes an information tape storage apparatus without tape loop storage means or tape driving means interposed along the path of the tape as the tape moves from the information processing station to the take-up reel. To provide such tape motion, including the usual start-stop characteristics, a tachometer generates a signal indicative of tape speed which is compared differentially with a ramp signal to develop a control signal for a low inertia printed circuit motor that is connected to turn the take-up reel.

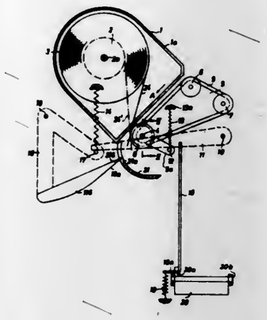
3,672,601
FILM FEEDING MECHANISM WITH MOVABLE CARTRIDGE MOUNTING MEANS
John J. Bundschuh, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 28, 1970, Ser. No. 76,080
Int. Cl. G03b *1/04;* G11b *15/32*
U.S. Cl. 242—192 12 Claims



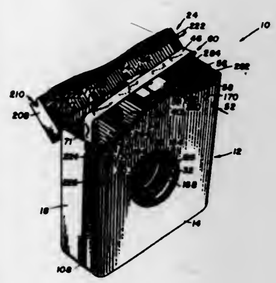
In a simplified film feeding mechanism of the type including a drive member and a stripper finger for contacting the periphery of a roll of film or other strip material to separate the leading end thereof from the roll and to feed it into a threading channel of a motion picture projector or similar apparatus, means for mounting the film roll so that it may be moved into engagement with the drive member and stripper finger.

3,672,602
MECHANISM FOR THREADING MOTION PICTURE FILM IN CINEMATOGRAPHIC APPARATUS
Herbert Wilsch, Unterhaching near Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed March 18, 1970, Ser. No. 20,558
Claims priority, application Germany, March 28, 1969, P 19 15 969.4
Int. Cl. G03b *1/02;* B65h *17/14;* G11b *15/32*
U.S. Cl. 242—192 10 Claims

Automatic film threading mechanism for use in motion picture projectors, comprising a driven endless elastic belt a portion of which is pivotable into engagement with the outermost convolution of film on the core of the supply reel to thereby rotate the reel in a direction to pay out the film. The belt is trained over a roller which rotates about a fixed axis, and such roller is surrounded by a stationary guide member or flanked by two guide rolls which prevent the film from engaging the belt in the region of the roller so that the belt can engage the film only when its aforementioned portion is pivoted into engagement with the outermost convolution.

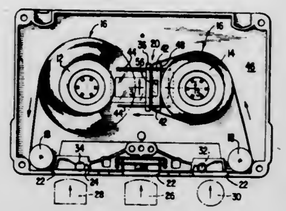


3,672,603
TAPE CARTRIDGE
William W. Swain, Mountain View, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,125
Int. Cl. G03b *1/04;* G11b *15/32, 23/04*
U.S. Cl. 242—194 27 Claims



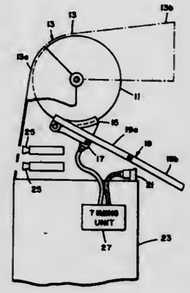
An improved tape cartridge for use with a tape transport of the type having a rotary head assembly. The cartridge is of the reel-over-reel type and a flexible, magnetic tape coupled to the reels of the cartridge can be drawn outwardly thereof and along a portion of a rotary head assembly by tape guide or pick-up means receivable within recesses near an open extremity of the cartridge. The cartridge housing has a pivotally mounted closure near the open extremity to cover the tape and releasable latch means on the closure holds the latter coupled to the cartridge housing until it is moved into an operative position. A releasable brake in the cartridge housing holds the reels against movement until the cartridge is moved into said operative position.

3,672,604
TAPE CARTRIDGE INCLUDING DIRECT VIEWING OF CUE INDICIA
Alan Beaumont, 359 Wildwood Road, Stamford, Conn.
Filed Oct. 8, 1970, Ser. No. 79,189
Int. Cl. G03b *1/04;* G11b *15/32, 23/04*
U.S. Cl. 242—199 11 Claims



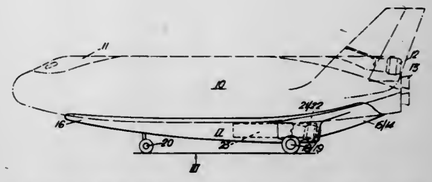
Cue indicia applied to the non-recording surface of a magnetic tape are directly viewed by passing the non-recording tape surface across a tape guiding element which includes a mirror for viewing the non-recording surface.

3,672,605
SYSTEM FOR DEPLOYMENT OF A SPHERICAL BODY FROM THE NOSE OF AN ACCELERATING BALLISTIC VEHICLE
Leonard M. Hoffman, Burlingame, and John B. Kimball, Menlo Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 16, 1971, Ser. No. 115,450
Int. Cl. B64g *1/10*
U.S. Cl. 244—1 SS 10 Claims



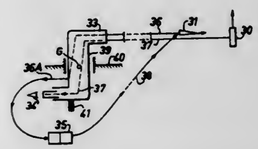
A system for lateral deployment of a spherical body from an accelerating ballistic vehicle. The smooth spherical body is constrained during the launch by a visor-like nose fairing, a ramp and a retractable chock, all located in the apex of the vehicle. Prior to separation, the nose fairing opens and the ramp is extended. At attainment of the desired separation velocity, the chock is retracted permitting the sphere to roll down the ramp under the thrust of the ballistic vehicle. During the roll down the ramp the sphere picks up spin velocity, normal to its roll axis, as required for re-entry temperature control. Lateral reaction of the vehicle resulting from the separation of the spherical body from the vehicle is counteracted by rocket motors deployed in the vehicle.

3,672,606
TROLLEY FOR RECOVERABLE SPACECRAFT
Gerald D. Walley, Long Ridge, near Preston, England, assignor to British Aircraft Corporation Limited, London, England
Filed Dec. 31, 1969, Ser. No. 889,408
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SS 6 Claims



A recoverable spacecraft has rocket propulsion engines for vertical flight into space, and has lifting surfaces for horizontal flight after re-entry into the earth's atmosphere. When transporting the craft over land, its size makes road transport difficult, and makes its flight energized by rocket motors uneconomical. The present invention provides a trolley which can be releasably attached to the craft for such transportation. The trolley has wheels, a braking system and may have at least one air breathing engine to energize transportation flight. It forms a streamlined blister beneath the spacecraft, but has itself no lifting surfaces, the flight of the combined spacecraft and trolley using the lifting surfaces of the craft. The trolley is attached to and released from the craft only when the two are stationary on the ground.

3,672,607
SIGHTING TELESCOPE INFRA-RED DIRECTION FINDER UNIT IN A TELEGUIDING DEVICE FOR MISSILES
Emile Stauff, Versailles, and Roger Fleury, Boulogne-sur-Seine, both of France, assignors to Nord-Aviation Societe Nationale de Constructions Aeronautiques, Paris, France
Continuation-in-part of Ser. No. 413,481, Nov. 24, 1964, abandoned. This application March 12, 1969, Ser. No. 806,428
Claims priority, application France, Nov. 28, 1963, 955387
Int. Cl. F41g *1/40, 7/00, 9/00*
U.S. Cl. 244—3.16 6 Claims

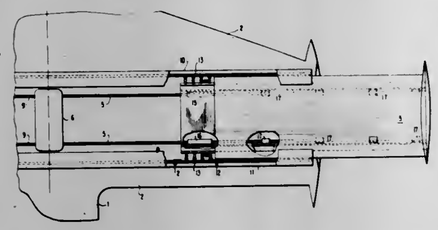


A firing control apparatus for teleguided missiles comprising an assembly of a periscopic sighting telescope and an infrared goniometer adapted to locate, with respect to the sighting axis of a target, a missile emitting infra-red radiation, and to determine its errors of trajectory with respect to the sighting axis, and an associated teleguiding system giving orders at every instant so as to correct the errors measured by the infrared goniometer. The whole assembly is fixed in one casing having a support permitting pivotal movement of the combined sighting telescope and goniometer about two perpendicular axes, one of which passes through the center of gravity of the apparatus, the optical axes of the telescope and the goniometer constituting two parallel optical paths.

3,672,608
HYDRAULIC MECHANISM

Gaspare L. Gioia; Norris H. Switzer, and John K. Willerton, all of Merritt Island, Fla., assignors to Omniomics, Inc., Brevard County, Fla.

Filed April 10, 1970, Ser. No. 27,359
Int. Cl. B64c 3/54
U.S. Cl. 244—43 43 Claims

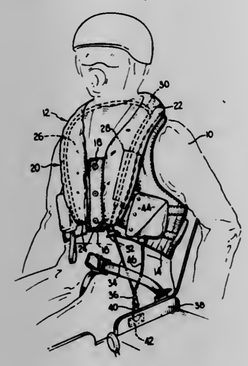


A hydraulic mechanism for supporting a telescopically mounted wing section of an extendible aircraft wing. Hydraulic cylinders, fixedly attached to one telescopic wing section, are in slidable or rolling contact with the other wing section via pistons. Cylinders are mounted in inboard and outboard sections. In one embodiment, single groups of inboard and outboard cylinders are hydraulically interconnected with a hydraulic accumulator so as to provide load dispersion, wear adjustment and flutter dampening. In a second embodiment, such results are obtained by the interworking of different hydraulic circuits.

3,672,609
INFLATABLE BODY-ATTACHMENTS FOR MARINE LIFE-SAVING

James Mitchell Hawkins, Ashton-Under-Lyne, England, assignor to Frankenstein Group Limited

Filed Oct. 6, 1970, Ser. No. 78,514
Int. Cl. B64d 25/18
U.S. Cl. 244—122 AE 10 Claims

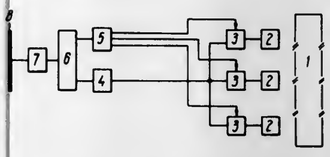


This invention concerns a life-saving appliance comprising an inflatable portion which when the appliance is unactivated is stowed compactly in a pouch, means for securing the pouch closely to the body of the wearer, and a fastening for the pouch adapted for release or disablement only through the medium of a flexible traction member to permit deployment of the appliance on inflation thereof, characterized in that the release or disabling means for the pouch fastening is adapted for direct or indirect connection to an aircraft ejection seat or the lift webbing of an associated parachute so that on separation of the wearer from the seat or deployment of the parachute, the pouch will be free to open on inflation of the appliance, and by a water-responsive mechanism adapted to initiate self-inflation of the appliance on immersion.

3,672,610
ELECTRIC SYSTEM OF A DEVICE FOR DEICING THE SURFACE OF THIN-WALLED STRUCTURES

Igor Anatolievich Levin, ulitsa Stepana Supruna, 12, kv. 74, Moscow, U.S.S.R.

Filed May 20, 1969, Ser. No. 826,204
Claims priority, application U.S.S.R., June 24, 1968, 1250546
Int. Cl. B64d 15/16
U.S. Cl. 244—134 R 4 Claims

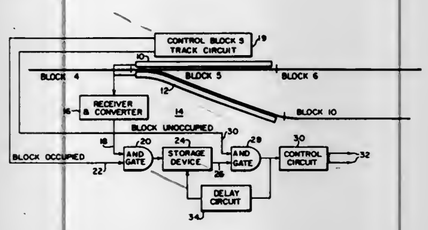


A system is disclosed for deicing the skin surface of aircraft and comprises a power supply unit to which are connected an electrical power accumulator and a program switch. Low inertia converters such as magnetostrictive vibrators are provided in close proximity to the skin surface and are fed from the power supply unit via key switches each having one input connected to the electrical power accumulator while its second input is connected to the program selector switch such that the switch will produce successive single or bundles of electrical pules separated by pauses at the converters.

3,672,611
VEHICLE CONTROL SYSTEM AND METHOD

George M. Thorne-Booth, Tarzana, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1970, Ser. No. 94,849
Int. Cl. B61l 23/26
U.S. Cl. 246—28 R 9 Claims

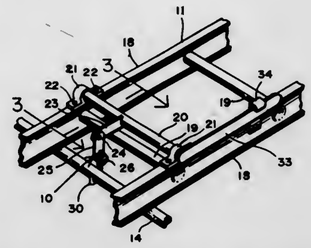


A path along which a vehicle traverses is divided into a plurality of blocks. In each block two devices sense the presence of a vehicle, and one of the devices is used to sense the absence of the vehicle. The two devices concurrently sensing the presence of a vehicle provide a presence signal to be stored which is indicative of a vehicle having been present in the block. In response to the sensing of the absence of the vehicle by the one device during the time the presence signal is stored, a control signal is generated. A predetermined amount of time after the control signal is generated the storage of the presence signal is discontinued.

3,672,612
LADDER LATCHING DEVICE

Clyde A. Laing, Jr., 920 S. W. 101st Ave., Miami, Fla.

Filed Feb. 11, 1971, Ser. No. 114,501
Int. Cl. B60r 9/04
U.S. Cl. 248—361 R 2 Claims

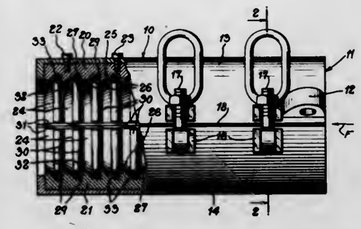


A latching device for releasably securing a ladder to a vehicle having racks secured thereon, the latching device being mounted on the side rails of the ladder on the lower side thereof and consisting of a rotatable shaft secured to the side rails, with a handle mounted on the end of the shaft and a hook member secured to the side rail for securing the handle in the locked position. At the middle of the shaft there is secured an arm portion at whose free end one end of an adjustable hooking member is pivotally attached with the other end engaging the rack for locking the ladder thereto.

3,672,613
DISTRIBUTING CLAMPING STRESS DEVICE FOR CABLE LAYING

Agostino Oriani, Sesto San Giovanni, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Filed March 27, 1970, Ser. No. 23,297
Claims priority, application Italy, July 10, 1969, 19410 A/69
Int. Cl. F16l 3/10
U.S. Cl. 248—62 8 Claims



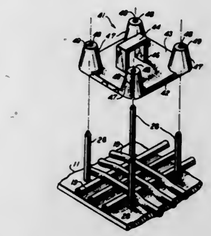
A clamp or stopper for suspending a cable being laid which comprises a generally cylindrical inner clamp having frustoconical interior grooves receiving resilient rings for engaging the cable surface and an outer housing for receiving and holding the clamp and for attachment to a suspending rope or ropes.

3,672,614
PLASTIC HOLDDOWN DEVICE FOR LOGIC CHASSIS

Franklin D. Guerry, Burlington, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 73,155
Int. Cl. F16l 3/10
U.S. Cl. 248—68 7 Claims

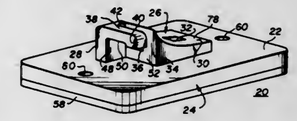
A resilient holddown device is employed to secure loose strip material to an underlying support that has affixed thereto a plurality of upward extending projections bounding the strip material. The device includes a base which has a plurality of openings therethrough. Each opening is aligned with an associated one of the projections on the support. A corresponding plurality of slits individually extend traversely from each opening to the periphery of the base. Each of the openings has a cross-sectional dimension sufficiently small to grip the projections when the base is lowered into engagement with the bounded strip material.



3,672,615
STRAP SUPPORT

Arthur A. Florentino, Piscataway, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Feb. 17, 1971, Ser. No. 116,164
Int. Cl. F16l 3/14
U.S. Cl. 248—74 PB 16 Claims



A strap support comprising a selectively recessed strap retaining member disposed on the upper surface of an appropriately contoured base member affixable to a mounting member. The inwardly directed surfaces of adjacent, upstanding, perpendicularly disposed portions of the retaining member in combination with an overhanging member partially define an open-ended strap head receiving cavity selectively aligned relative to an appropriately proportioned extending strap body receiving passage in one of the upstanding portions to provide both retaining and guide means for an extending strap body insertable therein. A plurality of upstanding recessed portions may be arranged in juxtaposed relationship to provide a multiple of spaced, opposing strap receiving passages. The base member may be provided with suitable mounting means such as an adhesive layer, fastener receiving openings, or the like.

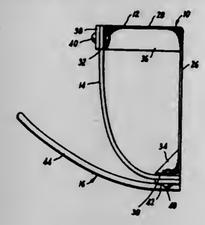
3,672,616
TOOL HOLDER

David H. Hunt, Simsbury, Conn., assignor to The Spencer Turbine Company, West Hartford, Conn.

Filed June 19, 1970, Ser. No. 47,776
Int. Cl. A47f 5/00
U.S. Cl. 248—75 9 Claims

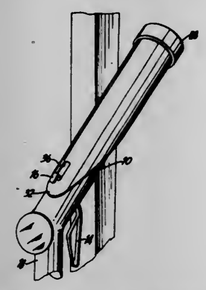
A holder for supporting and sealing a vacuum tool connected to a vacuum producing system and having an inlet opening for the passage of air in response to vacuum produced by the system and comprising a generally L-shaped wall bracket, a flexible sheet of substantially air impervious materi-

al connected to and loosely extending between the free end portions of the bracket, and a tool support member carried by



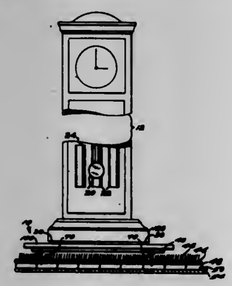
the bracket and adapted to support the tool in close proximity to the sheet so that vacuum produced by the system draws the sheet into sealing engagement with the tool inlet opening.

3,672,617
HANGER FOR HOSE NOZZLE
Elvin E. Neyendorf, Fredericksburg, Iowa, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 4, 1970, Ser. No. 86,713
Int. Cl. B05l *11/12*
U.S. Cl. 248—75 1 Claim



A hanger for a hose nozzle pivotally secured to a vertical support and provided with a hollow enclosure for holding the nozzle detachably and covering the discharge end of the nozzle.

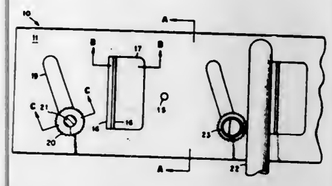
3,672,618
LEVELER
Clifford C. Janda, 9717 Cady Ave., Omaha, Nebr.
Filed Oct. 5, 1970, Ser. No. 78,090
Int. Cl. A47f *7/02*
U.S. Cl. 248—116 6 Claims



A support pedestal for grandfather clocks and other free-standing clocks having penetration legs thereon adapted to penetrate through carpeting to cause the weight of the clock to be supported by the hard flooring.

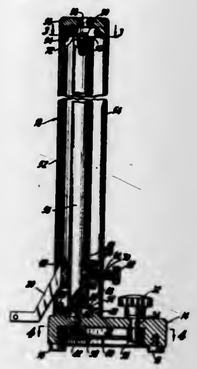
The penetration legs being adjustable with respect to a frame for assisting in the leveling.

3,672,619
QUICK RELEASE HOLDER
Elba W. Bowen, P.O. Box 3005, Greeneville, Tenn.
Filed June 8, 1970, Ser. No. 44,105
Int. Cl. A46b *17/02*
U.S. Cl. 248—113 3 Claims



An easily fabricated quick release holder for handled objects such as brooms, mops, garden tools, and the like. The object is gripped between a fixed planar gripping element and a roller gripping element that moves angularly to the fixed element (through the force of gravity). The gripping surfaces of both the fixed and moveable elements are resilient elastomers, having oppositely directed serrations, for additional gripping action.

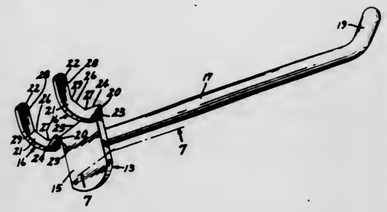
3,672,620
HEIGHT GAUGE
Anton Fiak, 149 Crescent Drive, Albertson, N.Y.
Filed Nov. 17, 1970, Ser. No. 90,324
Int. Cl. F16m *11/04*
U.S. Cl. 248—125 12 Claims



A centrally located shaft, having a longitudinal groove therein, is provided with an arm extending outward of the tubular casing for supporting either an electronic or a mechanical sensor. A coarse adjustment for a rapid movement of the arm and the sensor is provided as well as a fine adjustment which includes spring means for supporting the upper and lower ends of the shaft and a threaded, axially movable screw that is driven through a pulley system by means of the fine adjustment knob.

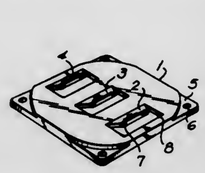
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,672,621
KEEPER FOR PEGBOARD HARDWARE
Joseph B. Bambenek, Winona, Minn., assignor to Peerless Chain Company, Winona, Minn.
Filed May 6, 1971, Ser. No. 140,863
Int. Cl. A47f *5/00*
U.S. Cl. 248—223 7 Claims



A keeper having supporting peg elements to fit pegboards of different thicknesses and having peg-receiving openings of different diameters.

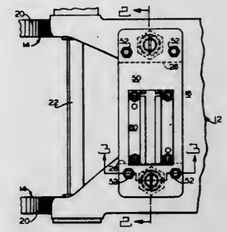
3,672,622
ARTICLE HANGING APPARATUS
Leon Breslow, 185 E. 162nd St., Bronx, N.Y.
Continuation-in-part of Ser. No. 733603, May 31, 1968, abandoned. This application Aug. 31, 1970, Ser. No. 68,302
Int. Cl. A47f *5/00*
U.S. Cl. 248—224 7 Claims



An article hanging apparatus having at least two interlocking members. One bracket is secured at the desired location while the other bracket is fastened to the article to be suspended. The bracket that is secured to the desired location, has integrally formed tongues which protrude obliquely from the surface. The other bracket has corresponding and identical tongues, but oppositely directed from the first bracket so as to permit detachable interlocking of one bracket onto the other. The articles suspended may include planters, wall lamps, hooks, curtain rods, plaques, clocks, tools, ad the like, and may have their positions easily changed.

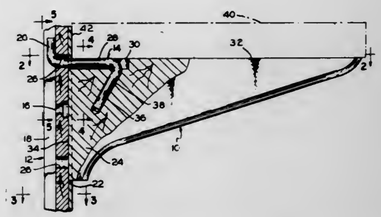
3,672,623
ADJUSTABLE MOUNT FOR AUXILIARY GUN SIGHT
Frank D. Jones, Moline, Ill., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 8, 1970, Ser. No. 96,209
Int. Cl. F41g *1/38*
U.S. Cl. 248—226 R 3 Claims

A sight mounting pad is pivotally mounted on the spherical heads of a pair of longitudinally spaced bolts and is secured to a supporting member by four machine bolts two of which are mounted through the mounting pad and supporting member on opposite sides of each of the spherical headed bolts. The spherical headed bolts are adjusted vertically to level the mounting pad longitudinally and by loosening two of the machine bolts on one side of the spherical headed bolts, and



tightening the two machine bolts on the other side thereof, the mounting pad is levelled transversely.

3,672,624
SHELF BRACKET STRUCTURE
James R. Keller, Portland, Oreg., assignor to Baldwin Tool, Inc., Hillsboro, Oreg.
Filed April 2, 1971, Ser. No. 130,605
Int. Cl. A47g *29/02*
U.S. Cl. 248—243 5 Claims

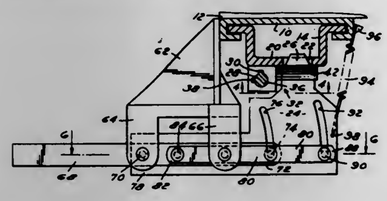


A shelf bracket structure includes a wood shelf bracket having a channel in its upper surface extending from the rear end of the bracket part way along the bracket and a hole spaced from such end of the bracket and extending from the bottom of the channel downwardly and rearwardly of the bracket. A metal attaching member has a horizontal body portion received in the channel and a downwardly and rearwardly bent end portion received in the hole of the bracket. The other end of the attaching member has an upwardly extending portion for attaching the bracket to a wall or other support. This upwardly extending portion may be positioned rearwardly of the bracket for hooking engagement in a hole in a support strip or in a modification may have a rear surface flush with the rear end surface of the bracket and a hole extending through the upwardly extending portion to receive a screw or other fastener for securing the attaching member to a wall or other support member.

3,672,625
POSITION LOCATOR FOR AN ADJUSTABLE SEAT SUPPORTING ASSEMBLY
Dennis C. Cazabon, Grosse Pointe, and John R. Dunbar, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed March 1, 1971, Ser. No. 120,025
Int. Cl. B60n *1/08*
U.S. Cl. 248—429 10 Claims

A position locator for an adjustable seat supporting assembly includes a guide rail over which a seat supporting channel is movable. Structure is provided on the channel to

function with a locator plate formed with the guide rail so that the seat channel is adjustable between a plurality of different positions. Structure is also provided that positively locates front and rear positions for the seat supporting channel. This structure is actuated by a device which permits one to move



the seat directly to either the front or the rear position and then to lock the seat in such a position. With the position locator, one driver of a vehicle containing the seat may move the seat to the rear position and another driver may move the seat to the front position.

3,672,626

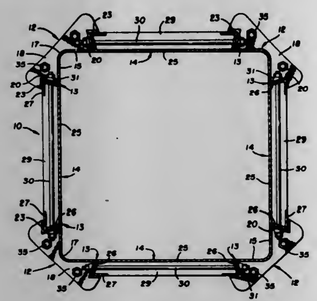
REUSABLE FORMS FOR CASTING COLUMNS

James Thornton, 413 Shoreline Drive, Hampton, Va.

Filed March 6, 1970, Ser. No. 17,053

Int. Cl. E04g *13/02*

U.S. Cl. 249—48 **2 Claims**



A reusable form assembly for casting columns from concrete or other suitable material consisting of corner forming members and side-forming panel members disposed therebetween, all detachably bolted together to provide selected cross-section of column formed therein. The form members are in modules of suitable length which can be detachably bolted together in longitudinal relationship. A dovetail joint arrangement is provided between the corners and the cooperating side panels to effectively align the cooperating members and hold them in true alignment until the form is disassembled.

3,672,627

DIAPHRAGM ASSEMBLY FOR PRESSURE OPERATED PILOT CONTROLLED SHUT-OFF VALVE

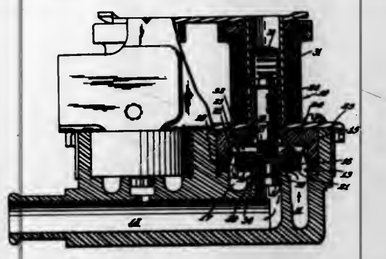
William R. McCarty, Jr., Skokie; Paul A. Dolter, Roselle, and Wesley S. Swanson, Elk Grove, all of Ill., assignors to Eaton Yale & Towne Inc., Cleveland, Ohio

Continuation-in-part of Ser. No. 850,572, Aug. 15, 1969, Pat. No. 3,593,957. This application March 2, 1970, Ser. No. 15,497

Int. Cl. F16k *31/06, 31/145*

U.S. Cl. 251—30 **7 Claims**

A poppet valve for use with a fluid pressure operated pilot controlled diaphragm valve. The poppet valve has a central pilot orifice leading therethrough and bleed holes communicating with mating bleed holes in a diaphragm with a screen means therebetween for allowing fluid passage into the diaphragm pressure chamber and through the central orifice. The poppet valve has a depending stem element fitting within the valve outlet bore arranged to maintain guiding contact



with the periphery of the bore throughout the movement thereof and to provide throttling during the closing operation whereby water hammer effect are avoided and the poppet valve is under positive guidance throughout the operation of the diaphragm valve.

3,672,628

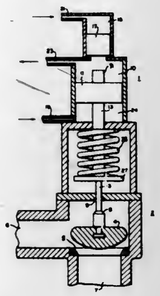
CONTROLLER FOR A BACK SEATED VALVE

Ola J. Aanstad, Chester, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 25, 1970 Ser. No. 92,733

Int. Cl. F16k *31/143, 41/14*; F01b *11/02*

U.S. Cl. 251—47 **5 Claims**



A hydraulic controller for a back seated steam valve wherein the controller comprises a pair of axially aligned hydraulic cylinders disposed to operate in opposite directions, one of the cylinders having a drive piston and piston rod connected to the valve stem, and the other cylinder having a free piston disposed therein, which opposes the force the drive piston applies to the valve stem as the drive piston approaches the end of its stroke in valve opening direction, thus reducing the back seating force applied to the valve stem by the drive piston. The free piston also increases the initial acceleration of the valves moving parts in closing direction, thus reducing the valve's closing time.

3,672,629

NON-BLEED PILOT VALVE

Johannes Sorteberg, c/o Sorteberg Controls Corp. 540 Connecticut, Norwalk, Conn.

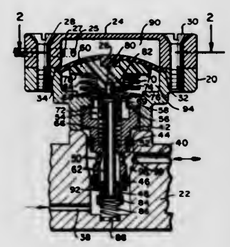
Filed May 18, 1970, Ser. No. 38,115

Int. Cl. F16k *31/165*

U.S. Cl. 251—61.2 **4 Claims**

A swivel joint between two interconnected members in a pilot valve which are responsive to force differentials and

capable of being extremely sensitive to these force differentials so as to initiate the proper motion to equalize the forces throughout. In the preferred embodiment, the swivel joint comprises a firmly seated ball bearing in the plunger of the pilot valve and an exhaust tube which incorporates a contact post and a biasing spring to urge and maintain the exhaust tube assembly in continual contact with the ball bearing. This



arrangement allows the plunger to pivot freely while the exhaust tube can move laterally with a minimization of frictional contact. The result is a pilot valve which is extremely sensitive and responsive to pressure variations. Pilot valve sensitivity is additionally increased by axially incorporating a pinion with the exhaust tube, while establishing a gap therebetween. This construction provides an unobstructed, controllable path for exhausting gaseous fluids.

3,672,630

FLAP VALVE FOR SUCTION APPARATUS

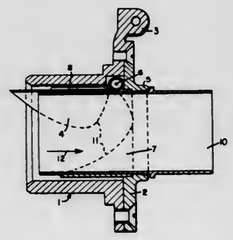
Per Naumburg, Djursholm, and Jan Olof Norrman, Solna, both of Sweden, assignors to AB Centralsug, Johanneshov, Sweden

Filed April 14, 1970, Ser. No. 28,414

Claims priority, application Sweden, April 18, 1969, 5544/69

Int. Cl. F16k *1/18*; F16l *37/28*

U.S. Cl. 251—149.2 **4 Claims**



A valve in a wall- or floor-mounted connection box for connecting suction apparatus to a central suction system, said valve being biased to closing position against the action of the negative pressure prevailing in the system.

3,672,631

VALVE AND ACTUATOR THEREFOR

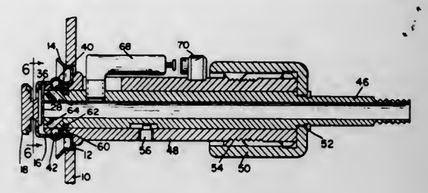
Frederick G. J. Grise, Box 112, West Brookfield, Mass.

Filed Nov. 16, 1970, Ser. No. 89,950

Int. Cl. F16l *29/00, 37/28*

U.S. Cl. 251—149.6 **12 Claims**

A full-flow tank valve and valve actuator, the valve comprising a thimble adapted for application to a tank and having an apertured bottom forming a seat, a movable imperforate member to open or close the apertures, said member including guides extending through certain of the apertures, and resilient means acting on the guides to draw the member to valve closed position against the bottom, said actuator includ-



ing means for engaging the guides and opening the valve and applying gas to the tank therethrough, with locking means for the thimble.

3,672,632

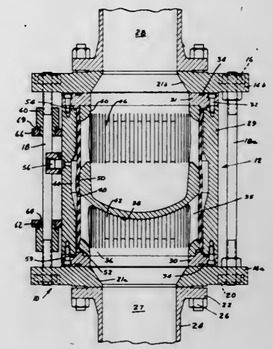
SWING OUT VALVE STRUCTURE

Peter C. M. Chow, San Jose, Calif., assignor to Grove Valve and Regulator Co., Oakland, Calif.

Filed May 3, 1971, Ser. No. 139,415

Int. Cl. F16k *51/00*; F16l *23/00*

U.S. Cl. 251—151 **5 Claims**



A valve structure comprising a swing-out body which is clamped between line flange connector plates by means of elongated studs with clamping nuts. Those studs which are located on, and on one side of, a diameter of the flow passages are provided with jacking nuts which may be tightened to engage the inside of the connector plates and separate them out of clamping engagement with the swing out body. A pair of hinge members welded to the swing out body have circular openings therein which rotatably receive bushings threadedably carried on one of the studs located on the aforementioned diameter. The studs without jacking nuts may be completely removed and the valve body may be pivoted out for internal inspection. Lateral slots in the hinge members permit removal of the valve body from the stud when the bushings are threaded back out of the circular openings in the hinges.

3,672,633

VENT VALVE

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation

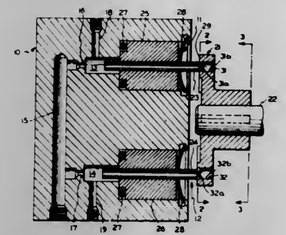
Filed Sept. 14, 1970, Ser. No. 71,937

Int. Cl. F16k *11/02*

U.S. Cl. 251—304 **3 Claims**

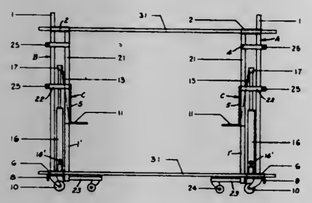
The disclosure concerns a sensitive vent valve for controlling the escape of air from a pressurized chamber. The

valve comprises a tubular seat, and a rotary plate which slides across one end of the seat and contains a through port which is selectively brought into registration with the seat. The port has



a short upstream portion and a longer and enlarged downstream portion so that the air which enters the port and expands therein will exert only minimal tangentially directed forces on the plate.

3,672,634
LIFTING APPARATUS
Chester C. Chaffin, Missoula, Mont., assignor to Ezy-Way Manufacturing & Sales Co., Missoula, Mont.
Filed July 28, 1969, Ser. No. 846,308
Int. Cl. B60p *1/02, 1/28*
U.S. Cl. 254—2 C 4 Claims

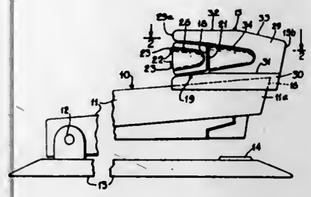


A load lifting and transporting apparatus comprises a pair of coacting units each having an upright main frame and a lifting or carriage frame. Hydraulic jacks on the two units of the apparatus raise and lower the carriage frame. The units have swiveled casters which may be locked in rigid positions. Ratchet controlled belts on the units are capable of encircling the load in two directions for safety and stability, and in another mode of use the two units may be rigidly coupled by connecting bars. The two units may be employed as a scaffold or table and a single unit of the apparatus is capable of forming a stable hand truck with load lifting capacity.

3,672,635
STAPLE REMOVER HOUSING MEANS
Whitney K. Munson, 28 Pinckney Road, and John N. Ricci, 22 De Forest Avenue, both of Red Bank, N.J., assignors to said Whitney K. Munson, by said Ricci
Filed June 18, 1971, Ser. No. 151,001
Int. Cl. B25c *11/00*
U.S. Cl. 254—28 10 Claims

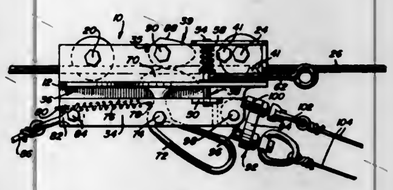
A housing means for staple removers of the conventional spring actuated, pivotal jaw-type is provided for storing a staple remover when not in use in a generally horizontal position, with the jaws partially compressed and with all but the finger-piece portions of the staple remover housed within a recessed body, with engagement between said body and the compressed staple remover preventing accidental displacement thereof, while permitting free removal upon slight further compression of the staple remover.

Suitably the device is fashioned as two interfitting parts with top, side and end walls of the recess formed in the top part and the lower wall of the recess being formed by an interfitting protruding portion of the lower part of the assemblage. A single upper part of the assemblage can interfit with a plurality of



different lower parts, on which the lower surface is specially contoured to interfit with a predetermined support, with preferred adaptations including provisions for mounting of the device on stapling machines either in place of or in conjunction with the striking pads thereof.

3,672,636
CABLE GRIPPING TOWING DEVICE
Edward M. Parsen, Box 23, Miller, S. Dak.
Continuation-in-part of Ser. No. 861,615, Sept. 29, 1969. This application Nov. 20, 1970, Ser. No. 91,256
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.3 R 14 Claims

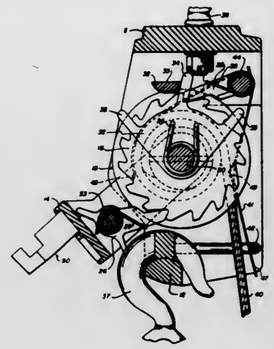


A cable tow device, adapted to ride on a messenger cable, is pulled along by a groundman's towrope or by a rope drawn by a vehicle. The device is provided with pivotally mounted means for securing a number of signal cables thereto. Releasable one-way locking means, in the form of mating cams, are mounted to the device and automatically clamp the device in place on the messenger cable whenever the towrope is slackened to prevent reverse movement. The pivotally mounted securing means yield when the towrope is released so as to prevent the device from being lifted off the messenger cable at the forward end.

3,672,637
RATCHET LEVER DRUM PULLER
Anthony G. Profet, Charlotte, N.C., assignor to Duff-Norton Company, Inc., Charlotte, N.C.
Filed Jan. 14, 1970, Ser. No. 2,895
Int. Cl. B66d *1/00*
U.S. Cl. 254—167 12 Claims

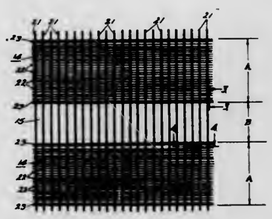
A ratchet lever drum puller having the ratchet toothed wheel integrally cast with the drum, and a reverse ring construction is disclosed. A retrofit or original equipment quick-lower mechanism works from the handle yoke and disengages the operating pawl to provide an arc of travel in the lowering configuration the same as raising. A cable guard is provided

from a single sheet of material which also assists in preserving the helical wind of the cable. The cable guard cooperates with



a cable guide to assist in securing the former, and to deter improper positioning of the dead-end hook on the cable guide.

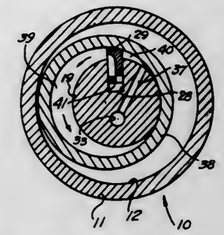
3,672,638
SNOW FENCE
William B. Krebs, Hanover, Pa., assignor to Keystone-Seneca Wire Cloth Company, Hanover, Pa.
Filed Feb. 3, 1971, Ser. No. 112,265
Int. Cl. E01f *7/02*
U.S. Cl. 256—12.5 5 Claims



A snow fence made of a woven wire fabric in which the warp wires extend substantially parallel to the ground and the weft wires extend perpendicularly to the ground. The warp wires are arranged in groups which are spaced apart laterally so as to provide a series of vertically spaced horizontally extending slat structures providing a degree of resistance to the flow of wind without totally blocking the flow. The mesh of the slats is selected to permit limited wind flow therethrough and to permit coating of the woven fabric after weaving substantially without bridging of the coating material across the mesh openings.

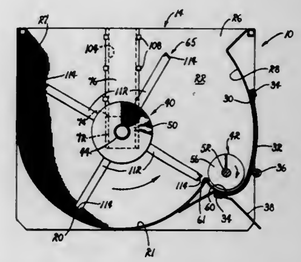
3,672,639
ROTATING PNEUMATIC VIBRATOR
Theodore S. Wadensten, 26 Snyder Ave., Ramsey, N.J.
Continuation-in-part of Ser. No. 42,791, June 2, 1970, Pat. No. 3,638,914. This application Oct. 9, 1970, Ser. No. 79,442
Int. Cl. B01f *11/00*
U.S. Cl. 259—1 R 10 Claims

A rotating pneumatic vibrator in which a cylindrical housing is provided with an axial shaft spaced inwardly from the walls of the housing to provide a circular space between the shaft and the housing. A cylindrical rotor having a diameter greater than the shaft and smaller than the housing is mounted on the shaft for movement thereabout. A longitudinally extending radially moveable vane is mounted in the shaft and is arranged to be pneumatically pressed against the rotor. Air forces the vane against the rotor and escapes into the chamber formed between the shaft and the rotor. The air forces the



rotor to move about the shaft and then escapes to the atmosphere with the rotor and vane returned to their beginning point. The motion is continuous and produces vibrations due to the off center rotary movement of the rotor during which it strikes the shaft or both the shaft and housing.

3,672,640
MIXER
Harvey L. Crose, P.O. Box 87, Tulare, Calif.
Filed Sept. 2, 1970, Ser. No. 69,048
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 18 Claims

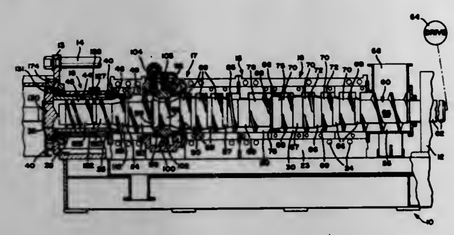


A mixer particularly suited for use in mixing fluid materials, such as feed for livestock, characterized by a portable, elongated shell having an open top, for therein receiving materials to be mixed, a side discharge port, for discharging mixed materials, and a plurality of parallel augers adapted simultaneously to advance the materials in opposite directions for transporting and incidentally mixing the materials. A particular feature of the mixer resides in an agitator conforming to a rotatable paddle wheel operatively affixed to one of the augers, for mixing the materials received within the shell, adapted to avoid the effects of substantially immovable obstructions encountered by the agitator as it is driven in operative rotation.

3,672,641
APPARATUS FOR REMOVING LIQUIDS FROM ELASTOMERIC POLYMERS
Robert Kent Slaby, Piqua, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio
Continuation-in-part of Ser. No. 753,647, Aug. 19, 1968, Pat. No. 3,574,891. This application Sept. 14, 1970, Ser. No. 71,639
Int. Cl. B01f *7/08*
U.S. Cl. 259—9 5 Claims

A continuous process and apparatus for removing liquids and/or vapors from elastomeric polymers causes the liquid containing polymer to undergo mechanical working and then a substantial reduction in pressure while contained within a

chamber having small vents to atmosphere or a collection housing. Essentially all of the last traces of liquids or vapors are removed in this chamber, the material is cooled by the vaporization of contained liquids, any resulting fine particles



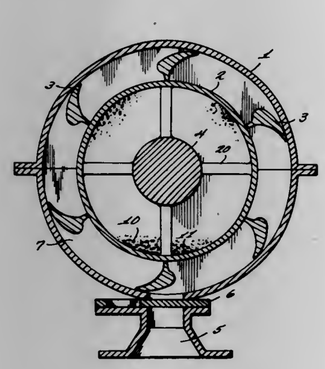
are contained and immediately mixed into the material, and the material is subsequently discharged through an extruder section without further significant creating of fine particles in the end product as discharged.

3,672,642

MIXING APPARATUS FOR POWDERED NUCLEAR FUEL

Heinrich Beisswenger, Karlsruhe, Germany, assignor to Alkem Alpha-Chemie und-Metallurgie GmbH, Leopoldshafen, Germany

Filed Oct. 3, 1969, Ser. No. 863,573
Claims priority, application Germany, Oct. 5, 1968, P 18 01 414.7
Int. Cl. B01f *9/02*
U.S. Cl. 259—50 9 Claims



An apparatus for mixing powdered nuclear fuel is provided in which the mixing space is in the form of a hollow cylinder whereby the inner diameter of the hollow cylinder is larger than half the outer diameter.

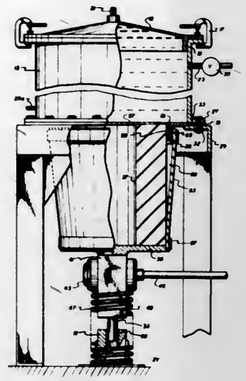
3,672,643

ELASTOMERIC PISTON

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Continuation-in-part of Ser. No. 666,398, Sept. 8, 1967, Pat. No. 3,544,073. This application June 2, 1969, Ser. No. 829,488
Int. Cl. B06b *1/16, 1/20*
U.S. Cl. 259—72 4 Claims

A device for radiating elastic pressure pulses into a liquid container which comprises a cylindrical body of elastomeric material, having connected to one end thereof an orbiting mass oscillator, with the opposite end covered by a plate being affixed thereto, this end being further exposed to and in contact with a body of water contained within a tank.

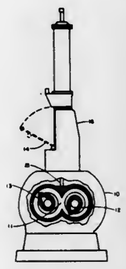


3,672,644

ROTOR FOR INTENSIVE MIXERS

Arthur R. Crixell, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 5, 1969, Ser. No. 882,560
Int. Cl. B01f *7/00*; B29b *1/10*
U.S. Cl. 259—104 6 Claims



An improved rotor for use in intensive mixers which reduces leakage of material out of the mixers comprising a substantially cylindrical body having affixed thereto a pair of diagonally disposed spiral lobes, said lobes terminating at the respective ends of the rotor at oppositely opposed end plate sections, the distance between the edges of the lobes adjacent the end face plate sections and the internal wall of the mixing chamber being greater than the distance between the edges of the lobes farthest from the end face plate sections and the internal wall of the mixing chamber.

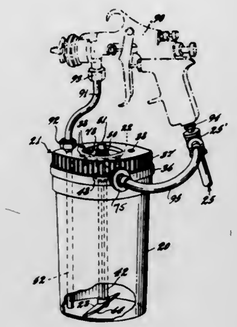
3,672,645

CONTAINER AND STIRRER FOR PAINT SPRAYER

Joseph L. Terrels, 6 Greenbank Ave., and Robert Meneses, 1308 W. Chester Pike, both of West Chester, Pa.

Continuation-in-part of Ser. No. 772,559, Nov. 1, 1968, abandoned. This application Jan. 8, 1971, Ser. No. 105,003
Int. Cl. B01f *7/16*
U.S. Cl. 259—122 3 Claims

A combination paint container and stirrer for use with a conventional spray gun. The stirrer is driven from the same source of air that operates the spray gun. A vent system of the shaft keeps the air pressure within the cup at the proper level, without allowing leakage of paint, even when the spray gun is positioned other than horizontally.

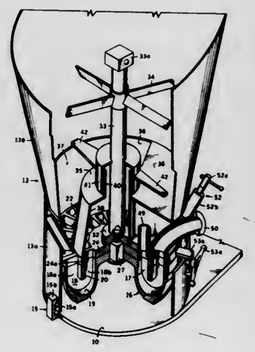


3,672,646

PNEUMATIC CEMENT GUN MACHINE

James D. Burtin, Lebanon, Mo., assignor to Detroit Tool and Engineering Company, Lebanon, Mo.

Filed April 15, 1971, Ser. No. 134,190
Int. Cl. B28c *5/06*
U.S. Cl. 259—151 14 Claims



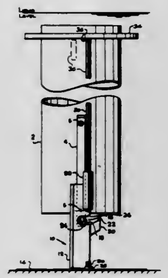
A cement gun machine has a hopper subtended by a rotary transport bowl which is divided into radial compartments. The bowl receives dry cement mixture from the hopper, and moves it to a station where the mixture is pneumatically discharged into a delivery hose. A hood structure within the hopper traps cement dust and prevents it from escaping into the ambient atmosphere. Means are provided for introducing measured quantities of accelerator material into the cement mixture in the transport bowl.

3,672,647

QUICK RELEASE MECHANISM FOR SEWAGE LAGOON AERATION GUNS

Declan S. Murphy, and Rolland C. H. Charest, both of Montreal, Quebec, Canada, assignors to Atara Corporation, Montreal, Quebec, Canada

Filed Sept. 25, 1970, Ser. No. 75,652
Int. Cl. B01f *3/04*
U.S. Cl. 261—121 R 7 Claims



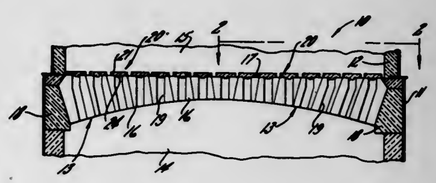
An anchoring device is provided for an aeration gun which has two trunnions on it so that two men in a boat can release or replace a gun from the surface of the liquid of an aerated sewage lagoon. The anchoring device comprises the provision of two slots to accept the trunnions and two vertical elongated guide bars to control the direction of the gun as it is pushed downwardly against the force of its own buoyancy. The elongated guide bars are free to move axially as they are located in sleeves. In the retracted position (raised) they allow the trunnions to enter or leave the slots but in the normal position they are down and prevent the trunnions leaving the slots when the gun is in position. Preferably the slots are concyclic so that the trunnions may be held against the guide bars by applying twist to the gun.

3,672,648

TUYERE ASSEMBLY

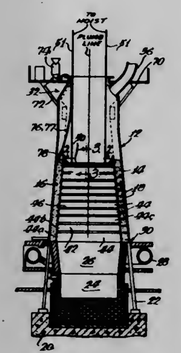
Franklin Carr Price, 1125 Campbell Ave., Chicago Heights, Ill.

Filed Nov. 27, 1970, Ser. No. 93,274
Int. Cl. F27b *15/00*
U.S. Cl. 263—21 A 5 Claims



A tuyere for controlling flow through a hole in a flat reactor hearth which utilizes the Bernoulli effect to retain its position. The tuyere is essentially a flat disc with a centering shaft fitting loosely in the hearth hole to prevent sideways movement. Either metal, including sheet metal, or refractory material can be used to form the tuyere, and it can be shaped to completely block backflow or with port grooves to increase gas volume flow.

3,672,649
SHAFT OR STACK FURNACE AND METHOD AND APPARATUS FOR LINING SAME
John E. Allen, c/o J. E. Allen & Associates Inc., 173 W. Madison St., Chicago, Ill.
Continuation-in-part of Ser. No. 13,329, Feb. 24, 1970, Pat. No. 3,625,494. This application Sept. 11, 1970, Ser. No. 71,542
Int. Cl. F27d *1/16*
U.S. Cl. 263—46 22 Claims



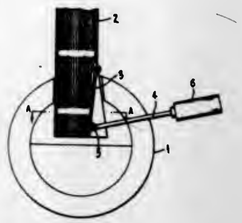
A stack portion of a furnace having an outer shell is lined with refractory concrete by casting or gunniting the concrete between the stack outer shell and a heat consumable inner form to build up the lining in horizontal layers of stacked integral rings in the absence of appreciable voids or vertical faults. The resulting lining is a monolithic refractory concrete wall capable of withstanding very high temperatures such as in blast furnace use. A suspended and vertically movable platform is provided for supporting ring-shaped form sections spaced inwardly from the furnace shell while the concrete is poured or gunnited from the platform at each pouring level. Laterally or horizontally extensible support members on the platform are used to bridge across the stack interior to provide interior support for the form during pouring.

ERRATUM

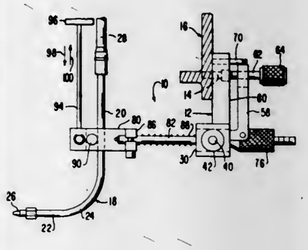
For Class 263—40 R see:
Patent No. 3,672,654

3,672,650
FURNACES
Neil Clifford Ashdown, and Eugene Reginald Groutsch, both of Tasmania, Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Melbourne, Victoria, Australia
Filed June 16, 1970, Ser. No. 46,742
Claims priority, application Australia, June 19, 1969, 56667/69
Int. Cl. F27b *9/38*
U.S. Cl. 266—33 R 4 Claims

A feed chute for charging a metal melting furnace includes a member which is movable to vary the effective cross section of the chute, the rate of passage of feed material through the chute being controlled by movement of said member.



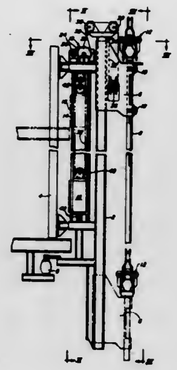
3,672,651
ADJUSTABLE MOUNT
John C. Diepeveen, 1737 Kimberly Drive, Sunnyvale, Calif.
Filed July 13, 1970, Ser. No. 54,179
Int. Cl. B23k *7/10*
U.S. Cl. 266—23 F 15 Claims



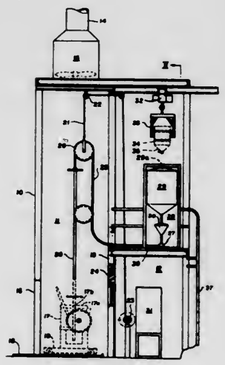
A mount for connecting a member to a support to permit adjustment of the member in a number of different directions. The mount includes a shaft to which the member is coupled, the shaft being movable along its axis and rotatable about its axis to provide for adjustment of the member in two degrees of freedom. Means is provided to secure the member to the shaft laterally of the same for adjustable movement relative thereto transversely thereof to provide a third degree of freedom.

3,672,652
APPARATUS FOR MANIPULATING AN OXYGEN INJECTION LANCE
Harry W. Schurr, II, Moon Township, Allegheny County, Pa., assignor to United States Steel Corporation
Filed July 31, 1970, Ser. No. 60,051
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 LM 3 Claims

Hoisting mechanism for an oxygen lance includes a counterweighted lance carriage driven by a hoist system made up of a motor driven traction drum, guide sheaves and cables. The weight of the counterweight offsets the weight of the carriage, lance, hose complex attached to the lance, and skull build-up on the lance. In normal operation, the counterweight is elevated as carriage is lowered by the hoist system to insert the lance into an oxygen converter and conversely the counterweight is lowered when the carriage is raised by the hoist system to withdraw the lance from the converter. In the event there is a power failure which impairs operation of the hoist system, the counterweight descends by gravity causing the carriage and lance to travel upwardly upon freeing the traction drum from restraint normally applied during the blowing operation of the converter.

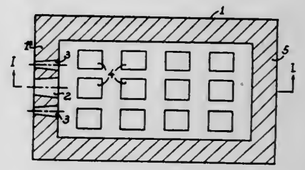


3,672,653
INOCULATION APPARATUS
Everett W. Hale, Falconer; Paul H. Hawkinson, and Edward T. Robbeloth, both of Jamestown, all of N.Y., assignors to Blackstone Corporation
Filed Feb. 12, 1970, Ser. No. 10,879
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T 2 Claims



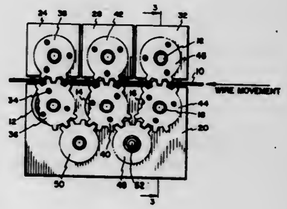
An apparatus is provided for injecting additives such as magnesium into molten metal so as to prevent the danger of flaring and flashing. The apparatus is a housing divided into two parts by a vertical wall, one part being totally enclosed and provided with a door through which a ladle of metal is introduced and a vertically movable nozzle adapted to enter the metal and the other part is provided with automatic injection apparatus and a control means therefor for delivering a preselected amount of additive at selected times.

3,672,654
SOAKING PIT FURNACE
Rudiger Knaak, Neuss, Germany, assignor to Koppers-Wistra-Ofenbau Gesellschaft mit beschrankter Haftung, Duesseldorf, Germany
Filed Sept. 16, 1970, Ser. No. 72,772
Claims priority, application Germany, Sept. 19, 1969, P 19 47 391.7
Int. Cl. F27b *3/02*
U.S. Cl. 263—40 R 13 Claims



A soaking pit furnace used for preparing metal ingots or blooms is provided with two sets of heating means, a principal burner means and an auxiliary burner means mounted in the upper portion of one wall of the furnace. The furnace also has an evacuating means in the lower portion of the same wall. The auxiliary heating means can supply only a minor portion of the heat requirement, but is capable of injecting hot gases into the furnace enclosure at a velocity of at least 70 meters per second.

3,672,655
WIRE FEEDER
Kenneth G. Carter, 175 Virginia St., Salt Lake City, Utah
Continuation-in-part of Ser. No. 755,336, Aug. 26, 1968, abandoned. This application March 12, 1970, Ser. No. 18,891
Int. Cl. B65h *17/20*
U.S. Cl. 226—108 4 Claims



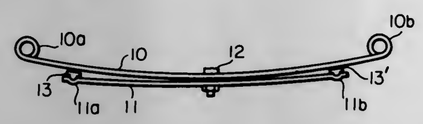
A wire feeder including a frame which supports three pairs of rotatably mounted drive rolls in a position to pass wire in a substantially straight line between the pairs of rolls and means connected to each of the rolls of each of said pairs of rolls for driving each of said rolls at the same speed. The drive rolls are grooved with sidewalls contacting at an angle of 100° to 150° and at least one drive roll in each pair of rolls can be provided with biasing means for urging the roll towards its coacting drive roll to impart a driving pressure to the wire between the pair of rolls.

3,672,656

MULTI-LEAF SPRING FOR AUTOMOTIVE SUSPENSION

Kohichi Saitoh; Nobuo Ohkubo; Katsunobu Sobajima, and Takeshi Hirano, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited and Nippon Hatsujo Company, Limited, Yokohama, Japan

Filed July 27, 1970, Ser. No. 58,513
Claims priority, application Japan, Aug. 1, 1969, 44/72655
Int. Cl. F16f 1/20
U.S. Cl. 267—47 1 Claim



A multi-leaf spring for an automotive suspension, consisting essentially of a master leaf supporting the frame structure of the vehicle body, an auxiliary leaf underlying the master leaf and secured thereto by a center bolt, at least two removable inserts interposed between those overlapping portions of the two leaves which are remote from the central portions of the leaves, and a central fixed inset interposed between and fixedly secured to the leaves, the spring thus constructed being adapted to eliminate practically all the modes of vibration and to be removed readily and economically when worn.

3,672,657

LIQUID SHOCK ABSORBING BUFFER

Bruce O. Young; Grant W. Walker, both of Sacramento; Duane B. Ford, Placerville, and Wan Seegmiller, El Dorado, all of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Sept. 23, 1970, Ser. No. 74,664
Int. Cl. E02b 3/22; F16f 5/00, 9/08
U.S. Cl. 267—116 8 Claims

An impact cushioning device for buffering the impact of a vehicle colliding with a stationary vertical surface. The device comprises a wall of liquid filled flexible, collapsible energy absorbing and dissipating cells disposed between the stationary vertical surface and movable articulated and overlapping diaphragm fender panels which are supported on slide plates. At impact, the fluid in the energy absorbing and dissipating cells is forced upward through a sharp-edged orifice which regulates the release of fluid commensurate with the force of impact. The outermost diaphragm panel is composed of a material having a low coefficient of friction to aid in safely redirecting the vehicle safely subsequent to impact.
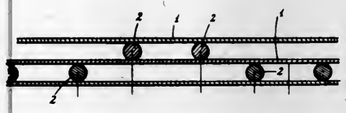
3,672,658

SPRING-ACTION DEVICE

Pierre Habib, 2 rue Turgot, and Andre Puyo, 23, Boulevard du Montparnasse, both of Paris, France

Filed Nov. 28, 1969, Ser. No. 880,719
Claims priority, application France, Dec. 4, 1968, 68176505
Int. Cl. F16f 1/44
U.S. Cl. 267—160 12 Claims

A spring-action device comprising a stack of elastically deformable elements applied against each other and mounted between spaced supports which are disposed in sets of at least two, arranged substantially in staggered relation on each side of intermediate elements. This arrangement results in a composite spring having high mechanical properties and particularly a high elastic limit, allowing a plurality of industrial applications such as prestressing of reinforced concrete components.



3,672,659

METHOD AND APPARATUS FOR FABRICATING STRUCTURES

James E. Grasswick, 331 Dorado, Ridgecrest, Calif.

Filed March 2, 1970, Ser. No. 15,530
Int. Cl. F16f 1/14, 3/00; G05g 17/00
U.S. Cl. 267—182 6 Claims



A method and apparatus by which physical structures are fabricated substantially entirely of resilient members or modules. The structures may be compressed for shipment and, when released from restraint, spring into the final shape of structure desired.

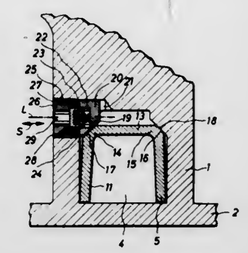
3,672,660

PARALLEL VISE

Karl Jagob, Silschede, Germany, assignor to Paul Ferd. Peddinghaus, Gevelsberg, Germany

Filed June 11, 1970, Ser. No. 45,381
Claims priority, application Germany, June 11, 1969, P 19 29 488.3
Int. Cl. B25b 1/02, 1/24
U.S. Cl. 269—203 6 Claims

A parallel vise with a tunnel-shaped base portion in which a correspondingly shaped guiding rail carrying the movable jaw is displaceable, and in which said guiding rail has longitudinally extending inclined guiding surface means slidably engaged by correspondingly inclined surface means of a spring-loaded bushing which is adjustable from the outside of the vise, clutch means being provided between said bushing and adjusting means operable from the outside of said vise.

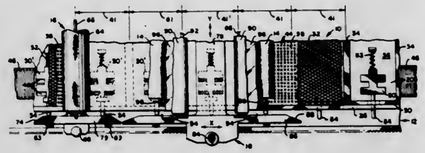


3,672,661

METHOD FOR SPREADING SHEET MATERIAL

Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, East Hartford, Conn.

Division of Ser. No. 821,780, May 5, 1969, Pat. No. 3,495,492.
This application Feb. 2, 1970, Ser. No. 7,545
Int. Cl. B65h 29/46
U.S. Cl. 270—31 5 Claims



Garment fabric or other similar flexible sheet material is spread from a roll or bolt of the same onto a table for subsequent cutting and/or other work to be performed thereon, and in such spreading may be spread into a multi-layer layup by passing the roll or bolt and the associated spreading tool back and forth many times along the length of the table. As the roll or bolt and the associated spreading tool move relative to the table a vacuum is created adjacent at least that portion of the table surface which receives the newly spread portion of the sheet material so as to aid in eliminating wrinkles and in otherwise achieving a more uniform and desireable arrangement of the material on the table.

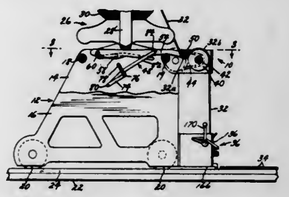
3,672,662

TURNTABLE FABRIC SPREADING MACHINE

Harold Grimm, Bronx, and Ira Zuckerman, Far Rockaway, both of N.Y., assignors to Panther Machine Corp., New York, N.Y.

Filed March 19, 1970, Ser. No. 21,047
Int. Cl. B65h 29/46
U.S. Cl. 270—31 9 Claims

In a turntable fabric spreading machine having a positive drive roller for drawing fabric off a supply roll and positively feeding it through a cutting assembly to a table surface, handle-actuated cam means mounts an idler roller for movement between an operative position in which it is in close promimity to the positive feed roller for causing the fabric to wrap around the latter, and a retracted position in which it is spaced a substantial distance from the feed roller to permit the fabric to be manually fed therebetween. Handle-actuated cam means are also provided to separate the front wall of the cutting assembly housing from a guard plate normally closely spaced from said front wall, in order to permit fabric to be manually fed between said front wall and guard plate.

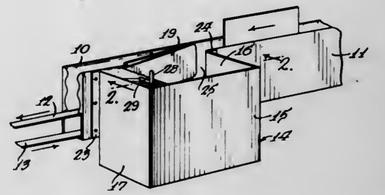


3,672,663

CONVEYOR DROP BOX

Charles W. Tomlinson, Orange, Va., assignor to Acme Visible Records, Inc., Crozet, Va.

Filed Dec. 21, 1970, Ser. No. 100,280
Int. Cl. B65h 29/58
U.S. Cl. 271—64 1 Claim



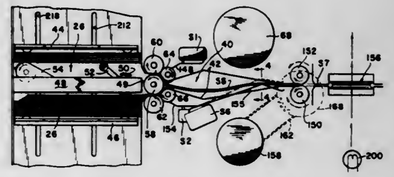
The combination with a laterally confined belt conveyor for moving documents or the like of a receptacle having bottom end walls and side walls, one of the side walls having a pivotally mounted gate portion adapted to extend above the conveyor belt and between the side walls of the conveyor for gathering therefrom conveyed articles such as documents at one or more points on the conveyor, the hinged gate being either manually, mechanically or electrically actuated into and out of the path of articles conveyed on the belt.

3,672,664

REVERSIBLE BYPASSABLE APERTURE CARD READER

Louis J. Santirocco; Duane L. Rose, both of Rochester, and John W. Scofield, Pittsford, all of N.Y., assignors to The United States of America as represented by the Secretary of Commerce

Filed June 2, 1970, Ser. No. 42,650
Int. Cl. B65h 3/06
U.S. Cl. 271—3 5 Claims



A pair of parallel card hoppers are spaced from a projector film gate. A reversible drive roller and two idler pinch rollers,

defining two reversible, oppositely transporting nips, are positioned near the hoppers for transporting a card from either hopper and later delivering it to the other hopper. A second reversible drive roller and idler pinch roller, defining a third, reversible-go, or no-go nip, are positioned near the film gate for transporting the card from one of the first two nips into the film gate, and then retrieving it from the film gate and delivering it to the other nip, or for preventing the card from entering the film gate, causing the trailing edge of the card to follow the first reversible drive roller from the one nip to the other.

3,672,665
DEVICE FOR THE FEEDING OF SHEETS IN COPYING MACHINES OR THE LIKE

Gunther Schnall, and Herbert Engel, both of Muenchen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 9, 1970, Ser. No. 88,012
Claims priority, application Germany, Nov. 13, 1969, P 19 57 019.5
Int. Cl. B65h 3/06, 1/08
U.S. Cl. 271—39 10 Claims



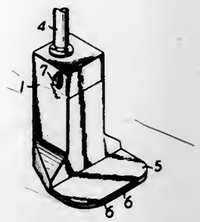
A device for the feeding of stacked sheets in a copying machine or the like has a reciprocable drawer which is mounted in the frame of the machine and is movable between an inserted and an extended position. The drawer supports a platform which serves to support a stack of sheets and is pivotably mounted in the drawer. The front part of the platform can be depressed by hand and is then engaged by spring-biased detent levers which are provided on the drawer to hold the front part in a lower position during the placing of a fresh stack onto the platform in extended position of the carriage. A spring biases the front part upwardly and is free to urge the topmost sheet of a freshly inserted stack against an intermittently driven feeding roller, which is mounted in the frame, when the drawer is returned to its inserted position. During such inward movement of the drawer, stops which are provided in the frame disengage the levers from the front part so that the latter can pivot under the action of the spring.

3,672,666
DEVICE FOR SEPARATING A BUNDLE OF PAPER

Seiya Shibata; Akitoshi Yamasaki, and Isokazu Shimon, all of Osaka, Japan, assignors to Tsubakimoto Chain Manufacturing Company, Limited, Osaka, Japan

Filed Dec. 18, 1969, Ser. No. 886,146
Claims priority, application Japan, Dec. 19, 1968, 43/111281
Int. Cl. B65h 3/08
U.S. Cl. 271—26 1 Claim

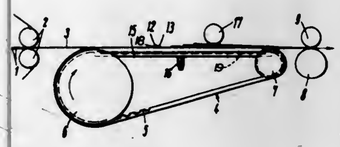
A separating device readily separates a desired number of sheets of paper in bundle form from a pile of paper sheets placed on a pallet or skid without disturbing the orderly piled-up bundle. The device comprises a nozzle made in a flat, palm-like form by which a compressed air is ejected into the boundary portion between the paper bundle and the paper pile and diffused uniformly over the entire area of the boundary portion to provide an air separation layer. The nozzle has guides for effecting diffusion of the compressed air.



3,672,667
APPARATUS FOR STAGGERING BLANKS OF SHEET MATERIAL

Bruno Pahlitzsch, Gneisenaustrasse 67, 1 Berlin 61, Germany

Filed July 9, 1970, Ser. No. 53,553
Claims priority, application Germany, July 17, 1969, P 19 37 082.2
Int. Cl. B65h 29/24
U.S. Cl. 271—74 4 Claims



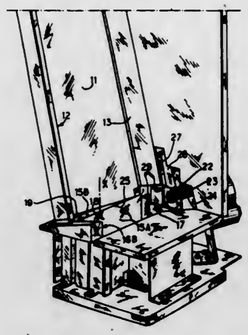
Blanks of sheet material, to be assembled in staggered relationship for the application of glue to overlapping flaps thereof, are horizontally fed at a relatively high speed to the upper run of an endless conveyor moving at the same speed and carrying at least one wedge-shaped cam in whose wake the blanks are entrained by suction toward a pair of exit rollers moving at a relatively low speed. The rear part of each blank, forming a flap, is thereby caused to ride up the inclined leading flank of the next oncoming cam, thus overlapping the front part of the next-following blank. The feeding of the blank to the exit rollers is facilitated by a transfer roller closely spaced from the upper conveyor surface so as to hold the raised flap down onto the cam.

3,672,668
LARGE-CAPACITY CARD SUPPLY MAGAZINES COMPRISING A DEVICE FOR RETAINING AND TRANSFERRING CARDS

Gerben Jan Keulen, Amsterdam-Zuid, Netherlands, assignor to Bull General Electric (Nederland) N.V., Amsterdam, Continuation of Ser. No. 793,848, Jan. 24, 1969, abandoned.

This application Aug. 20, 1970, Ser. No. 65,675
Claims priority, application Netherlands, Feb. 2, 1968, 6801512
Int. Cl. B65h 1/06
U.S. Cl. 271—61 10 Claims

In a card supply magazine with a device for retaining and transferring cards, the walls of a loading ramp are turned angularly about a vertical axis relatively to the walls of a lower reception magazine. The cards situated at the bottom of a stack in the ramp rest on two support surfaces and on a rotatable roller. When the roller is driven in rotational movement by a motor, cards driven frictionally by the roller rotate about the said axis and fall into the lower magazine from which they are extracted. A vibrator arranged at the bottom of the stack facilitates the fall of the cards into the lower magazine. The motor is controlled by a device monitoring the level of the cards in the lower magazine.



3,672,669
ALTERNATIVELY OCCUPANT PROPELLED OR MOTOR DRIVEN ROUNDABOUT

John James Ottaviano, 113 Stark Ave., Penn Yan, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,550
Int. Cl. A63g 1/10, 1/12
U.S. Cl. 272—33 B 1 Claim

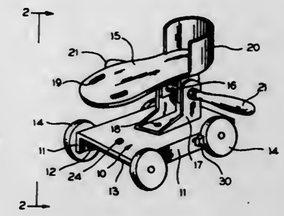
An amusement ride for children, the device comprising a stand that supports a horizontally rotatable frame consisting of a pair of crossing arms, each of the arms at its outer end being attached to a riding unit which consists of a horse-shaped body supported upon a front and rear wheel that travels on the ground, the front wheel having foot pedals and the horse shaped body having a seat for a rider. The foot pedals are removable and a pair of stirrups are releasable to hang down upon opposite sides of the horse-shaped body. An electric motor mounted on the stand has a gear engageable with a gear mounted on the underside of the hub supporting the crossing arms whereby the pedals may be removed and the roundabout motor driven.

3,672,670
WHEELED FOOT-EXERCISING DEVICE WITH HAND GRIPS

Ralph A. Burzenski, 5429 N. 25th St., Milwaukee, Wis.

Filed July 8, 1970, Ser. No. 53,117
Int. Cl. A63b 23/04, 21/00
U.S. Cl. 272—79 R 5 Claims

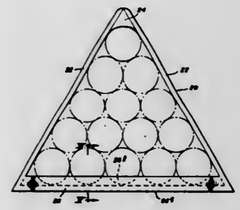
A physical exercising device supported on wheels and having a pivoted upper platform for receiving the foot of a user. The upper platform is spring biased into a normal horizontal position. The exercising device has hand hold grips extending out from the side. These hand hold grips may be used by the exerciser in a push-pull manner on the floor so as to exercise his arms. The upper platform may have an extended lever to aid in manually pivoting the upper platform.



3,672,671
BILLIARD BALL RACK

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Filed June 22, 1970, Ser. No. 47,983
Int. Cl. A63d 15/00
U.S. Cl. 273—22 10 Claims

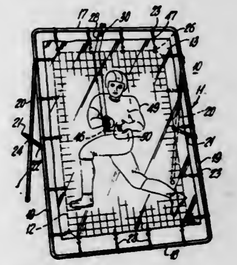


A rack for shaping a group of billiard balls on a pool table, which rack has interconnected sides defining a patterned enclosure, such as a triangular or diamond shaped enclosure. At least one of the side members has an inclined interior surface which will serve to urge the balls into a compact pattern when a downward pressure is exerted on the rack.

3,672,672
BALL REBOUND DEVICE

Herbert Rubin, New York, N.Y., assignor to New York Toy Corporation, New York, N.Y.

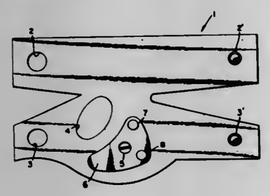
Filed Jan. 20, 1971, Ser. No. 107,924
Int. Cl. A63b 69/40
U.S. Cl. 273—26 A 7 Claims



A missile rebound recreational device includes a rectangular frame adjustably supported in an inclined position and sup-

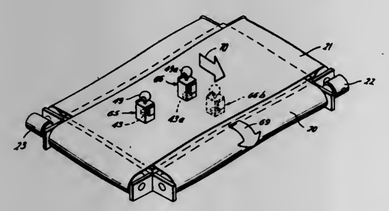
porting a registering rebound net by peripherally spaced elastic bands interconnecting the frame legs and rebound net. A support arm depends from the frame top leg behind the rebound web and is adjustable in length, along the frame leg and angularly about the frame leg axis and an impact actuated bell is mounted on the arm free end and includes an actuating member facing the rebound web. A thin flexible web having a target representation is superimposed on the rebound web front face.

3,672,673
BOWLING BALL CONTROL DEVICE
De Voe H. Hicks, 500 Foster St., North Canton, Ohio
Filed Feb. 11, 1970, Ser. No. 10,492
Int. Cl. A63b 71/14
U.S. Cl. 273—54 B 2 Claims

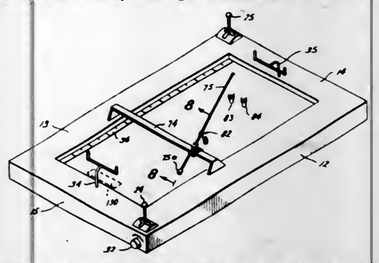


Bowling ball control device in the form of a strap-type attachment to the bowler's hand. A rotatably adjustable plate on the main portion of the attachment carries a pair of upstanding posts which provide, together with a forward portion of the plate, a seat for a bowling ball. On the palm side of the strap is a palm plate which helps control the pressure of the ball on the hand.

3,672,674
REMOTE CONTROLLED FOOTBALL GAME WITH PASS PLAY APPARATUS
Donald L. Reed, 12415 Broken Arrow, Houston, Tex.
Filed March 11, 1970, Ser. No. 18,513
Int. Cl. A63f 7/06
U.S. Cl. 273—94 R 10 Claims

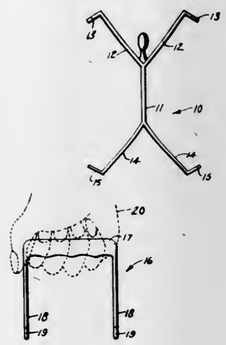


A game board formed of a frame defining a playing surface with means such as a pair of superimposed, diversely moving, flexible sheets for remotely producing controlled diverse movements of playing pieces resting on the playing surface. The lower sheet has magnetic areas and the game pieces incorporate magnets or a magnetic element movable between positions in which their magnetic fields, respectively, may interlink with one or more of the magnetic areas, thereby causing the pieces to stand or move with the lower sheet, and other positions in which their fields clear the magnetic areas whereby the game pieces will frictionally adhere to the upper sheet for standing or moving therewith, irrespective of the movement of the lower sheet. Controlled powering means is provided whereby the players may produce selected diverse movements of their respective game pieces in accordance with



the game rules. Related game ball action is simulated by the means of a bead on a rod with variable directional settings from a bridge piece placed over the playing surface.

3,672,675
HOOKED STICK FIGURE AND HANDLE FOR CATCHING AND PROJECTING SAME
Elias J. Morris, Jr., 5020 Good Drive, New Orleans, La.
Filed May 18, 1970, Ser. No. 38,397
Int. Cl. A63b 63/00
U.S. Cl. 273—96 R 1 Claim

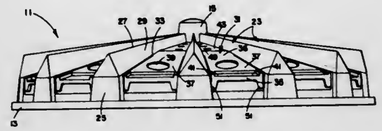


An exercise and amusement toy consisting of a handle portion and an animated figure portion. The handle portion is U-shaped for the user to grip with one hand and has hooks at the end of its leg members. The figure has hooked, stick-like appendages formed around its central stem. The handle portion is used to catch and toss the figure portion.

3,672,676
TETHERED BALL APPARATUS WITH CATAPULTS AND STATIONARY GOALS
Adolph E. Goldfarb, 4614 Monarca Drive, Tarzana, Calif., and Rene Soriano, Los Angeles, Calif., assignors to said Goldfarb, by said Soriano
Filed Dec. 14, 1970, Ser. No. 97,959
Int. Cl. A63b 71/02
U.S. Cl. 273—101 14 Claims

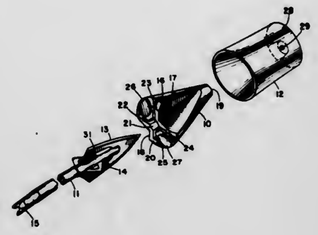
A game comprising a playing board having a ball attached to a string extending from the center of the board. A plurality of individual flipper members are disposed about the center of the board, with each flipper member being capable of catapulting the ball attached to the strong off the surface of the flipper member toward another flipper member. Each

flipper member has an aperture therein capable of allowing the ball to pass therethrough, and each player attempts to flip



the ball through an aperture in an opposing player's flipper member.

3,672,677
FRANGIBLE IN FLIGHT ARROW HEAD COVER
Vera E. Moore, 4907 W. Havasu Way, Salt Lake City, Utah
Filed Aug. 20, 1970, Ser. No. 65,609
Int. Cl. F41b 5/02
U.S. Cl. 273—106.5 R 20 Claims



A novel, in-flight cover to protect arrow points and archers during handling of arrows has been invented. The novel cover has an aerodynamic external shape and fractures upon impact with a target. It is constructed preferably of a frangible material and has a center opening to accommodate an arrow point and to frictionally secure itself thereto. The external surface is preferably conical in shape and may have vanes cut in the surface thereof to provide stability for arrow shafts in flight. Frangible cellular materials such as polystyrenes, polyurethanes and the like are useful construction materials. The novel covers of this invention may protect various types of points such as hunting points, field tips and the like. An insertion device for placing the cover on an arrow comprising a hard, rigid material having an internal opening having substantially the same shape as the external surface of the cover is also provided.

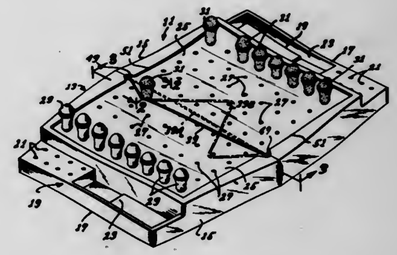
3,672,678
DART CONSTRUCTION
Bartolo Rizzo, Providence, R.I., assignor to Hasbro Industries, Inc., Pawtucket, R.I.
Filed Nov. 3, 1970, Ser. No. 86,545
Int. Cl. A63b 65/02
U.S. Cl. 273—106.5 R 2 Claims

A dart construction comprising a weighted head portion, a metallic shaft secured thereto and extending therefrom and terminating in a point, and a plastic shaft threadedly attached to the head portion and extending in an opposite direction from the metallic point in substantial alignment therewith, said plastic shaft having a tubular member slidably received thereon, said tubular member having a plurality of vanes extending integrally therefrom, and an integral collar on the plastic shaft for maintaining the tubular member snugly positioned between said collar and the head portion. The collar has a pair of diametrically opposed openings therein for



facilitating turning movement of the shaft when being threaded to the head.

3,672,679
MOVABLE BOUNDARY BOARD GAME APPARATUS
Edgar Burns, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 25, 1971, Ser. No. 109,270
Int. Cl. A63f 3/00
U.S. Cl. 273—131 BA 10 Claims

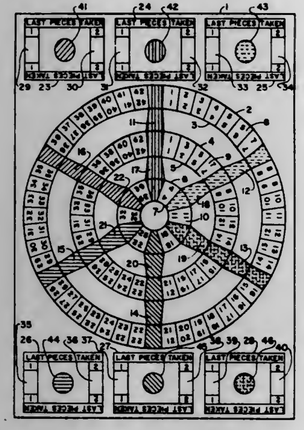


A game board structure having a plurality of movable playing pieces disposed on each side of a movable boundary across the playing surface dividing it into two playing areas. The playing pieces include means for removably securing the pieces to the playing surface and means for contacting the movable boundary and moving at least that portion thereof so contacted to alter its shape and thereby change the dimensions of the playing areas.

3,672,680
BOARD GAME WITH DEFINITELY MOVABLE GAME PIECES
Joseph Michael Grey, 3060 Ruth St., Philadelphia, Pa.
Filed Sept. 9, 1969, Ser. No. 856,383
Int. Cl. A63f 3/00
U.S. Cl. 273—131 AB 6 Claims

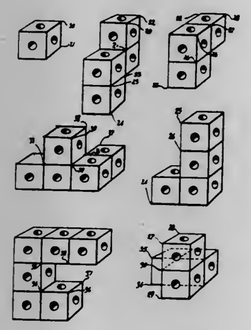
Briefly, in carrying out the objects of this invention, a game apparatus is provided which includes a game board containing six equally spaced concentric circular lines divided up into spaces symmetrically located within the circles. Some of the aforesaid spaces are colored and some are numbered. The aforesaid game board also contains six rectangular shaped sections outside the aforesaid circles for the purpose of tallying certain captures during the course of the game. There is also provided with my invention 42 flat rectangular shaped pieces

bearing numbers on only one surface, numbered consecutively from one to 42 inclusive. There is further provided a set of six pieces of a different shape than the aforesaid 42 rectangular flat pieces.



A thorough description of the colors of the pieces and the finer points of the game are given in the specification which follows.

3,672,681
GAME METHOD INVOLVING COMPETITIVE ARRANGING OF GROUPED PIECES INTO POLYHEDRIC FORM
David Wolf, 67 Brackett Road, Newton, Mass.
Filed May 1, 1970, Ser. No. 33,667
Int. Cl. A63f 9/08
U.S. Cl. 273—157 R 2 Claims



A method of playing a game comprising two sets of pieces each set consists of twenty-seven cubes having a hole in each of its six faces. The cubes are interengageable to form building groups of two or more cubes. These groups are selectively constructed by opposing players in puzzle form as to permit the groups of each set to be assembled into a large cube. The groups of each set are exchanged by opposing players for purposes of competitively forming the cube from the opposing players building groups, thereby solving the puzzle.

3,672,682
GOLF PUTTING TRAINING APPARATUS
Sakan Yanagidaira, 25-10-2, Mita, Meguroku, Tokyo, Japan
Filed May 5, 1970, Ser. No. 34,670
Claims priority, application Japan, May 9, 1969, 44/41927
Int. Cl. A63b 69/36
U.S. Cl. 273—189 R 2 Claims



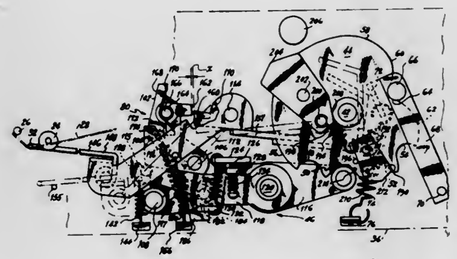
A golf putting practice aid device which helps to stabilize the golfer's arms during putting and to help him determine his best stable posture for putting. The device, in its simplest form, embodies an elongated strip or plate of lightweight wood, plastic or the like, and has at opposite end curved portions adapted to be interposed between and to engage snugly against portions of the golfer's arms. Another form includes a central casing having separate oppositely extended, slidable arm engaging stabilizing plates mounted adjustably within said central casing.

3,672,683
TAPE PLAYER FOR PLAYING PLURALITY OF MAGNETIC TAPE CARTRIDGES
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed March 20, 1970, Ser. No. 21,355
Int. Cl. G11b 23/10
U.S. Cl. 274—4 F 8 Claims



A tape player for playing a plurality of magnetic tape cartridges comprises a compartment adapted to vertically and horizontally receive a plurality of the magnetic tape cartridges, a deck provided with a reproduction means including a tape driving device for drivingly feeding the tape in the cartridge and at least one magnetic head adapted to transduce the tape, a horizontally movable mechanism for horizontally moving the deck, a laterally movable mechanism for laterally moving the deck, a lock for selectively locking the deck in the position where one cartridge is to be played, a shifting mechanism for moving the cartridge opposite to the deck retained by the lock means from the compartment toward the deck and for returnedly moving the cartridge from the playing position to the original position in the compartment, and an index mechanism for designating the cartridge to be played.

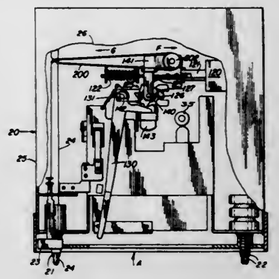
3,672,684
MAGNETIC RECORDING AND REPRODUCING APPARATUS
Hiroshi Kawakami, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 30, 1970, Ser. No. 85,555
Claims priority, application Japan, Nov. 4, 1969, 44/88182
Int. Cl. G11b 5/00
U.S. Cl. 274—4 D 10 Claims



In a tape recording and/or reproducing device having a magnetic head for recording signals on and reproducing signals from a magnetic tape passing adjacent the head, in tension, from a supply reel to a takeup reel and switch control means movable to a plurality of positions for selectively determining the stop and operating modes of the device, apparatus is provided for selectively maintaining the switch control means in each of its positions. The apparatus includes means urging the switch control means to the position thereof which determines the stop mode of the device and a spring biased tape engaging lever pivotally mounted on the device for movement between first and second positions. The tape engaging lever is held in its first position by the tape as it is moved, in tension, past the magnetic head and is moved towards the second position by its spring in the absence of tensioned tape engaged therewith. A releasable locking mechanism, operably engaged between the switch control means and the tape engaging lever, holds the switch control means in a predetermined position corresponding to one of the operative modes of the device when the tape engaging lever is in its first position and for releasing the switch control means when the tape engaging lever is moved towards its second position whereby the device is automatically returned to its inoperative mode.

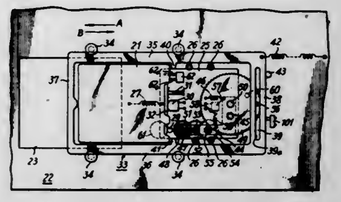
3,672,685
UNIVERSAL CARTRIDGE-TYPE TAPE RECORDER AND PLAYBACK INSTRUMENT
James H. Tolar, Mayfield Heights, Ohio, assignor to Tenna Corporation
Filed Jan. 19, 1967, Ser. No. 610,346
Int. Cl. G11b 15/29, 21/08, 21/24
U.S. Cl. 274—4 G 6 Claims

A cartridge-type tape player containing three coordinated systems for positioning the transducer with respect to the recording tracks on the tape. The first system is actuated by an operator controlled selector switch to index the transducer to a position adjacent the track or tracks containing the signals to be played. The second system automatically shifts the transducer 0.016 inches with respect to the tape when one type of cartridge which is normally loaded with a four-track prerecorded tape is inserted into the tape player. The third system has a mechanism for "fine tuning" the position of the transducer with respect to the tape by small increments to eliminate crosstalk and distortion caused by the failure of the transducer to come into perfect register with the tracks of the



tape. Additionally the tape guide may be adjusted for perfecting the position of the tape with respect to the transducer.

3,672,686
PROGRAMMED TRACK SELECTING APPARATUS
Itsuki Ban, 829, Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed Oct. 6, 1969, Ser. No. 863,957
Claims priority, application Japan, Oct. 9, 1968, 43/73125; Jan. 22, 1969, 44/4060
Int. Cl. G11b 21/08
U.S. Cl. 274—4 A 5 Claims

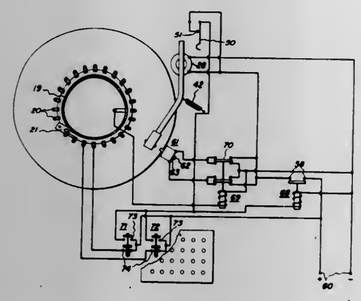


A programmed track selecting apparatus for a multiple tape cartridge player utilizing a plurality of multi track endless magnetic tape cartridges includes a rotary cam for positioning a magnetic head to the desired track, a plurality of track selection switches for selecting a desired track, and a rotary switch rotatable in synchronism with the rotary cam and including switches corresponding to the track selection switches, rotation of the rotary cam being controlled by the track selecting switches and the rotary switch.

3,672,687
AUDIO REPRODUCING APPARATUS FOR RANDOM ACCESS PLAYBACK SYSTEMS
David J. Ben Daniel, Schenectady; John O. Fielding, Ballston Lake, and Henry Hurwitz, Jr., Schenectady, all of N.Y., assignors to General Electric Company
Filed May 26, 1969, Ser. No. 827,792
Int. Cl. G11g 21/08; G11b 21/12
U.S. Cl. 274—9 RA 2 Claims

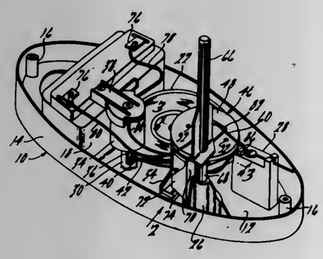
Audio playback apparatus is disclosed including a tone arm which is positioned electromagnetically to facilitate control thereof in accordance with the position of a turntable relative to the tone arm. The apparatus is particularly suited for random access retrieval of audio information from a record including a plurality of nested spirals each corresponding to items of information on a display or selection chart. An array of switches corresponding to individual items on the display

and a position selector switch assembly operated by the position of the turntable relative to the tone arm cooperate to



position the stylus of the tone arm in a spiral groove corresponding to the selected portion of the display.

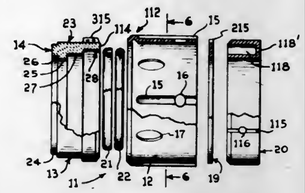
3,672,688
TOY PHONOGRAPH
Charles P. Hill, Lorain, Ohio, assignor to The Leisure Group, Inc., Los Angeles, Calif.
Filed May 14, 1970, Ser. No. 37,084
Int. Cl. G11b *17/06*
U.S. Cl. 274—14 3 Claims



A toy phonograph having a rotary turntable, a pivoted tone arm carrying a sound box and a pick-up needle, a manually operated reset means engageable with the tone arm to return the arm to a starting position, and an electrically conductive spring member engaging the arm to urge the needle into engagement with the record and forming a part of the motor circuit to energize the motor during play of the record and to shut off the motor when play is completed.

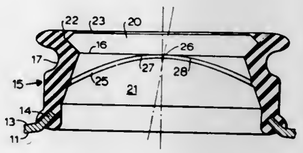
3,672,689
MECHANICAL SEAL ASSEMBLIES
Robert C. Hadley, P.O. Box 4358, Odessa, Tex.
Filed Oct. 5, 1970, Ser. No. 77,793
Int. Cl. F16j *15/34*
U.S. Cl. 277—38 10 Claims

A shaft seal for effecting a seal between a wall member and a rotatable shaft which prevents flow of pressurized fluid from one to the other side of the wall. A seat is attached to the wall and presents a face to a rotating face of an improved sealing loaded seal assembly so as to present movable seal faces which sealingly engage one another as relative rotation occurs therebetween. A removable slipper sleeve enables the seal assembly to be used in either a balanced or an unbalanced appli-



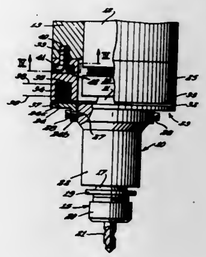
cation by effecting a slight modification upon one member of the assembly.

3,672,690
BIDIRECTIONAL HYDRODYNAMIC SHAFT SEAL
Alfred S. Berens, Farmington, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed May 25, 1970, Ser. No. 40,144
Int. Cl. F16j *15/32*
U.S. Cl. 277—134 8 Claims



A shaft seal of the bidirectional hydrodynamic type with flutes that meet the sealing band or lip edge tangentially, the flutes being continuous and providing for hydrodynamic return of oil that has leaked past the lip edge. The continuous flutes are readily and accurately provided during molding in a seal having an as-molded lip edge.

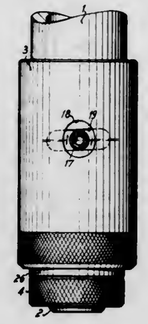
3,672,691
MEANS FOR OPERATING RELEASABLE TOOL CHUCKS
Earl J. Hammond, Frankenmuth, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed June 2, 1970, Ser. No. 42,766
Int. Cl. B23b *29/12, 31/28, 31/30*
U.S. Cl. 279—1 TS 13 Claims



A tool holder or chuck of the type which is releasable from a tool by relative rotation of a releasing member is adapted to be selectively coupled with a non-rotating member while the tool driving spindle continues rotating uninterruptedly,

thereby releasing the clutch coupling to release the tool. Especially suitable for multi-operation machines, whereby various tools can be cyclically picked up from and returned to a rack in automatic operation of the machine to perform sequentially on a work piece.

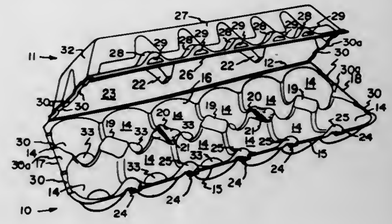
3,672,692
QUICK-CHANGE CHUCKS
Otto Fauth, Nellingen, Germany, assignor to Otto Bilz, Werkzeugfabrik, Vogelsangstr., Nellingen, Germany
Filed May 18, 1970, Ser. No. 38,080
Int. Cl. B23b *31/04*
U.S. Cl. 279—82 4 Claims



A quick-change chuck with a hollow shank, a guide sleeve surrounding the shank, a tool-holding socket removably inserted into the shank and adapted to be adjusted to different positions in the axial direction of the shank by an adjusting nut on the end of the socket which is releasably connected in the adjusted position to the shank by locking balls which are guided in transverse bores in a reduced neck portion of the guide sleeve and are adapted to be moved into and out of an annular groove in the adjusting unit by a spring-biased control sleeve. For locking the guide sleeve and thus also the adjusting nut and the tool socket to the shank, the guide sleeve is provided with a peripherally extending slot through which a setscrew passes which is screwed into the shank. The axis of this slot is slightly inclined relative to a plane extending vertically to the axis of the guide sleeve so that, when the sleeve is turned relative to the setscrew in the slot, the sleeve is retracted on the shank until its neck portion abuts tightly against the front end of the shank.

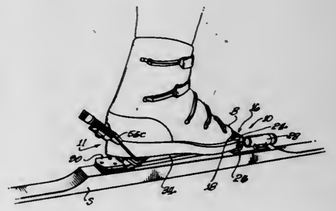
3,672,693
EGG CARTON
Dennis Douglas Weir, 1637 South 740 East, Orem, Utah
Filed July 11, 1969, Ser. No. 840,934
Int. Cl. B65d *85/32*
U.S. Cl. 229—44 R 1 Claim

An egg carton fabricated of plastic and shaped to cradle and cushion eggs of varying size. A single motion closing latch is provided, the lid is supported against crushing and is held against wracking and an enlarged flat surface is provided on



the lid to insure adequate marking space. Ventilation is provided through matched slots formed in the base and cover.

3,672,694
MEANS AND TECHNIQUES FOR RELEASABLY SECURING SKI BOOTS TO SKIS
William R. Whittaker, Beverly Hills, Calif., assignor to Whittaker Corporation
Filed Dec. 21, 1970, Ser. No. 100,037
Int. Cl. A63c
U.S. Cl. 280—11.35 K 10 Claims

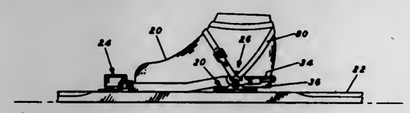


Ski bindings involve an attachment to the toe portion of a ski boot in the nature of a cam socket which is releasably engageable with a spring-urged plunger on a ski. Such plunger presses such boot attachment into releasable engagement with a forward end of an elongated plate which has a length commensurate to the lenigth of a boot and which mounts a cam block on its rearwardmost portion. Such cam block is normally received within an adjustable abutment mounted on the ski. The plate carries a spring-urged stirrup having a portion engageable with the top portion of the boot heel to normally press the boot into engagement with the plate. When abnormal forces are developed, as in mishaps, the boot is released from the ski, depending upon the direction of the force, either at the toe portion or at the spring-urged stirrup. This automatic release at the stirrup is preadjusted using an adjustable screw.

3,672,695
SAFETY TURNTABLE FOR A SKI BINDING
Ernest Peter Baukhage, 180 Edgewood Ave., Mill Valley, Calif.
Filed Nov. 20, 1962, Ser. No. 238,918
Int. Cl. A63c *9/082*
U.S. Cl. 280—11.35 K 10 Claims

A safety turntable for a ski binding includes a member fixed to a ski and another member adapted to be attached to a ski with one of the members being cylindrical and the other member having a cylindrical recess for receiving the cylindrical member. The cylindrical portion of one of the members is provided with a circularly extending groove and the other

member is provided with movable detent means allowing the two members to rotate relative to one another but permitting



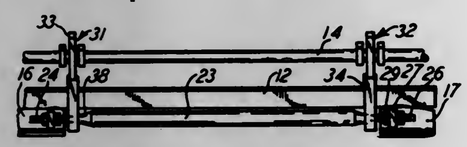
disconnection of the members at any angle of rotation. A safety strap for preventing loss of the ski may be attached between the two members.

3,672,696

LAWN MOWER ADJUSTABLE SKID ASSEMBLY

Sahag C. Akgulian, and Donald G. Haffner, both of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed May 15, 1970, Ser. No. 37,664
Int. Cl. B62b *13/06*
U.S. Cl. 280—15 7 Claims



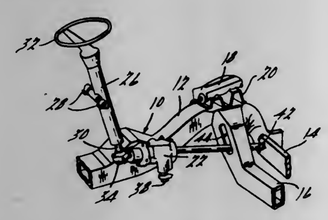
A lawn mower adjustable skid assembly including two spaced-apart skids which engage the ground for elevational support of the mower above the ground. The skids are pivoted to the mower, and adjustable standards connect between the mower and the skids for setting the pivot position of the skids and thereby setting the elevation of the mower. The standards include two bars bolted together for adjusting the overall length of the bars, and adjustment holes and a pin are related to the bars for the length adjustment. A connector extends between the two spaced-apart skids, and the connector is attached between the skids to serve as an anti-scalping bar which extends across the mower at a level above that of the skids so the mower is stable on the skids.

3,672,697

MOTOR VEHICLE STEERING SYSTEM

James Knowles, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 6, 1970, Ser. No. 52,306
Int. Cl. B62d *1/18, 1/20*
U.S. Cl. 280—87 A 11 Claims



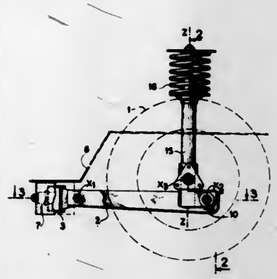
A steering system for a motor vehicle having a steering column and a steering gear. The column is supported, in part, by a bracket situated between the vehicle's fire wall and instrument panel. The column is also supported by the steering gear which, in turn, is secured by frangible means to the chassis frame. In the event of an impact load causing the collapse of the front vehicle structure, the gear separates from the frame and the column swings about its support on the bracket thereby causing the steering wheel to move away from its normal operating position.

3,672,698

REARWHEEL UNIT OF A VEHICLE HAVING INDEPENDENT WHEELS AND TRAILING LINKS

Armand P. Froumajou, Pontoise, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Aug. 25, 1970, Ser. No. 66,680
Claims priority, application France, Oct. 30, 1969, 6937292
Int. Cl. B60g *11/56*
U.S. Cl. 280—124 A 5 Claims



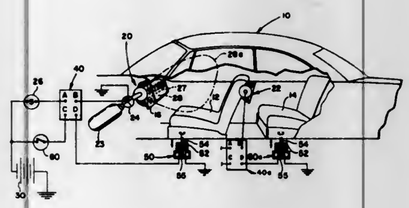
Rear wheel unit of an automobile vehicle comprising independent wheels mounted on trailing suspension links which are pivoted to the suspended part of the vehicle to pivot about a transverse axis. Each wheel is mounted on a stub-axle which is integral with an axle support connected to the suspension link through a resiliently yieldable pivot device.

3,672,699

AUTOMATIC RESTRAINT SYSTEM ARMING CONTROL

Edward Mandell De Windt, Lyndhurst, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed July 13, 1970, Ser. No. 54,353
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB 7 Claims



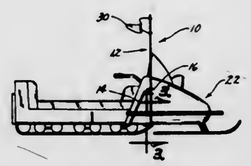
An occupant restraint mechanism which is mounted in a vehicle and automatically operable for restraining movement of the occupant relative to the vehicle in response to the vehicle being involved in a collision, including means for detecting the presence of an occupant and means for preventing operation of the restraint mechanism if no occupant is present to be restrained thereby.

3,672,700

SNOWMOBILE DEVICE

Glen Edward Marcse, Des Moines, Iowa, assignor to Snowmobile, Ltd., Des Moines, Iowa

Filed Jan. 28, 1971, Ser. No. 110,387
Int. Cl. B60r *27/00*
U.S. Cl. 280—150 R 10 Claims



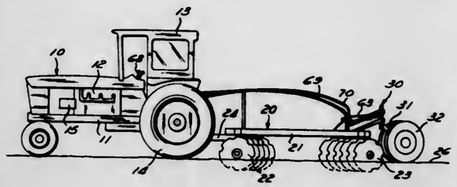
The snowmobile device is adapted to be mounted on a snowmobile and includes a vertically disposed first member and an obliquely disposed second member secured at its upper end to the first member at a point intermediate the opposite ends of the first member. Hinges are mounted on the lower ends of the first and second members and are rigidly secured to the snowmobile. The lower ends of the first and second members extend through the hinges and are provided with nuts on opposite ends of the hinges which are turnable for tightening against the hinges so as to prevent swinging movement of the first and second members with respect to the hinges. Modified forms of the device may include a light mounted at the upper end of the first member, a flat or pennant mounted at the upper end of the first member, and insulating means between the hinges and the snowmobile.

3,672,701

TRAILING WHEEL STRUCTURE FOR VEHICLE-DRAWN IMPLEMENT

Wilbur L. Blank, 524 E. Jefferson St., Toulon, Ill.

Filed Aug. 20, 1970, Ser. No. 65,376
Int. Cl. B60g *1/00*
U.S. Cl. 280—414.5 5 Claims



A tractor having a hydraulic pump is hitched to a disc harrow to be pulled over a field along a center line of travel. A ground wheel carriage is connected to the disc harrow at the center of travel. The connection between the disc harrow and the ground wheel carriage includes upper and lower links and a double acting hydraulic cylinder to raise and lower the disc harrow with respect to the ground.

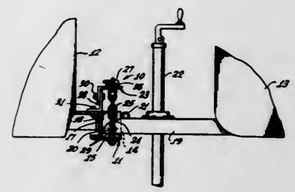
3,672,702

SAFETY HITCH DEVICE

Wilbur H. Phegley, Lone Pine, Calif., assignor to Howard L. Miller, Lone Pine, Calif., a part interest

Filed June 18, 1970, Ser. No. 47,417
Int. Cl. B60d *1/12*
U.S. Cl. 280—457 15 Claims

A safety chain arrangement combined with a conventional ball hitch and including a bracket mounted on the towing vehicle in overhanging relation with the ball hitch, a connector welded to the tongue of the towed vehicle over the ball



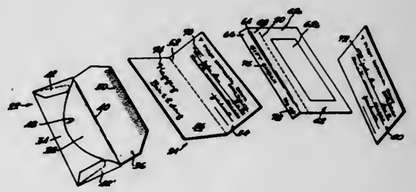
socket, and a safety chain extending between the connector and the bracket and detachably fastened to the latter.

3,672,703

GIFT CHECK TRANSACTION FORM

Edward William Jay, P.O. Box 791, Coral Gables, Fla.

Filed Nov. 16, 1970, Ser. No. 89,613
Int. Cl. B41l *1/20*; B42d *15/00*
U.S. Cl. 282—25 9 Claims



A one-piece sheet paper form of elongate generally rectangular configuration, having fold-tear lines demarcating the form into a gift check section, an envelope section, a record section and an identifying section. The transaction form is adapted to be accordion folded in flat multi-thickness compact configuration for retail vending or the like. A vendor of the transaction form may fill out the amount only of a gift check blank imprinted on a fold panel of the gift check section, forming simultaneously a carbon copy on a check blank panel of the record section. The vendor may then separate the gift check section with the envelope section from record section, the latter of which he keeps. The vendee will then place the check section in the envelope section for mailing or delivery to a recipient, after filling in the remaining blanks and separating the check section from the envelope section. The recipient separates greeting area from check before cashing or depositing.

3,672,704

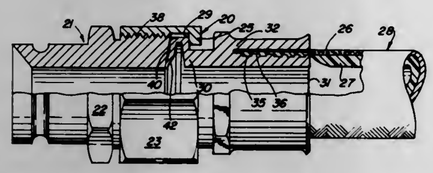
LIP-SEAL FITTING

Roger D. Christianson, Springfield, Mass., assignor to Titeflex, a Division of Atlas Corporation, Springfield, Mass.

Filed April 17, 1970, Ser. No. 29,557
Int. Cl. F16l *19/00, 33/20*
U.S. Cl. 285—110 13 Claims

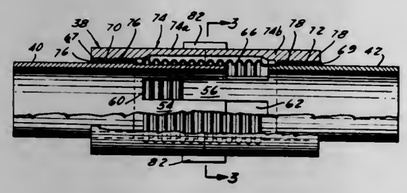
The invention provides a gas-tight end-fitting for either a flexible hose or a rigid tubing of the type used in aircraft. To

make a metal-to-metal seal one end of the fitting is a concave



annular flange plate which deflects to form a seal at two points.

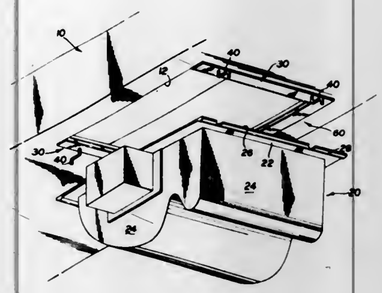
3,672,705
PIPE JACK
Harold F. Rush, Bellflower, Calif., assignor to Garren Corporation, Huntington Beach, Calif.
Filed June 19, 1970, Ser. No. 47,815
Int. Cl. F16l 35/00
U.S. Cl. 285—39 **10 Claims**



A pipe jack for installation in pipe lines adjacent to a piece of equipment, such as, for example, a valve or pump, in order to remove said equipment when it needs to be serviced or replaced. End parts of the jack are threadably connected together by a center member or sleeve. The threads are left and right hand threads so that, as the center member or sleeve is rotated in one direction, the end parts are moved inwardly so that the jack contracts or is shortened and, when the sleeve is rotated in the opposite direction, the end parts are moved outwardly away from each other to lengthen the jack. Thus, a piece of equipment adjacent the jack may be removed when the jack is contracted and, when the serviced or replacement piece of equipment has been replaced, the jack is expanded to tightly and sealingly secure the piece of equipment in place. The inner ends of the end parts are provided with fingers which interlock with each other, but which are adapted to slide longitudinally relative to each other to prevent the end parts from rotating relative to each other when the jack is being shortened or lengthened. A piece of laminated, corrugated flexible tubing or sleeve is placed over the fingers and welded, or otherwise suitably secured to the end parts outwardly of the roots or outer ends of the fingers, to provide a sealing connection between the end parts.

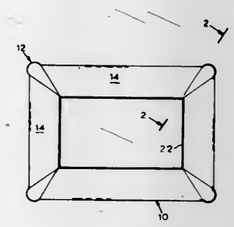
3,672,706
MOUNTING MEANS
Kermit E. Chilcoat, North Olmsted, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Jan. 26, 1970, Ser. No. 5,847
Int. Cl. F16l 5/00
U.S. Cl. 285—189 **11 Claims**

Means for mounting a body, such as a furnace humidifier to a thin wall, such as the wall of a warm air duct in registry with an opening therein. In particular, this invention relates to a means which requires no metal working or hole making other than providing an opening in the wall. The mounting means is a multipiece frame which is adapted to pressingly engage the wall at the edges defining the opening therein. Several of the brackets which make up the frame are equipped with one or more rotatable clamps which may be moved to a body holding or body releasing position. The clamps, when in body holding



position, engage the body and press it to the duct. When in body releasing position, the clamps disengage the body and allow it to come free of the duct. Thus, the body can easily and quickly be mounted or dismounted without the use of tools or removal of screws.

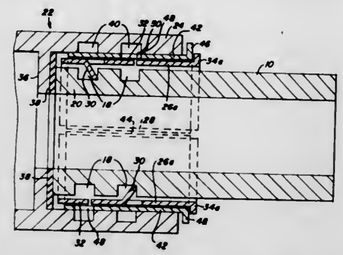
3,672,707
EXPANSION JOINT
Carmela Mary Russo, and Baladassare Russo, Jr., both of 16608 Marine View Drive S.W., Seattle, Wash.
Filed Jan. 2, 1970, Ser. No. 188
Int. Cl. F16l 51/02
U.S. Cl. 285—229 **8 Claims**



An expansion joint is provided whereby any amount of expansion required can be absorbed with one fold only. Designed to be safe for expansion joint failures by eliminating stresses concentration at the corners and to be simple to manufacture and construction assembly.

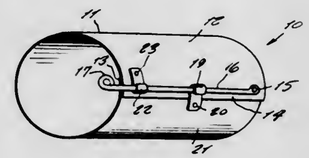
3,672,708
COUPLING DEVICE
William L. Zemberry, Swissvale Borough, Pa., assignor to United States Steel Corporation
Filed June 29, 1970, Ser. No. 50,622
Int. Cl. F16l 37/18
U.S. Cl. 285—315 **13 Claims**

A coupling device is disclosed for connecting one end of a pipe with a coupling member. The pipe is provided with pipe grooves adjacent said one end. The coupling member is provided with a coupling groove. A lock sleeve has a pipe groove tab and a coupling groove tab and is insertable into the coupling member so that the coupling groove tab locks in the coupling groove and is disposable on the one end of the pipe



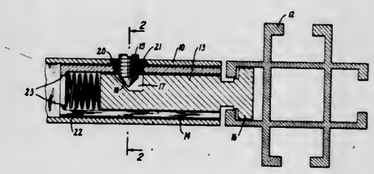
so that the pipe groove tab locks in the pipe groove thereby securing the coupling member to the one end of the pipe.

3,672,709
TIME SAVER DRAWUP COLLAR
William N. Mueller, 342 S. Washington Ave., Fredericksburg, Iowa
Filed Feb. 1, 1971, Ser. No. 111,478
Int. Cl. F16l 21/00
U.S. Cl. 285—419 **2 Claims**



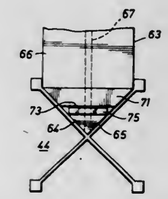
A collar that serves as a union for being fitted over the adjacent ends of pipes, the device including a flat sheet of metal which is rolled over to form a cylindrically shaped sleeve with the opposite end edges overlapping each other, and the end edges each having a hook in opposing directions so to hold against opposite sides of one end of a bar that is pivotable about its other end thus forming a quick securement of the end edges.

3,672,710
COUPLING FOR CONNECTING TOGETHER BUILDING UNITS
Karl-Gunnar Kroopp, Farsta, Sweden, assignor to Grafiset System AB, Bandhagen, Sweden
Filed Dec. 14, 1970, Ser. No. 97,888
Claims priority, application Sweden, Dec. 19, 1969, 17599/69
Int. Cl. F16b 7/00
U.S. Cl. 287—56 **2 Claims**



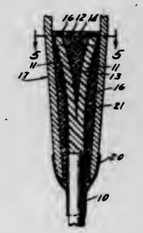
As described herein, a coupling member for building units includes a ram member which is movably mounted within one of the building units and which has an end adapted for placement within the open end portion of the other building unit. The ram member is provided with a surface in the form of two sloping planes arranged at right angles to each other and obliquely positioned in the longitudinal direction of the ram member. Also provided is a screw member which is adapted to abut either of the sloping planes of the ram member to thereby effectively lock the ram member in either of two positions. The other end of the screw member is adapted to project into a hole arranged in the building unit.

3,672,711
STRUCTURAL COLUMN AND CONSTRUCTION
David D. Red, P.O. Box 6721, Houston, Tex.
Filed Feb. 12, 1969, Ser. No. 798,706
Int. Cl. F16b 1/00
U.S. Cl. 287—189.36 R **5 Claims**



An X-shaped column, having beads at the end of the column webs, has a uniform strength in all directions in a cross-sectional plane. The beads are dimensioned such that they do not interfere with the mating of the surface presented by intersecting surfaces of two adjacent column webs and one end of a beam shaped to conform to such surfaces.

3,672,712
STRUCTURE FOR CONNECTING ATTACHMENTS TO FIBERGLASS RODS
Elbert Davis, 1611 Glenmont Drive, Glendale, Calif.
Division of Ser. No. 835,135, June 20, 1969. This application July 6, 1970, Ser. No. 52,502
Int. Cl. F16b 7/02
U.S. Cl. 287—20.2 R **6 Claims**

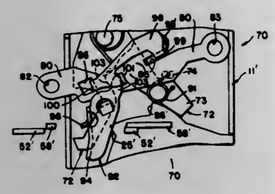


A structure for connecting an attachment to the end of a fiberglass rod, tube or other profile. The rod is separated into a plurality of segments which are held apart from each other by a spacer-spreader. A plug is disposed within the interior of the separated segments, preferably being cast in place. A cavity is formed around the exterior of the segments, also preferably being cast in place. Means forming a slip plane is provided between the exterior of the segments and the cavity so that upon the application of longitudinal tension to the rod, the segments and plug will move longitudinally within the cavity to convert such tension into lateral compression which transfers the load across the entire cross-section of the rod.

3,672,713
AUTOMOBILE DOOR LOCK

Joseph Pickles, Bloomfield Hills, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed April 23, 1969, Ser. No. 824,350
Int. Cl. E05c 3/26
U.S. Cl. 292—216 37 Claims

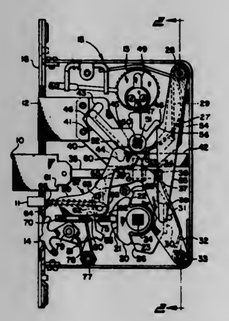


A locking lever is pivoted intermediate its length on a door-carried mount, being operated at opposite ends by internal and external linkages. A transmitter is pivoted on the lever to depend into or out of the path of inside and outside operators in the respective unlocked and disabled or locked condition of the lock. The locking lever has an automatic locking kick-off and reset slide mounted thereon; and in one position of its sliding adjustment on the lever the slide kicks the lever to unlocked position when the door closes and latches. In another position, to which the slide is actuated by an operator, the slide fails to kick the lever and the door latches shut in a locked condition.

3,672,714
MORTISE LOCK WITH MULTIPLE FUNCTIONS

Jerald Schultz, Woodmere, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sept. 28, 1970, Ser. No. 75,862
Int. Cl. E05b 59/00
U.S. Cl. 292—34 19 Claims

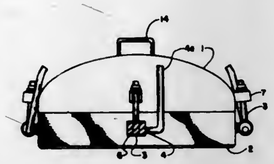


A deadbolt operating tumbler when rotated rearwardly beyond deadbolt retracting position will move a lever so as to operate a latchbolt retracting lever. There is a deadlatching dog coacting with both the latchbolt retracting lever and the dead-bolt tumbler. The retracting lever will move the dog to undog the latchbolt while also moving the tumbler to deadbolt retracting position. A stopwork slide is spring pressed at all times toward position locking an outside knob operated hub that moves the latchbolt retracting lever. The stopwork slide may be moved to release position by pressure of an inside hub, a lever actuated by the deadbolt tumbler, or by other parts that may be assembled. Slight reforming or reassembly of parts will permit the many lock functions that must be offered the market.

3,672,715
QUICK OPENING CLOSURE CAP

Forrest L. Carson, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Jan. 11, 1971, Ser. No. 105,444
Int. Cl. B65d 45/30; E05c 5/00
U.S. Cl. 292—257 5 Claims



A quick opening closure cap for pipelines, tanks, vessels, and other liquid or gas containers.

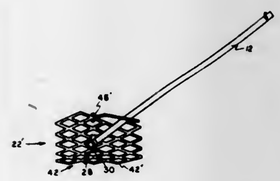
ERRATUM

For Class 292—346 see:
Patent No. 3,673,605

3,672,716
LIFTING DEVICE

James A. Burckhalter, 908 Meadow St., Columbia, S.C.

Filed March 5, 1971, Ser. No. 121,460
Int. Cl. A01d 7/06
U.S. Cl. 294—50.6 10 Claims

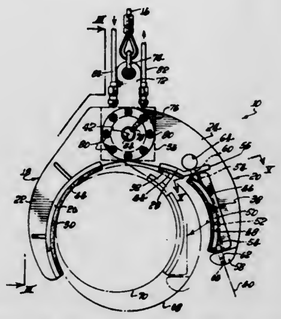


A device is disclosed that is capable of engaging and holding various materials during lifting and moving thereof. The tool of the present invention comprises two arms or handles that are secured to each other at one end while remaining separate at said end and have heads pivotally secured to the opposite ends thereof for engagement and holding of materials to be picked up. The heads are pivotally secured to the arms in the same plane of the arms and are provided with slots partially along their length through which the arms extend so as to render the tool self-adjusting to the terrain and also height of the individual using same. The heads extend downwardly below the arms, turn inwardly towards each other and are provided with a smooth contour on the inwardly turned ends thereof. Preferably, the heads are constructed from metal having a plurality of openings therein such as expanded metal. The pivot connection between the arms at the end opposite the heads is substantially universal, in that, the individual arms can be moved about various arcs and easily brought back together to a gripping and lifting relationship with the opposing head. The connection is formed by a pivot member which extends horizontally through a first arm, turns outwardly and returns vertically through the second arm.

3,672,717
CLAW ARMS WITH SWIVEL PLATE

Jack I. Sayre, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 109,318
Int. Cl. B66c 1/44
U.S. Cl. 294—104 10 Claims

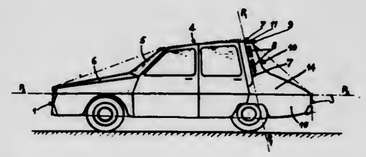


A claw assembly for retrieving conical objects including a pair of pivoted arms which have inner facing curved surfaces; a swivel plate pivotally mounted to at least one of the arms, said swivel plate having an inner facing curved surface; and the pivot axis of the swivel plate being in a plane which is substantially perpendicular to the pivot axis of the arms. With such an arrangement one arm is capable of engaging a circumference of the conical object and the swivel plate of the other arm is capable of pivoting to engage a tapered portion of the object.

3,672,718
AUTOMOBILE BODIES

Robert Broyer, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine), France

Filed June 1, 1970, Ser. No. 42,136
Claims priority, application France, June 16, 1969, 6919907
Int. Cl. B62d 35/00
U.S. Cl. 296—1 S 8 Claims

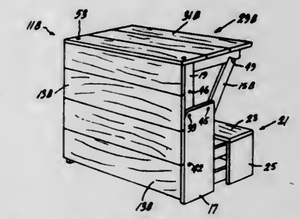


A body of automotive vehicle, and more particularly of mass-produced passenger vehicle, characterized in that its general configuration comprises two opposed irregular frustums of pyramid with non-parallel bases, assembled at their major bases, one frustum having an elongated shape converging to the front to constitute the passenger compartment and the front portion of the vehicle, its minor base constituting the front face and its major base corresponding to the greater cross-section of the vehicle body, which is located substantially at the rear of said passenger compartment, the other frustum being shorter and converging sharply to the rear, with the minor base constituting the rear end face of the vehicle and major base coplanar with that of the first or front frustum of pyramid, the perimeter of this major base following a contour slightly parallel to that the major base of said one frustum but being slightly recessed in relation thereto in order to provide a continuous, sharp-edged shoulder along the perimeter of said major base, on the faces corresponding to the roof and to the upper portion of the side panels of the body.

3,672,719
COMBINATION TABLE AND SERVING BAR

Blane L. Haukedahl, 4139 Mar Moor Drive, Lansing, Mich. 48917

Filed Mar. 1, 1971, Ser. No. 119,527
Int. Cl. A47b 83/02
U.S. Cl. 297—118 8 Claims

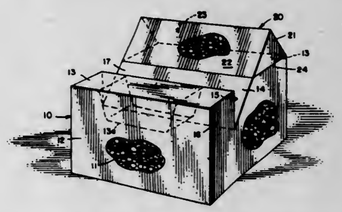


A picnic style of table is disclosed, having a top which may be articulated to an alternate vertical position, and a bench which is disconnected from the main picnic table structure and which is adapted for alternate disposition over the vertically articulated table top so that in their alternative positions the table top and bench form the counter and vertical front, respectively of a free standing serving counter-bar.

3,672,720
MULTI-PURPOSE ARTICLES OF FURNITURE

Michael C. Wilson, 332 Pennsylvania Ave., Glen Ellyn, Ill. 60137

Filed Nov. 3, 1970, Ser. No. 86,455
Int. Cl. A47c 13/00
U.S. Cl. 297—118 2 Claims



Multi-purpose articles of furniture convertible from back-supporting seating members to beds, stools, etc., and vice versa, by selective positioning of a bolster pad removably nested in a channel or trough in the upper, body-supporting surface of the article.

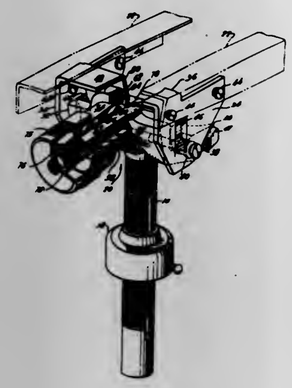
3,672,721
RUBBER SPRING ASSEMBLY FOR CHAIR CONTROL

Philip J. Williams, Bridgeport, Conn., assignor to Stewart-Warner Corporation, Chicago, Ill.

Continuation-in-part of application Ser. No. 862,145, Aug. 22, 1969, which is a continuation-in-part of application Ser. No. 776,673, Nov. 18, 1968. This application May 15, 1970, Ser. No. 37,754
Int. Cl. A47c 3/00
U.S. Cl. 297—302 1 Claim

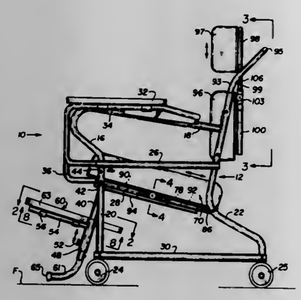
The following specification describes a chair control utilizing an annular rubber spring bonded at its external

surface to a shell held by the post horn and bonded at its internal surface to a tube, which is longitudinally displaced in response to rotational movement of the occupant support member. A chair control is also described in which forces created in response to pivoting movement



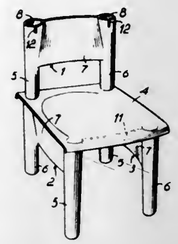
of the chair occupant are applied in a direction corresponding to the post axis and are resisted by a spring arranged along that axis. A chair control is also disclosed for enabling movement of the chair back independently of the seat by use of an annular rubber spring placed under shear stress.

3,672,722
INVALID CHAIR HAVING ADJUSTABLE HEADREST, SEAT, AND FOOTREST
Charles E. Murcott, Huntington, N.Y., assignor to Lumex Inc., Bay Shore, N.Y.
Filed May 1, 1970, Ser. No. 33,550
Int. Cl. A97c 7/50
U.S. Cl. 297—437 6 Claims



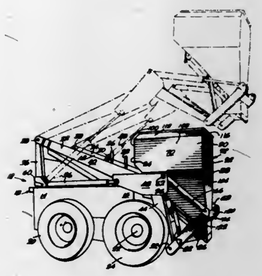
An invalid chair has a pair of fixed lateral frame members which support a pair of upright tubular members and a footrest assembly angularly adjustable up and down the tubular members. The frame members also support a seat which is adjustably positionable between the frame members. A backrest is secured between the frame members and adjustably supports a headrest.

3,672,723
MODULAR UNIT ELEMENT FOR FURNITURE
Giorgio Decursu, Via R. Sanzio 30; Johathan De Pas, Via M. Greppi 11; Donato D'Urbino, Via C. Balbo 25; and Paolo Lomazzi, Via Rossini 3, all of Milan, Italy
Filed Apr. 24, 1970, Ser. No. 31,501
Claims priority, application Italy, May 3, 1969, 16,387/69
Int. Cl. A47c 7/00
U.S. Cl. 297—440 1 Claim



Composable chair comprising three identical modular units. Each of such units comprises two legs and a plate member connecting the legs at their upper end portions. The legs are hollow and are open at the top and are adapted to receive the lower end portions of the legs of a superposed modular unit. The legs are tapered and allow a partial copenetration. A seat member in the form of a plate, provided with projections insertable in the open ends of the legs near one of its sides and with openings in register with the bores of the legs of another modular unit, connects together two modular units forming the leg structures. The back member is formed by inserting the lower end portions of a third modular unit into the openings of the set member, in register with the bores of the legs of an underlying modular unit.

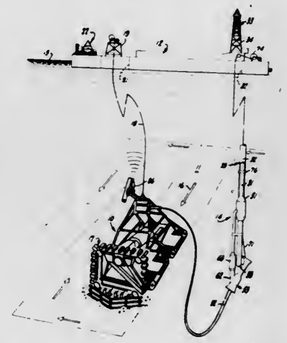
3,672,724
CONTAINER IMPLEMENT FOR END LOADER VEHICLE
Francis E. Neuzil, Sr., 18301 NW. 5th Court, Miami, Fla. 33169
Filed Mar. 1, 1971, Ser. No. 119,531
Int. Cl. B60p 1/02, 1/56
U.S. Cl. 298—27 7 Claims



A container implement for attachment to a front end loader which includes a mounting yoke with a pair of rigid arms to pivotally connect to a front end loader and a bucket rigidly connected to the mounting yoke for hauling materials and discharge of the same through a shoot opening at the lower end. The discharge opening is adapted to be opened and closed by a hydraulically operated slide panel type door. The rear wall of the

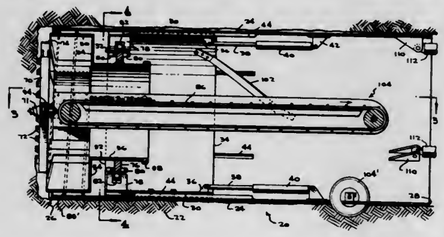
bucket converges toward the front wall at about the discharge opening so that the weight of materials carried in the bucket has a center of gravity closely adjacent the vehicle to resist the moment tending to lift the opposite end of the vehicle to which the implement is attached.

3,672,725
DEEP SEA MINING METHOD AND APPARATUS
Edward P. Johnson, Lafayette, Calif., assignor to Earl and Wright, San Francisco, Calif.
Filed June 15, 1970, Ser. No. 46,316
Int. Cl. E02f 7/00
U.S. Cl. 299—8 21 Claims



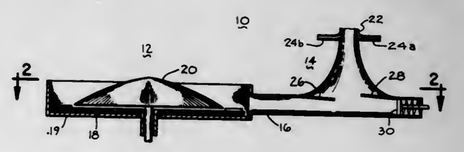
Apparatus and method for mining material from an ocean floor. A mining vehicle traverses a predetermined path on the ocean floor while a mother vessel on the ocean surface positions itself over the mining vehicle. The material is collected by the vehicle along the path of travel, crushed, and classified to form a mixture having a predetermined solid/fluid ratio range. The mixture is pumped to the vessel through a fluid transport system including a flexible conduit extending from the vehicle and discharging into a releasable connection with the lower end of a riser conduit suspended from the vessel. The releasable connection is adapted to provide re-entry capabilities to re-establish fluid communication in the transport system and permit the vehicle to be easily raised and lowered from the mother vessel.

3,672,726
TUNNEL BORING APPARATUS
Robert L. House, R.R. 5, Box 22–4, Bloomington, Ind. 47401
Filed July 20, 1970, Ser. No. 56,253
Int. Cl. E29c 29/00
U.S. Cl. 299—31 10 Claims



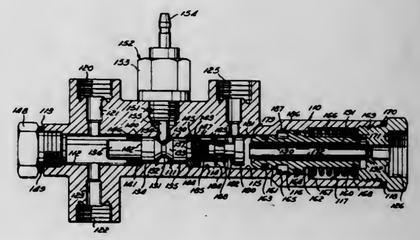
A tunnel boring apparatus is disclosed in which an outer tubular shield supports an inner shield for reciprocation adjacent its forward end with a rotary cutting head being mounted on the forward end of the inner shield and with the inner shield and cutting head being movable by a plurality of positioning cylinders rearwardly to be completely enclosed within the outer shield but also being movable to an extended position in which the cutting head is entirely exterior of the outer shield; another aspect of the invention resides in the provision of extendable wing teeth on the ends of the cutting bars on the cutting head movable to an extended position in which they traverse a path having a diameter larger than the diameter of the outer shield; another aspect of the invention resides in the rotational drive to the cutting head being provided by an output drive motor engaging the periphery of a ring pinion on the cutter head at a position adjacent the wall of the inner shield.

3,672,727
BOTTLE ORIENTING SYSTEM
Leonard E. Griffin, O'Fallon, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 29, 1969, Ser. No. 888,387
Int. Cl. B65g 47/24, 51/02
U.S. Cl. 302—2 R 3 Claims



A method and apparatus for orienting or aligning bottles utilizing substantially no moving parts in that substantially opposing double prong members permit the bottle neck to pass through one of the double prong members while the opposite end of the bottle is held in place by the other double prong member.

3,672,728
COMBINATION BRAKE WARNING SWITCH AND PROPORTIONING VALVE
Frederick D. Keady, Cleveland Heights, Ohio, and Ellis M. Wellman, Erie, Pa. (both % The Weatherhead Company, 300 E. 131st St., Cleveland, Ohio 44108)
Original application Apr. 22, 1970, Ser. No. 30,887. Divided and this application Sept. 14, 1970, Ser. No. 71,917
Int. Cl. B60t 17/22
U.S. Cl. 303—6 C 4 Claims



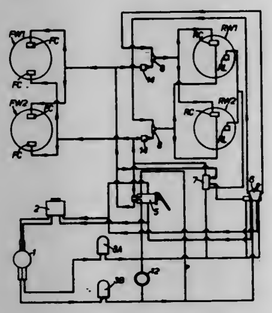
A combination brake warning switch and proportional valve includes a housing having an axial bore within which is located a switch piston and a proportioning piston at opposite ends of the bore. Fluid from two circuits of a dual brake system master cylinder is introduced to the bore on opposite sides of the switch piston which performs a switch actuating function in case of a pressure

unbalance. The proportioning valve piston cooperates with a valve seat member slidably carried on the end of the switch piston to reduce the outlet pressure in one circuit when the inlet pressure exceeds a predetermined level. In the event of failure of the other circuit, movement of the switch piston moves the valve seat member away from the proportioning piston which is then inoperable. When the proportioning valve is operative, the movable valve seat member cooperates with the proportioning piston so that the proportional relation between inlet and outlet pressures in the one circuit is maintained when the pressures are decreasing. A stop is provided to prevent the valve seat member from engaging the proportioning piston in the event of a pressure loss in the one circuit.

3,672,729
VEHICLE BRAKING SYSTEMS

Roy Blakey, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Oct. 15, 1970, Ser. No. 81,093
Claims priority, application Great Britain, Oct. 17, 1969, 51,103/69; Aug. 10, 1970, 38,442/70
Int. Cl. B60t 13/58
U.S. Cl. 303—9 9 Claims



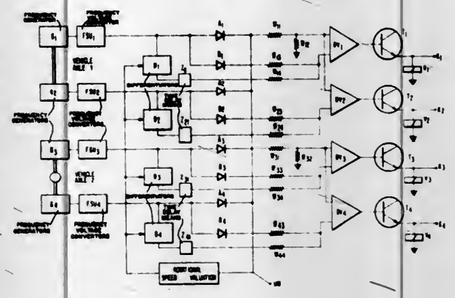
A vehicle hydraulic brake system has separate pressure sources and separate service and emergency brake control means for supplying pressure from those sources to the individual wheel cylinder, as well as lock units and a manual control for operating the same. Pressure lines leading from the service and emergency brake control are branched into each other by means for changeover valves acting as double check valves so that any individual wheel cylinder chamber can receive pressure from a source under the control of either the service control or the emergency control, without unnecessary duplication of pipework or of wheel cylinders.

3,672,730
BRAKE FORCE CONTROLS SYSTEM FOR VEHICLES, ESPECIALLY MOTOR VEHICLES

Manfred H. Burckhardt, Waiblingen, Hans-Jorg Florus, Goppingen, Horst Grossner, Geradstetten, and Helmut Krohn, Esslingen-Liebersbronn, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 22, 1970, Ser. No. 48,001
Claims priority, application Germany, June 25, 1969, P 19 32 128.9
Int. Cl. B60t 8/08, 8/12
U.S. Cl. 303—21 BE 32 Claims

A brake for control system for vehicles, particularly for motor vehicles in which a sensor is coordinated to each wheel for detecting its rotational condition; the sensor produces pulses when exceeding or falling below a predetermined threshold value which influences the brakes in accordance with both the wheel slippage and also the wheel acceleration, measuring magnitudes representing

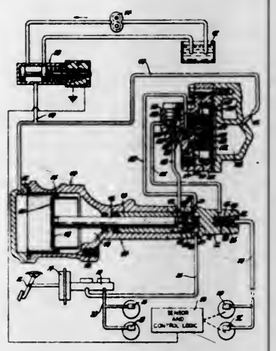


the slippage and the acceleration of a wheel being obtained from the sensors, preferably constructed as frequency generators and being combined into a signal magnitude representing the control pulse for the brakes.

3,672,731
FAIL SAFE BRAKE ANTILOCK MODULATOR

Erkki A. Kolvunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1970, Ser. No. 99,579
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 3 Claims

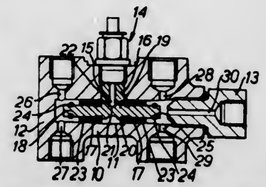


A brake pressure modulator for a vehicle brake antilock system includes a modulator valve which is located fluidly intermediate the brake pressure source and the controlled wheel brake and which is normally held unseated by a piston which forms a wall of the fluid passage communicating with the wheel brake. The piston is normally supported by fluid pressure and this fluid pressure is exhausted upon impending wheel lock, allowing the piston to withdraw, seating the modulator valve to isolate the brake from the brake pressure source and withdrawing brake fluid from the wheel brake to permit wheel acceleration. The invention provides a passage which bypasses the modulator valve, and a normally closed bypass valve in the bypass passage which is responsive to a substantially complete loss of modulator piston supporting pressure to open brake fluid communiction between the brake pressure source and the wheel brakes through the bypass passage.

3,672,732
DUAL HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Martin Green, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed May 18, 1970, Ser. No. 38,195
Claims priority, application Great Britain, July 1, 1969, 33,171/69
Int. Cl. B60t 17/22
U.S. Cl. 303—84 A 10 Claims

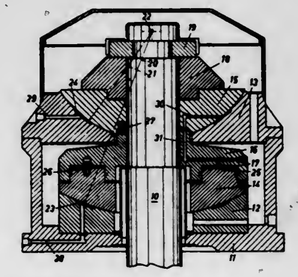


In means for detecting pressure differentials between hydraulic circuits in a dual braking system a piston assembly is mounted in the bore of a valve housing and has opposed ends subjected to the pressures of the two hydraulic circuits. The assembly comprises a piston slidable in two sleeves which in turn are slidable in the bore. The sleeves are limited in their movement towards each other by a stop fixed in the bore. The piston and sleeves are keyed together against movement of the piston away from the stop relative to the sleeves. Thus when pressure on one end of the assembly differs substantially from the other end, the piston and one sleeve move towards the low pressure end and in so doing actuate indicator means. When the pressures become substantially equal again the pressure at one end acts on the end of the piston and said one sleeve to move the piston against equal pressure acting on the smaller area of the other end of the piston, the other sleeve remaining unmoved. This renders the indicator means again inoperative.

3,672,733
AXIAL BEARING

Torsten Henry Arsenius, Anders Christer Gustafsson, and Karl Goran Albin Halstedt, Goteborg, Sweden, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Mar. 1, 1971, Ser. No. 119,510
Claims priority, application Sweden, Mar. 2, 1970, 2,661/70
Int. Cl. F16c 17/04, 17/16
U.S. Cl. 308—9 8 Claims

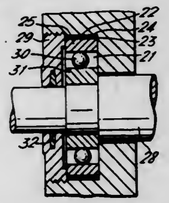


In an axial hydrostatic bearing the load is carried by at least two members, each cooperating with a support in a fixed housing. At least one pocket connected to a source of pressure fluid is arranged at each pair of cooperating working surfaces between a carrying member and its support, and an adjusting mechanism including a piston working in a cylinder is fitted between the carrying members and operatively connected to one of them. The cylinder is connected to at least one pocket at the pair of working surfaces at the opposite member to receive pressure fluid at a pressure proportional to the pressure fluid therein. Hereby the axial position of the two carrying members will be automatically adjusted in relation to each other in accordance with occasional changes in the load, and each member will carry its allotted portion of the load.

3,672,734
BEARING ADAPTOR

Sigeru Bando, Tokushima, Japan, assignor to Bando Kiko Co., Ltd., Tokushima, Japan

Filed July 23, 1970, Ser. No. 57,531
Claims priority, application Japan, Oct. 10, 1969, 44/80,819; Feb. 3, 1970, 45/11,195; Feb. 10, 1970, 45/13,374; Feb. 18, 1970, 45/16,388; Feb. 20, 1970, 45/17,193; May 20, 1970, 45/49,895; May 23, 1970, 45/50,366
Int. Cl. F16c 35/06
U.S. Cl. 308—26 4 Claims

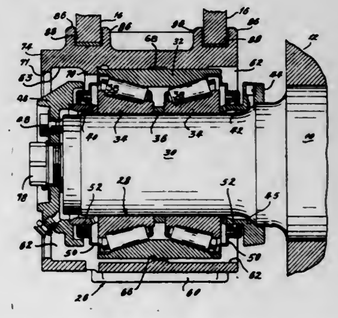


The bearing adaptor comprises an elastic body adapted to be secured on the outer peripheral surface of the bearing and a rigid elastic sleeve adhered on the outer peripheral surface of the elastic body, said sleeve being terminated at opposite ends thereof so as to define any clearance between said both ends.

3,672,735
BEARING HOUSING

Thomas C. Keller and Robert F. Hegy, Canton, Ohio, assignors to The Timken Company, Canton, Ohio

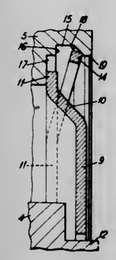
Filed Aug. 20, 1970, Ser. No. 65,624
Int. Cl. F16c 13/04
U.S. Cl. 308—180 10 Claims



A bearing housing has a bore sized to receive a double row tapered roller bearing. At the upper portion of the bore arcuate pads are formed on the housing and the curvature of these pads matches the curvature of the

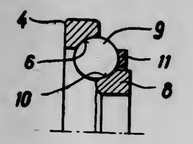
bearing cup so that good load distribution is achieved. A narrow retaining rib extends circumferentially along the remaining portion of the cavity and merges at its upper ends into the pads. The rib has an inwardly presented surface which is concentric to the seating surfaces of the pads and is slightly greater in diameter than those pad surfaces. The rib surface is positioned midway between the ends of the bearing and extends completely around the cavity, forming a relief between the pads. A thrust shoulder extends into the cavity beyond the pads and forms an abutment against which the end face of the cup bears. The close proximity of the rib surface to the bearing cup prevents the cup from disengaging and passing beyond the thrust shoulder and further keeps the bearing substantially centered in the housing. Since all the curved surfaces are concentric, they can be machined in one machine set up. The narrowness of the rib does not allow fretting corrosion to hamper disassembly of the bearing from the housing.

3,672,736
ANNULAR SHIELD FOR BEARINGS
Ivanhoe J. Rathbone, Ascot, England, assignor to Remo Precision Tools Limited, Wokingham, England
Filed Jan. 26, 1970, Ser. No. 5,835
Claims priority, application Great Britain, Feb. 12, 1969, 7,674/69
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.2 **5 Claims**



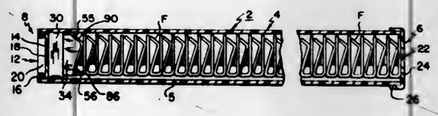
The invention is concerned with a bearing having at least one end an annular shield between the inner and outer races. The shield is held in position within the outer race by means of resilient radially outer portions which are outwardly displaced from the otherwise circular outer edge of the shield, these portions being received as a snap fit in a groove formed in the outer member.

3,672,737
BALL BEARING
Werner Jacob, Frankfurt am Main, Germany, assignor to Industrierwerk Schaeffler OHG, Herzogenaurach, Germany
Filed Sept. 29, 1970, Ser. No. 76,570
Claims priority, application Germany, Sept. 30, 1969, P 19 49 243.4
Int. Cl. F16c *33/60*
U.S. Cl. 308—196 **3 Claims**



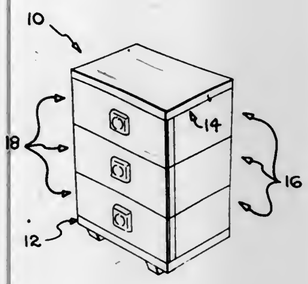
A process for the manufacture of race rings for inclined ball bearings and a process for the manufacture of ball bearings using such race rings.

3,672,738
CARTRIDGE DEVICE FOR FASTENERS AND THE LIKE
Albert T. Buttriss, Westlake, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Feb. 9, 1970, Ser. No. 9,834
Int. Cl. A47f *1/00*
U.S. Cl. 312—71 **12 Claims**



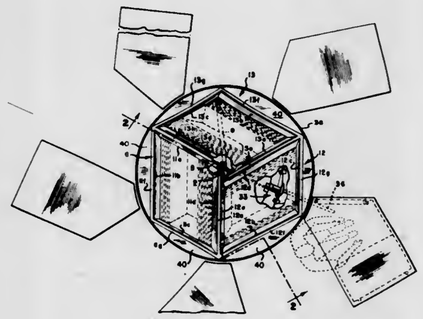
A cartridge device for mounting a plurality of fasteners for use in a fastener driving apparatus including a hollow body member adapted to receive a column of fasteners having a forward and rearward end. A plunger member disposed interiorly of the body member initially adjacent the rearward end and a closure member disposed over the rearward end of the body member. The closure member having aperture means to receive fluid under pressure therethrough for moving the plunger member interiorly of the body member to discharge fasteners from the forward end of the body member.

3,672,739
MODULAR, KNOCK-DOWN FURNITURE
Karl H. Taut, 602 Lincoln St., Archbold, Ohio 43502
Filed Aug. 6, 1970, Ser. No. 61,544
Int. Cl. A47b *47/04*
U.S. Cl. 312—107 **3 Claims**



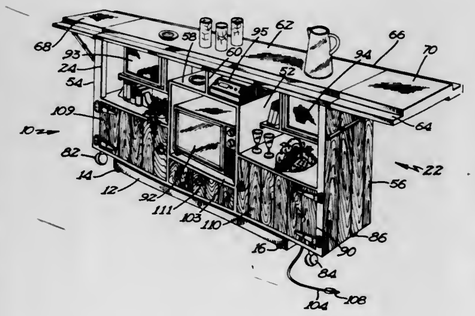
Furniture according to the invention involves both a knock-down and a modular construction. When designed for a cabinet or chest, for example, the modular units can be purchased as separate items and subsequently assembled to provide as many drawers or shelves as desired. Additional packages can be purchased at a later time as the need arises for more storage space or drawer space. Also, the individual modular sections can be used for other purposes besides chests or cabinets, such as being combined with a large flat top to produce a desk. The individual modular sections and drawers used therewith are of a knock-down construction, so that they can be shipped in a state occupying only approximately one-fifth the volume of conventional furniture. Storage space also is correspondingly reduced for additional savings. Further, the knock-down units can be assembled with a minimum of skill or tools.

3,672,740
SUPPORT FOR ROTARY FILING SYSTEM
Romeo T. Proulx, Copiague, N.Y., assignor to Barry Wright Corporation, Watertown, Mass.
Filed Mar. 4, 1971, Ser. No. 121,112
Int. Cl. A47b *53/00, 87/00*
U.S. Cl. 312—202 **9 Claims**



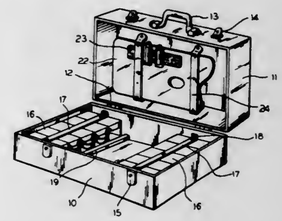
An improved support for a rotary filing system comprising two sets of vertically spaced support arms rotatably mounted on a vertical shaft. The upper set of arms support containers for holding file data in a cantilever fashion while the lower set of arms support the containers from underneath. The different parts of the support structure are constructed as separate compact elements for assembly at the site of use of the filing system. The containers for holding the file data have a rhomboid shape and are arranged around the support shaft in side-by-side relation.

3,672,741
COMBINED DRINK BAR AND ROOM DIVIDER CONSOLE
Terry D. Clark, 1537 E. 32nd St., Minneapolis, Minn. 55403
Filed Nov. 3, 1970, Ser. No. 86,480
Int. Cl. A47b *77/08, 95/18, 49/00*
U.S. Cl. 312—223 **1 Claim**



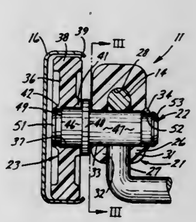
A multi-purpose furniture structure with an upright frame rotatably mounted to a stationary pedestal. The frame has a plurality of castors which partially support the frame and aid in its rotation relative to the stationary pedestal. A countertop is affixed to the top of the frame, and a longitudinal side of the frame has a plurality of open shelves to create a decorative room divider console. The remaining longitudinal side of the frame is closed to form a drink bar. The pedestal and frame are provided with cooperating pin and sockets to retain the frame in predetermined positions.

3,672,742
PAINT CASES, PALETTE, AND CONVEYOR
Dora A. Barg, 4573 N. 30th St., Milwaukee, Wis. 53209
Filed Oct. 21, 1970, Ser. No. 82,592
Int. Cl. A47b *27/00, 63/04, 95/02*
U.S. Cl. 312—232 **3 Claims**



An artist's paint box includes a palette having a strip of "Velcro" brand hook and loop tape fastener material on the bottom thereof. A drawer and housing combination has a matching strip of "Velcro" hook and loop tape fastener material on the top. When the housing is attached to the bottom of the palette, the drawer may be pulled out to form a palette cup.

3,672,743
ROLLER AND RETAINER FOR A WIRE BASKET
Walter Pompey, Kalamazoo, Mich., assignor to W-L Molding Company, Portage, Mich.
Filed Aug. 17, 1970, Ser. No. 64,163
Int. Cl. A47b *97/00*
U.S. Cl. 312—352 **8 Claims**

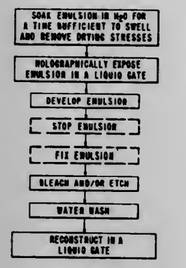


A support roller assembly primarily for rollingly supporting a wire basket, such as in a dishwasher. The roller assembly includes an inverted, substantialy U-shaped plastics retainer member adapted to be disposed in embracing relationship with one of the wires of the basket. The retainer member supports thereon a roller support shaft or stud, the stud being axially connected to the retainer member by means of a resilient snap fit. The stud in turn rotatably supports a plastics roller thereon, which roller is resiliently snapped onto the stud so as to be axially retained relative to the basket.

3,672,744
HOLOGRAPHIC SYSTEM AND PROCESS UTILIZING A WET CELL PHASE HOLOGRAM

Douglas H. Strope and Alan D. Wilson, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,535
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 5 Claims

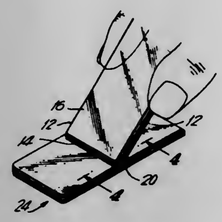


A system and method for holography in which the recording medium is exposed and viewed immersed in a liquid which is effective to relieve the residual stresses in the medium.

3,672,745
BEVELLED EDGE MICROSCOPE SLIDE

Irving A. Speelman, Roslyn Heights, N.Y., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.

Continuation of application Ser. No. 746,060, July 19, 1968, which is a continuation-in-part of application Ser. No. 477,801, Aug. 6, 1965. This application June 29, 1970, Ser. No. 50,975
Int. Cl. G02b 21/34
U.S. Cl. 350—92 2 Claims



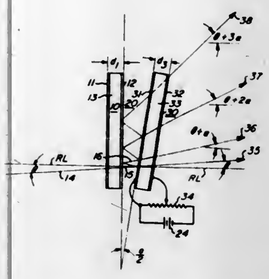
A microscope slide having peripheral side and end edges or peripheral end edges which are bevelled with a bevelled end edge of the slide operative for smearing of a specimen on the face of another companion slide. The bevelled side edges are structured to provide a wavy configuration to facilitate grasping of the slide for the smearing operation.

3,672,746
DIGITAL LIGHT DEFLECTOR USING OPTICAL RESONATORS

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation

Filed Jan. 14, 1970, Ser. No. 2,856
Int. Cl. G02b 27/00
U.S. Cl. 350—163 8 Claims

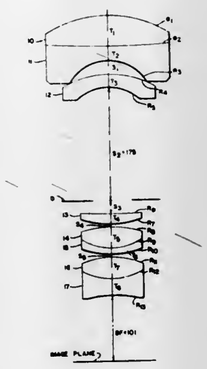
A light deflector is disclosed which includes an input Fabry-Perot type resonator, and an output Fabry-Perot type resonator. The two resonators are separated by a transparent wedge having an angle $\alpha/2$. A source of a laser beam of monochromatic coherent light is directed to the input resonator at an angle of incidence θ (relative to a normal reference line) at which the resonator exhibits a transmission peak, so that a beam of light is transmitted into and through the transparent wedge to the output resonator. Means are provided to vary a physical parameter in the light path through the second resonator in amounts to cause a beam of light to emerge from the output resonator at any one of many angles, relative to said reference line, approximately equal to θ plus an integral multiple including zero of α. The parameter varied may be the phase delay in the output resonator, or a physical spacing of resonator surfaces.



3,672,747
OBJECTIVE LENS FOR SHORT FOCAL LENGTH CAMERAS AND PROJECTORS

John R. Miles, Elk Grove Village, Ill., assignor to Retention Communications Systems, New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,287
Int. Cl. G02b 9/60
U.S. Cl. 350—216 1 Claim

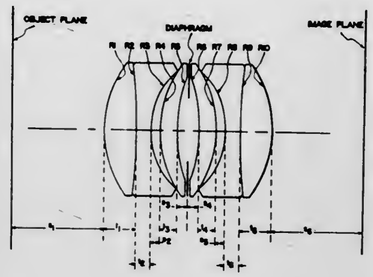


An objective lens designed for cameras and projectors for short focal length applications of the order of 1 cm. but having lens components which are relatively large and comparatively easy to manufacture. The system has a speed of f/2 and a back focal length equal to 101.1% of the focal length of the lens. There is a central space equal to 1.75F for positioning a shutter.

3,672,748
SPLIT DAGOR-TYPE OF SYMMETRICAL COPYING LENS SYSTEM

Yoshikazu Doi and Yasuo Honda, Oomiya, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed May 14, 1971, Ser. No. 143,372
Int. Cl. G02b 9/58
U.S. Cl. 350—220 2 Claims

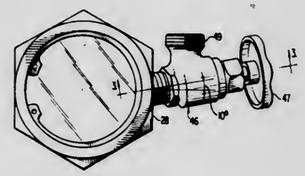


A split Dagor-type of symmetrical copying lens system having front and back compound lens components with a centrally-located diaphragm therebetween adapted to an optical system of a copier which can be used at 1:1 magnification. The front lens component has three lens elements including, in the following order, a first lens element of positive power, a second lens element of negative power cemented to the first lens element and a third lens element of positive power disposed between the second lens element and diaphragm, and the back lens component having three similar lens elements positioned so that the lens system is symmetrical.

3,672,749
SIGHT GLASS FOR THE INSIDE INSPECTION OF PIPES AND CLEANING OF SAME

Kenneth F. Roser, R.F.D. 4, Rome, N.Y. 13440

Continuation-in-part of application Ser. No. 826,946, May 22, 1969. This application Sept. 11, 1970, Ser. No. 71,439
Int. Cl. G02b 5/00
U.S. Cl. 350—319 3 Claims

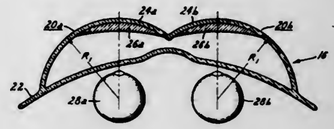


A sight glass plug having a threaded outer portion for connection to a standard building pipe fitting and a hollow interportion having a circular seat and a spaced apart recess in the surface thereof for holding an O-ring, a glass viewing window, and a snap-ring in sealing engagement with the inner surface of the plug. A valve controlled inlet allows pressurized fluid to impinge against the glass and the plug housing interior at a double inclination to ensure vortex cleaning of the same.

3,672,750
UNDERWATER DIVING MASK

Kenneth G. Hagen, Devon, Pa., assignor to General Electric Company

Filed July 31, 1970, Ser. No. 59,917
Int. Cl. G02c 1/00
U.S. Cl. 351—43 12 Claims

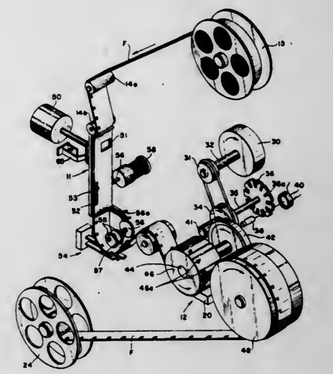


An underwater diving mask including a generally spherical lens portion for each eye with a corrective lens being incorporated into each lens portion to provide in-focus underwater vision for persons having normal, far-sighted or near-sighted vision. The mask allows an underwater diver to have vision substantially comparable to that which he would have in an air environment.

3,672,751
FILM ADVANCING APPARATUS

William Allen Martin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

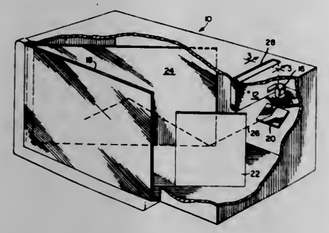
Filed Dec. 2, 1970, Ser. No. 94,260
Int. Cl. G03b 21/48, 31/02
U.S. Cl. 352—30 7 Claims



Film advancing apparatus for a motion picture projector includes a continuously driven film pulldown mechanism disposed along a first portion of a predetermined film path and having a claw member adapted to intermittently engage and move a filmstrip past an aperture of a film projection station. The apparatus also includes a continuously driven film transport mechanism disposed along a second portion of the path and having a portion engageable with the filmstrip and adapted to continuously move the filmstrip so that a sound track provided on the strip moves past a transducer at a substantially uniform speed. The apparatus further includes an electrically actuable member movable between a first position wherein it is effective to prevent the intermittent mechanism from moving film and a second position wherein it permits the intermittent mechanism to move film, and circuitry for actuating the electrically actuable

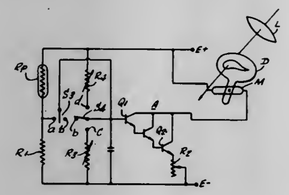
member to move between its positions in response to the rate of film movement of the transport mechanism to adjust the rate of film movement of the intermittent mechanism as a function of the rate of film movement of the transport mechanism.

3,672,752
PHOTOGRAPHIC FILM EXPOSURE AND VIEWING SYSTEMS USING CODED FILM CASSETTE
Richard W. Young, Wellesley Hills, and Murray E. Malin, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 31, 1970, Ser. No. 103,172
Int. Cl. G03b *21/00, 19/18*
U.S. Cl. 352—72 **10 Claims**



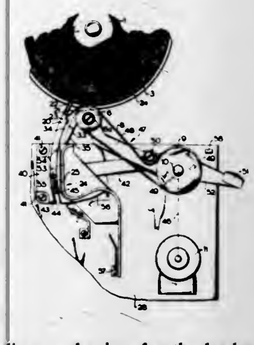
A photographic film transparency exposure and projection system in which the film is contained in a cassette mountable in both the camera and the projector of the system. The cassette is provided with a coding element corresponding to the projection density of the particular film contained therein, which element cooperates with the projector to regulate the projection light intensity automatically during projection of the developed film. In addition, the coding element has a film sensitivity value to enable its use in the camera to regulate camera exposure parameters during film exposure.

3,672,753
PHOTOCELL CONTROLLED DIAPHRAGM
Tsukumo Nobusawa, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Nov. 7, 1969, Ser. No. 874,739
Claims priority, application Japan, Nov. 13, 1968 (utility model), 43/82,517, 43/98,336
Int. Cl. G03b *7/00, 21/36*
U.S. Cl. 352—91 **8 Claims**



A motion picture diaphragm control mechanism includes a photoconductor and resistor connected in series across a voltage source the junction being connected through a switch to the input of a Darlington amplifier. An adjustable diaphragm is connected to the armature of a meter movement whose winding is connected between a voltage terminal and the collector of the amplifier output transistor, the emitter thereof being grounded through a first variable resistor. A memory capacitor shunts the amplifier input. A second variable resistor may be connected through a switch across the capacitor and the capacitor may be connected to the voltage source through a third variable transistor and switch.

3,672,754
FILM THREADING MECHANISM FOR USE IN MOTION PICTURE PROJECTORS OR THE LIKE
Wolfgang Riedel, Winnenden, Germany, assignor to Silma S.p.A., Turin, Italy
Filed Jan. 21, 1971, Ser. No. 108,406
Claims priority, application Germany, Jan. 27, 1970, P 20 03 448.4
Int. Cl. G03b *1/58*
U.S. Cl. 352—158 **14 Claims**

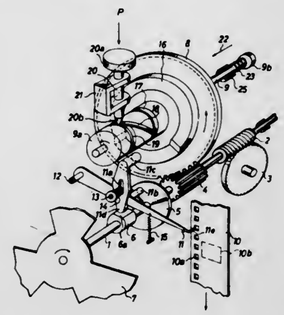


A threading mechanism for the leader of motion picture film in a motion picture projector has a drive for rotating the supply reel in a direction to pay out the film at the will of the operator. The drive has a shaft which is driven by an electric motor and transmits torque to a friction wheel mounted on a carrier which is pivotable about the axis of the shaft to move the friction wheel into and out of engagement with the outermost convolution of film on the supply reel. The carrier further supports two film directing members having surfaces which define an arcuate path for directing the leader of motion picture film into the channel of a fixed film guide assembly. One of the film directing members is located between the other film directing member and the friction wheel, and the other film directing member has a tip which is movable into engagement with the outermost convolution to intercept the leader and to direct the thus intercepted leader into the path between the surfaces of the two film directing members when the friction wheel drives the supply reel. The other film directing member is connected to the carrier by an elastic coupling which insures that the carrier can move the friction wheel into engagement with the outermost convolution even if such outermost convolution is engaged by the tip of the other film directing member prior to engagement between such outermost convolution and the friction wheel.

3,672,755
CINEMATOGRAPHIC APPARATUS
Heldemar Radl, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 8, 1970, Ser. No. 96,062
Claims priority, application Germany, Dec. 13, 1969, G 69 48 290.2
Int. Cl. G03b *1/22*
U.S. Cl. 352—194 **10 Claims**

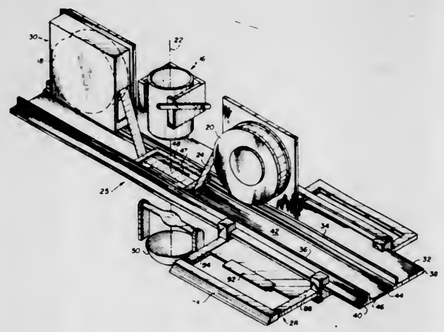
The film transporting mechanism of a motion picture projector has two rotary in-out cams the first of which moves the claw of the pull-down into and out of perforations of motion picture film at a normal frequency and

the second of which can be shifted axially to an operative position so as to override the first cam during certain stages of each revolution to thus reduce the frequency of film transport. The shifting device for the second cam consists of a helical groove machined into a cylindrical



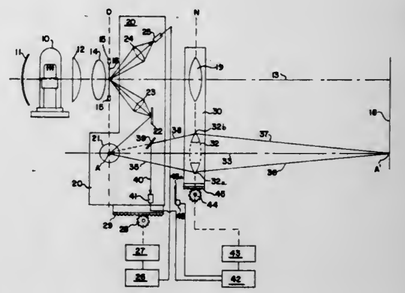
extension of the second cam and a wiper which can be moved by hand to enter the groove. The second cam is driven by a gear train which receives torque from the shaft for the first cam. The shaft further rotates a shutter and a transporting cam which moves the pull-down in and counter to the direction of film transport.

3,672,756
FILM VIEWER
William Charles Kinsinger, New York, N.Y., assignor to Metagraphic Systems, Inc., Bronx, N.Y.
Filed Dec. 11, 1969, Ser. No. 884,260
Int. Cl. G03b *21/11*
U.S. Cl. 353—68 **11 Claims**



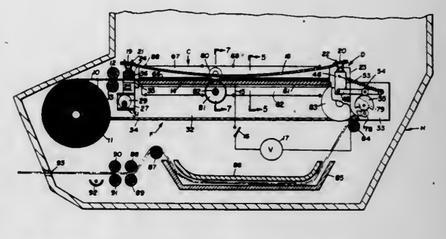
Apparatus for holding and guiding film in either roll or plate form for viewing of either type of film through a lens, comprising means for sequentially guiding portions of film in roll form into a first viewing position of the lens disposed in a first plane, means for disposing film in plate form in a second plane parallel to the first plane, the second plane containing a second viewing position of the lens, means for moving the film in plate form within the second plane to position a desired portion thereof within the second viewing position, and means mounting the lens for movement relative to the viewing positions for focusing on film in either viewing position. A microfilm reader utilizing the aforesaid apparatus is provided which is capable of reading microfilm in roll form or in plate form.

3,672,757
AUTOMATIC FOCUSING SYSTEM FOR PROJECTORS AND THE LIKE
Oleg Szymber, Elk Grove, and Norman Shim, Glenview, Ill., assignors to GAF Corporation, New York, N.Y.
Filed Sept. 14, 1970, Ser. No. 72,076
Int. Cl. G03b *3/00, 21/14*
U.S. Cl. 353—101 **15 Claims**



A first appraisal sub-system includes a focusing lens mounted for movement with the projector objective lens to establish a focusing axis parallel with the projector optical axis. This sub-system includes a light source movably mounted on the focusing axis and detection means responsive to variations in the distances of such light source and the screen from the focusing lens and for moving the latter to maintain a predetermined relationship between such distances. A second appraisal sub-system includes other detection means for sensing buckling or popping of the transparency and for moving the aforementioned light source along the focusing axis in response to such buckling or popping.

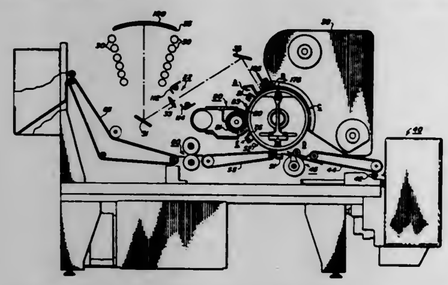
3,672,758
DEVICE AND METHOD FOR HANDLING A FLEXIBLE PHOTOCONDUCTOR
William A. MacDonald, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 665,915, Sept. 6, 1967. This application Apr. 24, 1970, Ser. No. 29,742
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **17 Claims**



A flexible photoconductive sheet supported by opposite ends over a platen for supporting a receiving sheet wherein the photo conductive sheet is lowered while an electric potential is applied between it and the platen to create an electric field therebetween. First, one end of the photoconductive sheet is brought into line contact with the receiving sheet and held there-against by electrostatic force. Then, as the other end is

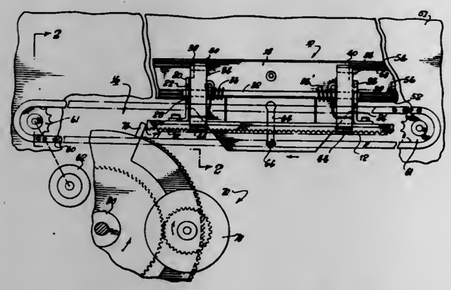
lowered, the photoconductive sheet progressively contacts the receiving sheet, forcing any air out from between the sheets so that they are held in intimate contact by the electrostatic force. A clamping mechanism is used to hold the receiving sheet during separation from the photoconductive sheet following exposure to an electrostatic image.

3,672,759
ILLUMINATION CONTROL SYSTEM
George T. Bauer, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 17, 1970, Ser. No. 90,309
Int. Cl. G03g *15/00*; G03b *27/78*
U.S. Cl. 355—3 **8 Claims**



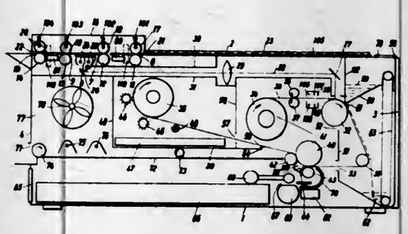
An illumination control system which compensates for gradual dimming or deterioration of exposure lamps in a photocopying machine. The accumulated number of reproductions made by the reproducing machine controls the current output of a variable current generator, which in turn controls the illumination projected onto the photoconductive surface in one of two ways. In the first embodiment, the current output controls an aperture slit mechanism positioned between the source of illumination and the photoconductive surface, widening the slit as the accumulated number of copies increases. In the second embodiment, the current output is coupled directly to the source of illumination, thereby controlling the amount of illumination it generates.

3,672,760
XEROGRAPHIC PLATE TRANSPORTING MECHANISM
Raymond A. Lunning, Duarte, and Francis T. Mercer, Manhattan Beach, Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 28, 1970, Ser. No. 75,995
Int. Cl. G03g *15/14, 15/00*
U.S. Cl. 355—3 **19 Claims**



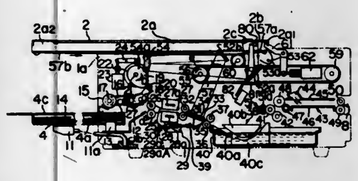
An improved mechanism for transporting a flat xerographic plate through a powder image transfer station having means for equalizing the linear velocities of the plate transporting mechanism and the support sheet feeding mechanism in the transfer station, the velocity equalizing means being positioned adjacent the path of travel of the xerographic plate along the plane passing along the image-bearing surface of the xerographic plate. In the particular embodiments described, the velocity equalizing means comprises a rack supported by the plate transporting mechanism, a gear segment supported by the support sheet feeding mechanism and means to permit the motor driving the plate transporting mechanism or the motor driving the support sheet feeding mechanism to overdrive the other of said motors.

3,672,761
COPYING APPARATUS
Walter Limberger, Hamburg-Poppenbuttel, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany
Filed Sept. 5, 1969, Ser. No. 855,661
Claims priority, application Germany, Sept. 26, 1968, P 17 97 416.2
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **7 Claims**



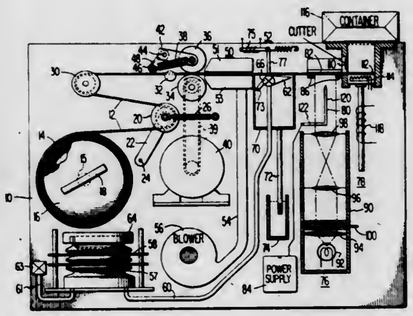
A copying apparatus having a slot shaped exposure orifice parallel to and adjacent to a narrow edge of a substantially rectangular frame. Transport rollers protrude above the top cover of the apparatus and cooperate with a transparent, plate-shaped carrier for the original. Charging and exposure components are provided for producing an image on an electrophotographic band. The image is then transferred to the final support which may be of any desired material.

3,672,762
ELECTROPHOTOGRAPHIC COPYING MACHINE
Shigeru Suzuki, Keiji Sugita, and Yasumori Nagahara, Yokohama, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1970, Ser. No. 31,596
Claims priority, application Japan, Apr. 25, 1969, 44/32,511
Int. Cl. G03g *13/10*
U.S. Cl. 355—10 **7 Claims**



An electrophotographic copying machine of the type in which both of an original to be reproduced and a copy paper are moved in synchronism with each other relative to a slit exposure optical system wherein the copy paper, upon admission into a charging station, actuates a common switch which energizes the charger, the light source in the exposure optical system and an electromagnetic clutch for coupling an original carrier device to a drive mechanism until the copy paper passes through the exposure station. Upon discharge of the copy paper from the exposure station, the charger, light source and clutch are de-energized while a reverse clutch is energized so as to return the carrier to the initial position. In order to attain the precise registration of the leading edges of the copy paper and original, a device for driving the carrier after predetermined time delay when said electromagnetic clutch is energized is provided along with a member for locking the carrier in the initial position until a start button is depressed, and a mechanism for preventing any slippage of the carrier drive cable.

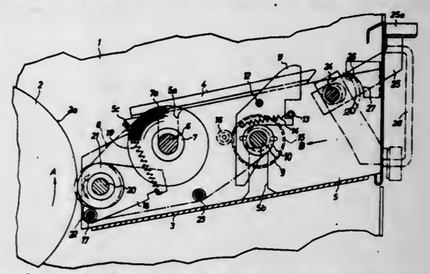
3,672,763
ELECTROSTATIC PRINTING APPARATUS
Martin Lewis Levene, Cherry Hill, and Mitsuru Yamamoto, Moorestown, N.J., assignors to RCA Corporation
Filed June 12, 1970, Ser. No. 45,692
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 **4 Claims**



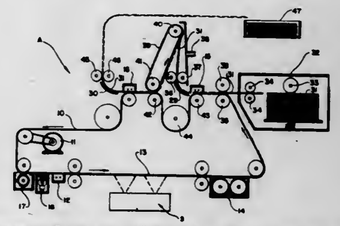
Electrostatic printing apparatus in which the recording medium remains at the same location during the charging and exposure intervals. The charging electrode is preferably of needle shape and is located in the dark area of the image projected onto the recording medium so that its outline does not appear in this image. In a preferred form of the system, after exposure, the recording medium is moved in a first direction to the toner and drying stations and then moved in the opposite direction past the exposure station to a delivery station.

3,672,764
ELECTROSTATIC COPIER WITH REMOVABLE CLEANING MODULE
Karl Hartwig, Unterhaching, and Herbert Engel and Gunther Schnall, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 2, 1970, Ser. No. 94,422
Claims priority, application Germany, Dec. 4, 1969, P 19 60 800.5
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **9 Claims**

A rotatable drum carrying a photoconductive layer is mounted in a housing of a copier. A cleaning module is connectable with and disconnectable from the housing in toto and comprises a pay-off roller and a take-up roller, a cleaning tape which is convoluted about the rollers, a biasing arrangement which biases increments of the cleaning tape into contact with the travelling photoconductive layer for frictional removal of surface contaminants therefrom, and a drive for incrementally advancing the tape from the pay-off roller to the take-up roller.

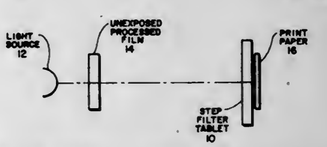


3,672,765
APPARATUS FOR MAKING TWO-SIDED COPIES FROM TWO IMAGES ON AN ORIGINAL
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of application Ser. No. 716,092, Mar. 26, 1968. This application Aug. 3, 1970, Ser. No. 60,500
Int. Cl. G03b *15/00*
U.S. Cl. 355—24 **22 Claims**



Two images from an original are placed on an endless belt **10**. The first image is xerographically transferred to one side of the copy paper **31**. The copy paper is next turned over as follows. The copy is fed past a set of rollers **36, 37** away from the path of belt **10**. An air blast urges the copy to another belt **39**. The copy sheet moves along belt **39** until it again meets the main belt **10**. After the copy sheet has been reversed, the side without the first image can receive the second image.

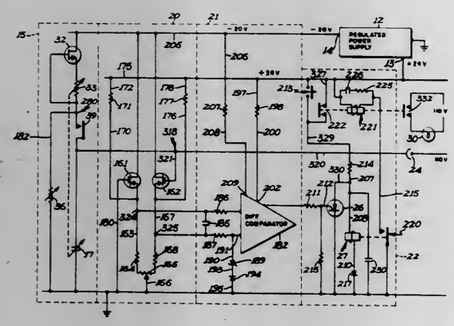
3,672,766
COLOR PRINTING METHOD
Marilyn Levy, Red Bank, N.J., assignor to the United States of America as represented by the Secretary of the Navy
Filed Apr. 15, 1971, Ser. No. 134,298
Int. Cl. G03b *27/76*
U.S. Cl. 355—32 **2 Claims**



The correct color balance required for making color prints in color photography from a color negative is determined by printing the clear, unexposed, but processed

portion of the negative with the correct filtration so as to yield equal densities in the print to red, blue, and green light.

3,672,767
PHOTO PROCESS TIMER
George Pamlenyi, St. Paul, Minn., assignor to Chesley F. Carlson Company, Minneapolis, Minn.
Filed July 15, 1970, Ser. No. 55,049
Int. Cl. G03b 27/54, 27/76
U.S. Cl. 355—37 10 Claims

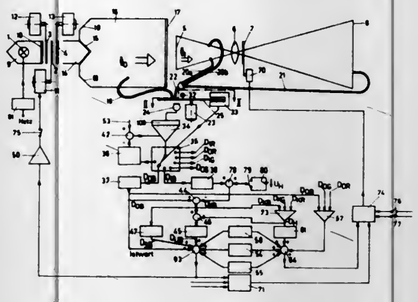


Apparatus for determining the elapse of a timing cycle utilized in high production photographic process. Dials connected to variable resistors and capacitors have indicia thereon calibrated to provide values of time units and density. Manipulation of the density dials preselects resistance and capacitance values to control the potential to which a capacitor is charged. Momentary depression of a start switch energizes the lighting to be utilized and initiates discharge of the capacitor through a phototube which is exposed to the lighting utilized so that the discharge of the capacitor through the phototube is dependent upon the light intensity. The discharge of the capacitor is monitored and when the capacitor has discharged to a predetermined value, the lighting is terminated to complete the cycle. Means are provided to preset the timing cycle for all lighting normally utilized in high production photographic processes as well as means for converting the circuit for color work. In the latter case different exposure and density values for each of the various colors can be preselected before the circuit is initially energized.

The apparatus may also include a mechanical computer which allows density readings to be fed into the dials and automatically calculates and enters additional compensating values of density.

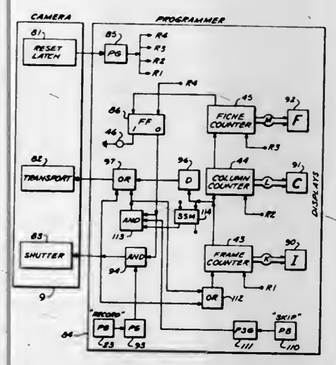
3,672,768
APPARATUS FOR MAKING PRINTS FROM COLOUR NEGATIVES
Heiner Schaub, Wettingen, Zurich, and Kurt Thaddey and Tino Cello, Buchs, Zurich, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
Filed Aug. 24, 1970, Ser. No. 66,416
Claims priority, application Switzerland, Aug. 28, 1969, 13,065/69
Int. Cl. G03b 27/78
U.S. Cl. 355—38 7 Claims

An apparatus for making prints from colour negatives has adjustable filters for controlling the colour composition of the printing light which illuminates the negative being printed. The required colour composition is dependent on the colour densities of the negative. To measure the colour densities the printing light is sampled both before and after transmission through the negative and the samples analysed in respect of their primary colour components. The corresponding components of the light samples before and after the negative are compared to



obtain difference signals representing the colour densities of the negative. These signals are used in turn to automatically adjust the filters for the correct colour composition of the printing light. A shutter is located between the negative and the printing material and is opened to expose the latter once the printing light has been adjusted. The light samples are also used to derive brightness signals for controlling the time for which the shutter is opened.

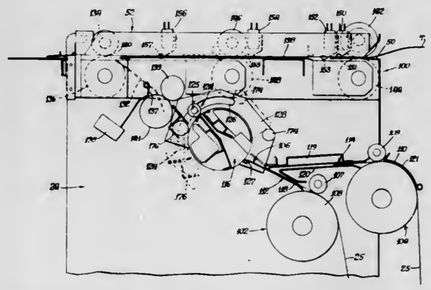
3,672,769
FICHE CAMERA WITH SELECTIVE FRAME SKIP MECHANISM
Dan C. Ross, Bethesda, Md., assignor to U.S. Dynamics Inc., Elmsford, N.Y.
Filed Apr. 26, 1971, Ser. No. 137,158
Int. Cl. G03b 27/52
U.S. Cl. 355—40 6 Claims



A fiche camera arrangement is provided for exposing frames of a film strip which subsequently is converted to a matrix array of photographic frames on a fiche, and the camera includes a skip arrangement for selectively advancing the film by (1) one or more frames in the column of a fiche, (2) one or more columns in a fiche, or (3) one or more fiches in a reel of film. A fiche coordinate counting arrangement is provided for visually displaying

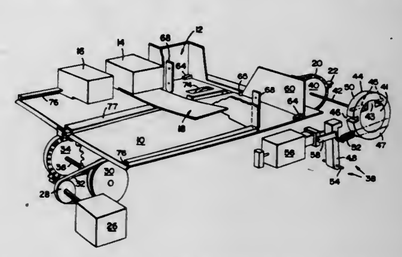
the frame, column, and fiche numbers as the strip film is exposed. Selective skipping is accomplished by operating the film transport mechanism and the fiche coordinate counting arrangement each time the skipping arrangement is operated. If a preferred fiche making process is employed, which process requires skipping one frame after each fiche column, then the skipping arrangement is inhibited from operating the fiche coordinate counting arrangement whenever a frame following a fiche column is skipped.

3,672,770
ROLL FEEDING AND CUTTING APPARATUS FOR USE IN A PHOTOCOPY MACHINE
Richard G. Lee, Weston, Mass., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed June 8, 1970, Ser. No. 44,306
Int. Cl. G03b 27/04
U.S. Cl. 355—97 27 Claims



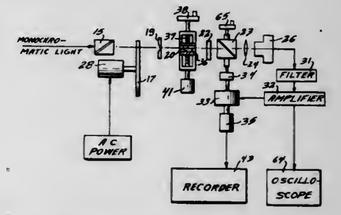
Apparatus is disclosed for feeding and cutting relatively wide copy material from a roll in accordance with an original document fed into a variable speed contact type copying machine. A first sensing element positioned along an original feed path initiates the feeding of copy material from a selected roll upon detecting the leading edge of the original. The copy material is fed along a copy path converging at an infeed station with the original feed path, through a cutting station and a pair of nip rollers to a second sensing means. Detection of the leading edge of the copy material by the second sensing means stops the nip rollers and therefore the movement of the leading end of the material while material continues to be dispensed from the roll. In response to the latter, loop forming apparatus comprising a clutch driven crank arm arrangement moves a loop forming rod into engagement with the copy material between the cutting station and the nip rollers. A third sensing element along the original feed path downstream of the first sensing element, detects the leading edge of the original and starts the nip rollers to move the leading end of the copy material in synchronism with the original. Upon the trailing edge of the original clearing the first sensing element, the dispensing of copy material from the roll is stopped and the crank arm arrangement, which controls a cutting device at the cutting station as well as the loop forming apparatus, operates the cutting device to sever a length of copy material corresponding to the length of the original, from the roll, and the loop forming apparatus to disengage the loop forming rod from the material. A fourth sensing element, laterally spaced from the first mentioned sensing element along the original feed path, initially selects an alternate copy material roll in the event the width of the original document is greater than a predetermined width. The feeding and cutting apparatus is also equipped to sever a short length of copy material from the roll when no original is fed along the original feed path, for the purpose of trimming the leading end of a fresh roll of copy material. A manual cut mechanism is also provided for severing copy material from a selected roll when desired during the operation of the apparatus.

3,672,771
APERTURE CARD DUPLICATOR APPARATUS
Harold Lakin, Portola Valley, Calif., assignor to Kleer-Vu Industries, Inc., New York, N.Y.
Filed May 5, 1969, Ser. No. 821,758
Int. Cl. G03b 27/30
U.S. Cl. 355—100 9 Claims



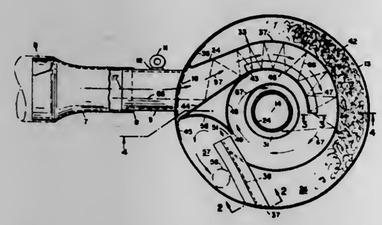
Aperture card duplicating apparatus in which a master aperture card is received in a receiving station adjacent to an exposure station. Copy cards are fed one at a time from a stack adjacent the exposure station, are exposed within the exposure station and moved thereafter to the developing station and then to an exit hopper. A circuit responsive to the presence of a master aperture card or film to be copied is provided to permit movement of an exposed copy card from the exposure station to the developing station without feeding an additional copy card when the film or card is no longer in position to be copied.

3,672,772
AUTOMATIC PHOTOELASTIMETER
William L. Primak, Hinsdale, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 31, 1970, Ser. No. 68,089
Int. Cl. G01b 11/18
U.S. Cl. 356—33 7 Claims



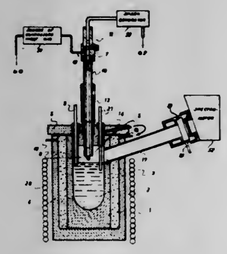
An automatic photoelastimeter includes a rotating birefringent disk positioned to develop modulation of the ellipticity of the polarized light beam used in the photoelastimeter. The detected light beam develops an A.C. signal which is used to drive a servo system. The servo system adjusts the compensator to cancel the ellipticity caused by birefringence of the sample being examined. A second rotating birefringent disk may also be used to produce additional modulation to improve the action of the servo system by sweeping the dead space of the servo system.

3,672,773
EXHAUST MUFFLER AND SPARK ARRESTOR
Paul S. Moller, Davis, Calif., assignor to Discojet Corporation
Filed June 18, 1971, Ser. No. 154,385
Int. Cl. F01n 1/10, 1/12, 3/06
U.S. Cl. 181—58 4 Claims



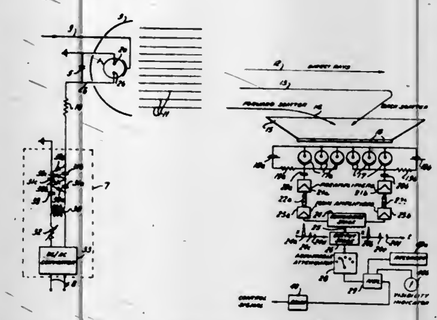
A muffler and spark arrestor for an internal combustion engine exhaust has an inlet to a disk-like housing into which the sound influx is reflected by an angled wall onto a spiral, perforated wall backed by a sound absorbing medium and partly defining an incurling chamber branched to permit solids to be centrifugally cast into a pocket and to permit gases and residual sound to escape first in an axial direction and then through radial discharge passages.

3,672,774
APPARATUS FOR SPECTRAL ANALYSIS OF MOLTEN SUBSTANCES
Milan Bojic, Metz, and Daniel Jorre, Bougival, France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France
Filed Dec. 7, 1970, Ser. No. 95,568
Claims priority, application France, Dec. 12, 1969, 6943156
Int. Cl. G01j 3/02, 3/30
U.S. Cl. 356—86 10 Claims



Apparatus for direct spectrometric examination of molten metals or the like has a crucible which is to be partially filled with molten material and a jacket defining with the crucible a compartment which surrounds the crucible. The jacket has a closure for the upper ends of the compartment and of a chamber in the crucible above the exposed surface of molten material. A compressed neutral gas is circulated through the chamber and thereupon through the compartment, and the closure is traversed by two electrodes one of which dips into molten material. The electrodes are connected to the poles of a generator which produces sparks between the exposed surface of molten material and the tip of the other electrode. The thus produced light is directed for the purposes of analysis into a spectrometer by way of a duct which extends from an opening in the crucible and admits some compressed gas into the chamber above the exposed surface of molten material. The remaining gas is admitted through the holder for the other electrode which is adjustable toward and away from the exposed surface of molten material.

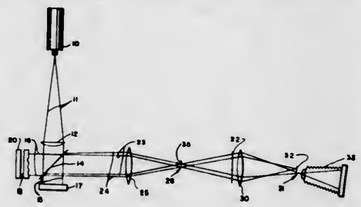
3,672,775
METHOD AND ARRANGEMENT FOR MEASURING THE DENSITY OF NATURAL FOG IN THE FREE ATMOSPHERE USING LIGHT SOURCE WHICH IS ALSO A FLASHING WARNING BEACON
Frank Fruengel, Herwigredder 105a, Hamburg-Rissen, Germany
Continuation of application Ser. No. 194,235, May 14, 1962. This application Oct. 4, 1965, Ser. No. 498,195
Claims priority, application Germany, May 16, 1961, F 33,930
Int. Cl. G01n 21/00, 21/26; H01i 39/12
U.S. Cl. 356—103 1 Claim



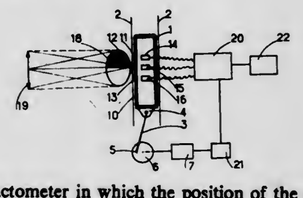
An apparatus for determining the density of natural fog in the atmosphere is disclosed. It includes a spark lamp, which also has utility as a flashing warning beacon, for projecting a light beam of consecutive light pulses of constant amplitude through the fog-laden atmosphere. The light pulses are scattered by the fog to produce consecutive light pulses proportional to the density of the fog. A light pulse receiver having its axis intersecting the axis of the transmitted beam receives the scattered light. A blind is provided to prevent direct light from the transmitter from reaching the receiver. A layer of filters may be placed in front of the photocells of the receiver as an additional means of eliminating light other than that which is scattered. The photocells are grouped into two groups each of which is A-C coupled to its own preamplifier by means of a coupling capacitor thereby excluding that part of the photocell output which is due to ambient light. The output of each preamplifier is connected to a separate input of a coincidence stage so that photocell signals which do not occur simultaneously in both groups of photocells are inhibited. A measuring means is provided for measuring the output of the coincidence stage to yield an indication of the density of fog in the region being monitored.

3,672,776
HOLOGRAPHIC REAL-TIME INTERFEROMETRY WITH A RECONSTRUCTED REFERENCE BEAM
Robert E. Brooks, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Oct. 9, 1970, Ser. No. 79,395
Int. Cl. G01b 9/02; G02b 27/00
U.S. Cl. 356—106 14 Claims

The holographic interferometer makes use of the stored beam hologram for investigating a displaced or distorted object. Illumination of the stored beam hologram by the distorted object beam will cause the generation of a distorted reference beam. The subject beam is now blocked off and the distorted reference beam is allowed to interfere with the original reference beam. This will yield an interferogram or fringe pattern corresponding to the object deformation.

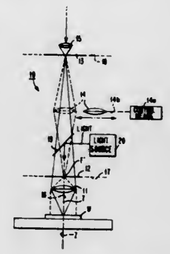


3,672,777
APPARATUS FOR SENSING A CHANGE IN LIGHT INTENSITY
Heleno Llop, Cretell, France, assignor to Societe D'Optique Precision, Electronique et Mecanique-Sopelem, Paris, France
Filed Sept. 21, 1970, Ser. No. 73,998
Claims priority, application France, Oct. 30, 1969, 6937413
Int. Cl. G01n 21/46; H01j 39/12
U.S. Cl. 356—135 5 Claims



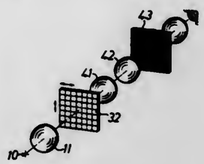
A refractometer in which the position of the change in intensity of the refractometer beam at the critical angle is sensed by a photoelectric sensor comprising an opaque screen defining two or three slits behind each of which a photoelectric cell is positioned, the outputs of the cells being supplied to an electronic circuit which provides a signal at the mean position of the change in intensity.

3,672,778
OPTICAL SYSTEM FOR POSITIONAL AND ANGULAR ORIENTATION DETERMINING APPARATUS
Richard W. Kern, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 9, 1970, Ser. No. 96,417
Int. Cl. G01b 11/26
U.S. Cl. 356—138 5 Claims



A selectively operative relay lens is provided in an optical system which is part of apparatus that determines the positional and angular orientation of an object with respect to a given reference system. When the relay lens is inoperative, the optical system provides an image that is indicative of the position of the object relative to two predetermined reference axes of the reference system and the angular orientation of the object relative to a third reference axis of the system, the three reference axes being mutually orthogonal with respect to each other. When the relay lens is operative, the optical system provides an image which is indicative of the angular orientation of the object relative to the first two mentioned reference axes.

3,672,779
DEVICE FOR INDICATING THE POSITION OF TWO MECHANICAL ELEMENTS RELATIVE TO ONE ANOTHER
Fromund Hock, Wetzlar, Germany, assignor to Firma E. Leitz GmbH, Wetzlar, Germany
Filed May 17, 1971, Ser. No. 144,079
Claims priority, application Germany, May 22, 1970, P 20 24 919.8
Int. Cl. G01b 11/26
U.S. Cl. 356—138 9 Claims

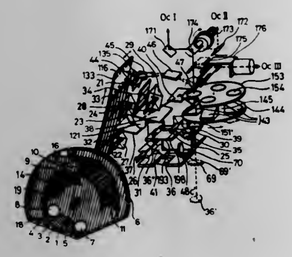


An indicating device comprises a record carrier plate consisting of information containing elements, such as sections of holograms, and of a diaphragm having at least one aperture corresponding in shape to the shape of one of the elements. The record carrier plate and the diaphragm are displaceable relative to one another, thereby revealing one or more elements by the diaphragm apertures. The revealed elements provide an information on the position of the record carrier plate relative to the diaphragm. In a first embodiment the elements are transparent and the record carrier plate is illuminated by transmitted light so that an image caused by the information containing element is projected through the aperture onto a screen or may be observed as a virtual image behind the record carrier plate. In a second embodiment the record carrier plate is illuminated by incident light which is reflected from the revealed element also to be projected onto a screen or viewed as a virtual image. The record carrier plate may be displaceable in one or in two directions of a rectangular system of coordinates. In the first case the elements are strips extending perpendicularly to the direction of movement and in the second embodiment the elements are of square shape.

3,672,780
METHOD AND DEVICES FOR THE DETERMINATION OF COLORS AND COLOR TOLERANCES IN A VISUAL MANNER IN ANY KIND OF ARTIFICIAL LIGHT OR SUNLIGHT
Fritz Piringer, Graf Starhemberggasse 13, Stiege 10, Vienna IV, Austria
Continuation of application Ser. No. 290,712, June 26, 1965. This application Mar. 26, 1970, Ser. No. 22,110
Int. Cl. G01j 3/48, 3/52
U.S. Cl. 356—195 27 Claims

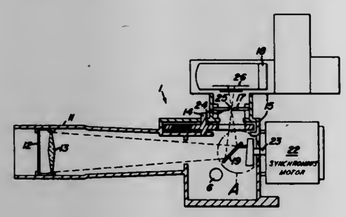
A visual comparison method and apparatus in which an image of a sample is presented in an image plane with a plurality of differing color comparison regions whose color attributes, i.e. hue, saturation and darkness can be

progressively adjusted so that the color of the sample can be visually compared with the comparison regions to establish color correspondence with one region. In order to facilitate such matching a number of proposals are provided: (1) either the sample image or the comparison regions are temporarily eliminated; (2) the sample image and the corresponding comparison region are replaced by a dull color; (3) the borderlines between the sample image and the comparison regions are periodically shifted;



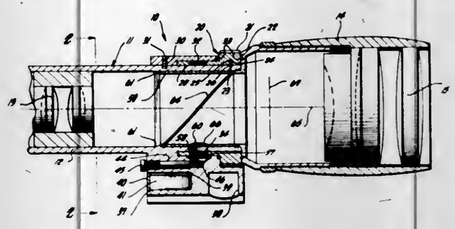
(4) a complementary color is superimposed on the field of vision to increase contrast between the sample color and the comparison regions. In order to permit different sample objects to be viewed under different illumination requirements, the sample objects are supported in respective holders with corresponding optical devices providing the particular illumination requirement, the holders being interchangeable in a housing containing a viewer and the means for producing the color comparison regions.

3,672,781
CONTRAST PHOTOMETER
Earl S. Rosenblum, Lexington, Mass., assignor to the United States of America as represented by the Secretary of the Army
Filed Mar. 3, 1970, Ser. No. 16,115
Int. Cl. G01n *21/22, 21/26*
U.S. Cl. 356—201 **9 Claims**



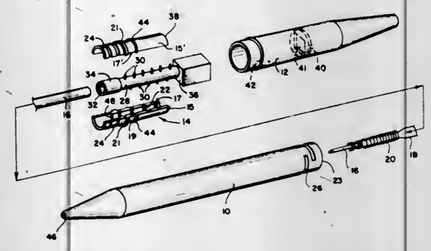
An apparatus and method for instrument determination of the effectiveness of military obscuration systems by the determination of the ratio of cloud reflectance to cloud transmittance as related to the visual contrast determined by a contrast photometer. The method and apparatus can also be utilized to observe industrial smoke clouds to ascertain whether or not particulate matter of the cloud exceeds the maximum allowable amount within pollution control standards. Aforementioned instrument determination and utility is accomplished by an apparatus and method which employs an optical system having an oscillating mirror means therein and a photomultiplier means therein; the mirror means being used to receive light waves from the source being studied by the photometer and to transmit the light waves to a photomultiplier means to convert the light waves into electrical impulses.

3,672,782
RIFLESCOPE WITH MULTIPLE RETICLES SELECTIVELY PROJECTED ON A TARGET
Alfred A. Akin, Jr., West Covina, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Continuation-in-part of abandoned application Ser. No. 769,136, Oct. 21, 1968. This application Feb. 22, 1971, Ser. No. 117,340
Int. Cl. G02b *27/34*
U.S. Cl. 356—251 **5 Claims**



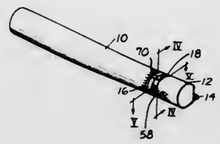
A firearm optical sight having a plurality of reticles which are selectably indexed and projected within the sight to appear as an illuminated reticle superimposed on a target image viewed by a shooter. A choice of many different reticles adapts the sight for use under varying lighting conditions and at varying range with different types of ammunition. A small battery-operated lamp projects the reticle on a beam-splitting device such as a partially transparent pellicle or mirror which reflects the reticle image onto the focal plane of the target image. The pellicle is partially coated with a reflection-reducing coating to maintain a bright target image. The reticles are mounted in a ring or similar assembly which is movably supported on the sight to permit a desired reticle to be indexed into a projected position.

3,672,783
TWIST-ACTION RETRACTING MECHANISM FOR USE IN WRITING INSTRUMENTS
Harold F. Bajusz, Woodbridge, N.J., assignor to Accutec, Inc.
Filed Aug. 25, 1970, Ser. No. 66,728
Int. Cl. B43k *24/06*
U.S. Cl. 401—116 **17 Claims**



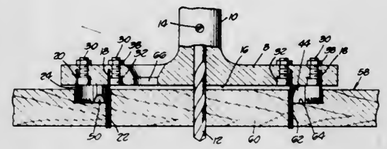
A twist-action retracting mechanism for use in writing instruments with forward and rearward barrels. The operating mechanism includes a tubular adapter having a helical slot on the inside surface and shaped to permit mounting of the adapter within the rearward end of the forward barrel. A hollow insert member is shaped to engage the inside of the rearward barrel and to receive the rearward end of the writing cartridge. The insert member also includes a plurality of discrete projections extending outwardly for engaging the helical slot of the adapter. Rotation of the insert member within the adapter causes axial movement of the insert member and the writing cartridge.

3,672,784
ADJUSTABLE TOOL
James F. McCreery, Latrobe, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Aug. 26, 1970, Ser. No. 67,071
Int. Cl. B23b *29/02*
U.S. Cl. 408—178 **15 Claims**



The specification discloses an adjustable tool, specifically, a boring bar in which the tool has a first member adapted for being fixedly supported and a second member adjustable on the first member and adapted for supporting a cutting tool such as a hard insert. The two members are adapted for being fixedly clamped together and are adjustable relatively in a direction laterally of the axis thereof while cooperating elements of a cam and follower are carried by the respective members to effect said lateral adjustment.

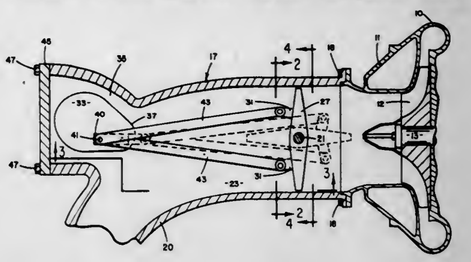
3,672,785
CIRCULAR SAWING TOOL
Joseph E. Byrne, 38623 E. 21st St., Palmdale, Calif. 93550
Filed June 24, 1970, Ser. No. 49,391
Int. Cl. B27b *33/18*
U.S. Cl. 408—206 **2 Claims**



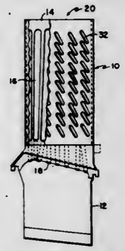
A circular sawing device particularly for wood and other fibrous materials, as well as plastics, comprising a rotary body carrying at least a pair of concentric circular saw blades directed axially of the body and a pilot drill on the axis of rotation, wherein one circular blade is of lesser axial extent than the other, and whereby a circular opening with a rabbeted edge can be provided in one arrangement and in another blade arrangement, a circular disc with an inwardly concentric groove can be produced. Different adjustments of the blades can provide for various types of cuts other than the two mentioned.

3,672,786
CAPACITY CONTROL MECHANISM FOR CENTRIFUGAL GAS COMPRESSORS
Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 2, 1970, Ser. No. 85,937
Int. Cl. F04d *15/00, 27/00;* **H01j** *39/12*
U.S. Cl. 415—147 **3 Claims**

A pair of capacity control damper plates of semi-circular form are mounted for movement about a common pivot in the gas intake passage of a centrifugal compressor. The adjacent straight or diametrical edges of the plates extend normal to the axis of the pivot. A powered actuator is mounted upstream from the valve plates and is connected to the same by links. The plates are moved in unison in opposite directions about the pivot by the actuator, between positions wherein the plates extend transversely across the passage and a position in which the plates are parallel with the passage.

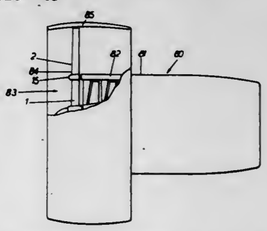


3,672,787
TURBINE BLADE HAVING A COOLED LAMINATED SKIN
Rolf A. Thorstenson, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Oct. 31, 1969, Ser. No. 872,947
Int. Cl. F01d *5/08*
U.S. Cl. 416—97 **11 Claims**



A turbine blade is comprised of a core having open troughs enclosed by a laminated skin to form coolant passages. Each layer of the laminated skin has cooperating cavities which provide coolant flow passages through the skin. This results in the combination of convection cooling within the multi-layered laminated skin, and boundary layer cooling on the surface of the turbine blade.

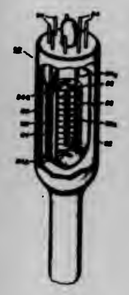
3,672,788
VARIABLE PITCH AEROFOIL BLADES
John Henry Ellinger, Mickleover, Derby, England, assignor to Rolls-Royce Limited, Derby, England
Continuation of application Ser. No. 686,435, Nov. 29, 1967. This application May 4, 1970, Ser. No. 34,582
Claims priority, application Great Britain, Dec. 5, 1966, 54,417/66; June 24, 1967, 29,245/67
Int. Cl. B64c *11/34*
U.S. Cl. 416—43 **13 Claims**



Variable pitch aerofoil blades are provided with a gear drive having a feedback so that when the mechanism

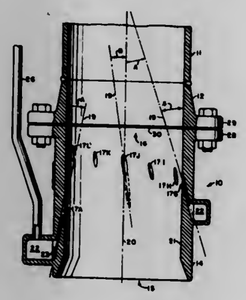
reaches an equilibrium (feathered) condition any disturbance affecting the blade causes the gear drive to adjust the blades to cancel the effect of the disturbance.

3,672,789
HYDROCARBON RESPONSIVE GETTER ION PUMP
James Roger Young, Rexford, N.Y., assignor to General Electric Company
Filed Sept. 21, 1970, Ser. No. 73,848
Int. Cl. F04b 37/02; F04f 11/00; H01j 7/16
U.S. Cl. 417—51 8 Claims



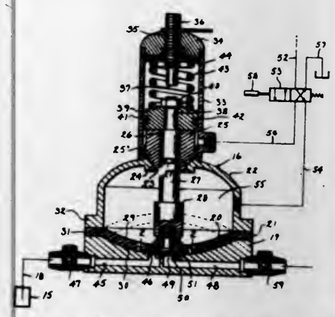
A getter pump which is sensitive to hydrocarbon gases as well as active inorganic gases is disclosed. The pump is particularly useful in image converter tubes having organic materials therein. The getter pump includes electrode means for dissociating the hydrocarbon gases into their atomic constituents and heating means to improve the gettering characteristics of particular porous getter materials such as titanium, zirconium, alloys of titanium and zirconium, or alloys of zirconium and aluminum.

3,672,790
AIR LIFT PUMP
Jessie N. White, Kensington, and Bernard Roseby, Burlingame, Calif., assignors to Berkeley Steel Construction Company, Inc.
Filed Apr. 15, 1971, Ser. No. 134,218
Int. Cl. F04f 1/18, 5/00
U.S. Cl. 417—108 6 Claims



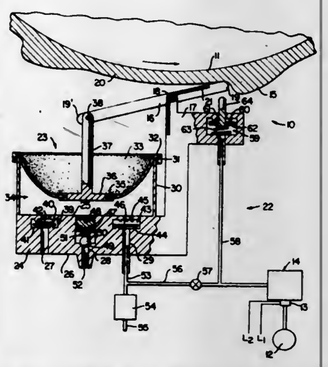
An air lift pump for use as a sewage lift pump is provided with an air injection section in which jet nozzles are disposed peripherally and helically around the pump section and arranged at angles to the planes radial and tangential to the longitudinal axis of the pump which vary when progressing peripherally around the pump section.

3,672,791
PUMPING SYSTEM WITH CONTROLLED LIQUID ADDITION
Robert D. Zimmerly, Kenosha, Wis., assignor to Ladish Co., Cudahy, Wis.
Filed July 17, 1970, Ser. No. 55,885
Int. Cl. F04b 23/08, 7/04, 21/02
U.S. Cl. 417—205 4 Claims



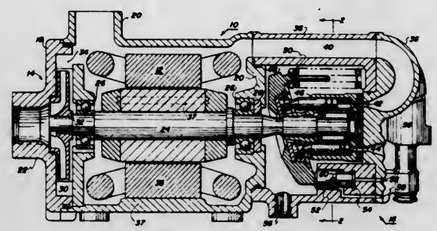
Liquids which are to be added in precise amounts to the suction side of a main pump in a liquid system are pumped from an additive tank by a special diaphragm pump which is so constructed and arranged that the diaphragm serves as a normally-closed, positive shut-off valve when the diaphragm pump is not operating to prevent excess chemical from being sucked into the system.

3,672,792
PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE
Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.
Original application Nov. 15, 1968, Ser. No. 776,224, now Patent No. 3,550,404. Divided and this application Aug. 26, 1970, Ser. No. 67,229
Int. Cl. F04b 49/00
U.S. Cl. 417—306 5 Claims



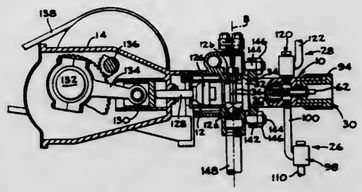
This disclosure relates to a laundry machine wherein the rotating laundry confining drum or tub is operatively interconnected to a vacuum pump to cause continuous operation of the vacuum pump during the entire movement of the confining means so as to provide a source of vacuum for controlling vacuum operated actuators of the apparatus. In addition, a pneumatically operated timer controlling the "on-off" operation of the laundry machine is repetitively actuated and deactuated by the movement of the laundry confining means.

3,672,793
POWER TRANSMISSION
Gordon H. Yowell, North Branch, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Oct. 28, 1970, Ser. No. 84,697
Int. Cl. F04b 17/00; 35/00, 39/02, 24/14, 1/00, 27/00
U.S. Cl. 417—368 7 Claims



An electric motor-pump unit for hydraulic power systems has a pressure regulated variable displacement, high pressure pump at one end of an electric motor and a low pressure centrifugal charging pump at the opposite end. A path is provided from the low pressure pump through the electric motor to the inlet of the high pressure pump. To maintain a flow of charging fluid to cool the electric motor during periods when no high pressure fluid is required, the pressure responsive regulator for the high pressure pump opens a bypass from its delivery line into the casing to join the scavenged fluid.

3,672,794
INJECTION PUMP
Stanley E. Reed, Jr., Haslett, and Donald C. Ruby, Lansing, Mich., assignors to FMC Corporation, San Jose, Calif.
Filed Oct. 12, 1970, Ser. No. 79,849
Int. Cl. F04b 17/00, 35/00
U.S. Cl. 417—382 3 Claims



A piston type injection pump, having means for adjustment of the volume for each stroke, being powered synchronously by a reciprocating pump to inject a fluid in a set ratio by volume with the effluent of the reciprocating pump.

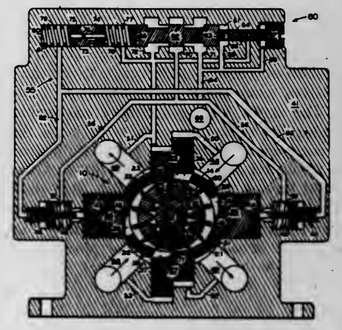
3,672,795
CABLE-SUSPENDED, LINEAR-SUPPORTED ELECTRIC PUMP INSTALLATION IN WELL CASING
Armais Arutunoff and John C. O'Rourke, Bartlesville, Okla., assignors to TRW, Inc., Cleveland, Ohio
Filed Feb. 4, 1971, Ser. No. 112,610
Int. Cl. F04b 17/00, 35/04; F03b 13/02
U.S. Cl. 417—424 6 Claims

A cable-suspended, submergible electric pump installation for use in a well casing, including concentrically connected pump, motor and motor protecting units. A retrievable cylindrical liner encircles the cable and extends into the well casing from ground level to enclose the discharge head of the pump unit, where a shoe is provided on the liner to actually support the installation at a predetermined operative elevation in the well. The pump intake communicates with the well fluid in the casing, and the pump discharges to the earth's surface through the liner. The annulus between the liner and casing acts



as a gas separator. All electrical connections and splices are made in a low pressure zone effected by the pump intake, removed from the high pressure zone influenced by the pump discharge, to avoid the detrimental effects of high pressure on the connection and splices. The installation also includes means to permit the flushing of sand which may accumulate in the liner adjacent the pump discharge head.

3,672,796
FLUID PRESSURE CONTROL
Robert K. Mitchell, Hilliard, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Filed Oct. 12, 1970, Ser. No. 80,038
Int. Cl. F01c 21/16; F04c 15/04; F16k 11/00
U.S. Cl. 418—26 19 Claims

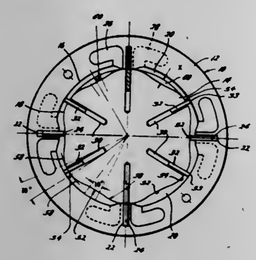


A pressure control for a fluid device such as a variable-delivery pump. A servo valve has an elongate opening

in which a control piston is longitudinally slidable about an equilibrium position where the forces of an adjustable compression spring and of the pump discharge pressure on a small surface at the right end are balanced by the discharge pressure on a larger surface at the left end. Increased discharge pressure moves the control piston to the right, applying the increased pressure to the flexible cam ring of the pump so as to reduce its eccentricity and the discharge rate. Decreased discharge pressure allows the control piston to move to the left, relieving pressure on the cam ring to increase its eccentricity and the discharge rate.

Oscillation of the control piston during changes in the discharge rate are substantially eliminated by a damping piston having a constricted longitudinal passage through it and positioned to the left of the control piston between compression springs. The space to the left of the damping piston communicates with a fluid pressure that is responsive to the eccentricity of the cam ring. As the control piston moves one way in response to a change in discharge pressure the damping piston moves in the opposite direction, thereby anticipatorily decelerating and minimizing overshoot by the control piston, which then returns to the equilibrium position as the damping piston moves oppositely to its equilibrium position and thus anticipatorily decelerate and minimizes oscillation by the control piston.

3,672,797
FLUID POWER CONVERTER
Charles R. Gerlach and Robinson W. Brown, San Antonio, Tex., assignors to Gerlach Brown, Inc.
Filed Dec. 10, 1969, Ser. No. 883,692
Int. Cl. F01c *1/00*; F03c *3/00*; F04c *1/00*
U.S. Cl. 418—125 **11 Claims**



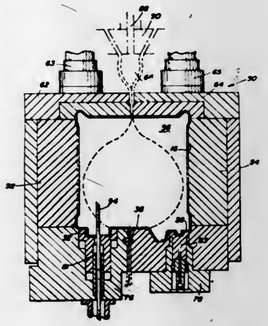
A fluid power converter, such as a hydraulic fluid pump or motor, having a rotor and stator each having sealing valves, which provides a zero radial bearing load by providing more valves in the rotor member than in the stator, with the excess of rotor valves being at least two when the stator contains an even number of valves, and with the number of rotor valves being twice the number of stator valves when the stator contains an odd number of valves. The stator having a contoured periphery to provide a plurality of annular spaces between the rotor and stator, each space defined in part by an arc of a circle having its center coaxial with the axis of the rotor and stator and having an angular width such that a constant net torque is exerted on both rotor valves and stator valves to provide zero torque fluctuation. Both the rotor and stator having opposed contoured perpheries cooperating to provide an annular space therebetween in which the stator and rotor peripheries include a plurality of recesses defined in part by an arc of a circle having its center coaxially with the axis of the rotor and stator and of an angular width such that a constant net torque is exerted on both rotor valves and stator valves to provide zero torque fluctuation.

3,672,798
RADIAL SEALING BAR FOR PISTONS OF ROTARY PISTON INTERNAL COMBUSTION ENGINES
Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Mar. 6, 1970, Ser. No. 17,128
Claims priority, application Germany, Mar. 6, 1969, P 19 11 320.3
Int. Cl. F01c *19/02*; F03c *3/00*; F04c *27/00*
U.S. Cl. 418—113 **7 Claims**



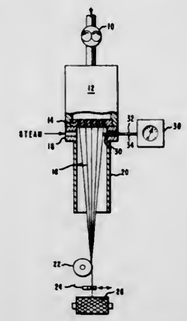
A radial sealing bar of composite construction for pistons of rotary piston internal combustion engines, especially of trochoidal construction in which the radial sealing bar consists of at least three thin layers which extend in the longitudinal direction; at least the layer which forms a part of the bar crest is made from a material having a high hardness, such as a ceramic material, quartz, a hard metal or alloy and other sintered materials.

3,672,799
APPARATUS FOR FORMING A STACKABLE CONTAINER
Wolfgang Liebertz and Anthony J. Starr, Wilmington, Del., assignors to Container Corporation of America, Chicago, Ill.
Original application Sept. 18, 1968, Ser. No. 760,427. Divided and this application July 17, 1970, Ser. No. 55,740
Int. Cl. B29c *17/07*; B29d *23/03*
U.S. Cl. 425—330 **2 Claims**



A unitary, stackable container is formed from moldable material and has integral top and bottom members interconnected by a hollow, tubular body and further comprises a stacking indentation in the bottom member, a pair of ridges upstanding from the top member and being adapted to engage the stacking indentation in the bottom member of a similar container when the containers are stacked, the top member having a pair of threaded, flanged apertures located adjacent the opposite sides of the member, a handle integrally formed with the top member and having its long axis positioned in a normal relationship with the axis extending through said apertures. The method of forming the above container includes the steps of suspending a tube of plastic material having one closed end and one open end between a pair of separated mold halves, introducing air into the tube through the open end for partially expanding the tube, enclosing the partially expanded tube in a cavity of the mold by bringing the mold halves into mating registry, completing the expansion of the tube by introducing air into the tube at a location other than the open thereby causing the tube to assume the configuration of the cavity, maintaining said expanded tube under internal air pressure for a predetermined time, exhausting air from the expanded tube, and separating the mold halves for removal of the article formed. The apparatus for forming the container comprises a pair of mold halves movable relative to one another into mating registry, a pair of article bottom forming plates positioned above the mold halves and movable relative to one another and into contacting engagement with the mold halves, a pair of article top forming plates located below the mold halves and movable into mating registry with one another and having cavities for forming threaded, flanged apertures and a handle in the top member of the container.

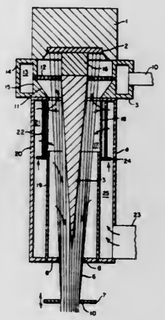
3,672,800
GALVANIC DETECTION OF OXYGEN IN A SPINNING CELL STEAM CHAMBER
Carmelo Rapisarda, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 1, 1970, Ser. No. 51,543
Int. Cl. D01d *13/02*
U.S. Cl. 425—71 **2 Claims**



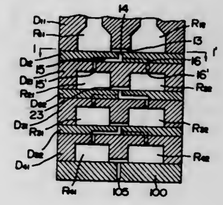
In an apparatus for spinning synthetic filaments of the type that includes an extrusion device from which filaments pass successively through a steam chamber and a quenching chamber to a windup, a means is provided for continuously detecting and indicating the amount of oxygen in the steam chamber in the range of concentrations of from 0.01 to 1.0% at temperatures that range from 100 to 350° C. The detecting means is a galvanic cell in communication with the steam chamber and connected to an indicator. The cell includes a porous graphite cup containing an electrolyte mixture and a molybdenum anode centrally located in the cup.

3,672,801
SPINNING QUENCH CHAMBER HAVING A CONICAL FLOW DIRECTOR
Gary Lee Caldwell, Wilmington, Del., and Richard Thomas Eger, Madison, and Frederick Warren Miller, Hendersonville, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 13, 1971, Ser. No. 106,022
Int. Cl. D01d *13/02*
U.S. Cl. 425—71 **4 Claims**

A cylindrical chimney used for quenching synthetic filaments after they are extruded from a spinneret is divided into concentric cylindrical plenum and quenching chambers by means of a cylindrical foraminous member comprised of at least five layers of fine mesh screens spaced from each other a specified distance to improve quench medium distribution from the plenum into the quench chamber. A cone shaped flow director extends from the spinneret coaxially into the quenching chamber. A flow restrictor at the exit end of the quench chamber forms a partial seal with the filament bundle directing the air flow through the bundle for more efficient cooling. A guide positioned below the chimney quench chamber encompassing the filaments serves to stabilize the threadline and is vertically movable to vary the filament bundle size at the point it passes through the flow restrictor to vary the sealing effect of the bundle.

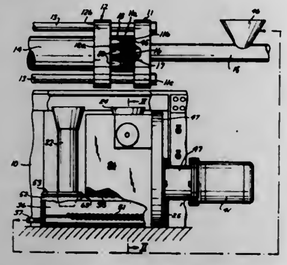


3,672,802
APPARATUS FOR PRODUCING MULTILAYER FILAMENT
Maso Matsui, Takatsuki, Yutaka Utsuhara, Higashi-Osaka, Masahiro Yamabe, Neyagawa, and Susuma Tokura, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Original application Mar. 6, 1968, Ser. No. 711,070. Divided and this application May 25, 1970, Ser. No. 48,683
Claims priority, application Japan, Mar. 15, 1967, 42/16,501
Int. Cl. D01d *3/00*
U.S. Cl. 425—131 **7 Claims**



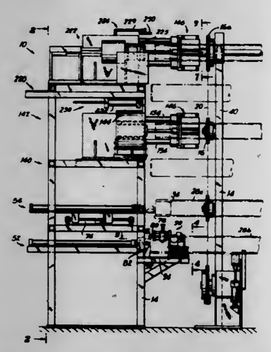
A spinneret is disclosed for the production of mixed filaments which are made from at least two spinning materials extending substantially continuously along the filament axis having at least ten thin layers in arbitrary cross section. The spinneret contains a plurality of layer multiplying mixers for separation and joining of the filament components in different phase.

3,672,803
SCRAP GRINDER FOR INJECTION-MOLDING MACHINE
Herbert Rees, Willowdale, Ontario, Canada, assignor to Husky Manufacturing and Tool Works Limited, Bolton, Ontario, Canada
Continuation-in-part of application Ser. No. 732,148, May 27, 1968, now Patent No. 3,566,444. This application May 13, 1970, Ser. No. 36,938
Int. Cl. B29f 1/00
U.S. Cl. 425—197 **7 Claims**



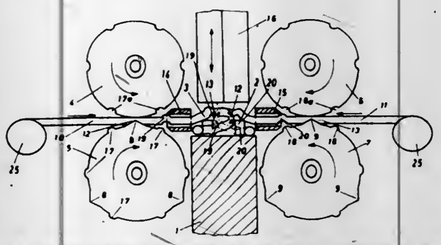
A grinder with rotary knives is positioned below the mold level of an injection-molding machine and offset from the mold path, an auger driven by the knife motor extending horizontally from a hopper beneath the mold path to the grinder mouth for delivering runners dropping from the opening mold to a lateral entrance of a knife housing. A lateral extension of that housing receives the comminuted scrap with the aid of a second auger, disposed at right angles to the first one, and has an outlet for the return of this scrap to the machine hopper via a suction pipe.

3,672,804
PIPE BELLING MACHINE
Herbert A. Dalik, Pomona, N.Y., assignor to The Flintkote Company, White Plains, N.Y.
Filed Oct. 12, 1970, Ser. No. 79,842
Int. Cl. B29c 17/00
U.S. Cl. 425—328 **17 Claims**



An apparatus for simultaneously belling the single wall thickened end portion of individual pipes supplied to the apparatus from an extruder with the thickened wall end portions thereof located at opposite ends of the successive pipes has a pick-up station for receiving the pipes from the extruder and a generally vertically extending conveyor which sequentially receives the pipes at the pick-up station and transports the pipes through a plurality of process stations including a pair of generally vertically spaced first process stations at which the both ends of the pipes are cleaned by a flow of air produced therein which is directed outwardly toward the pipe ends to remove debris therein while a line is simultaneously scribed on the peripheral surface of the spigot portion of the pipes at a predetermined position from the end thereof, a pair of generally vertically spaced second process stations at which the wall thickened end portions of the respective pipes are heated, and a pair of generally vertically spaced third process stations at which the heated wall thickened end portions of the respective pipes are belled prior to discharge from the apparatus.

3,672,805
APPARATUS FOR FORMING A PLASTIC ARTICLE
Bernd Porepp, Am Rebberg 16, Wangen 7764, Germany
Filed Dec. 8, 1969, Ser. No. 883,251
Int. Cl. B29d 5/00
U.S. Cl. 425—391 **5 Claims**



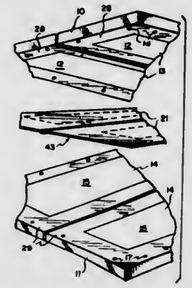
A method and apparatus for making continuous coupling elements for slide fasteners. A synthetic thread of a thermosetting material is advanced axially toward radially outwardly extending guide pins or teeth on the periphery of a cylindrical disc mounted for step-by-step rotation. The synthetic thread is advanced a length sufficient to form a loop of a helical coil, after which the cylindrical disc is advanced one step, or one guide pin. The synthetic thread is advanced by means of a pair of rollers which have means on their periphery or which coact with stamping tools to deform the synthetic thread at certain points and give it a proper shape. The shaped thread will provide a loop having a deformed coupling surface at its apex and deformed engaging surfaces for the coupling surfaces of a matching coupling element at the loop base. After a loop has been formed and advanced, it is stamped flat by a reciprocating stamping device and is then heated so as to become set. The cylindrical disc may also be provided with an additional set of guide pins on its periphery, offset from the first set of guide pins, so that two continuous coupling elements may be formed in engaging relationship simultaneously.

ERRATUM

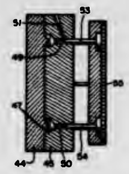
For Class 425—364 see:
Patent No. 3,672,348

3,672,806
DIE ASSEMBLY
Peter T. Triolo and Harlan H. Schutte, Dubuque, Iowa, assignors to Scovill Manufacturing Company
Filed July 22, 1970, Ser. No. 57,096
Int. Cl. B29c 17/00
U.S. Cl. 425—406 **7 Claims**

A die assembly for forming and shaping articles from a moldable material by heat compressing the material between a pair of dies in which the dies comprise adjacent die units in side-by-side relationship to form a plurality of molded articles simultaneously and having a compressing member on one of the dies at the edges of the units and spanning these edges to increase the density of the molded material at these edges. This compressing member not only densifies the edges of the article but also restricts and thereby controls the rate of escape of volatile products from the moldable material that would ordinarily tend to rupture and weaken the molded product at the edges if the edges were not thusly densified.



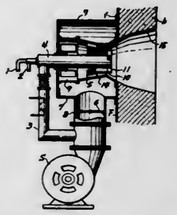
3,672,807
MOLD CONSTRUCTION
Orville F. Genz, Elmwood Park, Ill., assignor to Hydro Component Research and Development Co., Chicago, Ill.
Application July 23, 1969, Ser. No. 844,006, which is a division of application Ser. No. 643,236, June 2, 1967, now Patent No. 3,519,280. Divided and this application Feb. 8, 1971, Ser. No. 113,262
Int. Cl. B29c 7/00; B29f 1/14
U.S. Cl. 425—422 **3 Claims**



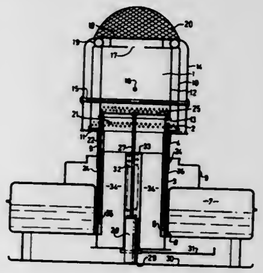
A mold construction comprises mating mold sections defining in assembled relation a mold cavity for forming an annular sealing ring of a generally V-shaped cross-section. The mold construction avoids the occurrence of mold parting lines and other surface irregularities on critical surfaces of the ring. A series of channels extend through one mold section and communicate with the mold cavity at the base of the V while a submerged gate communicates with at least one of the channels for providing a path to inject a thermoplastic material in a fluid state into the mold. A series of knock-out pins are each normally positioned at an end of the channel remote from the mold cavity but are slidable toward the cavity to shear the thermoplastic material communicating with the channel through the gate and to eject the ring member on disassembly of the mold.

3,672,808
METHOD AND APPARATUS OF CONTINUOUS STEAM-ATOMIZING FUEL COMBUSTION FOR BOILER FURNACE
Shuzo Miyazaki, Tokyo, Japan, assignor to Japan Furnace Industry Co. Ltd., Tokyo, Japan
Filed Oct. 15, 1970, Ser. No. 80,906
Int. Cl. F23n 1/04
U.S. Cl. 431—2 **10 Claims**

A method and apparatus for initiating combustion in a steam-atomizing furnace using the pressurized source of combustion air to atomize the fuel during startup when the steam pressure is insufficient to do so. A damper is provided in the air inlet to build up the air pressure upstream of the damper so that the latter air pressure may be directed through the atomizing nozzle. When the furnace is up to temperature and steam is generated by the furnace, the damper is opened to obtain efficient combustion of the fuel which is then atomized by the steam. A supplemental air heater is provided to elevate the temperature of the pressurized air during the startup.



3,672,809
LIQUID FUEL BURNING HEATERS
Hugh Charles Hebard, Buckinghamshire, England, assignor to Aladdin Industries Limited, Greenford, Middlesex, England
Filed Feb. 12, 1971, Ser. No. 114,972
Claims priority, application Great Britain, Sept. 21, 1970, 44,773/70
Int. Cl. F23d 3/26
U.S. Cl. 431—34 **8 Claims**

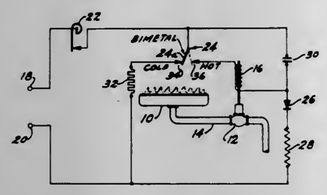


A liquid fuel burning heater having a wick fed radiant burner of the "short drum" type, is provided with an extinguishing device which is operative, upon tilting of the heater, to retract the wick and close the space between the inner and outer wick tubes under the influence of a spring acting upon a rod, the upper end of which is secured to the extinguishing device and the lower end of which engages the ground when the heater is standing upright.

3,672,810
BURNER IGNITION AND CONTROL SYSTEM
James A. Wright, Webster Groves, and Allan W. Lindberg, Kirkwood, Mo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Aug. 18, 1970, Ser. No. 64,692
Int. Cl. F23n 5/00
U.S. Cl. 431—66 **7 Claims**

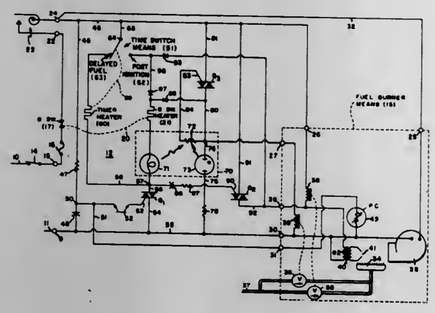
A direct ignition and control system for gaseous fuel burners employing an electrical resistance-type igniter, a biased closed solenoid actuated fuel valve, a double-throw switch normally completing an energizing circuit

for the igniter and responsive to the radiant energy of the igniter when at ignition temperature to break the igniter circuit and complete an energizing circuit for the winding of the valve solenoid; the valve circuit including a series resistor limiting current flow through the solenoid winding to that which holds the valve open but will not open it, and further includes a normally charged



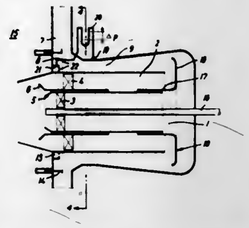
capacitor which upon completion of the solenoid winding circuit by the double throw switch is discharged through the winding to effect opening of the valve; the double throw switch also being responsive to burner flame to retain completion of the valve hold open circuit and the igniter having sufficient mass to retain an igniting temperature for a brief period after de-energization.

3,672,811
BURNER CONTROL SYSTEM USING A RADIATION OPERATED RELAY MEANS
Roland L. Hron, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 15, 1971, Ser. No. 124,128
Int. Cl. F23n 5/00
U.S. Cl. 431—69 **9 Claims**



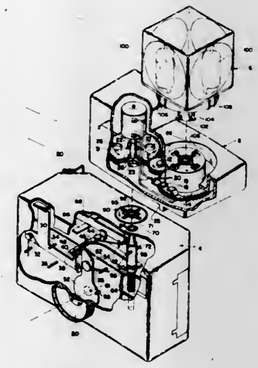
A substantially all solid state control system which is adapted to be connected to control a fuel burner is disclosed and provides a delayed fuel and post-ignition timing period using a heater operated bimetal switch. The system is adapted to be energized through a line voltage thermostat to provide power to a fuel burner means which may include two stages of fuel control, along with an ignition means and flame detection means. The system includes a main circuit means having triacs for control, and for operation of the valves that supply fuel to the fuel burner means. The switching between the triac stages is accomplished by a radiation operated relay means which includes two radiation sources and a radiation responsive means. The radiation operated relay means provides a solid state substitution for a more conventional type of relay.

3,672,812
FUEL BURNER UNIT FOR MOUNTING IN A COMMON AIR BOX
Knud Erik Bendixen, Horsholm, Denmark, assignor to Aktieselskabet Burmeister & Wain's Maskin- og Skibsbyggeri, Copenhagen K, Denmark
Filed Nov. 30, 1970, Ser. No. 93,625
Claims priority, application Denmark, Dec. 9, 1969, 6,507
Int. Cl. F23n
U.S. Cl. 431—89 **7 Claims**



A fuel burner unit designed to be connected to a common air supply box in parallel with one or more like burner units. The burner comprises a duct system for conveying combustion air from the air box to the burner head and includes a single annular outer duct connected at its front end to the air box and at its rear end to individual inner ducts for primary and secondary combustion air, respectively. The volume ratio between primary and secondary air is determined by an adjustable, but normally fixed baffle device at the rear outlet end of the outer duct. The total amount of combustion air supplied to each burner is controlled by a valve device located at the inlet end of the annular outer duct.

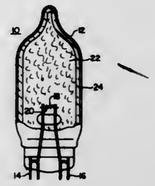
3,672,813
ADAPTER FOR IGNITING ELECTRICALLY IGNITABLE FLASHLAMPS
William H. Horton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 6, 1970, Ser. No. 9,209
Int. Cl. F21k 5/02
U.S. Cl. 431—95 **4 Claims**



An adapter for enabling a percussion flash camera to receive and actuate electrically ignitable flashlamps. The adapter includes a piezoelectric device for generating flashlamp ignition voltage in response to operation of the camera flash actuating means. The actuating means can strike the piezoelectric device directly, or release a percussive element for striking the device. In one embodiment, the adapter has a rotatable socket for receiving a conventional multilamp flash holder and for sequentially presenting a fresh flashlamp in a firing position in response to the actuation of camera indexing means. In another embodiment, the adapter receives a multilamp flash unit having a linear array of electrically ignitable flashlamps.

3,672,814
PHOTOFLASH LAMP WITH YTTRIUM COMBUSTION FILLING
Kenneth F. Andrew, East Pittsburgh, and Richard L. Tallman and Earl A. Gulbransen, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 30, 1970, Ser. No. 85,513
Int. Cl. F21k 5/02
U.S. Cl. 431—95 **6 Claims**

An improved combustible photoflash lamp is described wherein the combustible metal foil is yttrium metal. The rise time characteristic to peak light output is significantly improved by the use of the yttrium combustible metal. The addition of varying amounts of yttrium metal to



standard combustible metal such as zirconium also improves the rise time to peak light output characteristic for these lamps.

CHEMICAL

3,672,815
PROCESS FOR DYEING MIXTURES OF POLYESTER AND POLYACRYLONITRILE FIBERS IN ONE BATH
Hans-Ulrich von der Eltz, Frankfurt am Main, Johannes Jetha, Weiskirchen, and Alfons Bernhard Boecker, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Feb. 24, 1970, Ser. No. 14,753
Claims priority, application Germany, Feb. 26, 1969, P 19 09 517.1
Int. Cl. D06p 3/82
U.S. Cl. 8—21 A **6 Claims**

Process for the single-bath dyeing of mixtures made of polyester and polyacrylonitrile fibers simultaneously with disperse dyestuffs and cationic dyestuffs according to the thermosol method wherein non-ionic dispersing agents are added to the acidic padding baths which contain the cationic dyestuff in dissolved form.

3,672,816
PROCESS FOR DYEING SYNTHETIC POLYAMIDE TEXTILES WITH DISAZO DYESTUFFS
Johannes Dehnert, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed July 9, 1970, Ser. No. 53,682
Claims priority, application Germany, July 10, 1969, P 19 35 004.0
Int. Cl. D06p 1/02
U.S. Cl. 8—41 B **3 Claims**

Process for the fast dyeing of synthetic polyamides with disazo dyes derived from 4,4' - diamino-stilbene-2,2'-disulfonic acid as diazo component and a phenol or phenols as coupling component.

3,672,817
ALKYLENE CHLOROHYDRIN, OXIDE OR CARBONATE MODIFIED SULFONATED LIGNINS IN A DISPERSE OR VAT DYE CAKE
Sten I. Falkehag, Mount Pleasant, and Howard H. Moorer, Gerald Prazak, and Carl W. Bailey III, Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,164
Int. Cl. C09b 67/00
U.S. Cl. 8—79 **7 Claims**

Dyestuff compositions comprising an admixture of a dye cake, i.e., disperse dyes and vat dyes, and up to 75% by weight of an improved sulfonated lignin surfactant. The improved sulfonated lignin surfactant is the hydroxyalkylated adduct made by reacting with lignin up to 20 moles, preferably from 1 to 10 moles (per 1000 grams of lignin), of a reactant such as an alkylene oxide, a halogen-containing alkyl alcohol or an alkylene carbonate. The preferred reactants include ethylene oxide and 2-chloroethanol. These improved sulfonated lignin adducts are lighter in color, and lessen or eliminate fiber staining, diazo dye reduction and foaming problems.

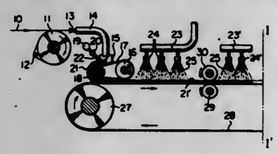
3,672,818
POLYISOCYANATE COMPOSITION AND PROCESS FOR TREATING CELLULOSIC MATERIALS THEREWITH TO RENDER THEM WATER REPELLANT
George M. Wagner, Lewiston, and William J. Vullo, Burnt Hills, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Original application July 30, 1969, Ser. No. 846,283, now Patent No. 3,617,189. Divided and this application Nov. 25, 1970, Ser. No. 92,856
Int. Cl. D06m 13/42
U.S. Cl. 8—116.2 **6 Claims**

A method for rendering cellulosic materials water-repellent by contacting the cellulosic material to be treated with an emulsion formed by a soap, a surface active agent and a polyaryl polyisocyanate containing at least three aryl groups and an average of at least three isocyanate groups, a portion of which may be modified by reaction with an alcohol, thioalcohol, organic acid, amine or amide, and thereafter curing the treated material with water.

3,672,819
PROCESS FOR SHAPING A BUNDLE OF WET-SPUN CONTINUOUS FILAMENTS
Shigeo Katsuyama, Atsumi Asami, Masahide Watanabe, Tsutomu Sato, Toshiaki Norimatsu, and Eizo Nakajima, Miyazaki-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Dec. 2, 1969, Ser. No. 881,345
Claims priority, application Japan, Dec. 3, 1968, 43/88,229
Int. Cl. B08b 3/00
U.S. Cl. 8—137 **4 Claims**

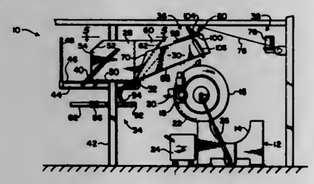
A process for the shaping of wet-spun continuous multifilament bundles wherein said bundles are arranged

in a plurality of elongated and parallel fleece mat strips on a pervious endless belt, each of said strips having a



thickness of at least 5 mm. and 100–1,000 crossings of multifilament bundles.

3,672,820
LOADING STRUCTURE AND METHOD FOR LAUNDRY MACHINES
Alex Toth, Lincolnwood, and Robert H. Fesmire, Barrington, Ill., assignors to Ellis Corporation, Chicago, Ill.
Filed Dec. 7, 1970, Ser. No. 95,849
Int. Cl. D06f 39/00
U.S. Cl. 8—150 9 Claims



A commercial laundry machine receives a prewetted laundry load from a hopper by way of a transfer chute. The initially dry load is placed into a hopper while the hopper is in an upright position, and the hopper is supplied with liquid in order to wet the load. A pivotally mounted transfer chute is normally spaced from the machine to permit access, unloading and the like. The chute is pivoted into loading position wherein it is disposed at an acute angle relative to horizontal, and the hopper is pivoted about the same axis to discharge the laundry load into the chute. The cohesive wet load slides at a controlled low velocity from the hopper along the chute and into the machine. Liquid supplied during transfer reduces friction, and a paddle member assures complete emptying of the load into the machine.

3,672,821
INHIBITOR FOR ALUMINUM IN ALKALINE SOLUTIONS
Hans-Joachim Schlussler, Duesseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Duesseldorf, Germany
No Drawing. Continuation of abandoned application Ser. No. 768,516, Oct. 17, 1968. This application Feb. 16, 1971, Ser. No. 115,756
Int. Cl. C23f 11/06
U.S. Cl. 21—2.7 2 Claims

A method of inhibiting the corrosion of metallic aluminum during its treatment with alkaline solutions. As the inhibitor in the alkaline solution, according to the invention polyacrylic acids having a specific viscosity in the range of 0.07 to 0.90, preferably 0.09 to 0.20, are used in a preferred amount of 0.05 to 0.5% by weight, based on the weight of the alkaline solution. Instead of the polyacrylic acids their water-soluble alkali salts can be used.

By the present invention the undesired side effects of alkali silicate inhibitors, such as incrustation of the aluminum, can be avoided.

3,672,822
CORROSION INHIBITING ENVIRONMENT FOR ALUMINUM
Willem Vedder, Latham, and David A. Vermilyea, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,854
Int. Cl. C23f 11/02
U.S. Cl. 21—2.5 3 Claims

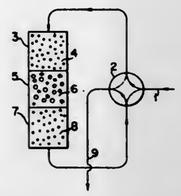
Aluminum can be protected against corrosion by providing a vapor phase inhibiting environment for the aluminum comprising a hydrolyzable volatile organic phosphate.

3,672,823
METHOD OF STERILIZING LIQUIDS
Raymond Marcel Gut Boucher, New York, N.Y., assignor to Wave Energy Systems, Inc., New York, N.Y.
Filed Mar. 25, 1970, Ser. No. 22,419
Int. Cl. A61l 1/00, 3/00
U.S. Cl. 21—54 R 3 Claims



Improved, economical method for the continuous or batch sterilization of bacteriologically contaminated liquids at increased liquid flow rates by means of the synergistic effects produced during the simultaneous and combined action of ultraviolet flux and high intensity acoustic waves in the sonic or ultrasonic range. The method involves the use of ultraviolet irradiation within the 1800 A. to 4500 A. region with intensities equal to at least 1 watt per square foot of processed area in air and 16,000 micro-watt seconds per cm.^{2} in liquids while simultaneously subjecting the liquid to an acoustic field having a frequency of the order of between 5 and 150 kHz. and an average acoustic energy density level equal at least to 1 watt per liter in the processing chamber.

3,672,824
METHOD FOR OXIDIZING CARBON MONOXIDE CONTAINED IN ROOM AIR
Takaaki Tamura, Tokyo, and Tsutomu Kato, Hamamatsushi, Japan, assignors to Kachita Co., Ltd., Shizuokaken, Japan
Filed June 16, 1969, Ser. No. 833,285
Claims priority, application Japan, June 20, 1968, 43/42,374; Oct. 16, 1968, 43/74,952
Int. Cl. B01d 53/34
U.S. Cl. 23—4 7 Claims



Where carbon monoxide contained with moisture in room air is converted to harmless carbon dioxide using an oxidation catalyst mixed with natural zeolite, it has been discovered that if there is provided, before and after the catalyst chamber, demoistening chambers filled with a desiccant such as active alumina or natural zeolite, and said gas is allowed to pass through these three chambers

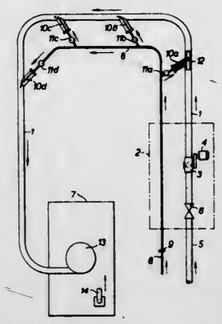
first to one direction and thereafter in the opposite direction, continuously repeating said gas passage operation by turns, then the aforementioned catalyst will be possible to display an effect of efficiently eliminating carbon monoxide over a long period without reducing its catalytic action.

3,672,825
PROCESS FOR PREPARING BASIC ZIRCONIUM SULFATES AND OTHER ZIRCONIUM COMPOUNDS SUCH AS ZIRCONIUM FLUOSULFATES, AND COMPOSITIONS CONTAINING THE SAME
James Richard Gambale, Media, Pa., and Glenn Hazel McIntyre, Jr., and Fredrik J. Ramney, Pennington, N.J., assignors to Tizon Chemical Corporation, Flemington, N.J.
Filed Feb. 16, 1970, Ser. No. 11,624
Int. Cl. C22b 59/00
U.S. Cl. 23—15 R 12 Claims

A process is provided for preparing zirconium sulfates by fusing a zirconium siliceous ore, such as zircon sand, with an alkali metal carbonate or hydroxide to form an alkali metal zirconylosilicate, and/or alkali metal zirconate, and silicate, which is dissolved in aqueous hydrochloric acid to form a clear solution of zirconyl chloride and silicic acid. An aqueous sulfate solution is added, and the mixture heated to precipitate a zirconium sulfate. This can be calcined to form zirconium oxide. If fluoride is added with the sulfate solution, a series of basic and acidic zirconium fluosulfates can be obtained useful as a glass polishing additive. The zirconium fluosulfates can also be calcined, to form a very pure zirconium oxide.

A process also is provided for preparing a zirconium oxide having a very low proportion of silica, by calcining a zirconium compound comprising silica in the presence of fluorine or a fluoride.

3,672,826
PROCESS FOR THE HYDRATION OF SODIUM TRIPOLYPHOSPHATE
Hans Werner Hornig and Kurt Walz, Mannheim, Germany, assignors to Lever Brothers Company, New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,258
Claims priority, application Germany, Dec. 24, 1968, P 18 16 839.3
Int. Cl. C01b 25/30
U.S. Cl. 23—106 7 Claims

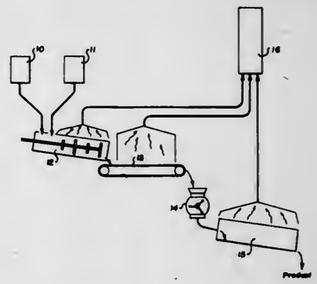


Sodium tripolyphosphate in particulate form is at least partially hydrated by contact with steam during its pneumatic conveyance. An apparatus for accomplishing the process comprises a pipe, at least one inlet thereto for a carrier gas and for the particulate sodium tripolyphosphate, at least one inlet for admitting steam to the pipe at a point or points past which the sodium tripolyphosphate is conveyed by the carrier gas and an exit from the pipe for the hydrated sodium tripolyphosphate and the carrier gas. The apparatus may be coupled to a detergent slurry-making apparatus for direct dosing of the hydrated sodium tripolyphosphate into a slurry-mixer.

3,672,827
SODIUM PHOSPHATE RECOVERY PROCESS
Duane L. Sawhill, Orange, Conn., assignor to Olin Corporation
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,134
Int. Cl. C01b 25/30
U.S. Cl. 23—107 5 Claims

Soluble phosphate values are recovered from the by-product insoluble phosphates precipitated when wet process phosphoric acid is partially neutralized in the manufacture of sodium phosphate. A mixture of soda ash with the insoluble phosphates is calcined and the soluble phosphates are leached out. The extract is purified to remove aluminum and fluorides. Suitably the purified extract is recycled to the sodium phosphate producing process or used for the recovery of solid sodium phosphates.

3,672,828
QUICK CURE PROCESS FOR MAKING SUPERPHOSPHATES OF LOW FLUORINE CONTENT
Albert E. Henderson, Jr., 4308 Plaza Gate Lane, Apt. 101, Jacksonville, Fla. 32217
Continuation-in-part of application Ser. No. 688,928, Dec. 7, 1967, now Patent No. 3,519,387, dated July 7, 1970. This application Feb. 3, 1970, Ser. No. 8,306
The portion of the term of the patent subsequent to July 7, 1987, has been disclaimed
Int. Cl. C01b 7/22, 25/32; C05l 1/00
U.S. Cl. 23—109 9 Claims



A method of making a quick cure low fluorine superphosphate by simultaneously and separately heating phosphate rock and mineral acid and then bringing the heated rock and acid together with rapid agitation to react the two to release fluorine and form a superphosphate product.

3,672,829
SODIUM DITHIONITE SOLUTION STABILIZATION
Mearl A. Kise, Portsmouth, and Leonard C. Ellis, Chesapeak, Va., assignors to Virginia Chemicals, Inc., Portsmouth, Va.
No Drawing. Filed Jan. 16, 1970, Ser. No. 3,526
Int. Cl. C01b 17/66
U.S. Cl. 23—116 2 Claims

Sodium dithionite in aqueous solution is widely used in bleaching and vat dyeing of textiles. Unfortunately, however, losses occur not only through decomposition during dissolving of the salt in question, but also during storage of the solution.

It has been discovered that the losses by decomposition in a 5% aqueous solution can be significantly reduced by

the addition of approximately 0.2% zinc sulfate. Here the rate of anaerobic decomposition in the protected sodium dithionite solution was decreased to 6% of the rate for an unprotected system. As to the stronger grades of the bleaching solution, viz: 15.0% to 17.7% by addition of 1.6% zinc sulfate, the anaerobic decomposition rates were reduced to 25% to 80% of those for unprotected bleaching solutions in storage.

3,672,830

ZINC SULFIDE PIGMENT AND METHOD OF MAKING SAME

John H. Calbeck, Pratt, Kans.; by J. R. Calbeck, trustee of the W. J. Trust, Pratt, Kans.

Continuation-in-part of application Ser. No. 338,244, Jan. 16, 1964, now Patent No. 3,443,888. This application May 5, 1969, Ser. No. 821,937

Int. Cl. C01g 9/08

U.S. Cl. 23—135 4 Claims

The method of the invention provides a new zinc sulfide pigment having a particular shape predominately lamellar, and being of a thickness less than the planar dimensions. To produce such a thiosulfate type zinc sulfide, pigment particles are subjected to a triturating grind with classification preferably in a pebble grinding mill turning at a relatively slow speed, and operating so as not to cascade or tumble the particles, and to subject the pebbles to a rolling motion.

3,672,831

PROCESS FOR THE PREPARATION OF FINE-SIZED ALUMINAS

Heyman C. Duecker, 10097 Colonial Drive, Ellicott City, Md. 21043, and Rimantas Glemza, 6105 Burnt Oak Road, Baltimore, Md. 21228

Continuation-in-part of application Ser. No. 645,231, June 12, 1967. This application Oct. 8, 1969, Ser. No. 868,275

Int. Cl. C01s 7/30

U.S. Cl. 23—143 4 Claims

A process for the preparation of sub-micron sized alumina powders by the thermal decomposition and/or dehydration of those aluminum compounds which on heating under carefully controlled conditions will yield the oxide.

3,672,832

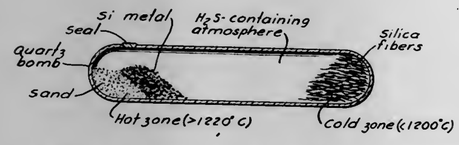
PRODUCTION OF POLYMERIC FIBERS OR COHERENT THIN DEPOSIT OF A SILICON AND OXYGEN COMPOUND

James O. Huml and Gilbert S. Layne, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 691,430, Dec. 18, 1967. This application July 16, 1970, Ser. No. 55,590

Int. Cl. C01b 33/18, 35/14

U.S. Cl. 23—182 V 11 Claims



Polymeric silica is condensed as fibers on a polycrystal substrate or as a microfilm on a single crystal substrate by reacting a mixture consisting of a sulfur source, an oxygen source, a silicon source, and a hydrogen source, and optionally an inert carrier gas, in a suitable single or multiple-chambered closed reaction vessel equipped with a heating means for one portion or one chamber of the vessel and preferably a cooling means for another portion or chamber of the vessel, maintaining temperature and pressure conditions such that a volatile intermediate is formed in the heated portion or chamber and maintaining a temperature at least 20 centigrade degrees less, when at about one atmosphere pressure, in the cooler portion or cooler chamber, whereby SiO_2 fibers or a microfilm is formed by decomposing said volatile intermediate in the cooler portion of a single chamber or the cooler chamber of multiple chambers.

3,672,833

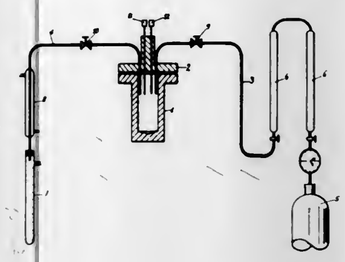
METHOD OF PREPARING INORGANIC AEROGELS

Stanislas Jean Teichner and Gilbert Andre Nicolaon, Lyon, France, assignors to Etat Francais represente par le Ministre des Armees Delegation Ministerielle pour l'Armement, Paris, France

Continuation-in-part of application Ser. No. 779,976, Nov. 29, 1968. This application Feb. 8, 1971, Ser. No. 113,246

Int. Cl. C01b 33/16, 33/14

U.S. Cl. 23—182 R 20 Claims



Silica aerogels are prepared by hydrolyzing a lower alkyl orthosilicate in an aliphatic alcohol having 1–4 carbon atoms with one to five times the stoichiometric quantity of water required to effect hydrolyzation. In a separate vessel, a supplementary amount of the same alcohol is added and the contents of both vessels are gradually heated to a temperature above the critical point. The pressure is gradually released and water and alcohol vapors are washed out with dry inert gas. The autoclave is then resealed and cooled to room temperature and the resulting aerogel is collected.

3,672,834

NUMERICAL POSITIONAL CONTROL

Klaus Corbach, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Filed Sept. 3, 1970, Ser. No. 69,211

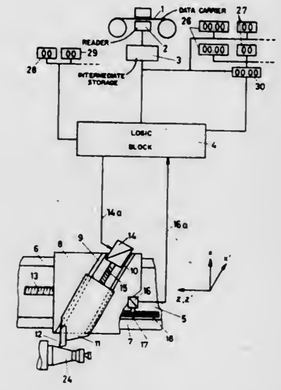
Claims priority, application Switzerland, Sept. 12, 1969, 13,787/69

Int. Cl. G06f 15/46

U.S. Cl. 235—151.11 8 Claims

A numerical positioning control embodying a digital computer circuit means which can be influenced in sets by a program, this digital computer circuit means serving to generate a feed control signal for a second displaceable unit as a function of a signal corresponding to the independent feed of a first displaceable unit. The aforementioned computer circuit means determines during the duration of each program set, the path slope in the form of a ratio between both mentioned signals. Further, the digital computer circuit means embodies switching means which can be influenced in sets by the program and which, for

the purpose of describing curved path sections, brings about during the duration of the set, automatic continuous



changes of the programmed starting values of the path slope.

3,672,835

TREATMENT OF AN AQUEOUS WASTE STREAM FROM A HYDROCARBON CONVERSION PROCESS

Peter Urban, Northbrook, and Robert H. Rosenwald, Western Springs, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 31, 1970, Ser. No. 68,275

The portion of the term of the patent subsequent to Oct. 27, 1987, has been disclaimed

Int. Cl. C01b 17/02

U.S. Cl. 23—224 18 Claims

An aqueous waste stream containing NH_4HS, which is typically produced in a process for converting a hydrocarbon charge stock containing sulfurous and nitrogenous contaminants, is treated to produce elemental sulfur and a treated water stream suitable for recycle to the hydrocarbon conversion process, by the steps of: (a) catalytically treating the aqueous waste stream with oxygen at oxidizing conditions effective to produce an effluent stream containing NH_4OH, $(NH_4)_2S_2O_3$ and elemental sulfur or ammonium polysulfide; (b) separating sulfur from the effluent stream from step (a) to produce an aqueous effluent stream containing $(NH_4)_2S_2O_3$; and (c) treating the aqueous stream from step (b) with carbon monoxide at reduction conditions effective to form a substantially thiosulfate-free treated water stream. Key feature of the treatment method is the use of a carbon monoxide reduction step to enable the continuous recycle of the treated water stream back to the hydrocarbon conversion process with consequential abatement of water pollution problems and substantial reduction of requirements for make-up water.

3,672,836

TREATMENT OF AN AQUEOUS STREAM CONTAINING WATER-SOLUBLE INORGANIC SULFIDE COMPOUNDS

Kenneth M. Brown, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 767,312, Oct. 14, 1968. This application Dec. 21, 1970, Ser. No. 99,859

Int. Cl. C01b 17/06

U.S. Cl. 23—224 19 Claims

An aqueous stream containing a water-soluble, inorganic sulfide compound is treated by contacting the aqueous stream and oxygen, in an amount selected to react less than 0.5 mole of O_2 per mole of sulfide compound, with a first oxidizing catalyst at oxidizing conditions, including a relatively low pressure and temperature, selected to form an effluent stream containing a water-soluble polysulfide; and thereafter by contacting the polysulfide-containing effluent stream and oxygen in an amount less than the amount utilized in the first step, with a second oxidizing catalyst at oxidizing conditions, including a temperature greater than or equal to the melting point of sulfur and a pressure sufficient to maintain at least a portion of the effluent stream in the liquid phase, selected to produce liquid sulfur and a substantially sulfide-free treated water stream. Key features of the disclosed method involve the use of a first catalytic oxidation step which is run at relatively low temperatures and pressures to produce polysulfide, coupled with a second catalytic oxidation step which is run at relatively high temperatures and pressures to selectively oxidize the polysulfide to elemental sulfur, thereby preventing the deposition of elemental sulfur on the catalyst used during these oxidation steps while simultaneously minimizing the amount of oxygen which must be supplied at the relatively high pressures.

3,672,837

PROCESS FOR TREATING TWO GAS STREAMS

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 1, 1970, Ser. No. 77,082

Int. Cl. C01b 17/14

U.S. Cl. 23—225 14 Claims

A first gas stream containing H_2S and a second gas stream containing SO_2 are simultaneously treated in order to remove SO_2 and H_2S from the respective streams and to produce elemental sulfur by the steps of: (a) scrubbing the first gas stream with an aqueous scrubbing solution to produce an effluent stream containing a water-soluble sulfide compound; (b) contacting the second gas stream with an aqueous scrubbing solution and with a reducing agent at reaction conditions selected to result in an effluent stream containing a water-soluble thiosulfate compound; (c) subjecting a mixture of the effluent streams from step (a) and (b) to reduction conditions selected to result in an effluent stream containing a polysulfide compound; (d) decomposing the resulting polysulfide compound to form elemental sulfur, hydrogen sulfide, and a regenerated scrubbing solution; (e) passing the resulting hydrogen sulfide to step (a); and (f) recirculating the regenerated scrubbing solution to steps (a) and (b).

3,672,838

ANALYTICAL METHOD AND APPARATUS USING DIFFUSION ACROSS A BOUNDARY BETWEEN LIQUIDS

Ronald Trcka, Berwyn, and Paul H. Sherrick, Winnetka, Ill., assignors to Sargent-Welch Scientific Company, Skokie, Ill.

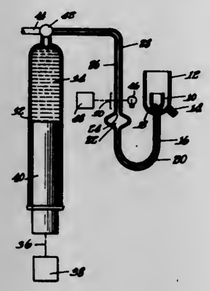
Continuation-in-part of application Ser. No. 787,900, Dec. 30, 1968, which is a continuation-in-part of application Ser. No. 544,165, Apr. 21, 1966. This application Sept. 10, 1970, Ser. No. 71,202

Int. Cl. G01n 13/00, 21/24, 33/16

U.S. Cl. 23—230 R 19 Claims

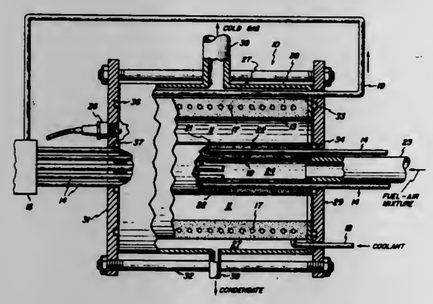
A method of, and apparatus for, obtaining a quantitative indication of a constituent in a liquid, for example, a crystalloidal constituent such as glucose in blood, in its mixture with other materials, which involves bringing a constituent carrying liquid into contact with another liquid to form a relatively stable boundary between the liquids, allowing diffusion to occur across the boundary,

and, without disrupting the boundary, conveying the the boundary to an analyzing zone where a measurement is obtained which is indicative of the concentration of the constituent in the constituent carrying liquid. Colorimetric or photometric techniques advantageously are employed



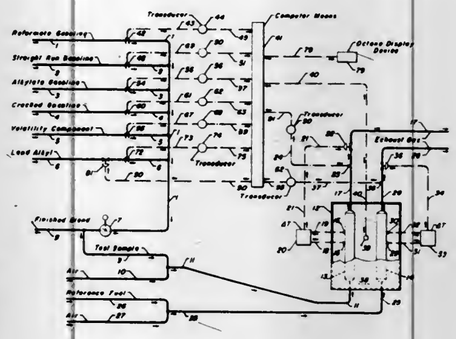
in making the measurement, and the transmittance change at, or proximal to, the boundary desirably is registered by an electrical signal which can be used to energize suitable recording devices to provide visual data relative to the concentration of the constituent in the constituent carrying liquid.

3,672,839
BURNER-COOLER SYSTEM FOR GENERATING EXOTHERMIC GAS
George E. Moore, Scotia, N.Y., assignor to General Electric Company
Filed Jan. 28, 1971, Ser. No. 110,392
Int. Cl. B01j 7/00; F23d 13/16
U.S. Cl. 23—281 **6 Claims**



A burner-cooler combination performing the functions of burner, flame arrester and cooler is provided in a single compact device. Both the burner and the cooler-condenser elements are of sintered metal construction and are cylindrical in configuration. In the construction described both the burner cylinder and the cooler-condenser are right circular cylinders and the cooler-condenser encircles and is spaced from the burner. Both components are enclosed in a single housing providing both for containment and dispensing of the cold product gas and for collection and removal of condensate. Ignition means are disposed in communication with the space between the burner and the cooler-condenser.

3,672,840
DETERMINATION AND CONTROL OF A COMPOSITION CHARACTERISTIC WHILE BLENDING A MULTI-COMPONENT COMBUSTIBLE FLUID
Ellsworth R. Fenske, Palatine, and Robert W. Sampson, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed May 15, 1970, Ser. No. 37,614
Int. Cl. F23n 5/00; G01n 25/46, 33/32
U.S. Cl. 23—230 PC **19 Claims**



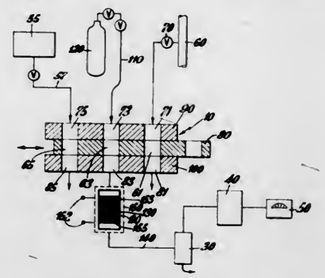
A blending process wherein a plurality of component fluids is continuously introduced into a blending zone producing a combustible fluid mixture, a method and apparatus for continuously determining and controlling a composition characteristic of the combustible fluid mixture, such as the octane rating of a gasoline blend. A sample of the fluid mixture and a sample of a reference fuel are simultaneously oxidized in an analyzer comprising a stabilized cool flame generator with a servo-positioned flame front, each fuel being burned in an individual combustion chamber. The position of each flame front is automatically detected and utilized to manipulate a combustion parameter in the associated combustion chamber in a manner sufficient to immobilize the flame front generated therein. Means is provided for sensing the manipulated combustion parameter of each combustion chamber, and developing therefrom a condition output signal which is functionally representative of and correlatable with composition characteristic for the fluid mixture sample. Means is also provided for adjusting the condition output signal responsive to analyzer temperature fluctuations and component changes in the blending zone. Thus, the condition output signal is compensated for combustion effects not indicative of composition characteristic, and is thereby rendered functionally representative of and correlatable with the true composition characteristic of the fluid sample of blended product.

3,672,841
ANALYSIS OF ORGANIC AND INORGANIC WATER POLLUTANTS
Donald C. Freeman, Jr., Katonah, N.Y., and Louis J. Rogers, Stamford, Conn., assignors to Ionics Incorporated
Filed Dec. 14, 1970, Ser. No. 97,707
Int. Cl. G01n 33/18, 31/12; B01j 11/02
U.S. Cl. 23—230 PC **3 Claims**

A method is provided for replenishing the catalyst component of an analyzer adapted to measure the total inorganic carbon content of a fluid sample.

The need for water analysis has become increasingly important with expanding interest in the abatement of

water pollution, and for determining leaks in vessels such as heat exchangers used in industry. One set of parameters

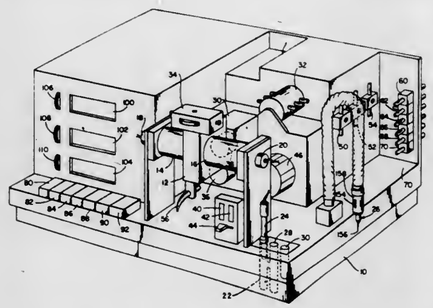


of great utility has been the concentrations of carbon; organic, inorganic and total.

3,672,842
WRITING INSTRUMENT AND INDICATOR METHOD
Walter Florin, 36 Wood Lane, Woodmere, N.Y. 11598
No Drawing. Filed June 2, 1969, Ser. No. 829,810
Int. Cl. G01n 21/08, 21/20; C09d 11/12
U.S. Cl. 23—230 R **12 Claims**

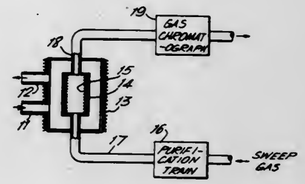
A marking tool for detecting the presence of suspected chemical substances on or adjacent to or even constituting a surface by dispensing therefrom upon the said surface a reagent, in solid or liquid form, which is capable of undergoing colorimetric change upon reaction with the chemical substances, the reaction being permitted to occur in a film environment at the situs of the mark. Crayons, pencils, nibbed pens, ball point pens and other stylus-like containers or writing instruments are considered within the scope of this invention. The reagents may be any detecting dye or other chemical substance which is susceptible of a color change during the described reaction, thereby indicating the presence of the chemical substance.

3,672,843
FLUID ANALYZING APPARATUS
Thomas A. Reese, Lexington, and David E. Blackmer, Harvard, Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed Apr. 7, 1970, Ser. No. 27,195
Int. Cl. G01n 27/00, 31/00, 33/16
U.S. Cl. 23—253 R **10 Claims**



Fluid sample analyzing apparatus includes a sample chamber, a constituent sensor in communication with the sample chamber, a first control for controlling the flow of fluid to the sample chamber and a second control for controlling the removal of fluid from the sample chamber. A sequencer operates the first and second controls to selectively channel cleaning fluid, calibrating fluid and sample fluid for sensing by the sensor to the sample chamber. A gaseous constituent of the sample is sensed by an electrode having a selectively permeable membrane.

3,672,844
CARBON CONTENT ANALYSIS
Geoffrey Long, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed June 9, 1970, Ser. No. 44,726
Claims priority, application Great Britain, June 13, 1969, 30,212/69
Int. Cl. G01n 7/10, 7/12, 7/00
U.S. Cl. 23—253 R **9 Claims**



An enclosure of a metal in which carbon is soluble and mobile at the relevant operating temperature is inserted into the fluid to be analysed for carbon content. On the interior surface of the enclosure is a layer of solid decarburant. Carbon permeating through the walls of the enclosure reacts with the decarburant to produce a gas. Measurement of this gas production provides an indication of carbon content of the fluid.

3,672,845
TEST DEVICE FOR ALBUMIN
Bruno J. Verbeck, Lombard, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Continuation of application Ser. No. 703,002, Feb. 5, 1968. This application July 28, 1970, Ser. No. 64,090
Int. Cl. G01n 31/22, 33/16
U.S. Cl. 23—253 TP **10 Claims**



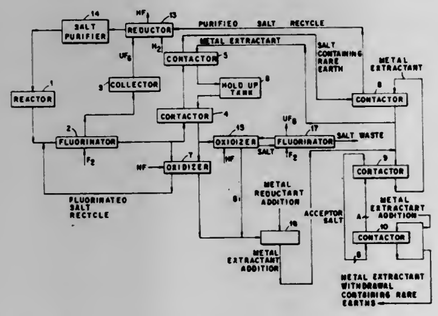
A testing device for the detection of albumin in urine in the form of a carrier, such as a plastic sheet material, which has had applied thereover a layer of particulate hydrophilic absorptive material, a portion of which has been first impregnated with a solution of an indicator which exhibits protein error and then dried, and a second portion of particulate material which has been impregnated with a solution of a buffer compound for maintaining the urine with which the device is to come in contact at a pH which is within or below the range through which the indicator changes color due to a change in pH. The device may also comprise a carrier which has had applied thereon a layer composed of agglomerates of particulate hydrophilic absorptive material, such as aluminum oxide, silica gel, cellulose, exfoliated vermiculite or the like, which agglomerates have been formed by first compressing into a compacted form a mixture of the said particulate material which has been prepared by first impregnating one portion of it with a solution of indicator which exhibits protein error and then dried, and a second portion with a solution of a

buffer and thereafter particulating the compacted form so as to form agglomerates composed of the two kinds of discrete particles of the hydrophilic absorptive material and the indicator and buffer with which said particles have been impregnated.

3,672,846
METHOD FOR REPROCESSING SPENT MOLTEN SALT REACTOR FUELS

Leonard E. McNeese, Oak Ridge, and Don E. Ferguson, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 21, 1970, Ser. No. 30,423
Int. Cl. C22b *61/04*
U.S. Cl. 23—325 **7 Claims**



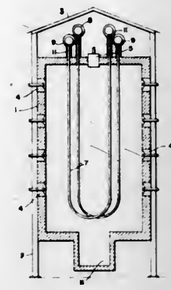
A method for reprocessing spent molten metallic fluoride salt mixtures suitable as molten salt breeder reactor fuels is provided wherein uranium, protactinium and certain rare earths are removed from the spent salt mixture prior to recycle of the purified salt mixture back to the reactor. A major fraction of the uranium contained in the spent salt mixture is removed by fluorination with the uranium hexafluoride being reconstituted into the purified salt for return to the reactor. The remaining uranium and protactinium are removed in a protactinium isolation unit by reductive extraction into a molten bismuth solution containing lithium, thorium, and ^{233}Pa as metal reductants. The extracted uranium is carried out of the unit by the metal solution while the protactinium is held-up within the unit in the bismuth phase. The rare earths are then reductively extracted from the uranium and protactinium-free spent salt mixture in a rare earth removal unit into a molten bismuth solution containing lithium and thorium as metal reductants. The rare earths are then back extracted from the bismuth phase into an acceptor salt selected from lithium chloride, lithium bromide and mixtures thereof. Hydrogen fluoride oxidizers are provided for removal of extracted materials, including fission products which form non-volatile fluorides during fluorination, metal corrosion products, and $^{231}PaF_4$, from the bismuth in order to regenerate the bismuth solution. Provision is also made for the separate recovery from the acceptor salt of divalent and trivalent rare earths.

3,672,847
REFORMER FURNACE

Abraham J. Esselink, Essenlaan, Netherlands, assignor to Selas Corporation of America

Filed Mar. 5, 1970, Ser. No. 16,649
Int. Cl. B01j *9/00*
U.S. Cl. 23—288 M **2 Claims**

This invention relates to a hydrocarbon steam reforming furnace in which the reforming tubes are coated on their inner surfaces with a catalyst. This permits the use of tubes that are smaller in diameter and longer than



usual, and permits the tubes in this type of furnace to be bent into coils.

3,672,848
PROCESSING OF IRRADIATED NUCLEAR FUELS

Alfred Leonard Mills and Robert William Jackson Vivers, Thurso, Scotland, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Dec. 31, 1969, Ser. No. 889,728
Int. Cl. C01g *43/00, 57/00*
U.S. Cl. 23—342 **1 Claim**

A method in which irradiated monocarbide nuclear fuel is dissolved in nitric acid and the solution is subjected to the oxidising effect of ozone or electrolytic oxidation to effect oxidation of organic compounds in the solution. Oxidation is terminated at the onset of the conversion of plutonium in the solution to the hexavalent state.

3,672,849
CERMET-TYPE ALLOY COATING ON METAL BASE

Nikolajs Bredzs, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation

Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,121
The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 **3 Claims**



An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature

in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

3,672,850
LOW CURRENT ELECTRICAL CONTACT COMPRISING A LAYER OF IRON-NICKEL ALLOY AND A LAYER OF RUTHENIUM

Walter Reichelt and Konrad Ruthardt, Hanau, Germany, and Hermann Speidel, deceased, late of Hanau, Germany, by Rosemarie Elisabeth Speidel, nee Rupprecht, Helmuth Speidel, and Dieter Speidel, heirs, Hanau, Germany, assignors to W. C. Heraeus G.m.b.H., Hanau (Main), Germany

Filed Apr. 13, 1970, Ser. No. 27,779
Claims priority, application Germany, May 6, 1969, P 19 23 010.5
Int. Cl. B32b *15/00*
U.S. Cl. 29—196 **2 Claims**



Ruthenium (Ru) is vapor deposited directly on a springy magnetic contact carrier of iron-nickel alloy, at pressures of less than 10^{-1}, and preferably less than 10^{-4}, mm. Hg to form adjacent crystal columns extending in a direction essentially perpendicular to the surface of the contact carrier facing the ruthenium contact layer.

3,672,851
GELLED ALCOHOL FUEL CONTAINING NITROCELLULOSE AND BORIC ACID

Joseph M. Ihm, 1481 W. 64th Ave., Vancouver 14, British Columbia, Canada

No Drawing. Continuation-in-part of application Ser. No. 741,219, June 28, 1968. This application Apr. 26, 1971, Ser. No. 137,658
Int. Cl. C10l *7/04*
U.S. Cl. 44—7 B **4 Claims**

A solid alcohol fuel gel having improved storage and burning properties comprising an alcoholic fuel gel which is a gelled solution of high viscosity nitrocellulose in methyl alcohol, said gel containing boric acid in an amount sufficient to stabilize said gel.

3,672,852
LIQUEFIED PETROLEUM GAS FUEL COMPOSITION

Herbert E. Vermillion, Wappingers Falls, and James J. O'Loughlin, Tuckahoe, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,500
Int. Cl. C10l *1/06*
U.S. Cl. 44—52 **21 Claims**

Motor fuel composition comprising a liquefied petroleum gas containing from about 0.0001 to 0.1 volume percent of (1) a polymer of a C_2 to C_6 unsaturated hydrocarbon, (2) a copolymer of a C_2 to C_6 unsaturated hydrocarbon, or (3) the corresponding hydrogenated polymer or copolymer, said polymer or copolymer having a molecular weight in the range from about 500 to 3500 and a method for operating an internal combustion gasoline engine.

3,672,853
PREPARATION OF A LIQUID FUEL FOR A PRESSURE-TYPE ATOMIZER

Gerrit H. Reman and Henri Verkoren, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,074
Claims priority, application Netherlands, Apr. 22, 1968, 6818913
Int. Cl. C10l *1/00*
U.S. Cl. 44—52 **5 Claims**

Decreasing the viscosity of and improving the atomizing and burning characteristics of a heavy hydrocarbon by dissolving a non-hydrocarbon gas in the heavy hydrocarbon in an amount not exceeding 95% of saturation at conditions of temperature and pressure immediately preceding atomization.

3,672,854
MIDDLE DISTILLATE

Robert H. Rosenwald, Western Springs, and Alexander Gaydasch, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

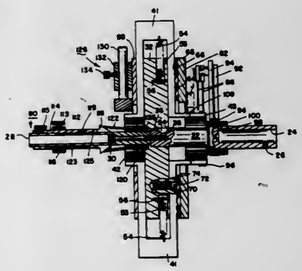
No Drawing. Filed Dec. 3, 1969, Ser. No. 881,895
Int. Cl. C10l *1/18*
U.S. Cl. 44—66 **3 Claims**

Middle distillate of improved pour point containing a pour point depressant amount of a C_{14}–C_{36} saturated carboxylic acid ester of a polyhydric alcohol having from 4 to 8 hydroxy groups.

3,672,855
GLASS LENS EDGING APPARATUS

Charles R. Bright, 8423 E. Hubbell, Scottsdale, Ariz. 85257

Filed Nov. 30, 1970, Ser. No. 93,521
Int. Cl. B24b *9/08*
U.S. Cl. 51—101 LG **11 Claims**



A glass lens edging apparatus which senses the inside periphery of the lens holding frame at a plurality of points and uses these sensor points for controlling lens forming equipment.

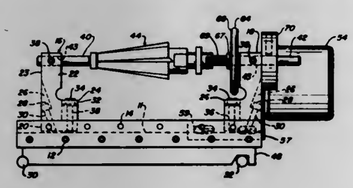
3,672,856
CENTERING FIXTURE

Nathan Rubenstein, 1506 Birchwood Ave., Chicago, Ill. 60626

Filed Sept. 14, 1970, Ser. No. 72,053
Int. Cl. B24b *41/06*
U.S. Cl. 51—237 **9 Claims**

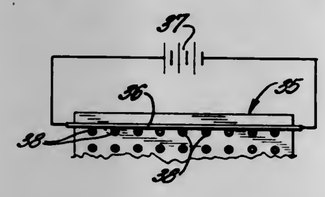
A fixture having reversible posts and repositionable centers for holding workpieces for processing by a surface grinder, such as outside diameter grinding. The fixture is also used for treating a workpiece such as dressing radii on a grinding wheel forming a true reduced thickness

width on a grinding wheel, or using a form to crush a wheel. The fixture permits versatile use, and it is dimen-



sioned so that it may be readily adaptable to be held by a magnetic chuck placed on a surface grinder.

3,672,857
APPARATUS FOR PRODUCING GLASS FILAMENTS WITH AUXILIARY HEATING MEANS
Charles J. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation
Filed Apr. 27, 1970, Ser. No. 31,904
Int. Cl. C03b *37/00*
U.S. Cl. 65—12 **14 Claims**



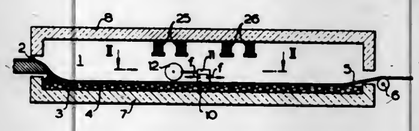
Apparatus for producing glass filaments wherein streams of molten glass material flow through an array of orificed tips projecting from a heated bushing. The streams of molten glass material are then attenuated into filaments. A uniform filament forming environment is attained by employing a fence adjacent boundary tips in the array of tips to heat such boundary tips by radiation, reflection or conduction. The fence is heated independently of the bushing so that a controlled quantity of heat is supplied to the boundary tips to compensate for losses which may vary with varying ambient conditions. The fence may be shaped to direct heat toward the boundary tips.

3,672,858
METHOD OF MOUNTING DISKS IN GLASS WALLS, HEAT WORKING ONLY ONCE
Robert H. Berg, 196 Clinton Ave., Elmhurst, Ill. 60126
Filed Apr. 17, 1970, Ser. No. 29,390
Int. Cl. C03c *27/00*
U.S. Cl. 65—43 **5 Claims**



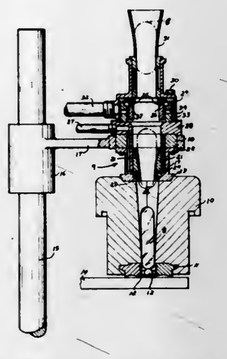
In mounting a disk in a glass wall, the glass wall is heat worked in a small area and a hole made through said heat worked area of the wall with, for example, a hot wire. The heat worked glass around the hole is removed, and the hole is enlarged without heat working to make the hole aperture size and tapered. The aperture is made large enough at one end to receive the disk and small enough at the other end so that the disc will not pass through the hole. The disk is mounted in the aperture and locked into place by heat working beads of glass around the perimeter of the disk.

3,672,859
METHOD FOR THE PRODUCTION OF A FLOAT GLASS STRIP HAVING A ROUGHENED UPPER SURFACE
Franz Classen, Porz-Grengel, Germany, assignor to Erste Deutsche Floatglas GmbH & Co. OHG, Porz, Cologne, Germany
Filed Dec. 16, 1969, Ser. No. 885,500
Claims priority, application Germany, Jan. 25, 1969, P 19 03 756.0
Int. Cl. C03b *13/04*
U.S. Cl. 65—93 **6 Claims**



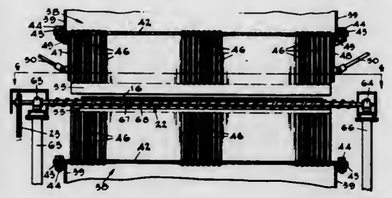
Glass floating on tin in a float glass plant is superficially roughened by a tool. This method is accomplished by producing a temperature gradient through the glass so that the upper surface has a higher temperature than the glass further down. The upper surface of the glass is roughened by a non-adhesive frictional tool and the glass is heat treated to preserve the upper surface of the glass.

3,672,860
GLASS GOB SHAPING AND DELIVERING MEANS
Robert H. Keller, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Continuation of application Ser. No. 743,373, July 9, 1968. This application Aug. 19, 1970, Ser. No. 65,239
Int. Cl. C03b *5/30, 39/00*
U.S. Cl. 65—208 **4 Claims**



In the forming of narrow neck parisons by the process termed "blow and blow," the mold charges in the form of substantially cylindrical gobs are delivered to a gob centering guide positioned in alignment with the cavity of the parison mold. When the parison mold is of non-cylindrical cross-section, such as used in the formation of parisons which are to be expanded into flask-shaped containers having relatively flat sides, it is advantageous that the glass distribution in the parison be closely controlled. In order to form a better and more uniform parison, the present invention provides a shaping funnel portion positioned between the gob centering guide and the parison mold for pre-shaping the gob as it falls through the funnel into a generally oval cross-section, corresponding to the oval cross-section of the body portion of the parison mold cavity.

3,672,861
APPARATUS FOR TEMPERING FLAT SHEETS OR PLATES OF GLASS
George F. Ritter, Jr., Toledo, and Frank J. Hymore, Oregon, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Nov. 16, 1967, Ser. No. 683,581
Int. Cl. C03b *27/00*
U.S. Cl. 65—350 **5 Claims**



Tempering thin sheets of flat glass, for example ⅛ inch, by conveying heated sheets to be tempered horizontally between a plurality of upper and lower tubular members which direct individual streams of cooling fluid, under relatively high pressure, against opposite surfaces of the sheet to temper the same, the pressure of the cooling fluid directed against the bottom surface of the sheet being relatively greater than that applied to the upper surface, a volume of back-up air being maintained above the sheet to compensate for the higher pressure applied to the bottom of the sheet and the tubular members above and beneath the sheet being separated into a plurality of groups to minimize turbulence of the cooling fluid.

3,672,862
RHIZOBITOXINE AS A POST-EMERGENT HERBICIDE
Lowell D. Owens, Greenbelt, Md., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 757,117, Sept. 3, 1968. This application Dec. 12, 1969, Ser. No. 884,727
Int. Cl. A01n *9/00*
U.S. Cl. 71—79 **2 Claims**

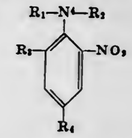
Rhizobitoxine, a phytotoxic compound synthesized by the bacterium *Rhizobium japonicum*, is combined with a specifically formulated solution of surfactant and wetting agent to provide post-emergent herbicidal activity.

3,672,863
DRY AMINOTRIAZOLE HERBICIDAL FORMULATION
James Edward Esposito, Ambler, Pa., assignor to Amchem Products, Inc., Lower Gwynedd Township, Montgomery County, Pa.
No Drawing. Filed Mar. 28, 1969, Ser. No. 811,583
Int. Cl. A01n *13/00*
U.S. Cl. 71—82 **2 Claims**

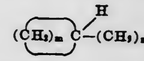
A non-caking, water soluble, powdered herbicidal concentrate containing 3-amino-1,2,4-triazole and ammonium thiocyanate in admixture with a pregelatinized cold water starch and an ultrafine filler.

3,672,864
CONTROL OF PESTS WITH CYCLOALKANE DERIVATIVES OF NITRATED ARYL COMPOUNDS
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 749,326, Aug. 1, 1968. This application June 11, 1970, Ser. No. 45,560
Int. Cl. A01n *9/14*
U.S. Cl. 71—103 **18 Claims**

Compounds characterized by the following formula:



wherein (1) R_1 is a cycloalkyl-containing grouping such as



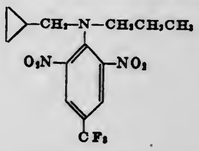
in which the cycloalkyl ring may be substituted with C_1–C_3 alkyl, C_2–C_3 alkenyl, halogen; m is a positive integer of 2 to 4 and n is 0 or 1 to 3; (2) R_2 is hydrogen; C_1–C_{12} straight or branched chain alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl; C_3–C_6 cycloalkyl; C_4–C_{10} cycloalkylalkyl; C_2–C_{12} alkoxyalkyl; C_1–C_{12} haloalkyl; C_1–C_{12} cyanoalkyl; C_2–C_6 acyl; C_2–C_6 alkylmercaptoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl; (3) R_3 is hydrogen, NO_2, halogen, C_1–C_6 alkyl, C≡N; and (4) R_4 is hydrogen, C_1–C_{12} alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, C≡N, phenyl, substituted phenyl,

$$N{=}N{-}C_6H_5$$

$SO_2NR_5R_6$ wherein R_5 and R_6 can be the same as R_3 above; in addition, R_5 and R_6 when taken together with the nitrogen atom to which they are attached form an aziridyl, pyrolidyl or piperidyl ring; $CH_3S(O)_x$,

$$C_2H_5S(O)_x$$

$C_3H_7S(O)_x$, wherein x is 0, 1 or 2; are biologically active compounds especially useful as herbicides. Exemplary of an especially preferred nitrated aryl cyclopropane derivative is the compound of the formula::



3,672,865
INCREASING THE SUGAR CONTENT OF CROPS WITH α-UREIDOOXYCARBOXYLIC ACIDS AND THEIR DERIVATIVES
Linus M. Ellis, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 801,169, Feb. 20, 1969, which is a continuation-in-part of application Ser. No. 657,049, July 31, 1967, which is a continuation-in-part of application Ser. No. 572,888, Aug. 17, 1966, which in turn is a division and continuation-in-part of application Ser. No. 206,154, June 29, 1962, now Patent No. 3,282,987. This application Jan. 5, 1970, Ser. No. 846
Int. Cl. A01n *9/24*
U.S. Cl. 71—106 **6 Claims**

The sugar content of sugar cane and sorghum can be increased by applying to those crops an effective amount

of an α-ureidooxycarboxylic acid compound, such as methyl α-ureidooxypropionate or ethyl ureidooxyacetate, during the period of 10 to 60 days prior to normally scheduled harvest.

3,672,866
USE OF N-(SEC-BUTYL)-4-(t-BUTYL)-2,6-DINITROANILINE AS A SELECTIVE HERBICIDE
John Joseph Damiano, Springfield, Pa., assignor to Amchem Products, Inc., Township of Lower Gwynedd, Montgomery County, Pa.
No Drawing. Continuation-in-part of application Ser. No. 878,583, Nov. 20, 1969. This application Nov. 12, 1970, Ser. No. 89,010
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 **1 Claim**

Novel herbicidally active 4-butyl-2,6-dinitroaniline derivatives are prepared by nitration of 4-butylphenol, followed by conversion of the resulting 2,6-dinitrophenol into the chloro-derivative and finally reacting the chloro-derivative with a primary amine.

3,672,867
SUBMICRON FERROMAGNETIC ALLOY PARTICLES CONTAINING COBALT, BORON, AND ZINC
Ernest Lewis Little, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 7, 1970, Ser. No. 95,836
Int. Cl. H01f *1/08, 1/20;* C22c *19/00*
U.S. Cl. 75—.5 AA **17 Claims**

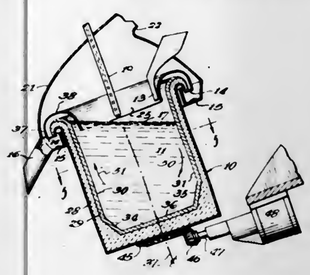
Submicron particles, useful in magnetic applications, consisting essentially of cobalt, zinc, and boron in 70–92 to 1–8 to 1–5.6 weight ratio and up to 22 percent by weight water and oxygen, are prepared by reducing Co^{2+} in solutions containing Zn^{2+} by means of selected borohydrides and preferably heat-treating the products in hydrogen. After heat treatment substantial quantities of hexagonal close-packed cobalt may be detected by X-ray diffraction. The particles are useful in a variety of magnetic applications, e.g., in magnetic recording tapes, in bar magnets and the like.

3,672,868
ZINC DUST FOR REMOVAL OF COBALT FROM ELECTROLYTE
Tokushige Hasegawa, Narashino, Kuninobu Makimoto, Aizu-Wakamatsu, and Seiji Nihei and Jiro Takahira, Bandai-machi, Yama-gun, Japan, assignors to Nisso Kinzoku Kabushiki Kaisha, Tokyo-to, Japan
Original application Apr. 9, 1968, Ser. No. 719,951, now Patent No. 3,579,327, dated May 18, 1971. Divided and this application Aug. 6, 1970, Ser. No. 61,859
Int. Cl. C22c *17/00;* C22f *19/26, 23/04*
U.S. Cl. 75—.5 A **1 Claim**

Zinc dust containing a small amount of antimony or antimony and lead as alloy elements is added into an electrolyte used in hydrometallurgy of zinc, in order to remove cobalt impurities from the electrolyte of zinc sulfate solution.

3,672,869
CONTINUOUS METALLURGICAL PROCESS
Conrad F. Niehaus, 2 Muirfield Road, Emmarentia, Johannesburg, Transvaal, Republic of South Africa
Filed Apr. 13, 1970, Ser. No. 27,695
Int. Cl. C21c *1/00, 7/00*
U.S. Cl. 75—45 **18 Claims**

Relatively unrefined or untreated molten metal and one or more treating or refining ingredients (e.g., oxygen, flux, alloying addition) are continuously introduced onto the top of a bath of relatively refined or treated molten metal contained in a predominantly vertically tilted vessel, rotated about its longitudinal axis. Surface and sub-surface bath currents, resulting from rotation of the tilted vessel, enhance and speed up the refining or treating action. Relatively refined or treated molten metal is continuously



withdrawn from the top portion of the bath, at the front of the vessel, at a location spaced from the location at which the unrefined or untreated molten metal is introduced.

3,672,870
SPRAY REFINING
Malvern John Rhydderch, Firbeck, near Worksop, England, assignor to The British Iron and Steel Research Association
Original application May 22, 1967, Ser. No. 640,122, now Patent No. 3,554,521. Divided and this application Mar. 27, 1970, Ser. No. 29,724
Claims priority, application Great Britain, May 23, 1966, 22,790/66
Int. Cl. C21c *5/00*
U.S. Cl. 75—52 **4 Claims**

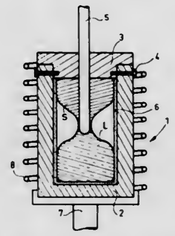
A method and apparatus for refining iron in which a stream of molten iron is shattered by oxidising gas in a vessel from which gas is withdrawn to induce air into the vessel.

3,672,871
METALLURGICAL MATERIAL AND PROCESSES FOR TREATING STEEL THEREWITH
William A. Brown, Rector, and John F. Drenning, Monroeville, Pa., assignors to Miller and Company, Chicago, Ill.
Continuation-in-part of application Ser. No. 645,557, May 11, 1967, which is a substitute for application Ser. No. 172,614, Feb. 12, 1962. This application Jan. 12, 1970, Ser. No. 2,202
Int. Cl. C21c *7/04*
U.S. Cl. 75—58 **2 Claims**



Coarse (—⅜ inch) metallurgical-grade silicon carbide has 6–15 weight percent of sodium carbonate added to it, and this is used as a treatment agent for recarburizing, resiliconizing, or deoxidizing steel and insuring its cleanliness. This makes it possible to use a coarser material, while improving the quality of the steel and the efficiency of the utilization of the silicon contained in the silicon carbide. Compared with deoxidizing with ferrosilicon of 50% silicon content or with aluminum, cost savings are also effected.

3,672,872
METHOD OF SEPARATION OF A SUBSTANCE IN A SOLID OR LIQUID PHASE FROM A MATRIX IN THE LIQUID PHASE
Etienne Bonnier, Colette Allibert, Jean Driole, and Alain Wicker, Grenoble, France, assignors to Agence Nationale de Valorisation de la Recherche, Puteaux, France
Filed June 1, 1970, Ser. No. 42,307
Int. Cl. B23d *1/00;* C22b *7/00;* C22c *1/00*
U.S. Cl. 75—63 **11 Claims**



A method of separation of a substance in a solid or liquid phase from a matrix in the liquid phase, at high temperature, by the creation of an alternating magnetic field of medium frequency in the composite mixture formed by said substance and said matrix, followed by a solidification tempering action. A device for carrying the method into effect comprises a crucible, heating means for the crucible, an inductor winding around the said crucible, and further comprises a medium-frequency alternating-current generator, of 10 kilocycles for example, associated with the winding. The inductor winding on the crucible may serve simultaneously as the heating means for the crucible and the electro-magnetic separating means, or the heating may be independent of the electro-magnetic means and may be constituted by an electrical resistance.

3,672,873
SEPARATION OF NICKEL FROM COBALT
David Anthony Huggins, Mississauga, Ontario, Canada, and Walter Curlook, Neuilly, France, assignors to The International Nickel Company, Inc., New York, N.Y.
No Drawing. Filed Mar. 11, 1970, Ser. No. 18,721
Claims priority, application Canada, Mar. 28, 1969, 047,217
Int. Cl. C22b *23/04*
U.S. Cl. 75—101 R **29 Claims**

Directed to a process for separately recovering nickel and cobalt from an aqueous solution containing the same wherein the nickel and cobalt contents are precipitated as reducible compounds, e.g., basic carbonates, separating and drying the resulting precipitates, reducing the compounds at a temperature below about 400° C. and then treating the reduced metal products with carbon monoxide at superatmospheric pressures and a temperature below 100° C. to evolve nickel carbonyl thereby separating the nickel from the cobalt in the reduced product.

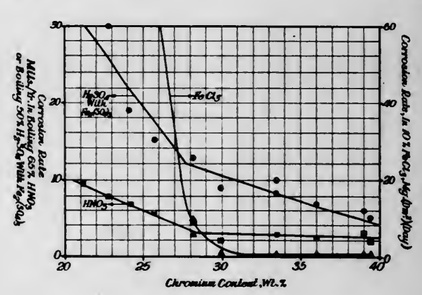
3,672,874
RECOVERY OF RHENIUM VALUES FROM A SPENT CATALYST
Charles L. Wiley, Blanchard, La., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 12, 1970, Ser. No. 88,993
Int. Cl. C01g *49/00*
U.S. Cl. 75—101 R **8 Claims**

Rhenium values are recovered from a spent rhenium-platinum-alumina catalyst. The catalyst is treated with sulfuric acid to form a rhenium-containing aluminum sulfate solution and a platinum-containing residue. The rhenium-containing solution is passed in contact with the sulfate ionic form of an anionic exchange resin whereby rhenium is absorbed thereon. The rhenium is subsequently eluted from the resin.

3,672,875
EXTRACTION OF FISSION PRODUCT NOBLE METALS FROM SPENT NUCLEAR FUELS
Adolfo MacCragh, Ellicott City, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,775
Int. Cl. C22b *11/06*
U.S. Cl. 75—112 **13 Claims**

A process for separating the fission product metals from spent nuclear fuels, in which the insolubles from the fuel element dissolution are heated in a stream of halide gas to convert the residues to the halides. The ruthenium and rhodium fractions are converted to the complex haloruthenite and halorhodite, followed by dissolution and distillation to remove ruthenium. The rhodium is recovered by neutralizing the undistilled portion and reducing to the metal. Palladium and technetium are recovered from the halides volatilized in the first step of the process.

3,672,876
DUCTILE CORROSION-RESISTANT FERROUS ALLOYS CONTAINING CHROMIUM
Donald J. Sipos, Newark, Del., Robert F. Steigerwald, McKeesport, Pa., and Newell E. Whitcomb, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of application Ser. No. 707,350, Jan. 26, 1968, which is a continuation-in-part of application Ser. No. 623,402, Mar. 15, 1967. This application May 4, 1970, Ser. No. 34,166
Int. Cl. C22c *37/10, 39/14*
U.S. Cl. 75—124 **3 Claims**



An iron, 28%–37% chromium content alloy in which postwelding ductility is improved by the incorporation of small amounts in the approximate range of about 0.1% to 1.0% of Al, Cu, Pt, Pd or Ag, or combinations of Al+Cu, Al+Ag, Al+V or Al+Cu+V.

3,672,877
CORROSION-RESISTANT RAZOR BLADES
Jan-Christer Henric Ovesson Carlen and Claes Bertil Bergqvist, Sandviken, Sweden, assignors to Sandviken Gerwerks Aktiebolag, Sandviken, Sweden
Continuation of application Ser. No. 665,320, Sept. 5, 1967. This application July 27, 1970, Ser. No. 64,087
Claims priority, application Sweden, Sept. 22, 1966, 12,737/66
Int. Cl. C22c *39/14, 39/48*
U.S. Cl. 75—126 C **3 Claims**

Steels suitable for making corrosion-resistant razor blades contain chromium and carbon, and may contain

silicon, manganese, molybdenum, tungsten, copper, cobalt, nickel, niobium, tantalum, titanium, vanadium, zirconium, boron or beryllium. The ratio of chromium to carbon is less than 30:1; the carbon content is 0.3–0.5 wt. percent; the silicon content is within the range 0.8–2.0 wt. percent, and the chromium content is 9.0–10.8 wt. percent. A tool formed from a steel of this class has a hardness exceeding VPN 800 in the hardened condition, and a hardness after tempering up to 45–0° C. within the range VPN 720–850.

3,672,878

ALUMINUM OFFSET PRINTING PLATE

Adolf Teubler, Uedorf, near Bonn, and Paul Eversheim, Bonn, Germany, assignors to Vereinigte Leichtmetall-Werke G.m.b.H., Bonn, Germany

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,805

Claims priority, application Germany, Sept. 27, 1968, P 17 83 066.9; June 9, 1969, P 19 29 146.4

Int. Cl. C22c 21/04

U.S. Cl. 75—141 4 Claims

An aluminum printing plate for use in offset roller plating is made of an aluminum base alloy including the following alloying components:

	Percent
Magnesium	0.8–2.5
Silicon	0.2–0.4
Manganese	0.8–1.4
Copper	0.05–0.3
Iron	0.2–0.6
Zinc	0.01–0.2
Aluminum	Balance

3,672,879

TiNi CAST PRODUCT

William J. Buehler, 10613 Montrose Ave., Apt. 3, Bethesda, Md. 20014

Original application Nov. 4, 1966, Ser. No. 592,069, now Patent No. 3,529,958, dated Sept. 22, 1970. Divided and this application June 1, 1970, Ser. No. 42,133

Int. Cl. C22c 19/00, 15/00

U.S. Cl. 75—170 1 Claim

A method for forming TiNi base alloys in which a prealloyed material of the type to be obtained is placed into a graphite crucible and is heated above the melting point by external application of power, whereupon the component metals are melted in the molten alloy in such a manner as to prevent direct contact between the component metals and the walls of the crucible.

3,672,880

PLATINUM-RHODIUM-GOLD ALLOYS

Alan Sydney Darling and Gordon Leslie Selman, London, England, assignors to Johnson, Matthew & Co., Limited, London, England

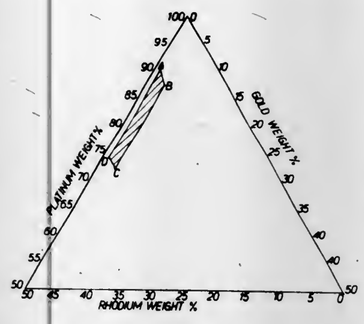
Continuation-in-part of application Ser. No. 750,641, Aug. 6, 1968, which is a continuation of application Ser. No. 558,398, June 17, 1966. This application Feb. 20, 1970, Ser. No. 12,919

Claims priority, application Great Britain, June 19, 1965, 26,028/65

Int. Cl. C22c 5/00

U.S. Cl. 75—172 2 Claims

A method for melting glass which includes introducing glass into a container formed of an alloy consisting of 72–90% by weight of platinum, 9–25% by weight of rhodium and 1–3% by weight of gold. Thereafter, the glass in the container is subjected to a glass melting temperature. Further molten glass can be dispensed by expelling the same through the orifice of a member made of the alloy defined above.



3,672,881

METHOD OF MAKING POWDER COMPOSITES

John J. Sowko, Sr., Bethel Park, Pa., assignor to Carmet Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,698

Int. Cl. B22f 7/06

U.S. Cl. 75—208 R 10 Claims

Described herein is a method of making a composite article of powdered metal and a refractory hard metal component which involves forming a green compact of powder metal and sintering the compact in contact with the refractory hard metal component to metallurgically bond the two.

3,672,882

SLIP CASTING

Joseph R. Sagmuller and Richard I. Hunter, Columbus, Ohio, assignors to The Battelle Development Corporation, Columbus, Ohio

Filed May 26, 1969, Ser. No. 827,846

Int. Cl. B22f 1/00

U.S. Cl. 75—211 10 Claims

Fine metal compound powders capable of being reduced to the metallic state are made into a casting slip, cast into a slip casting mold to form a slip cast object which is removed from the mold, reduced and sintered into a pore-free high density object.

3,672,883

CRYSTALLINE POLYMERS FOR FROST

Roger N. Ciccarelli and Burton B. Jacknow, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed July 2, 1969, Ser. No. 838,672

Int. Cl. B41n 5/20; G03g 13/22

U.S. Cl. 96—1.1 18 Claims

A new class of materials useful in surface deformation imaging is provided comprising the utilization of sharp melting crystalline polymers.

3,672,884

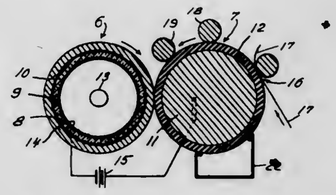
ELECTROSTATIC PRINTING AND DEVELOPING

Edward F. Mayer, Cleveland, Ohio, assignor to Xerox Corporation, Rochester, N.Y.

Continuation of application Ser. No. 571,644, Aug. 10, 1966, which is a continuation of application Ser. No. 380,285, Sept. 15, 1953. This application Oct. 14, 1968, Ser. No. 770,887

Int. Cl. C03g 13/10, 13/22

U.S. Cl. 96—1 LY 13 Claims



In the particular embodiments of the invention described herein, electrostatic charge images are formed on the adjacent engaging surfaces of a photoconductive insulating layer and another insulating layer by optical exposure through the photoconductive insulating layer. In one embodiment the layers are disposed on the outside surfaces of first and second rotating drums, respectively, and a light source within one drum projects the image of an original disposed on the inner surface of the drum to the photoconductive insulating layer disposed on the outer surface thereof. Electrostatic charge images are produced on the drum surfaces as a result of a potential difference applied across them and the charge images are moved by drum rotation to a development zone wherein the images are rendered visible by liquid or powdered developer. In another embodiment the electrostatic charge image is transferred from the insulating drum to a further insulating drum upon which it is moved through a development zone.

3,672,885

FERROCYANIDE-CHELATE CONVERSION SOLUTION FOR ELECTROPHOTOGRAPHIC OFFSET MASTERS

George M. Ort, Chicago, Ill., assignor to A. B. Dick Company, Niles, Ill.

No Drawing. Continuation of application Ser. No. 652,689, July 12, 1967. This application Oct. 23, 1970, Ser. No. 83,629

Int. Cl. G03g 13/00

U.S. Cl. 96—1 9 Claims

A conversion solution for zinc oxide coated electrophotographic planographic masters in which the conversion solution depends upon the presence of ferrocyanide in solution therein, in which the improvement comprises the formulation of the conversion solution with a chelating agent that sequesters the Fe^{++} and Fe^{+++} ions present in the solution by reason of the equilibrium reaction of the ferrocyanide whereby the solution is stabilized to minimize deterioration and increase the stability and shelf life thereof.

3,672,886

NOVOLAK RESINS IN DEFORMATION IMAGING

Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 421,613, Dec. 28, 1964. This application Dec. 26, 1968, Ser. No. 787,260

Int. Cl. G03g 13/22

U.S. Cl. 96—1.1 5 Claims

It has been determined that upon the addition an aromatic compound, preferably an aryl amine compound to a phenol-aldehyde type resin that it is now possible to form excellent surface deformation images of enhanced quality on the surface of the latter materials. Thus, upon the addition of the specified additive to a phenol-aldehyde type resin the frost characteristics thereof are substantially enhanced.

3,672,887

ELECTROPHOTOGRAPHIC PROCESS FOR MULTICOLOR REPRODUCTION

Seiji Matsumoto, Yasuo Tamai, Masaaki Takimoto, and Masamichi Sato, Asaka, Japan, assignors to Xerox Corportion, Rochester, N.Y.

Filed Aug. 17, 1970, Ser. No. 63,818

Int. Cl. G03g 13/22

U.S. Cl. 96—1.2 9 Claims

Reproduction of a multicolor original in an electrophotographic development employing superimposed development of multiple electrostatic latent images present on an electrophotographic photosensitive layer which is provided with low photoconductivity for a certain wavelength region, and has increased photoconductivity in at least a part of the remaining wavelength region. At least one development is obtained with a toner having photoconductivity for light of the wavelength region in which the electrophotographic level has low photoconductivity.

3,672,888

PROCESS FOR THE MANUFACTURE OF AN ELECTROPHOTOGRAPHIC SENSITIVE MATERIAL

Haruo Hasegawa, Kinroku Sugiyama, Kikuji Suzuki, and Kunio Hirano, Shizuoka, Japan, assignors to Tomoegawa Paper Manufacturing Co., Ltd.

Filed Mar. 2, 1970, Ser. No. 15,657

Int. Cl. G03g 5/08, 5/10

U.S. Cl. 96—1.8 5 Claims

An electrophotographic sensitive material wherein a reaction product of synthetic resin having OH-groups and a chromium compound is interposed as an intermediate layer between a photoconductive image-forming layer and a support, such as paper, plastic sheet, thin metallic film and the like and a process for the manufacture thereof.

3,672,889

ACRYLATE TERPOLYMER RESIN BINDERS FOR PHOTOELECTROSTATIC MEMBERS

Evan S. Baltazzi, Brookfield, Robert G. Blanchette, Elk Grove Village, and Ralph L. Minnis, Des Plaines, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

No Drawing. Filed July 14, 1969, Ser. No. 841,545

Int. Cl. G03g 5/08

U.S. Cl. 96—1.8 5 Claims

A polymeric resin binder for zinc oxide which is a terpolymer formed of ethyl acrylate or ethyl methacrylate, a vinyl-aryl compound such as styrene and an acrylate having amino, hydroxy, or acid functional groups. A typical terpolymer is ethyl acrylate-styrene-hydroxyethyl methacrylate combined in the weight ratio of 69:23:8.

3,672,890

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 782,075, Dec. 9, 1968. This application Aug. 19, 1970, Ser. No. 65,084

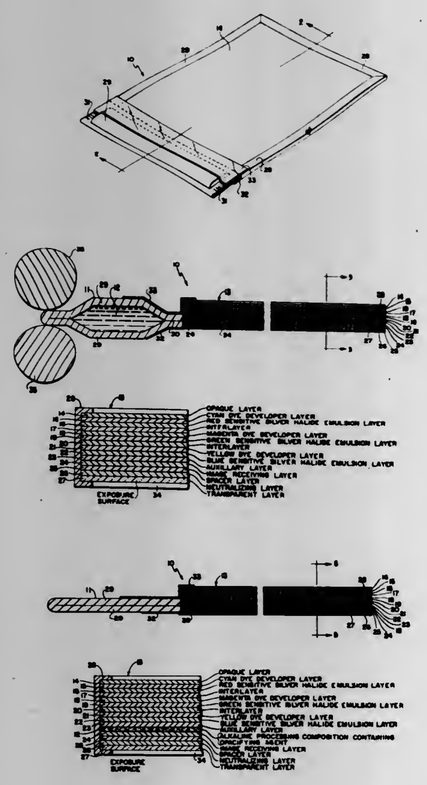
The portion of the term of the patent subsequent to Dec. 10, 1985, has been disclaimed

Int. Cl. G03c 1/48, 5/54, 7/00

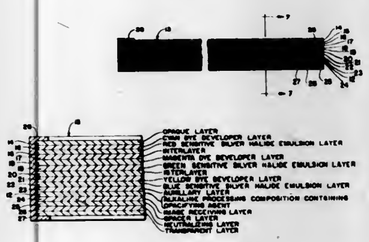
U.S. Cl. 96—3 16 Claims

The present invention relates to photography and, more particularly, to reflection type diffusion transfer process

photographic film units which comprise a composite photosensitive element adapted to provide, by diffusion transfer photographic processing, selective integral negative and positive image recordation of incident actinic radiation as a function of the point-to-point degree of photosensitive element exposure, which element includes a plurality of sequential layers including a dimensionally stable layer preferably opaque to incident actinic radiation; a photosensitive silver halide layer having associated therewith dye image-forming material which is diffusible during processing as a function of the point-to-point degree of silver halide layer exposure to incident actinic radiation; a layer adapted to receive image-forming material diffusing thereto; and a dimensionally stable layer transparent to incident radiation.



The film units additionally include, in combination, means for interposing, subsequent to photoexposure of the silver halide layer, intermediate the silver halide layer and the reception layer, an opacifying agent in a concentration effective to mask dye image-providing material associated with the photosensitive layer and preferably comprising an inorganic reflecting pigment dispersion containing at least one optical filter agent in a concentration effective to provide a layer exhibiting optical transmission density $>\sim 6.0$ density units with respect to incident radiation actinic to the photosensitive silver halide layer and optical reflection density $<\sim 1.0$ density units with respect to reflected visible radiation, and a processing composition possessing a first pH at which the dye image-forming material is diffusible during processing, and means for reducing the pH of the processing composition to a second pH at which the dye image-forming material is substantially nondiffusible subsequent to substantial dye transfer image formation in the reception layer.



3,672,891
PHOTOGRAPHIC ELEMENT AND PROCESS COMPRISING A PYRIMIDINE SILVER HALIDE DEVELOPING AGENT

Edwin B. Wyand and William C. Farley, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,340
Int. Cl. G03c *1/48, 5/30, 5/54*
U.S. Cl. 96—29 R **16 Claims**

Photographic developing agents which are pyrimidine compounds such as 5-hydroxy and/or 5-amino-pyrimidine developing agents provide reduced stain without loss of desired sensitometric properties in a diffusion transfer system. These can be used in combination with other photographic developing agents, such as reductone developing agents, aminomethyl hydroquinone developing agents, cinnamic acid developing agents, lactone developing agents, or developing agent precursors e.g. coumarin developing agents or developing agent precursors. They are especially useful in a black-and-white silver salt diffusion transfer process.

3,672,892
METHOD FOR THE PREPARATION OF A PLANOGRAPHIC PRINTING MASTER

Marcel Nicolas, Vrancken, Gerald Laurens Vanreusel, Hove, Paul Desire Van Pee, Edegem, and Jules Maria De Laet, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

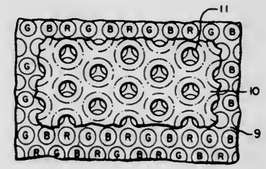
No Drawing. Filed June 21, 1968, Ser. No. 738,808
Claims priority, application Great Britain, June 21, 1967, 28,693/67
Int. Cl. G03f *7/02, 1/00;* **G03c** *1/72*
U.S. Cl. 96—33 **12 Claims**

An improvement on U.S.P. 3,476,937 wherein silver halide grains of the internal image-forming type are directly incorporated in the heat-sensitive layer of the basic patent formed by normally solid thermoplastic polymer particles dispersed in a hydrophilic binder so that by exposing the resultant layer to a light image, photographically developing the exposed layer with a photographic developing layer to obtain a direct-positive silver image having a density of at least 0.1 above background, and uniformly exposing the developed layer to radiation absorbed by the silver image and converted into heat, sufficient hydrophobic/hydrophilic differentiation is obtained as to adapt the resultant material for use as a planographic printing master.

3,672,893
PROCESS OF MANUFACTURING SCREENS FOR SHADOW-MASK TUBES

Ronald C. Robinder, Hanover Park, William A. Rowe, Palatine, and James W. Schwartz, Western Springs, Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Aug. 3, 1970, Ser. No. 60,433
Int. Cl. G03c *1/00, 5/00*
U.S. Cl. 96—36.1 **15 Claims**



The screen is covered with a water-soluble coating material comprising a negative photosensitive resist and an inhibitor to render the resist unresponsive to ultraviolet light. An additive, such as a dye that may be bleached or activated by exposure to a visible light wavelength, is also included in the coating to counteract the effect of the inhibitor when activated by exposure. The screen, coated with this material, is first exposed to the visible radiation from one color position and through a shadow mask having apertures larger than the phosphor dots of the screen. The screen is then exposed to ultraviolet, again through the shadow mask but from a second color position and results in elemental areas of the coating material, where the two exposure patterns overlap, being rendered insoluble. The coating pattern is developed by washing the screen with water.

3,672,894
METHOD FOR MAKING A COMPOSITE BACK PROJECTION SCREEN

William E. Glenn, Jr., Scotia, N.Y., assignor to General Electric Company

Original application Feb. 1, 1967, Ser. No. 613,323. Divided and this application Apr. 27, 1970, Ser. No. 43,275
Int. Cl. G03c *5/00, 11/00, 9/00*
U.S. Cl. 96—38.3 **3 Claims**

Composite back projection screens are described characterized by a cylindrically lenticulated back face and a selectively darkened front face having refracting lens components positioned at the undarkened foci of the back lenticules. The refracting lens components are formed either by selectively notching a Fresnel lens into the flat front face of the projection screen or by lenticulating the front face of the screen and utilizing an appropriate portion of the lenticules' arcual surface as the refracting lens components. Control of both the horizontal and the vertical viewing angles is accomplished by the formation of refracting lens components in both faces of a unitary screen in optical registration with spherical lens components situated along the back face of the unitary screen.

3,672,895
VACUUM TREATMENT OF COATED, DIRECT-POSITIVE, SILVER HALIDE ELEMENTS

Richard Karl Kurz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,697
Int. Cl. G03c *5/24*
U.S. Cl. 96—64 **6 Claims**

This invention relates to processes for improving the photographic properties of fogged, direct-positive, silver halide emulsions. In one aspect, coated, direct-positive emulsions are subjected to a vacuum treatment whereby the maximum density stability is improved upon aging. The D_{max} stability is highly improved in preferred embodiments when electron-acceptor compounds or desensitizers are present in the emulsion.

3,672,896
PHOTOGRAPHIC COMPOSITION, ELEMENT AND PROCESS

Rolf S. Gabrielsen and Ismael A. Olivares, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,339
Int. Cl. G03c *1/42, 5/30*
U.S. Cl. 96—66 HD **16 Claims**

Photographic developing agents which are anhydro dihydro hexose reductone silver halide developing agents provide low stain and improved stability without undesired sensitometric properties in developing a latent image in a photographic element. An aqueous alkaline developer containing, for instance, anhydro dihydro piperidino hexose reductone provides improved properties. The described developing agents can be used in combination with other silver halide developing agents.

3,672,897
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akira Sato, Hirozo Ueda, and Yoshiaki Ono, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 16, 1969, Ser. No. 858,262
Claims priority, application Japan, Sept. 16, 1968, 43/66,821
Int. Cl. G03c *1/40*
U.S. Cl. 96—74 **13 Claims**

A color photographic light-sensitive material comprising a support having coated thereon a red-sensitive silver halide emulsion layer containing a cyan-color forming coupler, a green-sensitive silver halide emulsion layer containing a magenta-color forming coupler, and a blue-sensitive silver halide emulsion layer containing a yellow forming coupler and a compound represented by the formula



wherein R is a member selected from the group consisting of a sulfoalkyl group and a sulfoaralkyl group, and Z and Q are each an atomic group necessary to complete a heterocyclic nucleus.

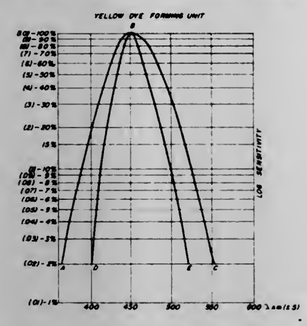
3,672,898
MULTICOLOR SILVER HALIDE PHOTOGRAPHIC MATERIALS AND PROCESSES

Judith A. Schwan and James L. Graham, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of application Ser. No. 715,005, Mar. 21, 1968. This application Sept. 29, 1969, Ser. No. 864,275
Int. Cl. G03c *1/76, 1/84, 1/10*
U.S. Cl. 96—74 **42 Claims**

Multicolor photographic elements are provided which contain yellow, magenta and cyan dye forming units, each of the units having a relative log spectral sensitivity distribution such that acceptable neutrals and good color rendition are obtained upon exposure of the film to any one of a variety of illuminants, such as daylight, tungsten or fluorescent illuminants. The spectral distribution of each

dye forming unit in accordance with the invention is shown in FIGS. 1–3 and Tables I–III hereof. Photographic proc-



esses utilizing the elements of the invention are also described.

3,672,899
HIGH CONTRAST PHOTOGRAPHIC MEDIA
Jean-Paul C. Archambault, Nashua, N.H., and William S. Holmes, Graniteville, Mass., assignors to Itek Corporation, Lexington, Mass.
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,376
Int. Cl. G03c *1/00, 1/28*
U.S. Cl. 96—88 25 Claims

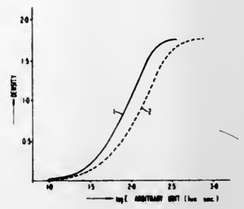
The use of arylmercuric compounds provides improved photographic properties to photosensitive materials, particularly in improving the sensitometric properties of photographic images. Such images show markedly higher gamma values. The arylmercuric compounds are especially effective in so-called low-content silver halide film, especially those containing very thin photosensitive layers.

3,672,900
FOGGED, DIRECT-POSITIVE EMULSION PRODUCTION BY INCREASED FLOW OF SILVER HALIDE-FORMING PRECIPITANTS IN GRAIN-RIPENER-FREE ACIDIC MEDIUM
Richard Karl Kurz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,659
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 8 Claims

A process is disclosed for making improved, fogged, direct-positive, silver halide emulsions. The silver halide grains of said emulsions are made by forming grains of at least 0.4 micron in size in a precipitation medium which is substantially free of ripening agents and wherein the flow rates of the respective reactants to form said silver halide grains are gradually increased during the growth of said grains. Preferably, the pH is maintained at less than 4 and an oxidizing agent is present during the formation of the grains.

3,672,901
PROCESS OF PRECIPITATING SILVER HALIDE IN THE PRESENCE OF A COLLOID AND A WATER-SOLUBLE IRON SALT
Kinji Ohkubo, Junpei Noguchi, and Kunioki Ohmura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 15, 1970, Ser. No. 37,618
Claims priority, application Japan, May 17, 1969, 44/38,249
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 16 Claims

A process for producing a silver halide photographic emulsion including a step of precipitating a silver halide in a colloidal solution by reaction between a halide and a silver salt, characterized in that said precipitation is



done in the presence of a water-soluble iron compound in an amount of 10^{-7} to 10^{-3} mol per mol of the silver salt contained in said solution.

3,672,902
PHOTOGRAPHIC SILVER HALIDE EMULSION WITH IMPROVED SAFE-LIGHT SENSITIVITY
Albert Louis van Stappen, Rumson, N.J., and Karl Schwarz, Sprendlingen, Germany, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 12, 1970, Ser. No. 63,286
Claims priority, application Germany, Nov. 12, 1969, P 19 56 774.9
Int. Cl. G03c *1/28, 1/36*
U.S. Cl. 96—107 8 Claims

Light-sensitive silver halide emulsions containing mixtures of a diphenyldisulfide carboxylic acid, a polyhydroxyspiro-bis-indane, a developing agent and a poly-(alkylene oxide) compound. The emulsions have improved light-sensitivity with reduced sensitivity to safe-light illumination.

3,672,903
DIRECT-POSITIVE SILVER HALIDE EMULSIONS CONTAINING GOLD SALT COMPLEX ADDENDA
Elizabeth Puiu Chang, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 16, 1970, Ser. No. 11,837
Int. Cl. G03c *1/28, 1/30*
U.S. Cl. 96—108 12 Claims

Gold salt complexes can be added to fogged, direct-positive silver halide emulsions to improve their photographic properties, especially the maximum density upon aging. Preferably, the emulsions of this invention contain reduction and gold fogged silver halide grains.

3,672,904
PHOTOTHERMOGRAPHIC ELEMENTS CONTAINING BIS-BETA-NAPHTHOLS
Richard A. de Mauriac, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed May 1, 1970, Ser. No. 33,964
Int. Cl. G03c *1/02*
U.S. Cl. 96—114.1 14 Claims

A reducing agent, such as a bis-naphthol, in combination with an activator-toning agent, such as a cyclic imide, in a photosensitive and thermosensitive element suitable for dry processing with heat, provides improved pre-processing incubation stability, increased sensitivity including reduced exposure and processing time, more neutral maximum density areas and greater image stability. A combination of a bis-naphthol reducing agent and a cyclic-imide activator-toning agent in conjunction with a stable source of silver for physical development are useful in photosensitive elements for dry processing. The element

can contain a sensitizing dye and a stable, developed image can be provided by heating the element after exposure. The photosensitive component can be photographic silver halide, or other suitable photosensitive metal salts.

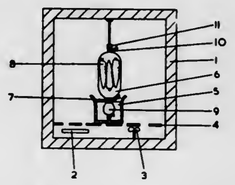
3,672,905
NOVEL DYES AND PHOTOGRAPHIC EMULSIONS
Roy A. Jeffreys and Susan M. Mellows, Harrow, England, assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Nov. 2, 1970, Ser. No. 86,316
Int. Cl. G03c *1/08*
U.S. Cl. 96—140 4 Claims

Novel methine dyes are provided in which one terminal carbon atom of the methine chain of the dye has two groups attached thereto, said groups being selected from a dialkylamino group, a diarylamino group, an alkylarylamino group, a morpholino group, a thiomorpholino group and a piperidino group; and, the other terminal atom of the methine chain of said dye is attached to a heterocyclic nucleus of the type used in methine dyes. The preparation of such dyes, and photographic emulsions containing them, are also provided herein.

3,672,906
SILVER HALIDE EMULSIONS SENSITIZED WITH METHINE DYES CONTAINING A CYCLOPENTANONE NUCLEUS
Leslie G. S. Brooker, Rochester, and Arthur Fumia, Jr., Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 656,647, July 28, 1967. This application Mar. 25, 1970, Ser. No. 22,707
Int. Cl. G03c *1/08*
U.S. Cl. 96—142 8 Claims

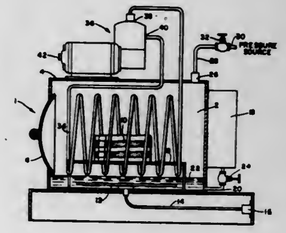
Novel methine dyes containing a cyclopentanone nucleus in the methine chain are prepared by the acid hydrolysis of cyanine enamine derivatives. These methine dyes are spectral sensitizers for photographic silver halide emulsions. A number of the new dyes extend the sensitivity of photographic silver halide emulsions into the red and near infra-red regions of the spectrum.

3,672,907
METHOD OF THERMALLY PROCESSING A COMESTIBLE PRODUCT
Ronald Augustus Hudson, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
Filed Jan. 19, 1970, Ser. No. 4,013
Claims priority, application Great Britain, Jan. 30, 1969, 5,226/69
Int. Cl. A23l *3/10*; A23b *1/00*
U.S. Cl. 99—1 5 Claims



Packaging and thermally processing foods etc. by enclosing them with a small amount of water in a sealed flexible plastic container, separating the water into a portion of the container, and heating only the water, preferably by microwave or radio frequency heating, to process the product by steaming.

3,672,908
METHOD OF HEAT PROCESSING FOOD
Jack O. Hice, Sr., Fort Lauderdale, Fla. (231 Commercial Blvd., Lauderdale-by-the-Sea, Fla. 33308)
Continuation-in-part of application Ser. No. 585,230, Oct. 17, 1966. This application Apr. 8, 1970, Ser. No. 26,728
Int. Cl. A22c *18/00, 25/00*
U.S. Cl. 99—1 17 Claims



A method of heat treating food including the steps of subjecting the food to be heat treated to superatmospheric pressure in a gaseous atmosphere prior to the application of heat to the food, applying heat to the food while maintaining the superatmospheric pressure on the food, rapidly cooling the food after the food has been heat treated to a desired extent, and removing the gaseous atmosphere under superatmospheric pressure from the food; and apparatus for practicing the method.

3,672,909
METHOD OF DENSIFYING FOOD PRODUCTS
Robert E. Berry, Owen W. Bissett, and Charles J. Wagner, Jr., Winter Haven, and Eldridge P. Patterson, Lakeland, Fla., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation of application Ser. No. 670,803, Sept. 26, 1967. This application Sept. 30, 1970, Ser. No. 76,967
Int. Cl. A23l *1/10*
U.S. Cl. 99—1 6 Claims

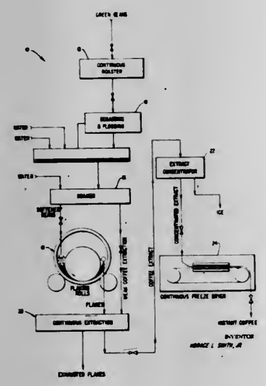
This invention relates to a method whereby powders of a porous nature which have a very low density and a very high bulk can be converted to powders of a higher density and lower bulk. More particularly, this invention relates to a method whereby a dry porous powder of a low bulk density is ground to a given particle size range and then fed into the nip of hard steel rolls where it is subjected to high pressures and where after such compression it is formed into flakes having from 3 to 4 times the bulk density of the original material.

3,672,910
BLOOD PRODUCT FOR FISH BAIT
R. D. Moore, Jacksonville, Tex., assignor to R-J-R, Corp.
No Drawing. Filed June 8, 1970, Ser. No. 44,646
Int. Cl. A01n *17/14*
U.S. Cl. 99—3 2 Claims

A manufactured fish bait made from fresh warm animal blood by mixing a gelling agent with the warm blood, permitting the mixture to solidify, draining and air drying the resulting product, and suitably packaging the blood product for subsequent use as a fish bait. Where deemed

desirable, the product can be improved by the addition of anise, charcoal, sodium chloride, and sodium bicarbonate.

3,672,911
METHOD FOR PRODUCING SOLUBLE COFFEE CONCENTRATES
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Dec. 14, 1970, Ser. No. 97,942
Int. Cl. A23f 1/08
U.S. Cl. 99—71 11 Claims



The production of a soluble coffee concentrate by roasting green beans, softening and flaking the roasted beans and thereafter extracting the coffee solubles from them, concentrating the extract, and freeze drying the extracted solubles in the concentrate.

3,672,912
TORTILLA AND PROCESS USING WATER SOLUBLE EDIBLE BORATE OR ALUMINATE
Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Nuevo Leon, Mexico
No Drawing. Filed July 24, 1970, Ser. No. 58,137
Int. Cl. A23l 1/10
U.S. Cl. 99—80 9 Claims

To retard the staling of tortillas, which are an unleavened unshortened food product made from nixtamalized corn or corn flour and to increase the yield of dough and tortillas by incorporating an additive in making the tortilla dough. The additive is water soluble edible borate or aluminate.

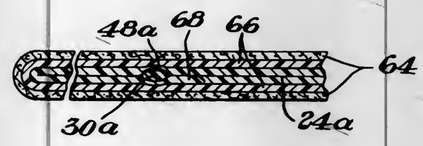
3,672,913
METHOD FOR THE CONTINUOUS MANUFACTURE OF LINKED SAUSAGE PRODUCTS
Everett V. Podebradsky, Madison, Wis., assignor to Oscar Mayer & Company, Inc., Madison, Wis.
No Drawing. Filed May 25, 1970, Ser. No. 40,372
Int. Cl. A22c 11/00; A23b 1/04
U.S. Cl. 99—109 6 Claims

When enough liquid smoke is used in the manufacture of weiners and smoky links to facilitate machine peeling of skins, an undesirable flavor and brown color tends to be imparted to the sausage. Addition of mono and/or di-saccharides in an amount between 15% and 40% to the liquid smoke eliminates this problem.

3,672,914
CONDIMENT CONTAINING SODIUM DIACETATE
William E. Delaney, Chicago, Ill., assignor to Kadison Laboratories, Inc., Chicago, Ill.
No Drawing. Filed Aug. 11, 1970, Ser. No. 63,040
Int. Cl. A23l 1/22; C12j 1/00
U.S. Cl. 99—140 R 8 Claims

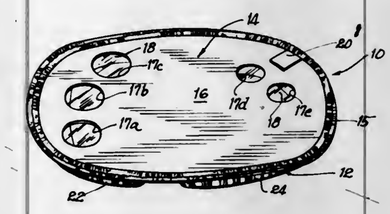
A dry, pulverulent, free flowing condiment which comprises a mixture of sodium chloride and sodium diacetate having a solid coating of an edible, non-hygroscopic, water-soluble material, in conjunction with other ingredients.

3,672,915
PRESSURE RELEASE VALVE FOR FLEXIBLE POUCHES
Glenn C. Wiggins, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of application Ser. No. 780,767, Dec. 3, 1968. This application Apr. 10, 1970, Ser. No. 27,412
Int. Cl. B65d 31/14, 85/00
U.S. Cl. 99—171 LP 15 Claims



In a package including a flexible pouch, the pouch normally comprising a tubular body and strip seals closing the opposite ends of the tubular body, the improvement of which comprises, a one way pressure release valve comprising an interiorly disposed element such as a monofilament or strand anchored its opposite ends, respectively, by securement with the layers of the pouch at the strip seal areas. A valving or venting action occurs when a face region of one of the element ends releases from the adjacent layer in the seal.

3,672,916
FOOD TRAY HAVING A LAMINATED CLOSURE THAT IS HEAT-RETRACTABLE
Herbert J. Virnig, Hanover Park, Ill., assignor to Mass Feeding Corporation, Elk Grove Village, Ill.
Filed Aug. 31, 1970, Ser. No. 68,432
Int. Cl. B65b 25/22
U.S. Cl. 99—171 H 10 Claims



A food container comprising a tray portion and a complementary closure member, said closure member comprising in sheetlike laminated form, a sheetlike support member of relatively heat insensitive material having one or more apertures of predetermined size formed therein and a film member of heat sensitive thermoplastic polymeric material secured and laminated to one surface of said support member and extending over said aperture or apertures providing a moisture vapor barrier in said closure member which is heat reactive at normal cooking oven temperatures.

3,672,917
METHOD OF IMPROVING QUALITY AND STORAGE STABILITY OF DEHYDRATED PRODUCTS
Charles M. Buchzik, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 15, 1969, Ser. No. 850,583
Int. Cl. A23f 1/06; F26 3/10
U.S. Cl. 99—199 10 Claims



An aqueous solution of soluble food concentrate is sprayed into chilled hexane or water immiscible liquids to freeze the concentrate into beads. The beads are freeze dried to remove ice therefrom by sublimation in a subatmospheric pressure chamber. The freeze dried beads are sealed in a chamber from which the air is removed. Nitrogen is introduced to the chamber and is heated to pass through a screen which supports the freeze dried beads. The nitrogen enters voids in the beads and is sealed therein by a coating of coconut-oil fat, with or without addition of antioxidants, the coconut-oil fat being sprayed into the chamber and carried to the beads by the stream of warm nitrogen.

3,672,918
HOT TOPS
George Rocher and Nicholas Orban, Pittsburgh, Pa., assignors to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.
Filed Sept. 14, 1970, Ser. No. 71,824
Int. Cl. B28b 7/34; B22d 7/10
U.S. Cl. 106—38.22 5 Claims



A composite hot top board comprising an exothermic layer and an insulating layer bonded together wherein there is a substantial number of randomly spaced, discontinuous and internal voids or a substantial amount of space at the interface between the two layers. Preferably, the voids are formed in situ under use conditions by the decomposition of certain additives in the insulating layer.

3,672,919
SEALING GLASS HAVING HIGH ABSORPTION OF INFRARED RADIATION
Werner Sack, Mainz-Gonsenheim, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany
Filed Sept. 19, 1969, Ser. No. 859,594
Claims priority, application Germany, Sept. 25, 1968, P 17 96 232.2
Int. Cl. C03c 3/04, 3/10, 3/08
U.S. Cl. 106—52 14 Claims

Glass which is heat absorbing and electrically highly insulating and suitable for sealing of elements of nickel-chromium-iron and nickel-manganese-iron alloys containing iron (II) oxide in an amount providing high infrared absorption at 1–2 μm. and less than 20% by weight of PbO.

3,672,920
OPTICAL GLASS HAVING A HIGH REFRACTIVE INDEX AND A LOW DISPERSION
Hachiro Ishiguri, Tokorozawa, Japan, assignor to Hoya Glass Works, Limited, Tokyo, Japan
Filed May 26, 1970, Ser. No. 40,553
Claims priority, application Japan, May 27, 1969, 44/41,260
Int. Cl. C03c 3/12, 3/14, 3/30
U.S. Cl. 106—47 Q 1 Claim

An optical glass having a high refractive index, a low dispersion and a high stability during melting can be produced by adding 5–10 weight percent of MgO to a composition of the B_2O_3-La_2O_3-ThO_2 system optionally containing SiO_2, ZrO_2 and/or Ta_2O_5.

3,672,921
GLASS FOR ULTRASONIC DELAY LINE
Yoshiyuki Asahara, Kawasaki, and Tetsuro Izumitani, Tokyo, Japan, assignors to Hoya Glass Works, Limited, Tokyo, Japan
Filed May 19, 1970, Ser. No. 38,797
Claims priority, application Japan, May 24, 1969, 44/40,454
Int. Cl. C03c 3/04, 3/10; H03h 7/30
U.S. Cl. 106—53 2 Claims

An ultrasonic delay line glass having improved temperature-coefficient and time dependencies of delay time and stability during melting can be obtained by incorporating B_2O_3 into a glass composition of the SiO_2-K_2O-PbO system and reducing a content of K_2O.

3,672,922
BENZYL STARCH EMULSION COATING COMPOSITIONS
Robert E. Brouilliard, Leonard J. Coughlin, and Vernon L. Winfrey, Cedar Rapids, Iowa, assignors to Penick & Ford Limited, Cedar Rapids, Iowa
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,972
Int. Cl. C08b 25/02
U.S. Cl. 106—211 8 Claims

An oil-in-water emulsion coating composition for imparting brightness and/or opacity to publication paper, boxboard and the like utilizes a combination binder and emulsifier in the water phase, consisting essentially of dispersed particles of benzyl starch containing from 2 to

20% of ether-linked benzyl groups. Preferably, the starch contains from 5 to 12% benzyl groups. The composition can be utilized as a "bubble" coating.

3,672,923
SOLID PRECIOUS METAL SENSITIZING COMPOSITIONS

Rudolph J. Zdrojsky, Hauppauge, N.Y., assignor to Photocircuits Division of Kollmorgen Corporation, Hartford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 9,060, Feb. 5, 1970, which is a continuation-in-part of application Ser. No. 801,167, Feb. 20, 1969, which is a continuation-in-part of application Ser. No. 712,575, Mar. 12, 1968, which is a continuation of application Ser. No. 551,249, May 19, 1966, which is a continuation of application Ser. No. 285,889, June 6, 1963, which in turn is a continuation of application Ser. No. 53,352, Sept. 1, 1960. This application June 29, 1970, Ser. No. 50,918

Int. Cl. C23c *3/02*

U.S. Cl. 106—286 **18 Claims**

Solid compositions dilutable to optically clear sensitizing solutions for rendering surfaces receptive to the deposition of an adherent electroless metal comprise a metal complex consisting of (a) a precious metal selected from a group consisting of the precious metals of the fifth and sixth periods of Groups VIII and I–B of the Periodic Table of Elements, (b) a Group IV metal of the Periodic Table of Elements which is capable of two valence states and (c) an anion capable of forming a stable moiety with both valence states of the Group IV metal, in which the molar ratio of (a) to (b) to (c) is from about 1:1:3 to 1:6:24. The solutions can be prepared by diluting the solid compositions. Controlled excesses of (b) and (c) and hydrogen ion and wetting agents enhance the solubility of the powdered product and stability of the diluted solutions. Processes for rendering surfaces receptive to the deposition of an electroless metal, e.g., copper, nickel, cobalt, palladium, gold and silver, are also provided.

3,672,924
THERMALLY STABLE AIR FILTER GELS

James P. Hamilton, Pasadena, Md., assignor to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 16,560, Mar. 4, 1970, which is a continuation-in-part of abandoned application Ser. No. 654,714, July 20, 1967. This application Oct. 23, 1970, Ser. No. 83,632

Int. Cl. C09k *1/04*

U.S. Cl. 106—287 **7 Claims**

Thermally stable triorganic phosphate coating compositions for viscous-impingement air filters are prepared by thickening 100 parts of a triorganic phosphate with a combination of 0.5 to 5 parts of a pure pyrogenic silica with 0.5 to 7 parts by weight of a hydrated salt, aluminum distearate or synthetic calcium silicate.

3,672,925
METHOD OF PREPARING A SUBSTRATE FOR DEPOSITING A METAL ON SELECTED PORTIONS THEREOF

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Filed Oct. 2, 1970, Ser. No. 77,440

Int. Cl. B44d *1/52, 1/18*

U.S. Cl. 117—5.5 **12 Claims**

A method of preparing a substrate for the deposition of a metal on selected portions of the substrate surface by electroless plating, in the presence of a catalyst, comprises first covering the unselected portions of the substrate surface with a masking film that includes an oxidizing agent. The substrate, including the masking film, is then treated with a sensitizing solution and heated to cause the oxidizing agent to oxidize, and desensitize, the sensitizing solution that is adsorbed on the masking film, rendering the masking film incapable of accepting a catalyst. The substrate and masking film are next treated with a catalytic activating solution, and a thin layer of the catalyst is deposited only on the sensitized selected portions of the substrate surface.



3,672,926
PROCESS FOR PRODUCING DECORATIVE SIMULATED INLAY

David S. Ramey, Winston-Salem, N.C., assignor to Multicraft, Incorporated, Winston-Salem, N.C.

Continuation-in-part of application Ser. No. 677,311, Oct. 23, 1967. This application Mar. 30, 1970, Ser. No. 23,561

Int. Cl. B44c *1/24, 5/04*; B44d *1/52*

U.S. Cl. 117—8 **10 Claims**

A simulated inlay is produced on an exposed surface of a finished receiving material such as wood, by a method in which an exposed surface of the material is scored to form grooves therein outlining the configuration of the simulated inlay, a first characteristic appearance is imparted to certain areas by printing on only certain predetermined areas of the exposed surface, and the entire surface is thereafter subjected to a finishing operation which imparts to other areas thereof a characteristic appearance contrasting with the appearance of the printed areas. An article to be decorated by such simulated inlay is produced by preparing a panel with certain areas printed in such a manner with respect to grooves outlining a simulated inlay, incorporating the panel into an article of furniture, and thereafter finishing the entire surface of the panel with the article.

3,672,927
ELECTROSTATIC COATING METHOD

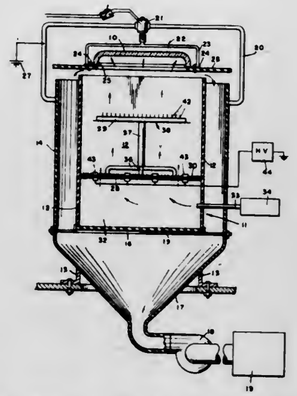
Lester L. Spiller and Stephen J. Smith, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of application Ser. No. 530,473, Feb. 28, 1966. This application Oct. 29, 1969, Ser. No. 873,761

Int. Cl. B05b *5/00*; B44d *1/095*

U.S. Cl. 117—17 **10 Claims**

A conductive sensitized binder comprising a polymerizable binder material such as polyvinyl alcohol and a metallic salt such as ammonium dichromate dissolved in a water soluble alcohol and water is applied to a nonconductive surface of a television picture tube. Electrostatically charged phosphor particles are placed adjacent the tube surface. The conductive coating of sensitized binder is maintained at particle-attracting potential. Particles are electrostatically deposited on the conductive sensitized binder, which is activated, affixing the particles. One method of depositing phosphor particles includes projecting the particles from a fluidized bed toward the conductively coated tube surface and establishing an electrostatic field to the conductive coating from an electrode to electrostatically charge and deposit the phosphor particles. The television picture tube and the electrode may be moved relative to each other during deposition.



3,672,928
ELECTROSTATOGRAPHIC DEVELOPERS HAVING CARRIERS COMPRISING POLYESTER COATED CORES

Robert William Madrid, Macedon, and Robert Joseph Hagenbach, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,412

The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed

Int. Cl. G03g *9/02*

U.S. Cl. 117—17.5 **10 Claims**

A carrier for electrostatographic developer mixtures is provided comprising a core coated with a polyester prepared from diallyl phthalate, diallyl isophthalate or diallyl chlorendate or prepolymers thereof.

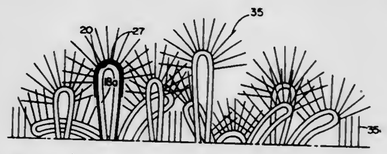
3,672,929
FLOCKED OPEN LOOPED PILE FABRIC AND METHOD OF MAKING SAME

Vincent P. Riordan, Westwood, Mass., assignor to Microfibers, Inc., Pawtucket, R.I.

Filed Dec. 10, 1970, Ser. No. 96,714

Int. Cl. B44c *1/08*; D06c *11/00*

U.S. Cl. 117—25 **8 Claims**



A flocked fabric comprising an open looped pile fabric base having some loops permanently and substantially raised from the major surface of the base fabric, and flock fibers adhered to this fabric.

3,672,930
PROCESS OF TRANSFERRING AN ELECTROSTATIC CHARGE PATTERN WITHOUT USING EXTERNAL PRESSURE OR ELECTRICAL BIAS

William Trachtenberg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,246

Int. Cl. G03g *13/18*

U.S. Cl. 117—37 LE **13 Claims**

A high resolution process of transferring and developing electrostatic charge patterns is described. An electrostatic charge pattern is formed on an image-bearing member having a very low Sheffield Smoothness value. A receiving element is provided which also has a low Sheffield Smoothness value. The smooth surfaced member is then placed in face-to-face contact with the receiving element in the presence of a thin layer of an electrically insulating isoparaffinic hydrocarbon transfer liquid having a boiling point in the range of 105 to 260° C. During contact, the charge pattern is transferred to the receiving element in the absence of external pressure or electrical bias potential. The transferred image is then developed to form a high resolution visible image.

3,672,931
METHOD OF FORMING PHOSPHOR SCREEN

Patrick F. Grosso, Stamford, and Raymond F. Heck, Norwalk, Conn., assignors to Columbia Broadcasting System, Inc.

Filed July 27, 1970, Ser. No. 58,290

Int. Cl. H01j *29/26*

U.S. Cl. 117—33.5 CP **9 Claims**



A high quality, uniform textured luminescent screen suitable for use in a high resolution cathode ray tube or the like is produced by successively depositing by settling two or more separate layers of phosphor.

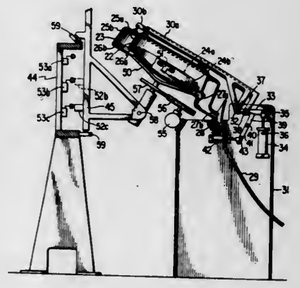
3,672,932
PROCESS FOR SCREENING CATHODE RAY TUBES INCLUDING SALVAGING OF EXCESS PHOSPHOR SLURRY

Frank Thomas D'Augustine, Lancaster, Pa., assignor to RCA Corporation

Filed June 24, 1969, Ser. No. 836,017

Int. Cl. B05c *11/10*; C03c *17/10*

U.S. Cl. 117—33.5 C **2 Claims**



A process for making a phosphor screen for a cathode ray tube having a faceplate panel which is in one of a

plurality of size ranges. First, a quantity of phosphor slurry in excess to that required for the screen is dispensed into the panel. The size range of the panel is sensed and a slurry collector means of the proper size is selected from a plurality of such collector means and moved into a salvage position with respect to the panel. The phosphor slurry is spread over the inner surfaces of the panel and the panel is spun to fling the excess slurry therefrom into said slurry collection means. Then, the excess slurry is recovered from the slurry collection means.

3,672,933
PREPARATION OF PHOTOSENSITIVE COATED PAPERS BY SINGLE PASS PER SIDE

Marvin Frank Lieberman, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,890
Int. Cl. B44d *1/02*
U.S. Cl. 117—34 **9 Claims**

Photosensitive papers such as proofing paper, imageable on both sides, are produced by (a) first coating one side with a composition comprising a volatile organic solvent and a film-forming polymeric binder, and photosensitive ingredients, followed by drying to evaporate the solvent at a controlled rate, thereby forming a film, then (b) coating the second side with the same composition in a single coating application, and drying under the comparable conditions to the first side. Careful control of the coating conditions, drying steps, volatile organic solvents, polymeric binders, photosensitive compositions and paper substrates yield blister-free, two-side coated, photosensitive papers.

3,672,934
METHOD OF IMPROVING LINE RESOLUTION IN SCREEN PRINTING

John R. Larry, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 886,035, Dec. 17, 1969. This application May 1, 1970, Ser. No. 33,875
Int. Cl. B44d *1/16*; B41m *1/12*
U.S. Cl. 117—38 **13 Claims**

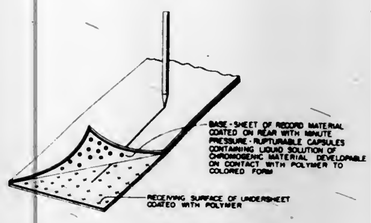
The invention relates to decreasing the wettability of the screen and/or substrate surfaces used in screen printing by treating at least one of said surfaces with a fluorinated organic compound which reduces the surface energy of the treated surface. The object is to coat the surfaces which contact the screen printing paste whereby any spreading of the paste on the substrate is significantly reduced. This process provides a means for screen printing fine line patterns onto conventional substrates as currently demanded in the electronic industry.

3,672,935
PRESSURE-SENSITIVE RECORD MATERIAL

Robert E. Miller and Paul S. Phillips, Jr., Dayton, Ohio, assignors to National Cash Register Company, Dayton, Ohio

Continuation of application Ser. No. 744,601, June 17, 1968, which is a continuation of application Ser. No. 392,404, Aug. 27, 1964. This application June 9, 1970, Ser. No. 44,805
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.8 **9 Claims**

A pressure-sensitive record unit comprising support sheet material having mark-forming components and a pressure-releasable liquid solvent for said mark-forming components arranged in contiguous juxtaposition on said sheet material, at least one of the mark-forming components being maintained in isolation from the other mark-forming component(s) prior to release of the solvent, and said mark-forming components comprising at least one



chromogenic material and at least one phenol-aldehyde polymeric material soluble in the liquid solvent and reactive with the chromogenic material to produce a mark.

3,672,936
REINFORCED CARBON AND GRAPHITE ARTICLES

Leo C. Ehrenreich, Buffalo, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,158
Int. Cl. C23c *9/06, 13/00*; B44d *1/46*
U.S. Cl. 117—46 CC **23 Claims**

A reinforced carbon article which comprises a carbon fiber shape bonded by a carbon binder and having incorporated within said article the in situ reaction product of carbon and a boron containing additive which comprises a material selected from the group consisting of boron, boron nitride, boron silicide and refractory metal borides; and the process of making said article which comprises forming a carbon fiber shape, dispersing the boron containing additive within at least a portion of said carbon fiber shape, impregnating said carbon fiber shape with a carbonizable binder, and heating said shape to carbonize the binder and to form in situ the reaction product of carbon and said boron containing additive.

3,672,937
PROCESS FOR THE NON-ELECTROLYTIC METALLIZING OF NON-CONDUCTORS

Gottfried Kallrath, Stiftstrasse 5, Bruhl-Vochem, Germany; Helmut Knorre, Martinstrasse, Hainstadt am Main, Germany; Eugen Meyer-Simon, Bertha-von-Suttner-Ring 3a, Frankfurt am Main, Germany; and Hanns Biegler, Josef Zimmermannstr. F, Wesseling, near Cologne, Germany

No Drawing. Continuation of application Ser. No. 593,736, Nov. 14, 1966. This application Feb. 4, 1970, Ser. No. 12,888
Claims priority, application Germany, Nov. 12, 1965, D 48,636
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 **5 Claims**

Improved process for applying adherent metal coatings to non-conductors by the non-electrolytic deposition of an electric conductive metal layer from an aqueous metal salt solution containing a reducing agent and a metal for catalyzing the deposition of the metal from the salt solution wherein the non-conductor to be metallized has incorporated therein a finely divided filler having functional groups capable of chemically binding the catalytic metal and of imparting the degree of roughness to the non-conductor surface required for the metallization.

3,672,938
NOVEL PRECIOUS METAL SENSITIZING SOLUTIONS

Rudolph John Zeblisky, Happauge, N.Y., assignor to Kollmorgen Corporation

No Drawing. Continuation-in-part of application Ser. No. 712,575, Mar. 12, 1968, which is a continuation of application Ser. No. 551,249, May 19, 1966, which is a continuation of application Ser. No. 285,889, June 6, 1963, which in turn is a continuation of application Ser. No. 53,352, Sept. 1, 1960. This application Feb. 20, 1969, Ser. No. 801,167
Int. Cl. C23c *3/02*
U.S. Cl. 117—47 A **11 Claims**

A new and useful precious metal sensitizing solution for rendering surfaces receptive to the deposition of an adherent electroless metal is provided which comprises a metal complex consisting essentially of a precious metal selected from the group consisting of the precious metals of the fifth and sixth periods of Group VIII and I–B of the Periodic Table of Elements, a Group IV metal of the Periodic Table of Elements which is capable of two valence states and an anion capable of forming a stable moiety with both valence states of the Group IV metal, in which the molar ratio of precious metal to Group IV metal to anion is from about 1:1:3 to 1:3:19.

Furthermore, a process for rendering a surface receptive to the deposition of an electroless metal is also provided in which the sensitizing solution hereinabove defined is employed.

3,672,939
ELECTROLESS PROCESS FOR FORMING THIN METAL FILMS

Richard G. Miller, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 2, 1969, Ser. No. 829,755
Int. Cl. B44d *1/08*; C03c *17/10*
U.S. Cl. 117—54 **20 Claims**

The invention described herein relates to an electroless process for forming thin metal films, particularly transparent films, on a reactive substrate. It particularly relates to a method of spraying two alkaline solutions—one containing a chelated metal salt and the other containing a reducing agent—onto a reactive substrate to form a metal film by reduction of the metal salt. More particularly, the invention relates to an electroless process for forming metal films of metals contained in Groups I*b* and VIII of the Periodic Table, especially iron, cobalt, and nickel, by forming an alkaline solution of soluble chelated salts of said metals in an aqueous media, preferably including boric acid, and spraying said solution on a reactive substrate at substantially the same time that an alkaline solution of a boron-containing reducing agent, especially alkali metal borohydrides, is sprayed on the substrate. The invention has been found to be particularly useful for forming transparent films of cobalt, nickel, iron, and the like on sensitized transparent substrates such as glass and plastic.

3,672,940
PROCESS FOR CHEMICALLY DEPOSITING NICKEL ON A SYNTHETIC RESIN BASE MATERIAL

Kiyotaka Funada, Chigasaki, Takashi Shinohara, Yokohama, and Hiroko Imai, Tokyo, Japan, assignors to Nihon Kagaku Kizai Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,628
Claims priority, application Japan, Aug. 8, 1969, 44/62,687
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 A **7 Claims**

A process for the chemical deposition of nickel on a synthetic resin base material, characterized by etching the resin base material in a new etching solution containing a palladium compound as the additive thereby eliminating the conventional sensitizing and activating treatments, and chemically depositing nickel on the etched resin base material from a new chemical nickel plating bath containing as the additives a water-soluble lead compound and a second reducing compound such as ascorbic acid, thereby obtaining the new plating bath having a better plating capability and longer lifetime.

3,672,941
PROCESS FOR PREPARING A PIGMENT COATED PAPER

Kozo Konishi, Michio Otake, Tatuo Maeda, and Kuniaki Maruyama, Mishi Kubiki-gun, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 28, 1969, Ser. No. 845,573
Claims priority, application Japan, July 31, 1968, 43/53,591; Nov. 15, 1968, 43/83,262
Int. Cl. B44d *1/44*; D21h *1/20*
U.S. Cl. 117—62 **3 Claims**

A paper coating pigment binder composition having an improved flowability and water-resistant property and a process thereof can be completed by using as a pigment binder composition a saponified product of vinyl acetate-acryl amide copolymer or a copolymer of vinyl acetate, acryl amide and one or more other copolymerizable monomer, with the co-use of aqueous zinc salt or aluminum solution.

3,672,942
PROCESS FOR IMPREGNATING POROUS METAL ARTICLES

Edward W. Neumann, Raleigh, N.C., and Richard Borowski, New Britain, Conn., assignors to Loctite Corporation, Newington, Conn.

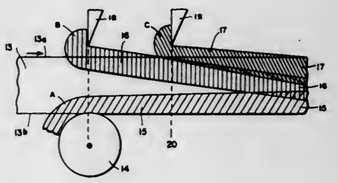
No Drawing. Continuation-in-part of application Ser. No. 790,873, Jan. 13, 1969. This application Dec. 24, 1969, Ser. No. 888,060
Int. Cl. B44d *1/34*
U.S. Cl. 117—62.2 **15 Claims**

Porous articles can be sealed and impregnated without heat cure by (1) impregnating the article with the anaerobic combination of an acrylate monomer and a redox catalyst system; and (2) following the impregnation step by treating the impregnated article with an accelerator of free radical polymerization.

3,672,943
PROCESS FOR THE PRODUCTION OF AN ARTIFICIAL LEATHER AND THE RESULTANT PRODUCT

Gerhard Seibert, Erlenbach, and Klaus Gerlach, Obernau, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed July 14, 1970, Ser. No. 54,787
Claims priority, application Germany, July 16, 1969, P 19 36 073.7
Int. Cl. D06m *3/00*; B44d *1/16*
U.S. Cl. 117—63 **17 Claims**



Production of an imitation or artificial leather by impregnation of a non-woven fibrous web in successive or

separate steps with a solvent solution of an elastomer such that increasing concentrations of the elastomer are supplied over the thickness of the web, immediately coagulating the web in a conventional bath after the last solution of the elastomer has been applied and then washing and drying the web to provide a fiber-reinforced microporous elastomeric structure closely resembling natural leather.

3,672,944
COMPOSITE SHEET
Donald F. Thompson, Atglen, George D. Quartermus, Brookhaven, and Thomas M. Quinn, West Chester, Pa., assignors to Avisun Corporation, Philadelphia, Pa.
No Drawing. Filed Mar. 25, 1970, Ser. No. 22,694
Int. Cl. B32b *27/30*
U.S. Cl. 117—76 F **9 Claims**

A composite sheet comprising an oriented thermoplastic base sheet and a primer on at least one side thereof effective in securing water based Saran Overlay Materials to the base sheet, said primer comprising a composition of:

a first component comprising an acrylic interpolymer of from 50 to 60 weight percent of a C_1–C_4 alkyl methacrylate, from 50 to 40 weight percent of a C_1–C_4 alkyl acrylate and from 1 to 5 weight percent of an acid selected from the group consisting of methacrylic, acrylic and itaconic acid, the total weight percent of first component not exceeding 100;

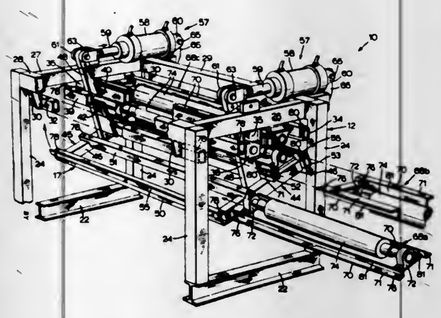
a second component comprising a compound selected from the group consisting of an adduct of rosin and an alpha-beta unsaturated dicarboxylic acid said adduct having an acid number between about 115 and about 140 and a melting point between about 110° C. and about 180° C., partial esters of said adduct and a polyhydric alcohol, and combinations of the adduct and partial esters; the first component being present in the range of from 50% to 80% based on the weight of the first and second components, the second component being present in the range of from 50% to 20% based on the weight of first and second components and the total weight percent of the first and second components of the composition not exceeding 100;

a wax containing component selected from the group consisting of paraffin wax, microcrystalline hydrocarbon wax, and a mixture of carnauba wax and stearic acid wherein the weight ratio of wax to acid is from 82:18 to 89:11, the wax containing component being present in an amount in the range of between about ½% and about 15% based upon the combined weight of the interpolymer combined with either the adduct, the partial esters or the combinations of the adduct and the partial esters.

3,672,945
GRANULES COMPRISING INERT CORES COATED WITH AN ABSORBENT POWDER
Geoffrey Gordon Taylor, Nelson, New Zealand, assignor to Fruitgrowers Chemical Company Limited, Port Mapua, Nelson, New Zealand
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,401
Claims priority, application New Zealand, Oct. 18, 1968, 154,193
Int. Cl. B44d *1/094*
U.S. Cl. 117—100 B **7 Claims**

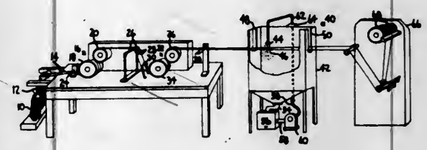
Granules are made by coating solid inert cores with an adhesive acting as the agent to bond the powder to the cores. The granules can thus now absorb agricultural chemicals, such as fungicides, micro-organisms, fertilizers, insecticides and herbicides, and constitute a readily controllable means for the application of such substances to the land or other desired locus.

3,672,946
METHOD AND APPARATUS FOR WRINGING EXCESS LIQUID FROM STEEL STRIP
Hans Herman, Ancaster, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada
Filed Mar. 18, 1971, Ser. No. 125,555
Int. Cl. B05c *11/02*
U.S. Cl. 117—102 L **11 Claims**



Wringing apparatus including two pairs of wringer rolls, one of each pair being secured to a framework, the other of each pair being secured to rocker assembly which is pivoted to the framework and swingable between a first position in which one pair of wringer rolls is closed and the other is open, and a second position in which the other pair of wringer rolls is closed and the first pair is open. Each wringer roll is mounted on a roll frame which is easily de-mounted from the framework for roll replacement when the pair to which it belongs is open. The pairs of wringer rolls are closed alternately on moving steep strip emerging from a liquid bath, each pair remaining closed until its rolls begin to wear.

3,672,947
METHOD FOR TEXTURIZING YARNS
Paul Luscher and Ben A. Hudson, Shelby, and Billie W. Childers, Forest City, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Oct. 29, 1969, Ser. No. 872,056
Int. Cl. B44d *1/08*
U.S. Cl. 117—104 **5 Claims**

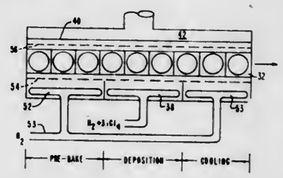


A texturized, binder-containing yarn produced by applying binder material to a texturized yarn through a jet spray nozzle.

ERRATUM

For Class 117—106 R see:
Patent No. 3,673,006

3,672,948
METHOD FOR DIFFUSION LIMITED MASS TRANSPORT
Robert A. Foehring, Williston, Richard R. Garnache, South Burlington, and Donald M. Kenney, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 2, 1970, Ser. No. 345
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—106 R **4 Claims**

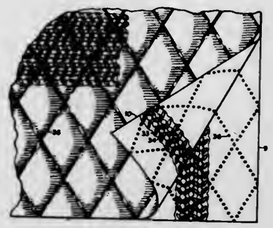


Method and apparatus for continuously carrying out mass transfer reactions in a reaction chamber utilizing laminar flow to provide diffusion limited transport and to provide isolation between process steps. There is provided a gaseous phase material inlet filter tube to introduce gaseous phase material in laminar flow within a reaction zone and an exhaust pressure baffle to maintain laminar flow throughout the reaction zone. Substrates may be continuously passed through a reaction zone to provide an inline system.

ERRATA

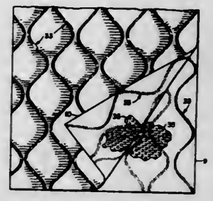
For Classes 117—115 to 117—219 see:
Patent Nos. 3,672,974 thru 3,672,992

3,672,949
ADHESIVELY LAMINATED CREPED TISSUE PRODUCT
Stirling Robert Brown, Oxnard, Calif., assignor to International Paper Company, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,134
Int. Cl. B32b *3/28*
U.S. Cl. 161—129 **8 Claims**



A laminated tissue product as for paper toweling is formed from at least two creped tissue webs bonded in superposed relation by adhesive disposed in patterned lines delineating substantial unbonded regions. Each of the webs is embossed to produce raised portions extending from one surface thereof, and the raised portions of one web oppose respective raised portions of the other web. The raised portions are embossed in patterns assuring opposed relation of the respective raised portions and precluding any substantial nesting of the webs irrespective of the relative lateral disposition of the webs. The webs are joined under different respective tensions so that, upon relaxing, the webs are in different conditions of stress, and one web is of greater area than the other.

3,672,950
ADHESIVELY LAMINATED CELLULOSIC PRODUCT
James A. Murphy and Stirling Robert Brown, Oxnard, Calif., assignors to International Paper Company, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,135
Int. Cl. B32b *3/28*
U.S. Cl. 161—129 **8 Claims**

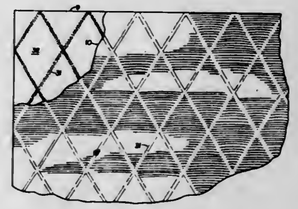


A laminated tissue product is formed from webs bonded in superposed relation employing patterned lines of bonding delineating substantial unbonded regions. The webs are maintained out of intimate contact over substantial portions of these unbonded regions to provide a quilted or cushioned effect. This may be achieved by embossing a number of protuberances on at least one web to face the other and keep the webs apart. Alternatively, or in addition, the webs may be joined under different respective tensions so that, upon relaxing, one web is of greater area than the other.

3,672,951
ROOFING STRUCTURE AND METHOD
Eugene R. Moore, Marlin G. Bussey, and Hal G. Parish, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Mar. 17, 1970, Ser. No. 20,317
Int. Cl. B32b *5/18, 11/00*; E04d *5/02*
U.S. Cl. 161—160 **2 Claims**

Improved plastic foam insulated roof structures are prepared employing a generally constant composition copolymer of styrene and maleic anhydride containing from 15 to 35 weight percent maleic anhydride, the polymer having a solution viscosity of from about 3 to 12 centipoise (10 percent solution of the polymer in methylethylketone at 25° C.).

3,672,952
ADHESIVELY LAMINATED KRAFT PAPER PRODUCT
Stirling Robert Brown, Oxnard, Calif., and Charles A. Lee, Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,000
Int. Cl. B32b *3/00*
U.S. Cl. 161—146 **6 Claims**



An adhesively laminated kraft paper product of improved resistance to rupture is formed from at least two superposed kraft paper webs bonded one to the other with an adhesive disposed between said webs in accordance with a selected pattern of lines. The webs are bonded together

in limited regions separated by substantial unbonded regions. Each web is in a different condition of stress in a common direction in the plane of the product.

3,672,953
PROCESS FOR GROWING CELLS OF A MICROORGANISM ON A CARBON-CONTAINING LIQUID SUBSTRATE
Vernon F. Coty, Trenton, Israel J. Heilweil, Princeton, and Richard L. Leavitt, Pennington, N.J., assignors to Mobil Oil Corporation
Filed Feb. 9, 1970, Ser. No. 10,172
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 **10 Claims**

A process for growing cells of a microorganism on a carbon-containing liquid substrate which is partially water-insoluble wherein it is desirable that the amount of the residual substrate in relation to the amount of the cells be as low as possible. The amount of the residual substrate is kept low by maintaining a low concentration of the substrate in the culture medium during growth of the cells. The latter is accomplished by introducing liquid substrate into the culture medium in response to the presence on the surface of the culture medium of a layer of foam of a predetermined height. An antifoaming agent is also employed.

3,672,954
PROCESS FOR PREPARING DEPROTENIZED BLOOD EXTRACTS HAVING A HEALING ACTION AND PRODUCT OBTAINED THEREBY
Leonida Grippa, Nettuno, Italy, assignor to Istituto Nazionale Chimico Biologico S.r.l., Rome, Italy
Filed Aug. 20, 1969, Ser. No. 851,593
Claims priority, application Italy, Nov. 2, 1968, 40,904/68
Int. Cl. C07g *7/00*
U.S. Cl. 195—29 **6 Claims**

A process for preparing deproteinized blood extracts having a healing action which comprises the sequential steps of subjecting, after filtration, hemolyzed and defibrinated blood of animals just slaughtered, to enzymatic hydrolysis, deproteinizing the hydrolysate obtained by heating followed by an immediate cooling and then filtering, and after concentration or lyophilization of the filtrate, deproteinizing further the product with alcohol, removing the lipids therefrom in an organic solvent, purifying, removing histamine therefrom and drying under vacuum the extract obtained.

3,672,955
PREPARATION OF AN INSOLUBLE ACTIVE ENZYME
William L. Stanley, Richmond, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed May 20, 1970, Ser. No. 39,860
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **5 Claims**

Process for preparing an insoluble but active enzyme which comprises emulsifying an aqueous dispersion of the enzyme with a solution of an organic polyisocyanate in an essentially water-immiscible solvent.

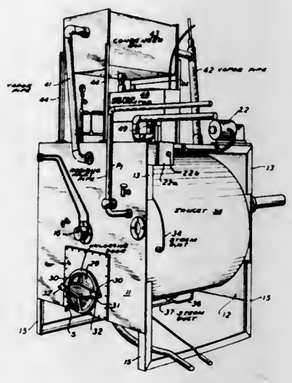
3,672,956
GERMINATION OF SPORES
Lewis G. Scharpf, Jr., Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 30, 1970, Ser. No. 7,264
Int. Cl. C12b *1/00*
U.S. Cl. 195—96 **17 Claims**

This invention relates to methods and compositions for germinating spores of the Bacillus or Clostridium genera utilizing lipases.

3,672,957
GERMINATION OF SPORES
Lewis G. Scharpf, Jr., Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 30, 1970, Ser. No. 7,265
Int. Cl. C12b *1/00*
U.S. Cl. 195—96 **8 Claims**

This invention relates to methods and compositions for germinating spores of the Bacillus or Clostridium genera utilizing amylases.

3,672,958
INDUSTRIAL DRY CLEANING COOKER-STILL
Albanis P. McCandlish, Cincinnati, Ohio, assignor to McGraw-Edison, Elgin, Ill.
Filed Feb. 9, 1970, Ser. No. 9,698
Int. Cl. B01d *3/02, 3/00, 1/00, 1/30*; B01f *11/60*; D06f *29/00*
U.S. Cl. 202—170 **2 Claims**

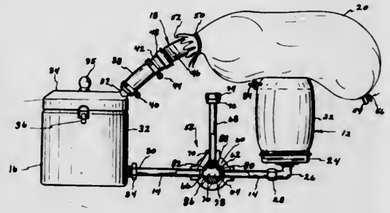


An industrial dry cleaning cooker-still for salvaging solvent such as perchlorethylene from oil residues comprises a cylindrical tub mounted horizontally and provided with heating ducts on the outside wall of the lower half portion thereof and with a surrounding jacket to form an air chamber open at the bottom and top for causing the upper half portion of the tub to be heated by convection. A rotor in the tub has a series of blades successively spaced along and around the rotor shaft which are set oblique to provide a screw propeller effect on the contents. The blades have outer arcuate edges adjacent to the wall of the tub and have leading and trailing cutter fins. The rotor is driven back and forth in opposite directions so that it will churn and cut up the contents while shifting the same back and forth along the tub. A scouring powder is added to the oil residue to keep the walls of the tub clean of encrustation. Upon driving the rotor in one direction only the contents are propelled out an unloading door.

3,672,959
PORTABLE DISTILLERY
Harold C. Sweet, Fenton, Mich., assignor of a fractional part interest to Merton E. Williams, Grand Rapids, Ohio
Filed Dec. 12, 1969, Ser. No. 884,516
Int. Cl. B01d *3/42*
U.S. Cl. 202—181 **2 Claims**

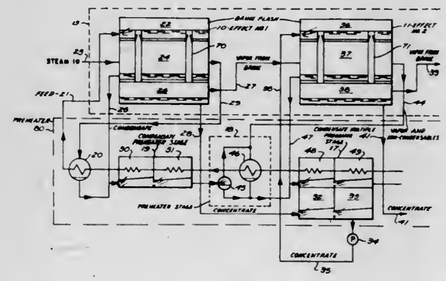
A distillery for production of fresh water, including a sealed reservoir and a heated boiler chamber with a conduit communicating between the bottom of the reservoir

and a low point on the boiler chamber to deliver water thereto. A second conduit delivers vapor from the top



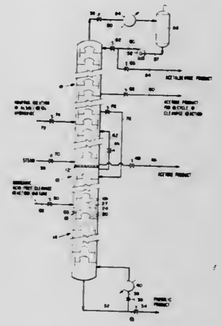
of the boiler chamber to a large surface area detachable plastic bag for condensing the vapor.

3,672,960
MULTIPLE EFFECT DISTILLATION SYSTEMS
David D. Kays, Claremont, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
Filed Feb. 10, 1970, Ser. No. 10,232
Int. Cl. B01d *3/00, 3/02*
U.S. Cl. 203—11 **4 Claims**



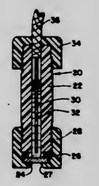
According to the multiple effect evaporation process disclosed herein, a feed liquor is sequentially operated on in a plurality of serially arranged evaporator effects. Hot vapor directed into one effect transfers heat to liquor in the effect to vaporize part of the liquor and to enrich the remainder of the liquor to form a concentrate. The hot vapor condenses on a heat transfer surface so that some of the hot vapor forms a condensate. The enriched liquor (concentrate) and the vapor from the liquor are forwarded to the next effect in such a manner that the vapor from the liquor transfers heat to the enriched liquor to vaporize part of the enriched liquor, thereby enriching the remainder of the enriched liquor. More vapor is condensed in each effect. The feed liquor is preheated by spontaneously vaporizing some of the enriched liquor from each effect to cool the remainder of the enriched liquor, and by transferring heat from the vapor from the enriched liquor to the feed liquor, thereby heating the feed liquor. The feed liquor is also preheated by condensing hot vapor from each effect on heat exchange tubes containing the effect of feed liquor. The feed liquor is also heated by spontaneously vaporizing a portion of the condensed vapor in the presence of heat exchange tubes carrying feed liquor to heat the feed liquor. Also, as concentrate is forwarded to each effect, it is spontaneously vaporized to cool some of the concentrate thereby establishing a temperature differential between the vapors from the previous effect and the cooled concentrate to effectuate heat transfer between the hot vapors and the cooled concentrate.

3,672,961
FRACTIONATION OF INORGANIC ACID-FREE, CLEAVAGE REACTION MIXTURE
Joseph R. Nixon, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Oct. 16, 1969, Ser. No. 867,011
Int. Cl. B01d *3/34*
U.S. Cl. 203—37 **6 Claims**



Disclosed is a continuous process for fractionating in a single, multiple plate distillation column an inorganic acid-mixture resulting from the cleavage reaction of hydroperoxide material selected from the group consisting of cumene hydroperoxide, cymene hydroperoxides, β-isopropylnaphthalene hydroperoxide, m- and p-diisopropylbenzene mono- and dihydroperoxides. The column has a lower fractional distillation zone and an upper fractional condensation zone. In the process the mixture is introduced into the lower zone and separated therein by fractional distillation into a liquid phenolic product and a vaporous acetaldehyde-acetone fraction. The vaporous fraction is introduced into the upper zone and separated by condensation into a liquid acetone fraction and a vaporous acetaldehyde fraction. The liquid acetone fraction is withdrawn from the bottom of the upper zone as acetone product, while the vaporous acetaldehyde fraction is withdrawn from the top of the upper zone and condensed. A portion of the condensed acetaldehyde fraction is returned to the upper zone as reflux. A portion of the liquid at any stage of the upper zone is withdrawn and returned to the lower zone as reflux. However, in a preferred embodiment of the process, an aqueous solution of alkali metal hydroxide material, at a rate sufficient to establish and maintain alkaline the liquid contents of the feed stage and any lower stages of the upper zone, as well as the acetone product, is introduced into the upper zone at the feed stage or preferably at a stage above the feed stage at which the liquid water content is high enough to maintain the alkali metal hydroxide material in solution. In such embodiment the lower zone reflux liquid is withdrawn from the upper zone at a stage above the stage at which the aqueous alkali metal hydroxide solution is introduced.

3,672,962
ION-SENSITIVE ELECTRODE AND METHOD OF MAKING AND USING SAME
Martin S. Frant and James W. Ross, Newton, Mass., assignors to Orion Research Incorporated, Cambridge, Mass.
Continuation of application Ser. No. 511,751, Dec. 6, 1965. This application Mar. 17, 1971, Ser. No. 125,390
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 9 Claims
A potentiometric type electrode for detecting sulfide ion activity in solution, and methods of making and using same. The electrode has, as its ion-sensitive element, a membrane of substantially imporous, high purity silver sulfide substantially free of metallic silver. The membrane is preferably made by compressing silver sulfide powder to form an imporous sheet or pellet. The membrane is



used by contacting one surface to a reference electrode at a fixed potential while contacting the other surface with the test solution, thus creating a half-cell across which voltage will vary as a function of ion-activity in the test solution in a Nernstian manner.

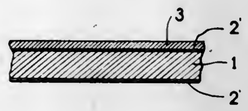
3,672,963
PROCESS OF COATING METALS WITH MERCURY OR MERCURY AMALGAMS
Vito A. De Palma, Tonawanda, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
No Drawing. Filed May 15, 1970, Ser. No. 37,892
Int. Cl. C22d *1/26*; C23b *1/00, 5/00*
U.S. Cl. 204—14 N 6 Claims
A process for wetting metals wherein, the metal to be coated is electropolished in a substantially alchol bath and is brought in proximity with a wetting agent; the potential is reversed, causing the wetting agent to adhere to the metal to be coated.

3,672,964
PLATING ON ALUMINUM, MAGNESIUM OR ZINC
Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,334
Int. Cl. C23b *1/00*; C23f *17/00*
U.S. Cl. 204—33 10 Claims
A process for plating aluminum, magnesium or zinc with an adherent nickel coating is provided. The process comprises contacting the surface of the metal to be treated with an aqueous solution of hydrofluoric acid or a material which releases hydrofluoric acid, such as ammonium bifluoride, and a soluble, catalytic metal salt of a metal such as nickel, iron or silver, and subsequently applying a nickel coating which is stress-free to said treated metal surface, preferably 0.2 to 1 mil in thickness, from an amine borane reductive plating solution maintained at a pH of about 6 to 7 and containing an organic monovalent or divalent sulfur compound. A thicker nickel overcoating can be subsequently applied to the nickel coating using either hypophosphite or borohydride reductive plating baths, or electroplated nickel. Further, adhesion and wear resistance can be upgraded by post heat-treating.

3,672,965
ELECTROPLATING OF ALUMINUM
William H. Harwood, Lawton, Okla., assignor to Continental Oil Company, Ponca City, Okla.
No Drawing. Filed June 29, 1970, Ser. No. 50,883
Int. Cl. C23b *5/00*
U.S. Cl. 204—14 N 10 Claims
Aluminum is electroplated upon metallic substrates by immersing the substrate as a cathode in an electrolyte which is an electrically conductive organoaluminum complex. An alkyl halide is included in the electrolyte in an amount of from 1 to 10 weight percent and functions as a deposit modifier.

3,672,966
PROCESS FOR THE TREATMENT OF ANODIC OXIDIZED ALUMINUM SURFACES
Roland Geisler, Dusseldorf-Holthausen, and Hans Gunther Germscheid, Hosel, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany
No Drawing. Filed July 8, 1970, Ser. No. 53,318
Claims priority, application Germany, July 26, 1969, P 16 38 039.3
Int. Cl. C23f *17/00*
U.S. Cl. 204—35 N 5 Claims
An improvement in the treatment of anodic oxidized aluminum surfaces with subsequent sealing with hot water or steam. The improvement comprises either an intermediate treatment or a combined treatment with the sealing of the aluminum surfaces at from 15° C. to 95° C. with a solution of acrylic acid and/or a polymer of acrylic acid, methacrylic acid or maleic acid having a specific viscosity of up to $\eta=0.75$ cp. in a 0.7% solution in 2 N NaOH at 20° C. The treatment prevents the formation of sealing films without impairing the anodic oxide coating or the quality of the after-sealing.

3,672,967
FINE CLOISONNÉ
Sadaichi Kuwano, 72, 1-chome, Saikudanicho, Tennojiku, Osaka, Japan
Filed May 28, 1970, Ser. No. 41,245
Int. Cl. C23f *17/00*
U.S. Cl. 204—38 C 4 Claims



Producing fine cloisonné jewelries for instance high-class lapel pins from a base of copper or brass by plating special silver alloy on the base before coating with cloisonné.

3,672,968
BATH FOR ELECTROLYTIC DEPOSITION OF MAGNETIC FILMS
Philip C. Baldwin, El Segundo, Calif., assignor to Burton Electrochemical Co., Inc., Los Angeles, Calif.
Filed Feb. 2, 1970, Ser. No. 7,791
Int. Cl. C23b *5/32*
U.S. Cl. 204—43 6 Claims
A bath for electrolytic deposition of magnetic films of relatively high, controlled coercivity. The bath comprises an ammoniacal solution of cobalt or cobalt and nickel salts, tungsten as tungstic acid or sodium tungstate and sodium hypophosphite. The concentration of sodium hypophosphite in the bath determines the coercivity of the resultant magnetic films, and permits control thereof over a wide range of values. Rochelle salt or other citrate

or tartrate may be used in the bath to aid complexing of the cobalt, and formaldehyde may be added to inhibit electroless deposition from the bath.

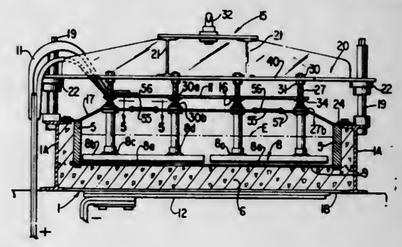
3,672,969
ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS
Fred I. Nobel and Barnet D. Ostrow, Roslyn, N.Y., assignors to Lea-Ronal, Inc., Freeport, N.Y.
Continuation of application Ser. No. 830,547, June 4, 1969, which is a continuation-in-part of application Ser. No. 634,134, Apr. 27, 1967, which in turn is a continuation-in-part of application Ser. No. 579,821, Sept. 16, 1966. This application Oct. 26, 1970, Ser. No. 84,228
Int. Cl. C23b *5/42, 5/28, 5/46*
U.S. Cl. 204—43 21 Claims
Organo-phosphorus compounds and their water soluble salts are incorporated into aqueous soluble cyanide gold or gold alloy plating baths.

3,672,970
ELECTROLYTIC CODEPOSITION OF COPPER WITH FINE PARTICLES
Thaddeus W. Tomaszewski, Dearborn, Mich., assignor to The Udylite Corporation, Warren, Mich.
No Drawing. Filed June 19, 1969, Ser. No. 834,868
Int. Cl. C23b *5/48, 13/00*
U.S. Cl. 204—52 R 8 Claims
Fine particles of non-conducting materials do not codeposit readily from aqueous acidic copper plating baths, unless there is present in the bath monovalent cations such as thallium, ammonium and the alkali metal cations. These monovalent cations are especially effective in acidic copper sulfate plating baths for the codeposition of dispersed fine, bath-insoluble, non-conducting particles such as barium sulfate, zirconium oxide, etc. Possible engineering applications for such 2-phase composite plates are in anti-seizing and improved wear resistance.

3,672,971
BRIGHT-ZINC PLATING BATH
Gerd Senge, Brackwede, and Rolf Sieburg, Eickum, Germany, assignors to Firma Riedel & Co., Bielefeld, Germany
No Drawing. Filed July 7, 1970, Ser. No. 53,038
Claims priority, application Germany, July 15, 1969, P 19 35 821.5
Int. Cl. C23b *5/10*
U.S. Cl. 204—55 R 6 Claims
A bright-zinc plating bath in which the primary brightening agent consists of a reaction mixture of polyamines, salts of the metals of Groups V and VI of the Periodic Table and sulfur-releasing organic compounds. The sulfur-splitting compounds are preferably aliphatic aromatic and heterocyclic compounds containing sulfur and include mercaptane, thiocompounds and the like.

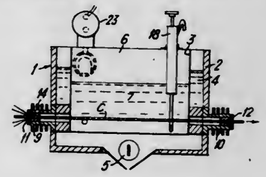
3,672,972
METHOD FOR FORMING ANODIC OXIDE COATINGS HAVING IMPROVED ADHESIVE PROPERTIES
Geoffrey A. Dorsey, Jr., Danville, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Continuation-in-part of application Ser. No. 707,962, Feb. 26, 1968. This application Mar. 23, 1970, Ser. No. 22,022
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 1 Claim
A method for improving the adhesive bond between an aluminum surface and other materials comprising pretreating the aluminum surface by anodizing in an acidic electrolyte in such as manner that an initially formed anodic oxide layer dissolves at about the same rate at which it is being formed and pseudoboehmite is formed in the oxide coating that remains on the aluminum surface.

3,672,973
CELL COVER WITH WEAKENED AREAS TO RELIEVE EXPLOSIONS
Vittorio De Nora, Nassau, Bahama Islands, and Richard E. Loftfield, Chardon, Ohio, assignors to Oronzio De Nora Impianti Elettrochimici S.p.A., Milan, Italy
Filed Nov. 28, 1969, Ser. No. 880,840
Int. Cl. C01d *1/08*; C22d *1/04*
U.S. Cl. 204—99 8 Claims



Describes a cell cover for alkali chlorine cells, primarily for use with dimensionally stable anodes, but also useful with graphite anodes, which cell cover is provided with weakened areas, in accessible place in the cell cover, through which the force of explosions can be vented and which weakened areas when ruptured by an explosion can be easily repaired.

3,672,974
METHOD OF IMPREGNATING AND COATING STRANDED BODIES
Roy Tomlinson, Middleton, England, assignor to Connollys (Blackley) Limited, Manchester, England
Filed Feb. 3, 1970, Ser. No. 8,298
Claims priority, application Great Britain, Feb. 6, 1969, 6,450/69
Int. Cl. B05c *3/12*; B44d *1/02*
U.S. Cl. 117—115 9 Claims



In order to coat and fill the interstices between the elements of an elongated flexible body, for instance a multiconductor cable core, formed by stranding or bunching a plurality of the elements together, the body is impregnated and coated with a filling material by passing it into a bath of filling material, in a liquid state, through an inlet die, through the liquid in the bath, and then out of the bath through an outlet die. The dies are wholly situated below the level of the liquid and are maintained at a temperature such that there is no substantial leakage of the liquid from the bath therethrough while the body is passing continuously through the bath. Preferably the dies are each mounted at the free end of a metal tube projecting from the wall of the bath and are maintained at the said temperature by means of external cooling fins on the tubes.

3,672,975
COPOLYMERIZATION OF POLYACRYLIC ACID WITHIN NYLON STRUCTURES
Gilbert N. Arons, Newton Highlands, Mass., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Filed June 9, 1970, Ser. No. 44,873
Int. Cl. B44d 5/12
U.S. Cl. 117—118 8 Claims
Copolymerization of polyacrylic acid within a nylon structure is accomplished by diffusing an aqueous solution of acrylic acid polymer, having a molecular weight range of from 2000 to 20,000 and at a pH of from 1.5 to 3.5, under elevated temperatures into the nylon structure, drying, and thereafter heat curing said diffused acrylic acid polymer to effect copolymerization with the nylon.

3,672,976
COPPER IMMERSION COATING ON ALUMINUM
Rudolf Paul Kallenbach CH8600 Duebendorf, 2 Postfach 15, Switzerland
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,964
Claims priority, application Germany, Sept. 17, 1969, P 19 47 003.2
Int. Cl. C23c 3/00
U.S. Cl. 117—130 R 8 Claims
The invention relates to a process for the deposition of a metal on aluminum and aluminum alloys by electrochemical displacement without the use of an external current, a method commonly termed immersion coating. It particularly relates to the deposition of copper and to novel compositions and baths for this purpose.

3,672,977
PRODUCTION OF POLYESTERS
Kimon Constantine Dardoufas, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,168
Int. Cl. C08j 1/44; D06m 13/00
U.S. Cl. 117—138.8 F 1 Claim
An improved multifilament polyethylene terephthalate yarn having a lubricating protective film applied thereon of from about 0.3 to about 0.6 weight percent based on the weight of the yarn of a liquid composition consisting essentially of about 10 to about 20 weight percent of said composition of each hexadecyl stearate and refined coconut oil, about 3.0 to about 6.0 weight percent of said composition of ethoxylated tallow amine, about 10 to about 20 weight percent of said composition of ethoxylated lauryl alcohol, about 8.0 to about 12.0 weight percent of said composition of sodium salt of alkylarylsulfonate, about 1.0 to about 3.0 weight percent of dinonylsodium-sulfosuccinate, about 1.0 to about 3.0 weight percent of said composition of 4,4'-thio-bis-(3-methyl-6-tert-butylphenol), about 35 to 50 weight percent of said composition of white mineral oil having a boiling point of between 510° F. and 620° F. wherein at least about 0.15 to about 0.30 weight percent is retained on said yarn, and then treating said yarn with from about 0.7 to about 1.2 weight percent on said yarn of a liquid composition selected from the group consisting of (a) about 95 to about 98 weight percent of said composition of triethylene glycol-dipelargonate and about 2 to about 5 weight percent of said composition of 2,2'-methylene-bis-(4-methyl-6-tert nonylphenol), and (b) about 13 to about 25 weight percent of said composition selected from the group consisting of glycerol monoleate and decaglycerol tetraoleate with ethoxylated tall oil fatty acids, about 12 to about 20 weight percent of said composition selected from the group consisting of sulfated glycerol trioleate and ethoxylated alkylamine, and about 55 to about 75 weight percent of said composition of hexadecyl (isocetyl) stearate.

3,672,978
METHOD OF RENDERING TEXTILE MATERIALS ABSORPTIVE
Rudi Widder, Eppelheim, and Harry Distler and Friedrich Fuchs, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Feb. 17, 1970, Ser. No. 12,127
Claims priority, application Germany, Feb. 22, 1969, P 19 08 966.8
Int. Cl. D06m 13/26
U.S. Cl. 117—139.5 CQ 5 Claims
Textile materials are rendered absorptive by impregnation with a sulfitobetaine containing an aliphatic hydrocarbon radical of medium chain length.

3,672,979
METHOD OF PRODUCING A PHTHALOCYANINE PHOTOCONDUCTIVE LAYER
Paul L. Gerace and Nikolaus E. Wolff, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
No Drawing. Filed Jan. 2, 1970, Ser. No. 462
Int. Cl. H01c 7/08; C09k 3/00
U.S. Cl. 117—201 10 Claims
A novel process for the preparation of a photoconductive layer of an electrophotographic plate which comprises combining phthalocyanine pigment particles and a binder material in a liquid medium and sandmilling and the combination is disclosed.

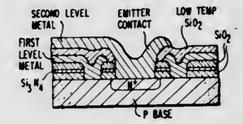
3,672,980
METHOD OF RAPIDLY DETECTING CONTAMINATED SEMICONDUCTOR SURFACES
William B. Glendinning, Belford, and Wellington B. Pharo, Neptune, N.J., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Dec. 1, 1970, Ser. No. 94,150
Int. Cl. B44d 1/18; C23c 11/00
U.S. Cl. 117—201 3 Claims
A silicon substrate is rapidly screened for surface contamination by exposing the substrate surface to a chemical vapor environment of nitric oxide, hydrogen fluoride and water at about 27 degrees C. to obtain a transparent surface film of about 50 to 100 angstroms in thickness, and then examining the film for surface uniformity and for the presence of geometric shapes.

3,672,981
ELECTROTHERMOGRAPHIC DUPLICATING SHEET
Donald D. Sloan, Weston, and Suresh D. Amberkar, Framingham, Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.
No Drawing. Filed Oct. 2, 1969, Ser. No. 863,365
Int. Cl. B44d 1/18
U.S. Cl. 117—201 10 Claims
An electrothermographic duplicating sheet is disclosed. A layer comprising a mixture of an electrostatically chargeable resin and an organic heat-activatable tackifying agent is adhered to a conductive base sheet. When subjected to radiant thermographic heat, both a latent tacky image and latent electrostatic image is formed.

3,672,982
CONDUCTIVE BASE SHEET FOR ELECTROPHOTOGRAPHIC REPRODUCTION SHEET
Frederick W. Travers, Wellesley, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
No Drawing. Filed July 29, 1970, Ser. No. 59,035
Int. Cl. G03g 5/00
U.S. Cl. 117—201 15 Claims
A conductive base paper sheet for receiving an electrophotographic coating, which sheet has a conductive and/or

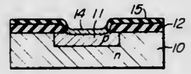
holdout layer containing a water soluble, conductive, ionizable resin, such as a quaternary ammonium salt polymer, and/or other synthetic resin which is normally tacky, and a water soluble inorganic salt of a strong inorganic mineral acid or a water soluble salt of acetic acid, preferably sodium, potassium and ammonium salts of phosphoric and hydrochloric acid, to detackify the otherwise tacky conductive or other synthetic resin.

3,672,983
PROCESS FOR MAKING METAL CONTACTS TO HIGH SPEED TRANSISTORS AND PRODUCT FORMED THEREBY
David De Witt, Poughkeepsie, Vir A. Dhaka, Hopewell Junction, and Avtar S. Oberai, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 9, 1970, Ser. No. 1,673
Int. Cl. H01l 7/34
U.S. Cl. 117—212 2 Claims



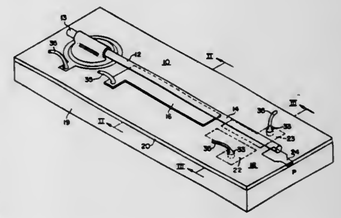
In a semiconductor device, the emitter and base metal contact stripes are at different levels and are separated by silicon dioxide and silicon nitride. By using such a silicon dioxide separatory layer in combination with an initial silicon nitride coating over the emitter and base regions in the semiconductor substrate, the silicon nitride coating being etched during processing, a high speed transistor having a very small emitter-base contact spacing, and a small emitter stripe width is obtained.

3,672,984
METHOD OF FORMING THE ELECTRODE OF A SEMICONDUCTOR DEVICE
Kogo Sato, Kokubunji, Hiroshi Kato, Tokyo, and Shinji Ohnishi, Kokubunji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 25, 1970, Ser. No. 14,116
Claims priority, application Japan, Mar. 12, 1969, 44/18,331
Int. Cl. H01l 1/14
U.S. Cl. 117—212 7 Claims



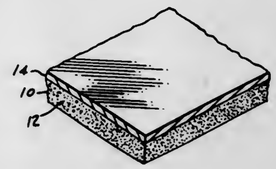
In forming an electrode in a semiconductor device, an aluminium layer is thinly deposited on the whole surface of a film of semiconductor oxide such as silicon oxide covering a major surface of a semiconductor substrate and on a portion of the major surface exposed in a hole formed in the film, the combination thus obtained is heated so that the portion of the aluminium layer deposited in the hole is alloyed with the semiconductor and so that the portion of the aluminium layer on the film is oxidized by the reaction with the semiconductor oxide, then an electrode metal is deposited on the alloy region thus obtained. The layer of the oxidized aluminium, that is, alumina is used as a passivation film.

3,672,985
CONDUCTOR ELEMENTS SPACED FROM MICROELECTRONIC COMPONENT SURFACE AND METHODS OF MAKING THE SAME
Harvey C. Nathanson and Robert A. Wickstrom, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Application May 31, 1968, Ser. No. 733,581, which is a division of application Ser. No. 465,090, June 18, 1965, now Patent No. 3,413,573. Divided and this application May 5, 1970, Ser. No. 34,807
Int. Cl. B44d 1/14
U.S. Cl. 117—212 9 Claims



A microelectronic component is provided with a conductive member having one or more extremities affixed to and supported by a substrate, such as an integrated circuit, and an extended portion from an extremity that is, or between two extremities that are, in permanently fixed spaced relation, substantially parallel to the substrate without intervening support material. The conductive member may be used for various purposes such as for the vibratory member of a resonant gate transistor or a conductive bridge crossing over elements of an integrated circuit. The conductive member may be formed by a method including use of a spacer layer in the position of the extended portion for deposition thereof followed by removal of the spacer layer.

3,672,986
METALLIZATION OF INSULATING SUBSTRATES
Frederick W. Schneble, Jr., Oyster Bay, John F. McCormack, Roslyn Heights, Rudolph J. Zeblisky, Hauppague, John Duff Williamson, Miller Place, and Joseph Polichette, Farmingdale, N.Y., assignors to Day Company, N.V., Netherlands Antilles
Continuation of application Ser. No. 561,123, June 28, 1966. This application Dec. 19, 1969, Ser. No. 882,782
Int. Cl. H05k 3/06
U.S. Cl. 117—212 8 Claims



A blank for the production of metallized articles is provided, which comprises an insulating base which is catalytic throughout its interior to the reception of electroless metal, and a surface on said base having super-imposed thereon and adhered thereto a unitary thin film of metal. In addition, methods for metallizing plastics and forming plated through hole printed circuit boards are also provided.

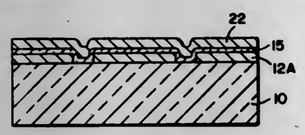
3,672,987
MASKED PHOTOCATHODE AND METHOD OF MAKING SAME

Terence W. O'Keeffe, Pittsburgh, and Jerome R. Morris, Trafford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Dec. 18, 1968, Ser. No. 784,801. Divided and this application Dec. 23, 1969, Ser. No. 887,707

Int. Cl. H01j 31/06

U.S. Cl. 117—212 2 Claims



A masked photocathode is provided having on a radiation transmissive support a mask pattern of a material that absorbs or reflects sensitizing radiation particularly in the ultraviolet. In one form, the mask is formed in a process that includes at least partial oxidation of a metal layer pattern. Alternatively, a mask pattern that blocks all radiation with high reflectivity may be formed by employing a metal with a subsequent insulating layer, such as of an oxide of the metal or a separately deposited insulator, for protection from the photocathode. In another form the photoemissive layer may be deposited directly on the transmissive support and have on its surface a pattern of organic material to provide the mask for electrons on the target side of the cathode as well as to prevent any radiation reflected from the target from impinging on areas from which photoemission is not desired.

3,672,988
METHOD OF MANUFACTURING BASES FOR ELECTROSTATIC RECORDING MATERIAL OR ELECTROPHOTOGRAPHIC MATERIAL

Yasuo Tamai and Satoru Honjo, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Nakanuma, Minami-Ashigara Machi Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,807

Claims priority, application Japan, Feb. 25, 1969, 44/64,082

Int. Cl. G03g 5/08, 7/00

U.S. Cl. 117—215 13 Claims

A method for manufacturing a base for an electrostatic recording material or electrophotographic sensitive material, which comprises forming an electroconductive layer on at least one surface of a base consisting of a non-metallic substance by treating said surface with a treating mixture containing colloidal alumina of more than 70% by weight of the non-volatile components of the mixture.

3,672,989
POROUS LAYER OF A SECONDARY ELECTRON MULTIPLIER AND A METHOD OF MANUFACTURING THE SAME

Ryuya Toyonaga, Kohza-gun, and Kazuo Sato, Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

No Drawing. Filed July 29, 1969, Ser. No. 845,882

Claims priority, application Japan, Aug. 3, 1968, 43/54,634

Int. Cl. C23c 13/00

U.S. Cl. 117—224 2 Claims

As a material for a porous layer of a secondary electron multiplier used for instance in a secondary electron conductive type camera tube or a secondary electron multiplier tube, it is desirable to use a metal oxide such as magnesium oxide, aluminum oxide or the like, which is chemically and physically stable. However, in general, a metal oxide has considerably high evaporation temperature so that vacuum evaporation under low vacuum of such oxide is difficult. In the method of the invention by utilizing an eutectic phenomenon of such metal oxide with secondary electron emissive substances having comparatively low evaporation temperature and being a nature of easiness of deposition under low vacuum, it is easily achieved to evaporate such a metal oxide under low vacuum. Thus a superior porous layer for use for instance in a secondary electron multiplier can be formed, which does not lose the porous property in a succeeding heat treatment during the process of manufacturing a multiplier tube.

3,672,990
PRODUCTION OF ELECTRODES

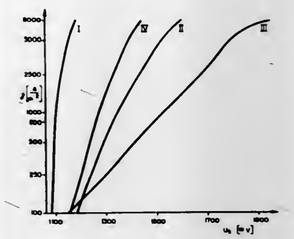
Fritz Beck, Ludwigshafen, and Gotthard Cziri, Bad Duerkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Mar. 25, 1970, Ser. No. 22,428

Claims priority, application Germany, Mar. 28, 1969, P 19 15 951.4

Int. Cl. B01k 3/02, 3/06; H01b 1/08

U.S. Cl. 117—230 7 Claims



Layers of an oxide mixture of at least one platinum metal and oxides of the elements silicon, tin or germanium are applied to a core of an anodically stable material for the production of activated electrodes. For this purpose, silicon, tin or germanium or a compound thereof with the platinum metal or a compound thereof is converted into oxidic compounds and these are fixed onto the surface of the anodically stable material by thermal treatment.

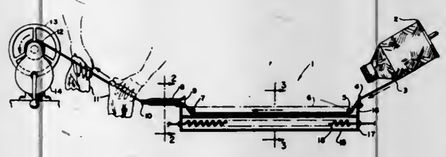
3,672,991
MAGNETIZED RECORDER THREAD

James V. Phillips, 30 King George Road, Warren, N.J. 07060

Filed June 2, 1970, Ser. No. 42,742

Int. Cl. H01f 10/04

U.S. Cl. 117—235 2 Claims



A magnetized recorder thread and method of making same, wherein a textile thread is easily and economically impregnated with a mixture of wax and iron oxide and which can be used only once and then is thrown away if desired.

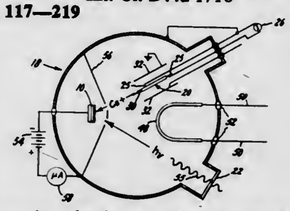
3,672,992
METHOD OF FORMING GROUP III–V COMPOUND PHOTOEMITTERS HAVING A HIGH QUANTUM EFFICIENCY AND LONG WAVELENGTH RESPONSE

Donald L. Schaefer, Skaneateles, N.Y., assignor to General Electric Company

Filed July 30, 1969, Ser. No. 846,155

Int. Cl. B44d 1/18

U.S. Cl. 117—219 8 Claims



A photoemitter having a high quantum efficiency and a low work function for photoemission, i.e. photoelectric threshold, is formed by depositing a 10–100 A. film of a wide bandgap Group III–V compound, e.g. gallium phosphide, atop a 0.5–10 micron thick layer of a second Group III–V compound, e.g. gallium antimonide, having a bandgap matching the desired photoelectric threshold. The film surface then is treated with cesium (or cesium and oxygen) to reduce the surface work function of the composite structure to the desired photoelectric threshold. When the Group III–V layer forming the photoemitter is epitaxially grown atop an oriented substrate of a semiconductive material such as gallium arsenide having a bandgap wider than the bandgap of the overlying layer, the resulting photoemitter is transparent only in a range between the bandgap of the substrate and the bandgap of the overlying layer.

3,672,993
METHOD AND COMPOSITIONS FOR CLEANING OVENS AND THE LIKE

Harry Ian Mitchell, Rochdale, and Kenneth Tomlinson, Bramhall, England, assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed July 30, 1970, Ser. No. 59,753

Int. Cl. C23g 1/02

U.S. Cl. 134—3 9 Claims

A method is provided whereby baked on organic deposits from a surface are readily removable wherein an alkali metal bicarbonate is applied to the clean surface and subsequent cleaning after soiling is effected by washing of the surface to remove the soiled coating. Compositions are provided for use in the process which include in addition to the alkali metal bicarbonate, an aqueous vehicle and a surface active agent. Other additives may also be included in the compositions such as suspensing agents, corrosion inhibitors, gelling agents and coloring materials. The process may be carried out by applying the compositions by means of a sponge, brush or cloth, from a spray bottle or by means of an aerosol type pressurized dispenser.

3,672,994
SODIUM-SULFUR CELL WITH THIRD ELECTRODE

Stephan P. Mitoff, Elnora, N.Y., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,521

Int. Cl. H01m 29/00, 35/00

U.S. Cl. 136—6 3 Claims

A sodium-sulfur cell is described which includes an anodic reaction zone, a cathodic reaction zone, a solid crystalline ion conductive electrolyte therebetween, and a third electrode positioned in the cathodic reaction zone and insulated electrically from a portion of the cathodic reaction zone. One type of third electrode for this cell has a metal mesh adjacent the solid electrolyte. A thin porous insulator is positioned on opposite surface of the metal mesh adjacent the cathodic reaction material. A method of charging a sodium-sulfur cell employing such a third electrode is described also.

3,672,995
SOLID ELECTROLYTE FOR ELECTRICAL CELLS

William E. Brown, Walnut Creek, and Robert G. Heitz and Charles A. Levine, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 567,587, July 25, 1966. This application May 8, 1969, Ser. No. 823,161

The portion of the term of the patent subsequent to Nov. 4, 1986, has been disclaimed

Int. Cl. H01m 3/02, 35/00

U.S. Cl. 136—6 5 Claims

An improved electrolyte-separator is provided for liquid anode/liquid cathode cells wherein its function is to conduct cations of the anode material without transmitting electrons. The electrolyte-separator is an impregnated glass or ceramic, open matrix wherein the discontinuous or disperse phase is an essentially non-migrating, cation-conducting salt. Such impregnated matrixes are particularly useful in batteries having molten alkali metal anodes and alkali metal sulfur mixtures for cathodes.

3,672,996
RECHARGEABLE ALKALINE GALVANIC CELL AND ELECTROLYTE THEREFOR

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation

Application June 20, 1968, Ser. No. 747,060, which is a Continuation-in-part of application Ser. No. 393,994, Sept. 2, 1964. Divided and this application Sept. 24, 1969, Ser. No. 863,747

Int. Cl. H01m 35/00

U.S. Cl. 136—6 14 Claims

A rechargeable alkaline galvanic cell having a zincate-containing electrolyte which comprises an aqueous alkaline medium containing dissolved zincate ions in an amount such that the electrolyte contains at least about 2 weight percent zinc and an ion of an amphoteric metal, i.e., a molybdate, arsenate or tungstate.

3,672,997
SEALED METALLIC OXIDE-INDIUM SECONDARY BATTERY

Elihu C. Jerabek, Delmar, N.Y., assignor to General Electric Company

Filed June 30, 1970, Ser. No. 51,172

Int. Cl. H01m 35/02

U.S. Cl. 136—20 4 Claims

A sealed metallic oxide-indium secondary battery is disclosed which comprises a casing, a pressed indium powder anode positioned in the casing, a separator adjacent the anode, a metallic oxide cathode spaced from the anode and adjacent the separator, and an aqueous alkaline electrolyte contained within the casing.

3,672,998
EXTENDED AREA ZINC ANODE HAVING LOW DENSITY FOR USE IN A HIGH RATE ALKALINE GALVANIC CELL

William G. Darland, Jr., Parma, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 738,474, Jan. 20, 1968, which is a continuation-in-part of application Ser. No. 612,645, Jan. 30, 1967. This application Dec. 5, 1969, Ser. No. 882,714

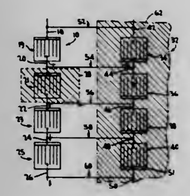
Int. Cl. H01m 41/00

U.S. Cl. 136—30 16 Claims

For use in a high rate alkaline galvanic cell, an extended area anode compact is provided composed of

elongated forms of zinc such as zinc fibers or wool, in pressure-formed, multipoint physical contact throughout the body of the anode compact. The anode compact may also be formed from fabricated metal such as expanded zinc metal or screen. In forming the anode compact, the zinc fibers, wool or expanded zinc metal is compression molded to a controlled low bulk density of below 2.5 grams per cubic centimeter. To attain reasonably high electrode efficiencies on the order of 70% of theoretical and above at electrical current drains of about 250 amperes per square foot, the anode compact is formed to a low bulk density of from about 1 to 1.75 and preferably from about 1 to 1.50 grams per cubic centimeter. Optimum electrode efficiencies are attained if the bulk density of the anode compact is maintained within the range of from about 1.0 to 1.25 grams per cubic centimeter. Suitable means are provided in the cell employing the anode compact for maintaining its internal temperature at least at a minimum operating temperature required to discharge the cell at high current densities.

3,672,999
USE OF UNILLUMINATED SOLAR CELLS AS SHUNT DIODES FOR A SOLAR ARRAY
Anthony J. Barbera, Greenbelt, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Dec. 19, 1968, Ser. No. 785,078
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **9 Claims**

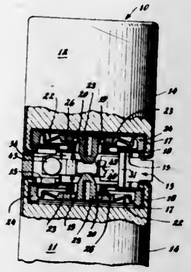


In a plurality of solar cells connected in a number of series paths to form both shaded and illuminated solar batteries, each individual cell of a shaded battery being electrically connected in parallel but in opposite polarity with a corresponding cell of an illuminated solar battery, the p-n junction solar cell of the shaded battery behaving as a forward biased diode forming a by-pass conducting path around the corresponding illuminated cell should it become non-conductive to thereby achieve an uninterrupted generation of electrical current by the remaining illuminated cells of the solar battery containing the non-conducting cell.

3,673,000
ANTIMAGNETIC ALKALINE MINIATURE GALVANIC CELL
Paul Ruetschi, Yverdon, Switzerland, assignor to Leclanche S.A., Yverdon, Vaud, Switzerland
Filed Apr. 27, 1970, Ser. No. 32,172
Claims priority, application Switzerland, May 1, 1969, 6,702
Int. Cl. H01n *21/00*
U.S. Cl. 136—107 **7 Claims**

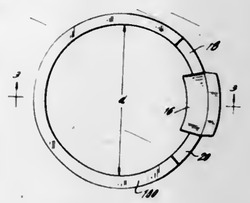
A non-magnetic alkaline minature galvanic cell having a positive electrode containing a metallic oxide has a nickel alloy housing containing at least 65% nickel and a resilient laminated closure having a spring bronze laminae in electrical contact with the negative electrode.

3,673,001
CONTROL MEANS FOR A RECHARGEABLE BATTERY
Robert J. Tolmie, Fairfield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 29, 1970, Ser. No. 50,573
Int. Cl. H01m *1/04*
U.S. Cl. 136—110 **7 Claims**



Means to control the charging of a rechargeable battery and which means include a spring restrained pressure responsive diaphragm within the battery and a pair of electrical contacts in circuit with the battery and the charging means for the battery. A switch actuator is moved by the diaphragm to actuate the contacts and open the battery charging circuit when a predetermined charge condition of the battery is reached.

3,673,002
CARRIER FOR VARIABLE BATTERY RETENTION
Walter R. Vignini, Peekskill, N.Y., assignor to Sonotone Corporation, Elmsford, N.Y.
Filed June 1, 1970, Ser. No. 42,089
Int. Cl. H01m *1/04*
U.S. Cl. 136—173 **2 Claims**



An interference fit is provided for a battery inserted in a carrier for hearing aid use. The degree of interference is such as to retain the battery in place prior to insertion of the carrier into the hearing aid housing to facilitate its handling. The interference is reduced, however, when the carrier is inserted into the housing by a camming surface included therein. Such arrangement establishes almost a "floating" condition for the battery when the carrier is in normal operating position, to simplify battery contact spring design.

3,673,003
THERMOCOUPLE FOR NUCLEAR ENVIRONMENT
Carrol Dean Starr, Whippany, and Teh Po Wang, Cedar Grove, N.J., assignors to Wilbur B. Driver Company
No Drawing. Filed Sept. 18, 1969, Ser. No. 859,203
Int. Cl. H01v *1/22*
U.S. Cl. 136—236 **5 Claims**

A thermocouple which exhibits substantially no change in composition when exposed to neutron irradiation. The

positive thermoelement of this thermocouple comprises, as expressed in percent by weight:

8%–10% chromium;
0%–1.5% silicon; and
Balance—nickel

The negative thermoelement of this thermocouple comprises, as expressed in percent by weight:

25%–35% chromium;
0%–1.5% silicon; and
Balance—nickel

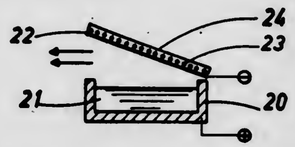
3,673,004
METHOD OF MAKING PISTON RINGS
Traian Dumitrescu, Bucharest, Rumania, assignor to Institutul de Ceretari Tehnologice Pentru Constructii de Masini
No Drawing. Filed July 23, 1970, Ser. No. 57,800
Int. Cl. B22d *15/02, 25/06*
U.S. Cl. 148—3 **6 Claims**

A method of making piston rings for internal-combustion engines, external-combustion engines such as steam engines, air compressors and the like in which the rings are individually cluster cast from an alloy-cast iron containing 4.0 to 5.0% silicon, 0.6 to 1.2% by weight manganese and 0.2 to 0.7% by weight phosphorus. The cast iron is treated in the liquid state with bismuth to yield a raw metallurgical structure, upon casting, of cementite, pearlite, ledeburite and a phosphoric eutectic.

3,673,005
PROCESS FOR BORATING METALS, ESPECIALLY STEEL
Helmut Kunst, Niedersachsen, Germany, assignor to Elektroschmelzwerk Kempten G.m.b.H., Munich, Bavaria, Germany
No Drawing. Filed Sept. 18, 1969, Ser. No. 859,172
Int. Cl. C23c *9/04*
U.S. Cl. 148—6 **5 Claims**

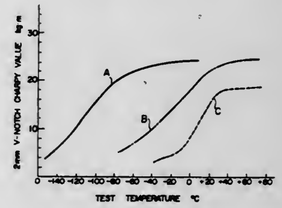
Process for borating metals in which the metal is treated with a pulverized borating agent containing a fluoborate and/or boron fluoride as an accelerating agent.

3,673,006
METHOD AND APPARATUS FOR SURFACE COATING ARTICLES
Emile Plumat, Gilly, and José Lelong, Fleurus, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium
Filed Sept. 9, 1968, Ser. No. 758,334
Claims priority, application Great Britain, June 26, 1968, 30,531/68; Luxembourg, Sept. 18, 1967, 54,489
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—106 R **10 Claims**



Method and apparatus for applying a substance vaporizable by electron bombardment to a surface to form a coating thereon. The substance is vaporized in a vacuum by being bombarded with electrons. The vapor, thus formed, travels from where it is formed and is deflected onto such surface to coat the same.

3,673,007
METHOD FOR MANUFACTURING A HIGH TOUGHNESS STEEL WITHOUT SUBJECTING IT TO HEAT TREATMENT
Katao Miyano and Masahide Shimazaki, Muroran, Japan, assignors to Japan Steel Works Ltd., Tokyo, Japan
Filed Nov. 14, 1969, Ser. No. 876,919
Claims priority, application Japan, Nov. 29, 1968, 43/87,011
Int. Cl. C21d *1/02, 7/14*
U.S. Cl. 148—12 **1 Claim**



A high toughness steel especially adapted to be used as a material for constructions to be used at low temperatures is manufactured by the steps of making an ingot by adding to a fundamental steel having a composition of from 0.03% to 0.13% carbon, 0.10% to 0.60% silicon, from 0.20% to 2.00% manganese, up to 0.035% aluminium and the balance being iron and impurities, at least one element selected from the group consisting by weight of up to 0.2% niobium, up to 0.2% vanadium, up to 0.15% titanium, up to 0.20% zirconium and up to 0.30% tantalum; rough hot rolling or forging the ingot to form a billet or slab; the billet or slab being cooled during said rolling or forging to below the A_1 transformation point; uniformly reheating the billet or slab from below the Ar_1 transformation point at its final rolling or forging stage to a temperature within 150° C. above the Ac_3 transformation point; working the billet or slab to cause a more than 10% thickness reduction, said working being completed at a temperature in the vicinity of the Ar_3 transformation point; and air cooling or furnace cooling the slab or billet to room temperature.

3,673,008
CARBONITRIDING AND OTHER THERMAL TREATMENT OF COLUMBIUM STEELS
Mahlon E. Wood, Farmington, Mich., assignor to National Steel Corporation
No Drawing. Filed Apr. 25, 1969, Ser. No. 819,424
Int. Cl. C21d *1/74, 7/00*
U.S. Cl. 148—12 **12 Claims**

Ferritic grain coarsening, and concomitant loss of strength and fatigue properties, are avoided in carbonitriding and other processes in which cold-formed steel articles are heated above the strain recrystallization temperature but below the A_3 critical temperature. Use of steel containing about 0.006–0.018% columbium for cold-formed parts heated to carbonitriding temperatures produces an ASTM grain size of 5 or finer.

3,673,009
METHOD FOR PRODUCING A PART FROM STEEL SHEET
Bernard S. Levy, Chicago, Ill., assignor to Inland Steel Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 743,295, July 9, 1968. This application Dec. 17, 1969, Ser. No. 885,979
Int. Cl. C21c *9/46*
U.S. Cl. 148—12.3 **11 Claims**

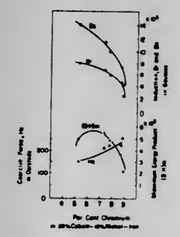
Steel having 0.04 wt. percent carbon and 0.25–1.00 wt. percent manganese is provided with a strengthening addi-

tion of either (1) 0.008 wt. percent nitrogen or (2) said nitrogen content plus 0.05–0.25 wt. percent silicon. The steel is rolled into a coil of rolled steel sheet having a yield strength of about 40,000–50,000 p.s.i. A steel part is formed from the sheet in a forming operation which increases the yield strength to about 60,000–65,000 p.s.i.; and the steel part is then age hardened at an elevated temperature to increase the yield strength to about 65,000–75,000 p.s.i. An optional heavy temper roll is performed when the forming operation is relatively mild.

3,673,010
COLD-WORKABLE PERMANENT MAGNET ALLOY

Jiro Matsumoto, Masatoshi Takeuchi, Arimichi Abe, and Koji Sengoku, Sendai, Japan, assignors to Tohoku Special Steel Works Limited, Naga-machi, Sendai, Japan

Continuation of application Ser. No. 638,199, May 15, 1967. This application May 19, 1970, Ser. No. 34,513
Int. Cl. C22c 39/12; H01f 1/04
U.S. Cl. 148—31.57 **1 Claim**



A permanent magnet alloy mainly containing Co, Ni, Cr and Fe and having a replacement relation between Co and Ni of Co wt. percent=50–2.5(Ni wt. percent)~53–1.5(Ni wt. percent), which can very easily be subjected to mechanical working and cold working and yet is very cheap owing to the presence of less than 1% by weight of V contrary to Vicalloy containing 10–14% by weight of V.

3,673,011
PROCESS FOR PRODUCING A CESIUM COATED GALLIUM ARSENIDE PHOTOCATHODE

Gene Strull, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Mar. 7, 1969, Ser. No. 805,130. Divided and this application Nov. 2, 1970, Ser. No. 86,202
Int. Cl. H01l 7/34, 15/06
U.S. Cl. 148—175 **4 Claims**

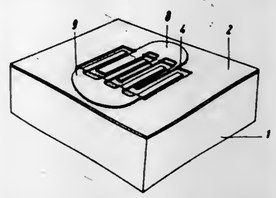
A photocathode is comprised of a monocrystalline layer of gallium arsenide grown on either a germanium or a gallium arsenide substrate. A monatomic layer of cesium is disposed on the monocrystalline layer. An electric contact affixed to the photocathode provides a means for connecting it electrically into electrical circuits. The gallium arsenide and the cesium are deposited on the substrate in essentially one continuous growth process.

3,673,012
METHOD OF PRODUCING A TRANSISTOR

Reinhold Kaiser, Heilbronn, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed July 29, 1969, Ser. No. 845,773
Claims priority, application Germany, Aug. 1, 1968, P 17 64 766.4
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **2 Claims**

The invention relates to a method of producing a transistor, such as a control transistor in which the emitter regions are formed by diffusion through strip-like apertures in an insulating layer on a semiconductor body. The



strips are positioned side by side and decrease in width in the direction of succession of the strips.

3,673,013
ILLUMINATING FLARE COMPOSITION

George A. Lane, Midland, and William Arthur Smith, Westland, Mich., and Stephen C. Dollman, Morris Plains, Seymour M. Kaye, Dover, and Francis R. Taylor, Mount Arlington, N.J.; said Lane and said Smith assignors to The Dow Chemical Company, Midland, Mich., and said Dollman, said Kaye and said Taylor assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,643
Int. Cl. C06d 1/10
U.S. Cl. 149—19 **10 Claims**

Disclosed is an illuminating flare composition comprising particulate magnesium as fuel, an alkali metal nitrate or perchlorate as oxidizer together with a binder system containing a high percentage of oxygen. The binder system is made up of the reaction product of an amine or acid anhydride curable epoxy resin and an amine terminated composition or acid anhydride as curing agent together with a plasticizer containing at least 40 percent oxygen.

3,673,014
FLARE COMPOSITION

George A. Lane, Midland, and William Arthur Smith, Westland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,642
Int. Cl. C06d 1/10
U.S. Cl. 149—19 **7 Claims**

Disclosed is an illuminating flare composition which comprises a particulate alkali metal nitrate or perchlorate, as oxidizer, particulate magnesium as fuel, together with a binder. The binder comprises the reaction product of an amine or acid anhydride curable epoxy resin and an amine terminated composition or acid anhydride wherein the epoxy resin comprises from 30 to 70 percent of the binder. The binder is further characterized by containing at least 30 percent oxygen and making up from 18 to 24 percent of the flare composition.

3,673,015
EXPLOSIVE PYROTECHNIC COMPLEXES OF FERROCENE AND INORGANIC NITRATES

Gilbert P. Sollott, Plymouth Meeting, and William R. Peterson, Jr., Levittown, Pa., assignors to the United States of America as represented by the Secretary of the Army

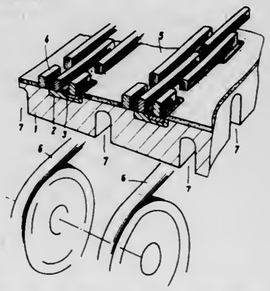
No Drawing. Filed May 23, 1969, Ser. No. 827,161
Int. Cl. C06f 3/06
U.S. Cl. 149—29 **25 Claims**

New explosive and/or pyrotechnic complexes are formed from ferrocene and its derivatives with specified inorganic nitrates, i.e., mercuric, ceric, and cupric, each of these nitrates known generally as being insensitive to sparks or impact.

3,673,016
METHOD OF DIVIDING A SEMICONDUCTOR WAFER

Dieter Gerstner, Willsbach, Germany, assignor to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany

Filed Dec. 1, 1969, Ser. No. 881,151
Claims priority, application Germany, Dec. 2, 1968, P 18 12 129.4
Int. Cl. H01l 7/50
U.S. Cl. 156—6 **7 Claims**



A method of dividing a semiconductor wafer having a plurality of components or circuits at one face of the wafer comprising partially sawing the wafer from the opposite face of the wafer along lines for the division of the wafer into individual components or circuits so that along these lines the thickness of the wafer is reduced in comparison to the remainder of the wafer, and etching the sawn face of the wafer without the use of a mask to complete the division. The method is particularly suitable for use with wafers, having thick self supporting conducting paths which extend over the surface of the wafer and are connected to the electrodes of the components or circuits.

3,673,017
PARTICLE TRACK ETCHING METHOD

David D. Peterson, Bristol, England, assignor to General Electric Company

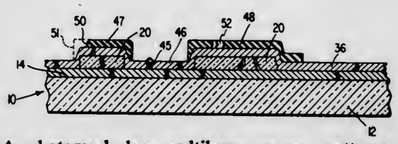
Filed July 9, 1970, Ser. No. 53,495
Int. Cl. B44c 1/22; C23f 1/00
U.S. Cl. 156—7 **5 Claims**

A new particle track etching method is disclosed wherein a smoother and more uniform track profile is obtained by controlling the chemical concentrations of the reagents and products so that the etching occurs at a uniform rate. Specifically, the etchant is maintained saturated with etch products throughout the entire etching procedure.

3,673,018
METHOD OF FABRICATION OF PHOTOMASKS

Andrew G. F. Dingwall, Somerville, N.J., assignor to RCA Corporation

Filed May 8, 1969, Ser. No. 823,051
Int. Cl. C23f 1/02
U.S. Cl. 156—11 **3 Claims**



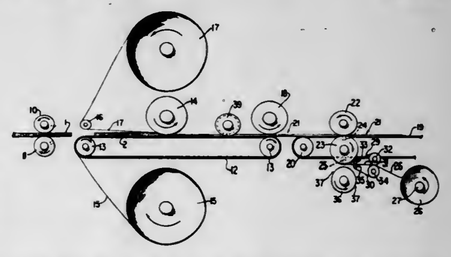
A photomask has multilayer opaque patterns on a transparent substrate. Each pattern includes a bottom layer and a top layer, each of a material capable of being etched by a substance which will not etch the substrate, and an intermediate layer of a material capable of being etched by a substance which will not etch the bottom and top layers. The several layers compensate for defects in each layer.

An improved photomask fabrication method includes forming the abovementioned patterns by successively depositing the bottom and intermediate layers, photoetching the intermediate layer into a desired pattern, depositing the top layer, and then photoetching the top and bottom layers into a desired pattern.

3,673,019
APPARATUS FOR MAKING ABSORBENT PADS

Arthur B. Erekson, Scarsdale, N.Y., assignor to Borden, Inc., New York, N.Y.

Filed Nov. 20, 1969, Ser. No. 878,390
Int. Cl. A41h 37/00
U.S. Cl. 156—66 **9 Claims**



Improvement in apparatus and method for producing disposable absorbent pads, such as diapers, comprising applying pressure-sensitive strips of adhesive tape to the diapers by means of apparatus which includes conveyor belt for advancing diapers, the conveyor belt being narrower than the diapers thus allowing the side edges of the diapers to extend beyond the conveyor belt; reel of adhesive tape ribbon disposed at each side and below the conveyor belt; rotatable drum, provided with suction valves, positioned below the overlapping side edges of the diapers, means for advancing the ribbon against the drum whereby the ribbon is held against the drum by the suction valves, rotatable cutting means for severing the ribbon into strips of adhesive tape while the ribbon is held against the drum, situated at each side and below the conveyor belt; and rotatable pressure roll, disposed directly above the rotatable drum, for affixing the strip of adhesive tape to the overlapping edges of the diapers in cooperation with the rotatable drum.

3,673,020
PROCESS FOR THE MANUFACTURE OF PARTICLE BOARDS UTILIZING A DRY ORGANIC BINDER

Norbert Maurice De Jaeger, 264 Avenue Geavaert a, Genval, Belgium

No Drawing. Filed Mar. 4, 1969, Ser. No. 804,302
Claims priority, application Luxembourg, Mar. 11, 1968, 55,657
Int. Cl. B29j 5/00
U.S. Cl. 156—62.2 **13 Claims**

A process for the manufacture of boards consisting of at least one layer, wherein sawdust having a particle size below 1 mm. is mixed with a quantity of binding agent ranging between 5% and 15% of the weight of the dry sawdust, and a layer is formed by spreading the mixture in a layer of such a thickness that a final layer of a thickness ranging between 0.5 mm. and 5 mm. is obtained, and by simultaneously applying a pressure ranging between 80 kg./cm.² and 150 kg./cm.² at a temperature ranging between 130° C. and 180° C.

A process in which an agent increasing the internal heat resistance is added to said mixture.

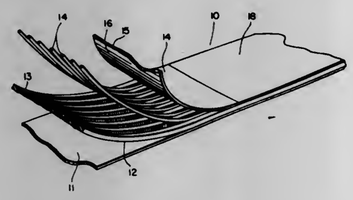
3,673,021
METHOD OF MAKING A LAMINATED MAT FROM PLIES OF FIBROUS PULP MATERIAL
Curt G. Joa, Town of Ocean Ridge, Fla.
(Box 1121, Boynton Beach, Fla. 33435)
Filed Feb. 3, 1969, Ser. No. 795,840
Int. Cl. B29j 5/00
U.S. Cl. 156—62.4 3 Claims

A composite mat of laminated separately formed plies of pulp fibers picked from a pulp board and sprayed with adhesive while airborne to thoroughly expose the fibers to the adhesive before the ply is formed. Such multiple plies are laminated and bound together by said adhesive into said composite mat. The apparatus comprises a tandem series of pulp fiberizers which concurrently form such plies and laminate the plies into said composite mat.

3,673,022
PROCESS FOR ADHERING A POLYESTER FIBROUS MATERIAL WITH A RUBBER
Ichiro Iwami, Toshio Honda, and Yukio Fukuura, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 27, 1969, Ser. No. 828,162
Claims priority, application Japan, June 4, 1968, 43/37,752
Int. Cl. B32b 25/02
U.S. Cl. 156—166 12 Claims

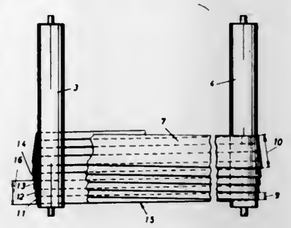
A strong adhesion of a polyester fibrous material and a rubber is obtained by using two baths for immersing the polyester fibrous material. The first bath is an aqueous solution of triglycidyl isocyanurate, which is a reaction product of isocyanuric acid and epichlorohydrin and this bath may be added with a second component of an amine, amine derivative, polybasic carboxylic acid or polybasic acid anhydride. The second bath is an aqueous solution of a resorcin-formaldehyde resin and a rubber latex solution. Namely the polyester fibrous material is immersed in the first bath and the immersed fibrous material is applied to a heat-treatment and then immersed in the second bath, thereafter applied to again a heat-treatment and the thus treated fibrous material is contacted with a vulcanizable rubber composition and the assembly is subjected to a vulcanization.

3,673,023
PROCESS OF PRODUCING REINFORCED LAMINATE
William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.
Filed June 24, 1970, Ser. No. 49,396
Int. Cl. B29h 7/22; B32b 3/12, 31/26; F16g 1/10
U.S. Cl. 156—137 3 Claims



Flexible laminated products such as printing blankets, belts, and the like of exceptionally high tensile strength are made by laying helically wound, continuous reinforcing cords in what is essentially a screw thread or threads extending between the lateral margins. A guide which automatically lays the cord in the helical groove bears teeth engaging the grooves on the base ply. Grooves are deep enough to house the cord. Walls between successive turns are thick enough to insulate the cords and prevent abrasive contact. The product is finished by a top ply laid over the wound carcass.

3,673,024
METHOD FOR THE MANUFACTURE OF ENDLESS DRIVE BELTS AND CONVEYOR BANDS
Erik Birger Eriksson, Halmstad, Sweden, assignor to Nordiska Maskinfilt Aktiebolaget, Halmstad, Sweden
Filed Mar. 6, 1969, Ser. No. 804,773
Int. Cl. B29h 7/22
U.S. Cl. 156—137 10 Claims



The invention relates to a method for the manufacture of endless belts and bands. The method is carried out in such a way that a rather narrow bat having fibres orientated essentially in the longitudinal direction is wound over and between two parallel rollers and the web thus obtained is needled in a needling machine. The invention also embraces a machine for carrying such a method into effect.

3,673,025
METHOD OF MAKING A POLYURETHANE RUBBER COVERED ROLL
Yasuo Fukuyama and Yosuke Okada, Hirakata-shi, Japan, assignors to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan
Original application Oct. 23, 1968, Ser. No. 769,844, now Patent No. 3,490,119. Divided and this application Aug. 11, 1969, Ser. No. 862,127
Int. Cl. B65h 81/00
U.S. Cl. 156—154 5 Claims



This polyurethane rubber covered roll consists of a metal core fixed by winding with a fiber previously impregnated with thermosetting resin solution to form a substratum and then a polyurethane rubber layer is cast molded on the periphery of said substratum.

3,673,026
METHOD FOR THE MANUFACTURE OF LAMINATED FABRICS
Stirling Robert Brown, Oxnard, Calif., assignor to International Paper Company, New York, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,002
Int. Cl. B32b 31/08
U.S. Cl. 156—164 24 Claims

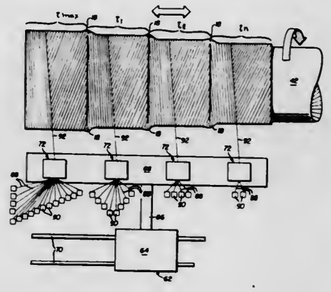
A method for the manufacture of laminated fabrics wherein separate webs are differentially stretched and bonded in superposed relation by means of limited bondings separated by substantial unbonded regions. Thereafter the bonded webs are relaxed, whereupon one web contracts more than the other web, and the webs separate in the unbonded regions. The webs also may be individually deformed before being superposed so as to project a portion of the fibers of each web out of the plane of each web in a pattern over substantially the entire surface area of each web and provide relatively premanently set interruptions in the planar structure of said web on at least one surface of the web for purposes of increasing the stretchable quality of the webs. The deformed webs may be superposed with surface interruptions of one web facing inwardly of the superposed webs so as to abut the other web or its surface interruptions and thus maintain the superposed webs out of intimate contact at least in the unbonded regions.

3,673,027
METHOD OF FORMING COATED FIBERS
Samuel Binford Spencer, Perrysburg, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.
Filed May 4, 1970, Ser. No. 34,152
Int. Cl. D02g 3/40
U.S. Cl. 156—167 9 Claims

A strand is made up of a large number of continuous filaments bonded together by a plastic coating, and is particularly suited for chopped strand employed in a matrix of plastic compatible with the coating where the coating binds the filaments when divided into short strand lengths.

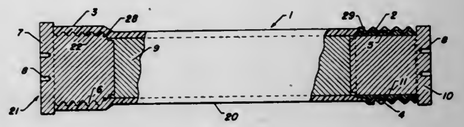
Strand is drawn under tension over a surface to separate the filaments and is passed through a mass of finely divided particles of the coating plastic. Particles adhere to and are carried with the strand into a heated region where the softening temperature of the plastic is reached. The plastic flows and coalesces to form a binding coating on the cooled strand which retains its integrity when chopped or otherwise severed into short lengths.

3,673,028
GLASS FIBER CONTAINER AND METHOD OF CONSTRUCTION
Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Oct. 1, 1969, Ser. No. 862,727
Int. Cl. B31c 9/00, 13/00
U.S. Cl. 156—172 3 Claims



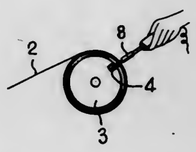
A filament-wound glass fiber container of a hollow tubular configuration having a wall composed of a plurality of discontinuous axially overlapping sections integrated with one another at the areas of overlap to form a homogeneous monolithic body. Also disclosed is a method of producing the container. The method includes the steps of simultaneously winding a plurality of spaced apart axially aligned groups of resin saturated glass fiber strands on a core, each group being wound in partially overlapping relation to the group or groups immediately adjacent to it and forming a predetermined section of the wall of the container. Thereafter the resin is cured.

3,673,029
METHOD OF MAKING A THREADED FILAMENT WOUND PIPE
Jack Lowrie McLarty, Milwaukee, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.
Original application July 9, 1969, Ser. No. 840,403. Divided and this application July 31, 1970, Ser. No. 64,930
Int. Cl. B65h 81/00
U.S. Cl. 156—175 5 Claims



An improved threaded filament wound pipe and the method of manufacture thereof. The improvement comprises helically winding resin impregnated fiberglass filaments upon a mandrel knurled at the ends in the form of helical threads. The helpical winding pitch is greater than the thread pitch. As a result, the fiberglass filaments alternately deviate in radial disposition with respect to the pipe axis, thereby forming both interior and exterior pipe threads at the ends of the finished pipe.

3,673,030
METHOD FOR MANUFACTURING ARTICLES MADE OF FLEXIBLE PLASTIC
Philippe Blanc de La Naulte, Paris, and Roland Ginhoux, Le Perreux, Val-de-Marne, France, assignors to Comptoir Europeen de Distribution et de Representation, Paris, France
Filed Feb. 13, 1970, Ser. No. 11,172
Claims priority, application France, Feb. 13, 1969, 693,483
Int. Cl. B65h 81/00
U.S. Cl. 156—193 3 Claims

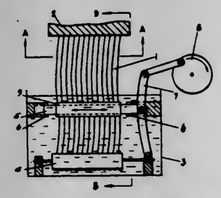


A method of manufacturing articles made of a flexible plastic, notably polyethylene, supplied in the form of a roll of a continuous sheet, which comprises: constituting, as the unrolling of a predetermined length of said continuous sheet proceeds, a stack of parallel layers formed by moving the continuous sheet at constant rate and always in the same direction; locally interlocking together the stacked layers; slicing through said layers in a region spaced relative to said region where said layers are joined together; flattening out the stack of sliced layers in order to obtain a pile of layers; and cutting through the pile of layers to the pattern of the article to be made up.

3,673,031
METHOD OF PRODUCING A LAMINATE FOR USE AS A LAYER IN A CORRUGATED BOARD
Veikko Mauri Moilanen, Imatra, Finland, assignor to Enso-Gutzeit Osakeyhtio, Imatra, Finland
No Drawing. Continuation-in-part of application Ser. No. 579,453, Sept. 6, 1966. This application July 2, 1970, Ser. No. 52,069
Int. Cl. B31f *1/22*
U.S. Cl. 156—206 5 Claims

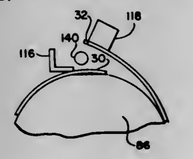
A method of producing a laminate for use in making corrugated board which is strong and resistant to severe weather conditions and which withstands rough handling. A substantially uniform layer of synthetic resinous material is applied between two webs of fibrous material, which material can be glued with conventional water miscible glues, the resinous material layer is bonded to the webs without finally hardening the layer, so that the laminate may then be shaped and the layer finally hardened.

3,673,032
PROCESS FOR THE PRODUCTION OF THERMOPLASTIC SHEETS HAVING LONGITUDINAL AND TRANSVERSE CORRUGATIONS
Thomas John Komoly, London, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation of application Ser. No. 570,586, Aug. 5, 1966. This application Mar. 17, 1971, Ser. No. 125,433
Claims priority, application Great Britain, Aug. 6, 1965, 33,736/65
Int. Cl. B31f *1/20*
U.S. Cl. 156—210 14 Claims



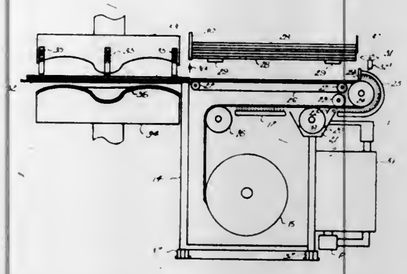
Thermoplastic polymeric sheet of improved rigidity is formed by passing a longitudinally corrugated extruded thermoplastic polymeric sheet in the longitudinal direction between two means for introducing further corrugations or undulations in said sheet, whereby the sheet is permitted to move in the longitudinal direction but restrained from movement in any other direction relative to the points, said sheet being in a mouldable state during at least part of its travel between said means and further corrugations or undulations being introduced into said sheet by reciprocating said means relative to one another.

3,673,033
METHOD FOR MAKING DISPOSABLE PLASTIC BUCKET
Gene MacDaniel, Lithonia, and Howell T. McElvy, Decatur, Ga., assignors to Sweethart Plastics, Inc., Wilmington, Mass.
Filed Feb. 2, 1970, Ser. No. 7,995
Int. Cl. B29d *27/00*; B31b *17/74*
U.S. Cl. 156—217 9 Claims



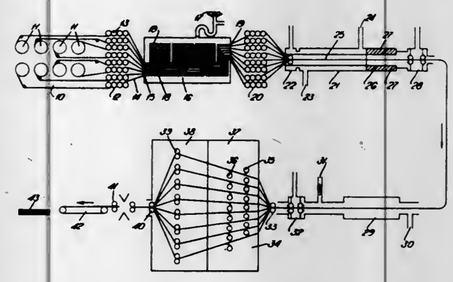
A method for producing two-piece containers wherein a turret carrying a plurality of container forms each has applied to it a side wall and a separately preshaped bottom, and as the turret rotates through successive stations, the side seam of the side wall is heat sealed closed, and the preformed bottom is heat sealed to the bottom of the side wall. Thereafter on a secondary turret the container rim is rolled and the fully formed container is ejected from the machine.

3,673,034
METHOD FOR COATING, LAMINATING, AND MOLDING AUTOMOBILE FLOOR COVERINGS
William H. Squier, 104 Eastbourne Road, Greenville, S.C. 29611
Filed May 5, 1969, Ser. No. 821,924
Int. Cl. B29c *3/00*
U.S. Cl. 156—222 6 Claims



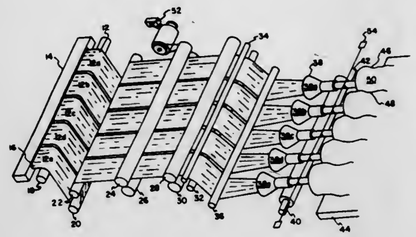
A process is disclosed for the molding of automotive floor coverings. A molten thermoplastic composition is applied to the back of a length of carpet. The carpet is immediately laminated to a backing pad and the laminate is immediately formed in a mold.

3,673,035
METHOD OF MANUFACTURING CARBON FIBRES
Ian Whitney, Wirksworth, England, assignor to Rolls-Royce Limited, Derby, England
Filed Apr. 15, 1969, Ser. No. 816,202
Claims priority, application Great Britain, Apr. 19, 1968, 18,617/68
Int. Cl. C01b *31/07, 47/32*; B32b *31/12*
U.S. Cl. 156—235 6 Claims



A method of manufacturing carbon fibres, particularly in the form of a sheet or tape, in which a plurality of sheets or tapes of polyacrylonitrile fibres are fed through a furnace or furnaces in which at least the majority of the constituents other than carbon are driven off, the plurality comprising at least 10^5 fibres.

3,673,036
METHOD AND APPARATUS FOR FORMING ARTICLE FILLED WITH FILAMENT FIBERFILL
Jerome G. Lipe, Jacksonville, Ala., assignor to Celanese Corporation, New York, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,123
Int. Cl. B65b *1/16, 5/00, 63/00*
U.S. Cl. 156—250 14 Claims



A process for filling a plurality of articles with continuous filament fiberfill comprising the steps of opening a crimped multifilament tow, spreading the opened tow, subdividing the opened tow, delivering each subdivision of the opened tow to a pneumatic propelling device, whereby the subdivided tow is bulked and propelled, discharging each subdivision of the tow into an enclosed zone of an article to be filled, and, when said article is filled, discontinuing delivery of new tow to the pneumatic propelling device, severing the tow downstream of the pneumatic propelling device, removing the filled article and replacing it with a new article to be filled, and resuming delivery of the new tow to the pneumatic propelling device. A corresponding apparatus and the filled article are also claimed.

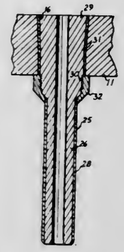
3,673,037
METHOD OF MAKING A LAMINATED ARTICLE COMPRISING BLOOD OR SKIN TISSUE SAMPLES
Clifford L. Reavis, Jr., Garland, Tex., assignor to Intelectron Corporation, New York, N.Y.
Filed Mar. 26, 1969, Ser. No. 810,593
Int. Cl. B32b *31/00*
U.S. Cl. 156—280 8 Claims

A process for the preparation of a plastic base material such as a film tape to gain the desired surface tension and adherence qualities necessary for the direct application and processing of blood and tissue samples in such a manner that the optical properties of the plastic base material are retained and the processed blood and tissue samples can be viewed both under a microscope and utilizing conventional projection techniques for cellular morphology and population identification.

3,673,038
METHOD FOR BRAZING GRAPHITE AND OTHER REFRACTORY MATERIALS
Domenic A. Canonico, Oak Ridge, Nancy C. Cole, Knoxville, and Clarence W. Houck, Lake City, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,539
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 1 Claim

The present invention is directed to a novel class of titanium-vanadium-chromium alloys which are particularly useful in brazing graphite and other refractory materials to themselves and to each other, and to the resultant brazed composites. Within the context of this invention, the refractory materials which can be joined by the hereinafter-defined brazing alloy are selected from such materials as tungsten, molybdenum, tantalum, rhenium, niobium, alloys thereof, and graphite.

3,673,039
METHOD OF PREPARING POURING SPOUT
Chester F. Todd, Corrollton, Ga., assignor to Southwire Company, Corrollton, Ga.
Original application Oct. 15, 1968, Ser. No. 767,729. Divided and this application Jan. 20, 1971, Ser. No. 107,916
Int. Cl. B65d *25/48*
U.S. Cl. 156—293 1 Claim



A long life pouring spout for pouring molten metal in a continuous casting system, wherein the body of the spout is fabricated of graphite and an insulating shield surrounds the pouring spout and prevents air from contacting the outside surface of the pouring spout.

3,673,040
MOUNTING PREFORMED ROLLER ON SHAFT
Edward D. Hill, 11212 Edgewater Drive, Cleveland, Ohio 44102
Filed Apr. 29, 1970, Ser. No. 32,843
Int. Cl. B29c *27/16*
U.S. Cl. 156—294 13 Claims

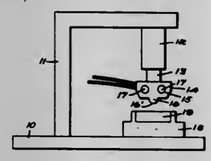
A roller, such as a printing roller, is fabricated by sliding a cylindrical body having a longitudinally extending, substantially central opening over a rigid shaft designed to support the roller during rotation or the like. The roller is preferably cut to a desired length from a preformed, relatively long section of the material. A lubricating adhesive is used for the joint purpose of first lubricating the relative sliding movement between the cylindrical body and shaft during assembly and then adhering these parts together after assembly.

In the preferred practice, a wet, polymerizable adhesive coatings the opening of the cylindrical body, and a second different adhesive is used on the shaft. The lubricity of both adhesives contributes to the sliding of the roller relatively to the shaft, and subsequently the two adhesives form an adhesive bond between themselves and the parts to which they are applied.

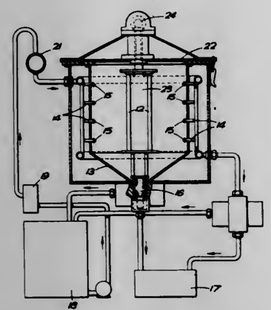
3,673,041
HEAT SEALER
Gerald L. Schulz, Holliston, and Raymond T. Mansur, Framingham, Mass., assignors to the United States of America as represented by the Secretary of the Army
Filed Sept. 8, 1970, Ser. No. 70,167
Int. Cl. B32b *31/00, 3/00*; C09j *5/00*
U.S. Cl. 156—306 3 Claims

Heat sealing opposed thermoplastic surfaces of open ended pouches, whose sealing surfaces are likely to be contaminated with liquids or fatty substances is accomplished by forcing a transversely radiused, heated sealing bar against the opposed unsealed sheets of the pouch

which are supported by a resilient anvil, thereby squeezing the contaminants out of the sealing area before the sheets fuse together and in those cases where solid particulate contaminants are found in the sealing area utilizing steam flushing to clean the sealing surfaces prior to sealing.



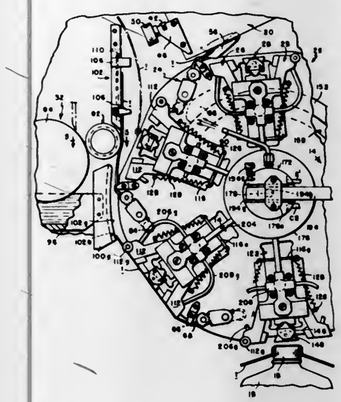
3,673,042
GLASS POLISHING MACHINERY
Colin Clayton Mayers, Radlett, England, assignor to Ian Low Smart, London, England
Filed Aug. 5, 1969, Ser. No. 847,686
Claims priority, application Great Britain, Aug. 5, 1968, 37,287/68
Int. Cl. C03c *15/02*
U.S. Cl. 156—345 **4 Claims**



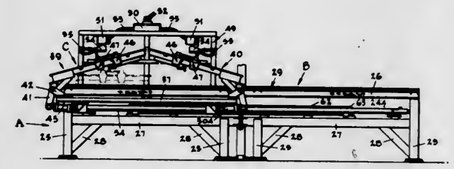
A method and apparatus for polishing glassware in which articles of glassware are placed in a vessel, and while remaining in the same vessel, are treated with streams of acid and rinse liquid. The glassware may be treated with detergent and neutralising liquid before and after the treatment with acid.

3,673,043
APPARATUS FOR ADHESIVELY APPLYING SEALING STRIPS TO CONTAINER CLOSURES TO PREVENT UNAUTHORIZED REMOVAL OF THE CLOSURES WITHOUT DETECTION
Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Cleveland, Ohio
Filed Oct. 7, 1970, Ser. No. 78,652
Int. Cl. B65c *3/20*
U.S. Cl. 156—363 **38 Claims**

Apparatus for adhesively applying sealing strips, for example, tax stamps, to the closures at the tops of containers comprising a wheel rotatable about a horizontal axis which has on it at spaced intervals grippers for clamping the sealing strips at one end thereto and affixing assemblies for applying sealing strips to the closures following application of adhesive thereto. Peripherally of the wheel there are at the top, a magazine for holding sealing strips and a picker for taking sealing strips from the magazines and presenting them to the grippers on the wheel; at one side adhesive-applying means for applying adhesive to the sealing strips; and at the bottom a conveyor for moving containers in succession to the wheel for application of the sealing strips thereto. The picker is controlled by a sensing device so as to remove sealing strips from the magazine only when there is a container on the conveyor ready to have a sealing strip applied thereto. The grippers are adjustable on the wheel relative to the affixing assemblies to center them with respect to the affixing assemblies for applying the sealing strips with equal portions at each side of the closures or to offset them for applying sealing strips to closures which are long from top to bottom with one end longer than the other so that at least one end overlaps the lower end of the closure. The adhesive applicator is provided with a grooved applicator roll for applying adhesive only to the marginal edges of the sealing strip so as to leave the center portion uncoated. A heated guide situated between the applicator roll and the place of application of the sealing strips keeps the adhesive liquid as the sealing strips are moved from the applicator roll to the place of application. The affixing assemblies comprise holding members which take hold of the ends of the sealing strips while still held at one end by the gripper and a spotter. The holding members and spotter are movable radially on the wheel toward the tops of the containers and relative to each other after a sealing strip is pressed against the top of a container to wipe the portions of the sealing strip at each side of the closure downwardly against the sides while holding the ends away from the container so that the ends will not become attached to the shoulders of the container. Alternately when the sealing strip is being applied to a long-necked bottle and there is no problem of bridging, the end portions of the sealing strip may be released at the time of application of the sealing strip to the closure. The sealing strip holding members are vacuum devices which hold the sealing strip ends until the sealing strip is applied, whereupon they are disabled and superatmospheric pressure is supplied to effect release and/or to blow the ends of the sealing strip free. The drive for the wheel embodies means for rotating the wheel at a speed compatible with picking the sealing strips from the magazine and applying adhesive most expeditiously and a pair of eccentric drive gears designed to speed up the rotation or slow it down as the case may be each time an assembly nears the place of application to synchronize the speed of the assembly with the linear speed of the containers. There is also means associated with the means for effecting radial movement of the assemblies at the place of application adapted to yield in the event of an oversize container to prevent shattering.

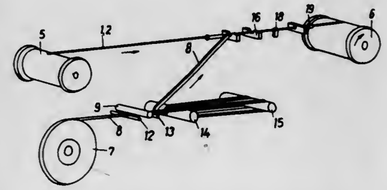


3,673,044
PRODUCING INTERLAYERS FOR ANTENNA TYPE WINDSHIELDS
Alfred H. Miller, and Lee F. Johnson, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Sept. 10, 1969, Ser. No. 856,720
Int. Cl. H01q *1/32*
U.S. Cl. 156—433 **6 Claims**



A method of and apparatus for preparing plastic sheets, to be used as interlayers in laminated antenna-windshield structures, by feeding a length of wire onto each sheet in a predetermined pattern, progressively heating the plastic in advance of the feeding wire and rolling the fed wire into the heated plastic, and then feeding a second length of wire onto and rolling it into the sheet in an identical but reversed pattern and in close proximity to the first length.

3,673,045
METHOD AND APPARATUS FOR MAKING LEAD STRIP
Franz Baier, Teichstrasse 3, Saerbeck, and Rudolf Schmitz, Austum 43,, Emsdetten, both of Germany
Division of Ser. No. 580,326, Sept. 16, 1966. This application Dec. 3, 1970, Ser. No. 94,765
Claims priority, application Germany, Oct. 15, 1965, 4494634
Int. Cl. B65h *45/08*
U.S. Cl. 156—438 **13 Claims**

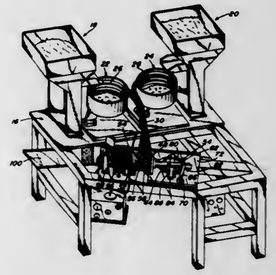


A method and apparatus for making a lead strip to be secured to the lower edge of a curtain or drape as weight means in which the individual lead members are disposed in and surrounded by a relatively thin, hose-like sleeve made from a polyterephthalate foil strip which is formed into a tube upon insertion of the lead member, by means of a glued seam.

3,673,046
APPARATUS FOR SPLICING SHEET MATERIALS
Carl R. Pepmeier, Fredericksburg, Va.; Joseph T. Sincavage, Media, and Louis E. Stoffregen, Springfield, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed June 23, 1969, Ser. No. 835,510
Int. Cl. B32b *31/00*
U.S. Cl. 156—517 **4 Claims**

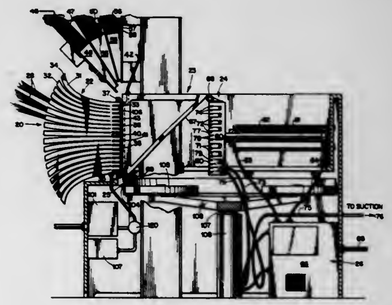
Apparatus for cutting severed end portions of sheet materials along substantially straight lines extending transversely thereof while such sheet materials are held fixed against flat surfaces by suction and thereafter connecting the newly formed ends in abutting and overlapped relationship.

3,673,047
FLECHETTE ASSEMBLY MACHINE
Roy C. Buth, and Arthur F. Schroeder, both of Evansville, Ind., assignors to The United States of America as represented by the Secretary of the Navy
Filed Sept. 3, 1970, Ser. No. 69,223
Int. Cl. B32b *31/00*; F42b *13/00, 39/00*
U.S. Cl. 156—563 **9 Claims**



Flechettes loaded into a pair of storage hoppers are supplied to vibrating feeders where they are oriented and fed to a row of inclined dispensing devices that drop them onto a grooved assembly plate where the flechette fins are radially oriented. A cam driven notched shuttle arrangement pushes rows, alternately axially displaced by one fin length, under a stationary holding device which holds the flechettes in proper alignment as subsequent rows are pushed across the assembly plate and under the holding device. Rows of flechettes will emerge from the holding device as additional rows of flechettes are added by the shuttle and they are sprayed with an adhesive and then heated to dry the adhesive, leaving the flechettes bonded together in sheets which may be easily handled for subsequent packaging.

3,673,048
APPARATUS FOR MAKING NON-WOVEN PILE MATERIAL
Lester Gidge, 61 Linwood St., and Valmor R. Poulin, Jr., 70 Forest Park Drive, both of Nashua, N.H.
Filed Aug. 13, 1969, Ser. No. 849,828
Int. Cl. B32b *31/20, 5/02*
U.S. Cl. 156—510 **20 Claims**



A plurality of tows of parallelized strands are supplied to a head to present a compacted, but unconnected, mass of fiber ends in a selected pattern. The exposed ends of the mass are then joined into a unified backing by heat fusing or the like.

The mass is then moved out of the head, in a pile length increment by engagement with the pull the strand mass and tension the fiber ends, whereupon the mass is then severed transversely, to form a pile-bearing piece, tile or block of the desired color pattern, density, and pile height.

3,673,049
GLASS LAMINATED BODIES COMPRISING A TENSILELY STRESSED CORE AND A COMPRESSIVELY STRESSED SURFACE LAYER FUSED THERETO

James W. Giffen; David A. Duke, both of Corning; William H. Dumbaugh, Jr., Painted Post; James E. Flannery, Corning; John F. MacDowell, Painted Post, and John E. Megles, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 735,074, June 6, 1968, abandoned. This application Oct. 7, 1970, Ser. No. 78,763
Int. Cl. B32b 7/02, 17/06
U.S. Cl. 161—164 15 Claims

This invention relates to sound, high strength, laminated articles of glass, glass-ceramic, glass and glass-ceramic materials. Such articles are made by means of a continuous hot-forming process wherein glasses are melted for the individual layers and these layers are then simultaneously fused together and shaped into a laminated structure of a desired configuration. Where a glass-ceramic article is desired, the laminated glass structure is subsequently heat treated in a particular manner to cause the glass to crystallize in situ.

ERRATA

For Classes 161—129 and 161—146 see:
Patent Nos. 3,672,949 thru 3,672,952

3,673,050
LAMINATE OF A BARRIER LAYER ENCLOSED IN RIGID HIGH DENSITY POLYOLEFIN LAYERS

Ritchey O. Newman, Jr., Midland, and Walter J. Schrenk, Bay City, both of Mich., assignors to Dow Chemical Company, Midland, Mich.

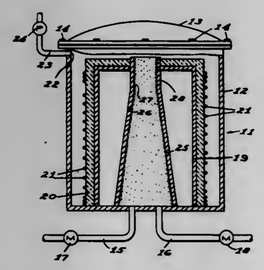
Filed Feb. 5, 1970, Ser. No. 9,068
Int. Cl. B32b 27/08, 27/30, 27/32
U.S. Cl. 161—165 16 Claims

This invention provides economical multi-layer sheets that combine high barrier layers with thick layers of rigid high density polyolefins.

3,673,051
PYROLYTIC GRAPHITE

Thomas J. Clark, Birmingham, and Howard W. Brown, St. Clari Shores, both of Mich., assignors to General Electric Company

Continuation of Ser. No. 520,213, Jan. 12, 1966, abandoned. This application March 20, 1969, Ser. No. 833,218
Int. Cl. B32b 15/04; C01b 31/04
U.S. Cl. 161—166 3 Claims

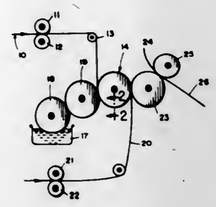


Curved pyrolytic graphite bodies of increased thickness-to-radius ratios are produced by codepositing with the pyrolytic graphite a refractory metal in progressively decreasing quantities from the outer to the inner surface of the body. The addition of the refractory alloy metal lowers the stress levels and hence permits greater thicknesses of the pyrolytic graphite body.

3,673,052
METHOD OF MANUFACTURING A DISPOSABLE PRODUCT

Rudolph E. Small; John J. Bradley, both of Green Bay; Charles J. Sanders, De Pere, and Howard J. Slawny, Green Bay, all of Wis., assignors to Paper Converting Machine Company, Inc., Green bay, Wis.

Filed Sept. 18, 1968, Ser. No. 760,600
Int. Cl. B31f 1/18; B32b 7/14
U.S. Cl. 156—164 4 Claims



A disposable product such as paper toweling made up of united sheets, at least one of which is of cellulose material, the adhesive joining the sheets being provided on areas which outstand from one of the sheets by virtue of being provided therein by a plate cylinder in a press arrangement.

3,673,053
ACRYLIC FIBERS WITH IMPROVED BRIGHTNESS AND PROCESS FOR PRODUCING THE SAME

Keitaro Shimoda; Nobuhiro Tsutsui; Hideto Sekiguchi, and Manso Sone, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Feb. 2, 1970, Ser. No. 7,858
Claims priority, application Japan, Feb. 3, 1969, 44/8366
Int. Cl. B29f 3/00; D02g 3/22
U.S. Cl. 161—177 3 Claims



An acrylic fiber with a triangular cross-section wherein the curved peripheral edge thereof is defined in accordance with formulas discussed herein. Also provided is a process for preparing these fibers, which exhibit improved brightness, by extruding a spinning solution through Y-shaped orifices into a coagulating bath, the inorganic salt concentration in the spinning solution and coagulating bath being within defined ranges, maintaining the delivery ratio within the range 0.5–3.0 and subjecting the filament to a series of stretching steps which include cold-stretching, primary hot-stretching and secondary stretching such that $16X_1+2.5X_2-3X_3 \leqq 31$

where X_1 is the cold-stretching ratio, X_2 is the primary hot-stretching ratio and X_3 is the secondary stretching ratio.

3,673,054
LAMINATED STRUCTURES AND METHOD

Archibald N. Wright, Schenectady; Victor J. Mimeault, Elnora, both of N.Y., and Edward V. Wilkus, Monroe, Conn., assignors to General Electric Company

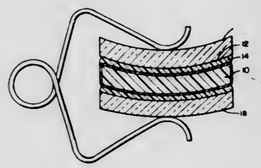
Filed Jan. 19, 1970, Ser. No. 4,121
Int. Cl. B32b 31/28, 27/16, 15/08
U.S. Cl. 161—189 13 Claims

Laminated structures are formed which are bonded by a novel fused tetrafluoroethylene polymer. The tetrafluoroethylene polymer is initially produced as a white powdery floc by irradiating tetrafluoroethylene monomer vapor at a temperature ranging from about 0° C to about 200° C and at a pressure of about 10 torr to 760 torr with light of wave length ranging from 1,800 to 2,400 Angstroms. The floc polymer is deposited on at least one surface of a lamina and a second lamina is placed over the deposited polymer to form a composite which is then heated to fuse the polymer and form the laminate.

3,673,055
LAMINATED TRANSPARENT BODIES HAVING MAR RESISTANT PROTECTIVE COATINGS

Clarence A. Sheld, 273 Thomas Ave., Rochester, N.Y., assignor to Bausch & Lomb, Incorporated

Filed March 30, 1970, Ser. No. 23,909
Int. Cl. B32b 27/30, 27/34
U.S. Cl. 161—183 10 Claims



Transparent bodies, particularly ophthalmic lenses, having cores of super strong plastic, outer surface layers of abrasion resistant thermosetting resins such as the allyl and methacrylic esters and an intermediate later of a polyamide. The cores are of bisphenol-A polycarbonate, or of a clear, hetereogeneous blend known as ABS, which is a polyblend of three resins. The surface layer is polymerized in situ. The polyamide is selected from among those soluble in alcohol or a mixture of alcohol and hydrocarbons. It serves both as an adhesive to bond the surface layers securely to the cores and as a barrier agent to protect the cores from chemical attack by the monomer of the surface layer material. The surface layer is preferably cured in a mold which defines the shape and surface finish of the completed body.

3,673,056
TURF-LIKE PRODUCT AND METHOD OF MAKING IT

Martin L. Nadler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

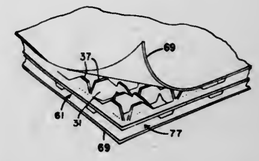
Filed Nov. 18, 1970, Ser. No. 90,612
Int. Cl. D04h 11/00; A46d 1/00
U.S. Cl. 161—62 11 Claims

A product having a turf-like appearance and useful as a playing field surface for football, baseball, or other games can be made in a wide variety of blade patterns and textures by (a) providing a liquid layer of polymeric matrix material (e.g., a foamable polyurethane composition) which can be solidified in situ to a desired degree of resilience and toughness; (b) providing a number of flexible polymeric ribbons; (c) making numerous width-wise cuts in one edge of each ribbon so as to form numerous blades (grass-blade-like elements) which are fastened together at their base; (d) forming a composite structure in which the ribbons are closely-spaced and in embedded relation with the liquid matrix layer whereby each ribbon has its length parallel with the matrix layer, its width perpendicular thereto, its blades upstanding therefrom, and a lower portion embedded therein; and (e) causing the matrix layer to solidify in situ.

3,673,057
CELLULAR STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 714,231, March 19, 1968, Pat. No. 3,616,025. This application July 22, 1970, Ser. No. 57,093
Int. Cl. B32b 3/12
U.S. Cl. 161—68 5 Claims

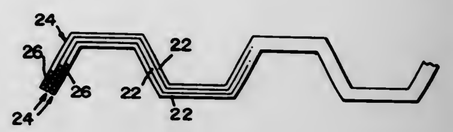


A cellular structure having a plurality of walls extending along intersecting planes and together providing abutting cells, such walls being connected at their locations of intersection by cruciform sections and formed by flexing portions of a slit web material into planes disposed at angles to the plane of the original web material.

3,673,058
HONEYCOMB HAVING LAMINATES OF UNIDIRECTIONAL STRANDS

Wendell T. Jackson, Walnut Creek; Beverley R. Garrett, Moraga, and Earl C. Vicars, Orinda, all of Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed April 7, 1969, Ser. No. 814,021
Int. Cl. B32b 3/12
U.S. Cl. 161—68 5 Claims



A honeycomb core constructed of a plurality of generally sinusoidally shaped ribbons which are bonded together to define honeycomb cells. Each ribbon includes at least one layer of adjacent, unidirectionally oriented strands which are bonded together.

3,673,059
DRY CLEANABLE VINYL TYPE ARTIFICIAL LEATHER

Jack P. Brandt, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed May 13, 1970, Ser. No. 37,017
Int. Cl. B32b 7/10, 27/06
U.S. Cl. 161—88 14 Claims

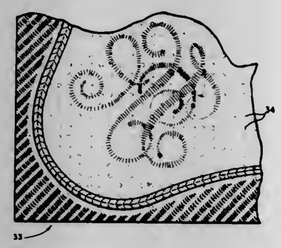
Blends of thermoplastic polyurethane elastomer, vinyl, chloride-vinyl acetate-vinyl alcohol terpolymer, and hexakis(methoxymethyl)melamine resin cast from solution and

cured by heating are resistant to dry cleaning. Material in the form of a sheet including a layer having the stated composition may have a patent leather finish, and the flexibility may be varied, for use in clothing or footwear, usually in combination with a textile fabric layer as a backing.

3,673,060
ADHESIVELY LAMINATED CREPED DINNER NAPKIN

James A. Murphy, and Stirling Robert Brown, both of Oxnard, Calif., assignors to International Paper Company, New York, N.Y.

Filed Jan. 12, 1970, Ser. No. 1,999
Int. Cl. B32b 3/02
U.S. Cl. 161—126 5 Claims



An adhesively laminated creped tissue product, having particular usefulness as a dinner napkin, is formed from two creped tissue webs superposed with the lines of creping of each web substantially parallel to the lines of creping of the other, and patterned adhesive disposed between the webs. Each web is in a different condition of stress in the plane of the laminated product. The bonded webs may be formed into individual napkins embossed about their periphery, leaving a substantial unembossed area in the center.

3,673,061
PROCESS FOR THE RECOVERY OF METALS FROM SULFIDE ORES THROUGH ELECTROLYTIC DISSOCIATION OF THE SULFIDES

Paul R. Kruesi, Golden, Colo., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,751
Int. Cl. C22d 1/00, 1/12, 1/16
U.S. Cl. 204—105 R 20 Claims

A pollution-free process for the electrolytic dissolution of sulfide ores of the metals of Groups IB, II B, V A, VI A, of the Periodic Table and lead in aqueous acidic media with the formation of metal ions and elemental sulfur followed by recovery of the metal ions from solution in the electrolyte media, the process characterized by certain critical process conditions, these being the use of:

1. an alkali metal and/or alkaline earth metal chloride electrolyte,
2. a sulfide feed of average particle size smaller than 60 mesh U.S. Standard,
3. a pH range of about 0.01 – 3.9,
4. an electrolyte temperature range of about 60°–105° C., and
5. an anode current density above about 12 amperes/ft².

3,673,062
ELECTROWINNING OF METAL

George Armstrong Smith, Kitwe, Zambia, and Donald Simon MacLeod, Cobalt, Ontario, Canada, assignors to New Nchanga Consolidated Copper Mines Limited

Filed Feb. 8, 1971, Ser. No. 113,736
Claims priority, application Zambia, Feb. 6, 1970, 15/70
Int. Cl. C22d 1/14; C37d 1/22; C22d 1/24
U.S. Cl. 704—112 5 Claims

The invention deals with a process in which an electrolyte for the cathodic deposition of cobalt is made up by dissolving a precipitated cobalt hydroxide resulting from precipitation by lime. The advance electrolyte is passed through a bed of activated carbon so that sulphide, which has been traced to impurities in the lime, and other contaminants are removed.

3,673,063
PRODUCTION OF LEAD-TIN-TELLURIDE MATERIAL FOR INFRARED DETECTORS

Shirley L. Wakefield, Cincinnati, Ohio, assignor to Avco Corporation, Cincinnati, Ohio

Filed March 31, 1971, Ser. No. 129,995
Int. Cl. C23b 3/06, 1/00; B23p 1/00
U.S. Cl. 204—140.5 6 Claims

The invention is a method of producing lead-tin-telluride material for use in making diffused junction photodiodes. Detector diodes which are made from such material can be produced directly from a wafer without the necessity of using conventional time-consuming back-etching. The steps of my method comprise slicing thin wafers from a pre-alloyed boule, mechanically polishing the sliced wafers to remove major imperfections in the flat surfaces, electropolishing said wafers to produce undamaged clean surfaces and finally annealing the sliced and polished wafers to reduce Hall carrier concentration.

3,673,064
METHOD OF ELIMINATING COPPER CONTAMINATION

A. Eugene Blakeslee, Mount Kisco; Luther M. Foster, Chappaqua, and Thomas S. Plaskett, Ossining, all of N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 29, 1970, Ser. No. 85,227
Int. Cl. C23f 13/00; H01l 7/00
U.S. Cl. 204—147 1 Claim

Copper contamination of gallium arsenide wafers is prevented when the wafers are rinsed with high-purity deionized water by applying a positive potential to the gallium arsenide wafer with respect to the rinse water.

3,673,065
ELECTROLYTIC REMOVAL OF GREASY MATTER FROM AQUEOUS WASTES

Harry T. Anderson, 208 Eastern Ave., Clarendon Hills, Ill., assignor to Swift & Company, Chicago, Ill.

Filed April 8, 1970, Ser. No. 26,769
Int. Cl. C02b 1/82; B01k 3/04
U.S. Cl. 204—149 8 Claims

Fat-water emulsion systems are de-emulsified by impressing direct current electrical energy therethrough and positioned such that a carefully defined anolyte stream is formed. The anolyte stream, having low pH values, breaks the emulsion, enabling the fat to rise to the surface and to be skimmed off.

3,673,066
PROCESS FOR THE ACCELERATED OBTAINING OF TERPENIC OXIDES USING ULTRAVIOLET LIGHT

Pierre Muller, Nanterre, France, assignor to Laboratories De L'Ozothine, Nanterre, France

Filed Feb. 14, 1969, Ser. No. 799,520
Int. Cl. B01j 1/10
U.S. Cl. 204—162 R 2 Claims

A process for the preparation of verbenone, myrtenol, myrtenal, trans-verbenol, cis-verbenol, pinocarveol, 3.01–2 pinene, α-pinene epoxide and campholene aldehyde comprising

I. subjecting oil of turpentine to an intense oxidation step comprising continuously insufflating air through said oil at a temperature of about 70° C while agitating said oil and irradiating said oil with ultraviolet light in the presence of
   a. from 0.05 to 0.5 percent by weight of a promoter selected from the group consisting of organic salts and complexes of nickel, vanadium, tungsten, tantalum, niobium, rhenium, tellurium and selenium; and
   b. in the presence of from 1 to 10 percent by weight of at least one catalyst selected from the group consisting of
      1. the abietates, the levopimarates, the dextropimarates and the pinonates of cobalt, manganese and nickel; and
      2. a member selected from the group consisting of the acetylacetonates, the phthalocyanines and the terpenic acid salts of nickel, cobalt, vanadium, tungsten, tantalum, niobium and rhenium; the oxides of selenium and tellurium; the naphthenates, the oleates, and the stearates of cobalt, manganese and nickel; in the presence of from 0.05 to 0.5 percent by weight of at least one member selected from the group consisting of copper (II) salts, cesium salts and mixtures thereof;

II. distilling off the reaction products having a boiling point of about 75° C at 10 mmHg; and

III. rectifying the distilled reaction products collected, is disclosed.

3,673,067
REMOVAL OF MOLECULAR HALOGEN FROM SOLUTION BY PASSAGE THROUGH A MEMBRANE

William H. Harwood, Lawton, and William P. Banks, Ponca City, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.

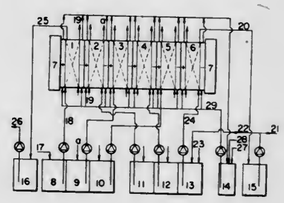
Filed Nov. 23, 1970, Ser. No. 92,301
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 9 Claims

A method for removing molecules of a halogen from a solution thereof by passing the molecules into or through a membrane of polyolefinic material. The halogen molecules enter and become dissolved in the material of the polyolefinic membrane, and may be transferred through the membrane by imposing a concentration gradient across the membrane between solutions on opposite sides thereof, or, in some instances, by applying an electromotive force.

3,673,068
PROCESS FOR RECOVERING WASTE ACIDS AND METALS BY ELECTRODIALYSIS

Maomi Seko, Tokyo; Akira Yomiyama, Nobeoka-shi; Tetsuya Miyake, Nobeoka-shi, and Hidemaro Iwashita, Nobeoka-shi, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed Dec. 12, 1969, Ser. No. 884,555
Claims priority, application Japan, Dec. 16, 1968, 43/91560
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 5 Claims

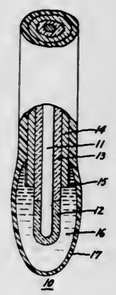


A process for recovering a substantial portion of nitric acid and metal ions from an acidic waste liquid produced in the process for the production of adipic acid by oxidizing cyclohexanone or cyclohexanol in a liquid phase, which comprises supplying said waste liquid to an electrodialysis apparatus including one or more electrodializers to recover said nitric acid and metal ions in a recovering liquid of a member selected from water and a diluted aqueous nitric acid.

3,673,069
CARBON DIOXIDE SENSOR

Leonard W. Niedrach, and William H. Stoddard, Jr., both of Schenectady, N.Y., assignors to General Electric Company

Filed May 3, 1971, Ser. No. 139,674
Int. Cl. G01n 27/36, 27/46
U.S. Cl. 204—195 G 6 Claims

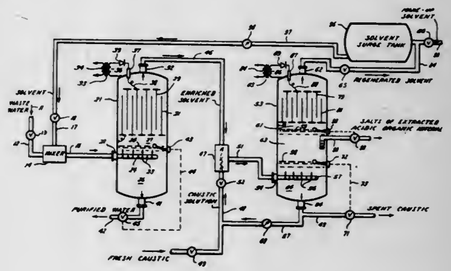


A carbon dioxide sensor has a first electronically conductive metallic base member, an electrochemically active region of a continuous glaze of pH sensing glass in electrical contact with a portion of the base member, a second electronically conductive metallic base member, a second electrochemically active region of silver and silver halide in electrical contact with the second base member, a first layer of electrical insulation disposed between the first and second base members, a second layer of electrical insulation disposed over the second base member, an immobilized electrolyte contacting both electrochemically active regions, and an outer sheath of carbon dioxide permeable, ion-impermeable diffusion barrier material encapsulating at least the electrochemically active regions and the electrolyte.

3,673,070
PROCESS FOR REMOVING AND CONCENTRATING ACIDIC ORGANIC MATERIAL FROM WATER

Robert A. Wiley, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 22, 1970, Ser. No. 48,367
Int. Cl. B03c 5/00; C10g 17/00, 31/14
U.S. Cl. 204—186 16 Claims



A process for removing and concentrating acidic organic material from a water stream. The water stream is dispersed within an organic liquid solvent for removing substantial amounts of acidic organic material, such as phenol, mercaptans and thiophenols etc., from the water. The enriched organic solvent phase is separated from the purified water stream phase. Next, the enriched solvent is intimately con-

tacted with substantially stoichiometric amounts of an immiscible concentrated caustic solution forming a three phase mixture in a second dispersion. This three phase liquid mixture is separated into a regenerated solvent phase, a second liquid phase of the alkali-metal salts of extracted acidic organic material, and a third phase of excess caustic solution. Preferably, both phase separations are undertaken in the presence of an electric field.

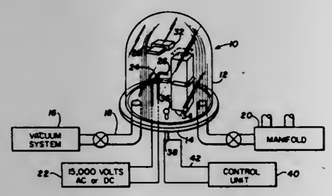
The regenerated solvent is recycled into contact with the water stream; the high-purity alkali-metal salts of extracted acidic organic material are passed to some suitable utilization, and the excess caustic solution is recycled for regenerating further amounts of the enriched solvent. Only small amounts of caustic need to be added to maintain a circulating inventory of the caustic solution.

3,673,071

PROCESS FOR PREPARATION OF TUNNELING BARRIERS

John P. Pritchard, Jr., Richardson, and Walter H. Schroen, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 8, 1968, Ser. No. 751,229
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **10 Claims**



Tunneling barriers, in particular superconductive tunneling barriers (Josephson barriers), are prepared in a vacuum chamber maintained at a low atmospheric pressure using an oxygen glow discharge which produces stable and reproducible superconductive tunneling devices. To prepare a Pb—Pb_xO_y—Pb barrier the first lead film is placed in a vacuum chamber and charged to a negative potential with regard to the positive ions by fast electrons from the plasma charge. Oxygen gas molecules bombard the first lead film where they probably disassociate into two oxygen atoms. A surface reaction takes place which produces a lead-oxide insulating layer in the first lead film. After this lead-oxide layer has reached a predetermined thickness, the plasma is extinguished and the oxygen-lead reaction stops. Immediately after the oxide formation, a second lead layer is evaporated onto the oxide layer to form a tunneling barrier of the Josephson type. Instead of forming a lead-oxide insulating layer into the first lead film, polymerized organic molecules may be formed on the lead surface by the high energy bombardment.

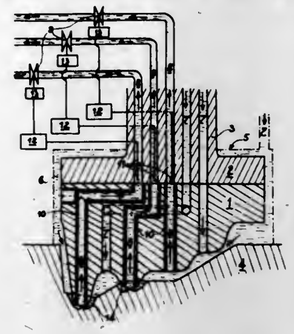
3,673,072

AUTOMATIC REGULATION OF ELECTROCHEMICAL MACHINING SYSTEMS

Jean Fleury, and Jean Pinot, both of Billancourt, France, assignors to Regie Nationale Des Usines Renaults, Billancourt and Automobiles Peugeot, Paris, France

Filed Feb. 16, 1971, Ser. No. 115,426
Claims priority, application France, Feb. 18, 1970, 7005750
Int. Cl. B23p *1/02*; B01k *3/04*
U.S. Cl. 204—224 **7 Claims**

This device for the automatic regulation of electrochemical machining processes is adapted to modify machining conditions according to the nature of the surface being machined and the rate of tool feed. It comprises temperature measuring means inserted in each electrolyte discharge conduit and adapted to control through servo means the output adjustment members. This device is applicable to the regulation of



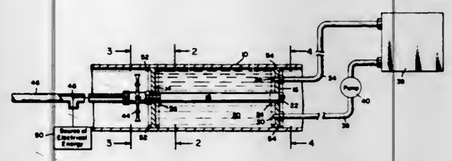
machining conditions by varying the return electrolyte output in machines of the type comprising an electrolyte-filled chamber under pressure.

3,673,073

APPARATUS FOR ELECTROPLATING THE INTERIOR OF AN ELONGATED PIPE

Ray Tobey, and David L. Lankford, both of Tulsa, Okla., assignors to Automation Industries, Inc., Century City, Calif.

Filed Oct. 7, 1970, Ser. No. 78,900
Int. Cl. C23b *5/56*; B23p *1/02*; B01k *3/00*
U.S. Cl. 204—226 **1 Claim**



Herein described is an apparatus and a method for plating a uniform thickness of material upon a substrate. The disclosed apparatus and method is particularly adapted for electroplating the inside diameter of a hollow member. A travelling compartment is included with is adapted to traverse the inside of the member to be plated. The compartment has an inlet and an outlet port. A source of electroplating solution includes a first conduit coupled between the source to the inlet port and a second conduit coupled between the source and the outlet port. Means are included for circulating the electroplating solution into the travelling compartment through the first and second conduit. An anode disposed within the compartment is coupled to a source of electrical energy.

3,673,074

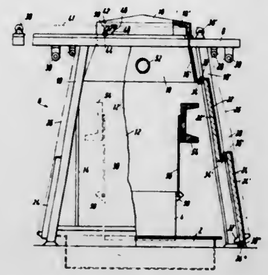
APPARATUS FOR IMPROVING THE HEAT ECONOMY OF AN ELECTROLYTIC CELL FOR THE PRODUCTION OF ALUMINUM

Wilhelm Hirt, Norf; Hagen Lehnerdt, Neuss; Ernst Weckesser, Grevenbroich/Nhr.; Gottfried Weinhold, Norf, and Friedrich Ellhelm Wrigge, Bad Godesberg, all of Germany, assignors to Vereingte Aluminum-Werke, Aktiengesellschaft, Bonn, Germany

Filed April 9, 1969, Ser. No. 814,592
Claims priority, application Germany, April 10, 1968, P 17 58 149.6
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—243 R **8 Claims**

Method and apparatus for improving the heat economy of electrloytic cells for the production of aluminum, in which a

sealed housing is provided above the bath of the cell and about the anode extending thereinto to maintain about an anode



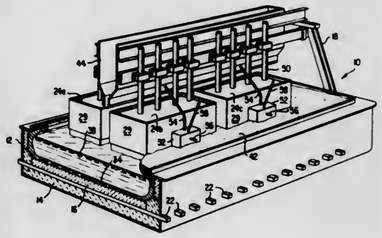
portion above the bath in said housing a volume of confined air, thereby reducing heat loss to the outer atmosphere.

3,673,075

ALUMINA REDUCTION SYSTEM

Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed April 24, 1970, Ser. No. 31,591
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—245 **9 Claims**



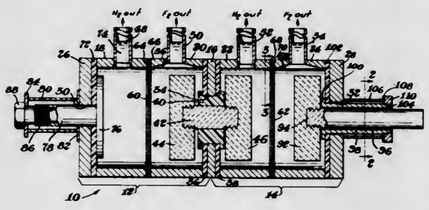
Improved techniques in the operation of alumina reduction cells, particularly as regards procedures and equipment for feeding alumina into the bath of such a cell and for collecting and removing anode reaction gases; and reduction cells of improved design and construction.

3,673,076

FILTER PRESS FLUORINE CELL WITH CARBON CONNECTORS

Paul R. Juckniess, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 5, 1969, Ser. No. 804,396
Int. Cl. B01k *3/10, 1/00*
U.S. Cl. 204—256 **4 Claims**



This invention relates to a filter press type of cell wherein the connection of an anode to the cathode of an adjacent cell is through a carbon connector. Individual cells have their ends protected by a Teflon end cover plate. The carbon connector between cells passes, by means of a press fit, through a Teflon bushing. A metal diaphragm fits across each cell intermediate its ends, the diaphragms being insulated from the adjacent metal body of the cell by Teflon gaskets.

The cell bath fills the cells and extends into hydrogen and fluorine risers at the top of each cell.

3,673,077

PROCESS FOR PRODUCING ELECTRODE BINDER PITCH AND CARBON BLACK FEEDSTOCK

Abraham Gerrit Alexander Roza, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 29, 1969, Ser. No. 862,025
Claims priority, application Great Britain, Oct. 3, 1968, 46,915/68
Int. Cl. C10c *3/04*; C10g *37/04, 37/08*
U.S. Cl. 208—76 **13 Claims**

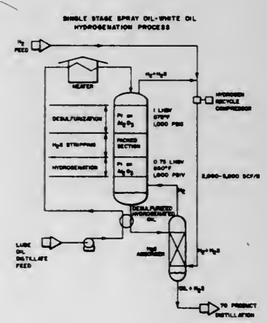
There is disclosed a process for converting the residue portion of a cracked petroleum product into electrode binder pitch and carbon black feedstock, both more valuable products, by heat soaking the residue to produce electrode binder pitch and a middle distillate, and blending the middle distillate with some of the electrode binder pitch to produce a carbon black feedstock.

3,673,078

PROCESS FOR PRODUCING HIGH UR OIL BY HYDROGENATION OF DEWAXED RAFFINATE

Merritt C. Kirk, Jr., Thornton, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 4, 1970, Ser. No. 16,495
Int. Cl. C10g *23/04*
U.S. Cl. 208—89 **7 Claims**



Refined mineral oils (useful as textile oils, white oils and agricultural spray oils) which have a viscosity in the lubricating oil range and a volume percent unsulfonated residue (UR) of at least 94.5 are produced from a dewaxed raffinate of a distillate oil obtained from a crude oil classified as paraffinic or mixed-base by ASTM viscosity-gravity constant (VGC), the dewaxed raffinate having a UR less than 93. The preferred process involves contacting the dewaxed raffinate with a hydrogen rich gas and a catalytic amount of sulfur-resistant hydrogenation catalyst at a temperature of about 550° to 750° F., a pressure of at least 1,500 p.s.i.g., and a hydrogen feed rate of about 0 to 10,000 s.c.f./bbl. of feed, at a gas recycle in the range of 0–20,000 s.c.f./bbl. of feed, said contacting being at a liquid hourly space velocity sufficient to convert said dewaxed raffinate to a hydrogenated oil having a UR of at least 94.5. At 0 or low gas recycle the preferred catalysts comprise sulfided oxides of nickel and molybdenum. When the gas

recycle is at least 500 s.c.f. the preferred catalysts also include nickel and the noble metal hydrogenation catalysts (e.g. Pt, Pd, Ru, Rh, Re) and alloys of 2 or more noble metals (e.g. PdRu, PtRe, PtRh, etc.). In one preferred embodiment the contacting is in two or more stages or zones. In the first stage or zone the catalyst is substantially sulfur resistant (e.g. sulfided CoMo, NiMo, NiCoMo, PtS) under the reaction conditions and the product has less than 10 p.p.m. sulfur. In the second stage or zone, the low sulfur product of the first stage or zone is contacted with a more active catalyst for saturation of aromatic rings (e.g. Pt, Pd, Ni, Rh, Re, Rh).

3,673,079
CATALYST MANUFACTURE

Bernard F. Mulaskey, Pinole, and Elmore F. Chilton, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 632,559, April 21, 1967, abandoned. This application Jan. 21, 1970, Ser. No. 4,735
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **15 Claims**

Multicomponent catalysts are produced, for example, in the form of rod-like particles, by forming a slurry of gelatinous precipitates of compounds of elements for forming the desired catalyst components, in a strongly ionic aqueous medium, separating the gelatinous precipitates from the slurry without washing, partially drying the unwashed gelatinous precipitates in the form of subdivided cohesive particles to a controlled moisture content, recombining the partially dried cohesive particles and extruding to form extrudate rods, washing the extrudate rods until essentially free of contaminating ions present in the occluded ionic aqueous medium, and thereafter drying and calcining the washed extrudate rods. Catalysts with a variety of different compositions can be prepared by this same general procedure and can be used in appropriate different hydrocarbon conversion processes.

3,673,080
MANUFACTURE OF PETROLEUM COKE

Warren G. Schlinger, Pasadena, Calif., and Harold C. Kaufman, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 9, 1969, Ser. No. 831,548
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 **3 Claims**

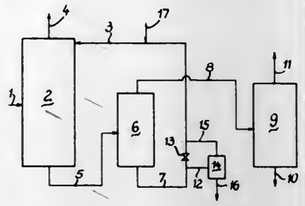
Clusters of petroleum coke pellets are made by the steps of dispersing particulate carbon seed particles in a high boiling petroleum oil, heating the seeded oil in a coking heater under conditions of controlled cracking, and introducing the effluent from the heater into a coke drum where the seed particles serve as nucleating agents in the formation of clusters of petroleum coke pellets.

3,673,081
PROCESS FOR SEPARATING SATURATED HYDROCARBONS AND OLEFINS

Gerhard Preusser, Essen; Martin Schulze, Neviges, and Klaus Richter, Essen, all of Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Feb. 18, 1970, Ser. No. 12,190
Claims priority, application Germany, Feb. 19, 1967, P 19 08 126.6
Int. Cl. C10g *21/20*
U.S. Cl. 208—313 **10 Claims**

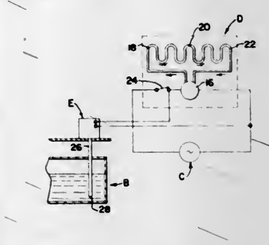
Process for separating saturated hydrocarbons and olefins from mixtures thereof, by subjecting such a mixture to an extractive distillation in the presence of a solvent selective for the olefins, whereby the solvent containing the separated olefin dissolved therein is subjected to a further distillation for separating the olefin from the solvent and the latter recycled back into the extractive distillation, wherein as selective solvent morpholine and/or a substituted morpholine is used.



3,673,082
APPARATUS AND METHOD FOR AERATING WASTE MATERIAL

James S. Reid, Hudson, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed April 26, 1971, Ser. No. 137,129
Int. Cl. C02c *1/02*
U.S. Cl. 210—12 **5 Claims**

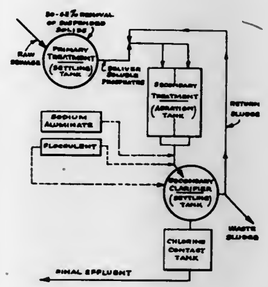


Liquid and organic waste material in a waste tank is aerated by periodically operating an air pump at spaced intervals of time.

3,673,083
SEWAGE TREATMENT

Roy D. Sawyer, Toledo, and John D. Tinsley, Lima, both of Ohio, assignors to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 823,518, May 9, 1969, abandoned. This application Dec. 28, 1970, Ser. No. 101,762
Int. Cl. C02c *1/40*
U.S. Cl. 210—18 **3 Claims**

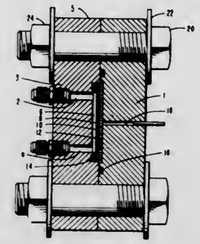


Soluble phosphates are removed from a sewage effluent by controlled additions of sodium aluminate, $NaAlO_2$, and a flocculant introduced into the sewage effluent at some point after secondary (aeration) treatment and prior to discharging the effluent to a receiving body of water, thereby reducing considerably the amount of phosphates responsible for proliferation of primitive aquatic plant life deemed ecologically inimical.

3,673,084
REVERSE OSMOSIS AND PROCESS AND COMPOSITION FOR MANUFACTURING CELLULOSE ACETATE MEMBRANES WHEREIN THE SWELLING AGENT IS A DI-OR TRI-BASIC ALIPHATIC ACID

William M. King, Walnut, and Paul A. Cantor, Covina, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Continuation of Ser. No. 521,034, Jan. 17, 1966, abandoned. This application July 14, 1969, Ser. No. 847,496
Int. Cl. B01d *13/04*; B29d *27/04*; C08b *27/44*
U.S. Cl. 210—23 **12 Claims**



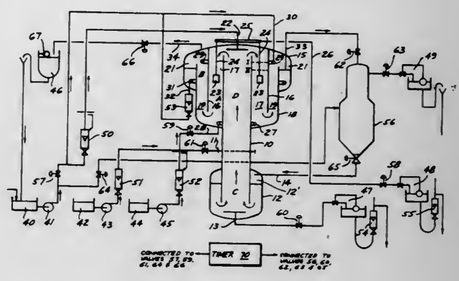
A casting solution for the preparation of a cellulose membrance containing cellulose acetate, an organic solvent and a water-soluble organic swelling agent, which is capable of hydrogen bonding with ketone and hydroxyl groups of the cellulose acetate, said organic swelling agent being present in an amount between about 1.0 to about 10 parts by weight of each 10 parts of the cellulose acetate, said organic swelling agent being of a different composition than the organic solvent and being, for example, a di- or a tri-basic aliphatic acid having from two to 13 carbon atoms.

3,673,085
METHOD AND APPARATUS FOR TREATING SOLUTIONS BY SOLID-ION EXCHANGERS

Paul Minart, Grenoble, France, assignor to Societe Grenobloise d'Etudes et d'Applications Hydrauliques, (Sogreah), Grenoble, France

Filed Nov. 19, 1969, Ser. No. 878,013
Claims priority, application France, Nov. 21, 1968, 685293
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **10 Claims**

An installation for the treatment of solutions by solid ion exchangers in a mobile bed, comprising an initial chamber formed by a central cylindrical column, followed by an even number of successive concentric annular chambers surrounding at least part of the central column, the exchange media rising up through the said column, spilling over the whole periphery of its top edge down into the first annular chamber, and passing from the bottom of the latter to the bottom of the second annular chamber. The flow of liquid in the column and the two chambers occurs in directions opposite to the directions of movement of the bed therethrough and whenever two liquids of different densities are present in the same chamber, the denser liquid is below the lighter liquid and is separated therefrom by an interface. The inlet and outlet flow rates of each liquid are controlled to keep the movements of an interface between certain limits during the operation of the installation.



3,673,086
METHOD OF REMOVING NITRIC ACID, NITRATE IONS AND NITRITE IONS OUT OF AQUEOUS WASTE SOLUTIONS

Stephan Drobnik, Eggenstein, Germany, assignor to Gesellschaft Fur Kernforschung mbH, Weberstrasse, Karlsruhe, Germany

Filed July 8, 1970, Ser. No. 53,283
Claims priority, application Germany, July 11, 1969, P 19 35 273.9
Int. Cl. C02c *5/02*
U.S. Cl. 210—59 **10 Claims**

Nitric acid, nitrate ions and nitrite ions are removed from aqueous radioactive waste solutions by treating such solutions with reducing agent.

3,673,087
PLANT TREATMENT COMPOSITION COMPRISING A PLANT TREATMENT CHEMICAL, A WETTING AGENT AND AN ALIPHATIC ALCOHOL

Robert Coles Brian, and Peter Douglas Bland, both of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 691,143, Dec. 18, 1967, abandoned. This application Jan. 25, 1971, Ser. No. 109,636
Claims priority, application Great Britain, Jan. 5, 1967, 672/67
Int. Cl. A01n *17/08*; C09k *3/00*
U.S. Cl. 252—1 **17 Claims**

Plant treatment compositions having improved wetting and spreading properties, containing a plant treatment chemical, a wetting agent selected from alkyl or alkyl aryl sulphonates or sulphates, or from condensates of ethylene oxide or propylene oxide with alcohols, amines or alkyl phenols; and an aliphatic compound having the molecular formula:

$$R^1\text{—}\underset{\displaystyle X}{\underset{|}{CH}}\text{—}R^2$$

wherein X is —OH, —CO_2H, —NH_2, —$CONH_2$, or —O·CO·H, and wherein R^1 is a straight chain alkyl or alkoxyalkyl group having from four to 11 carbon atoms; R^2 is hydrogen or a straight chain alkyl or alkoxyalkyl group having from three to five carbon atoms and the total number of carbon atoms in the molecule is from 8 to 12 inclusive.

3,673,088
FIRE EXTINGUISHING POWDERS COMPRISING A CELLULOSE ETHER ADDITIVE

Henry George Clements, Liverpool, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 12, 1970, Ser. No. 36,674
Claims priority, application Great Britain, May 14, 1969, 24,479/69; May 14, 1969, 24,480/69; Sept. 16, 1969, 45,555/69; Sept. 16, 1969, 45,556/69
Int. Cl. A62d 1/00
U.S. Cl. 252—2 6 Claims

A dry powder fire extinguishant includes a non toxic non hygroscopic fusible additive such that the material acts as an adhesive to retain the powder on a burning surface for a sufficient time for the powder to extinguish the fire.

Examples of additives are low melting point resins, low melting point waxes, phosphates of ammonia, potassium or sodium, mercury thiocyanate, microcosmic salt and cellulose ethers of low melting point.

3,673,089
METHYL ALKYL SILICONE GREASE COMPOSITION AND METHOD OF MAKING SAME

John G. Wright, Elnora, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 762,322, Sept. 16, 1968, Pat. No. 3,537,997. This application April 6, 1970, Ser. No. 26,153
Int. Cl. C10m 7/50, 7/20
U.S. Cl. 252—42.1 5 Claims

A grease composition contains a polysiloxane, the organic substituents of which are primarily methyl radicals and C_6 to C_{12} alkyl radicals, a thickener, optionally an amount of a polyether which is sufficient to cause the thickener to disperse into the polysiloxane, but insufficient to deleteriously affect the high temperature properties of the grease, and optionally a sufficient amount of a base to render the grease alkaline. The grease is made by heating together the polysiloxane, the polyether, the thickener and the base to a temperature of about 400°–500° F. after which the grease composition is cooled to room temperature, then milled. The grease composition is used in windshield wiper bearings and drive mechanisms, which are subject to oscillatory motion, often while being flooded with water.

3,673,090
SULFURIZATION OF TRIISOBUTYLENE AND PRODUCTS RESULTING THEREFROM

James O. Waldbillig, Beacon; Morris A. Wiley, Fishkill; Marvin L. Rambo, Fishkill, and Alfred J. Millendorf, Fishkill, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed June 11, 1970, Ser. No. 45,542
Int. Cl. C10m 1/38
U.S. Cl. 252—45 3 Claims

A process for the sulfurization of triisobutylene and resulting products comprising contacting triisobutylene with sulfur under essentially atmospheric conditions at a temperature between about 360° and 500°F., utilizing a mole ratio of triisobutylene to sulfur of between about 1:4 and 1:2.5 while blowing the reaction mixture during at least a part of said contacting with an inert gas and recovering a sulfurized triisobutylene product containing as a major component a compound of the empirical formula $C_{12}H_{20}S_3$ having substantially reduced corrosive activity to copper coupled with superior EP (extreme pressure) improving properties when incorporated in hydrocarbon lubricating oils such as gear oils and cutting oils.

3,673,091
LUBRICANTS CONTAINING OXIDATION INHIBITORS

William F. Werzner, Wood River, Ill., and James R. Miller, Florissant, Mo., assignors to Shell Oil Company, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,607
Int. Cl. C10m 1/32
U.S. Cl. 252—51.5 R 8 Claims

Novel compounds resulting from the reaction of hindered phenols, such as 3,5-di-t-butyl-4-hydroxybenxyl alcohol, with various aryl amines or carbazole are effective oxidation inhibitors for lubricants.

3,673,092
MULTILAYER DIELECTRIC COMPOSITIONS COMPRISING LEAD-BARIUM BOROSILICATE GLASS AND CERAMIC POWDER

Raymond Louis Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed June 5, 1970, Ser. No. 43,910
Int. Cl. C04b 33/00; H01g 1/00
U.S. Cl. 252—520 6 Claims

A dielectric composition which may be used in multilayer dielectrics is provided which consists of a glass binder and particles of a ceramic powder wherein the amounts of these two ingredients are correlated such that the ceramic powder substantially saturates the glass binder so as to insure the solderability of the conductors in the multilayered structure but does not substantially exceed the saturation point so as to cause a porous or non-sealed structure to be formed.

3,673,093
LIQUID DIELECTRIC COMPOSITION OF ALKYL BENZENE AND AN ANTIOXIDATION STABILIZER

Aldo Rocchi, Mantova, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed May 29, 1967, Ser. No. 642,233
Claims priority, application Italy, June 3, 1967, 18650
Int. Cl. H01b 3/22
U.S. Cl. 252—63.7 4 Claims

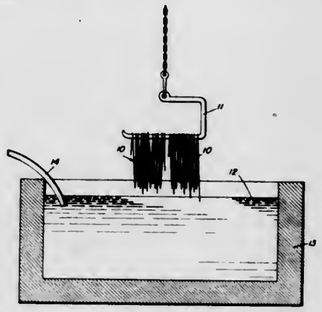
A liquid composition having high dielectric strength and oxidation resistance for use as a transformer oil and for other purposes in which an electrically insulating liquid is required, the composition consisting essentially of an alkylaryl hydrocarbon (i.e., dodecylbenzene) and 10 to 1,000 parts per million (ppm) of an antioxidizer from the group of phenolic and naphtholic compounds and their nuclear-substitution products, especially alkyl-substituted cresols, phenols and aminophenols, preferably di-tertiarybutyl-paracresol and 2,4-dimethyl-6-tertiarybutylphenol. The basic hydrocarbon is preferably the alkylbenzene obtained by alkylation of benzene with alkyl groups derived from polymerization of propylene (i.e., propylene tetramer).

3,673,094
CHEMICAL MILLING METHOD AND BATH FOR STEEL

John F. Kreml, Phoenix, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed July 7, 1969, Ser. No. 839,675
Int. Cl. C23g 1/04, 1/08
U.S. Cl. 252—79.4 12 Claims

Chemical milling of stainless steel and high nickel alloys by immersing the same in a bath of 3 to 15 percent by volume sulphuric acid, 3 to 15 percent hydrochloric acid, 2 to 6 percent nitric acid, 0.1 to 5 percent lignin, more particularly a vegetable tannin, as an inhibitor, and remainder water; and maintaining the steel or alloy in the bath at such temperature and for such time as to remove a desired quantity of metal. A best combination of results is had with the extract of the bark of Acacia Mollissima serving as the inhibitor. In milling martensitic and ferritic stainless steel, the bath additionally may contain phosphoric acid. And in milling austenitic stainless steel, the bath additionally may contain hydrofluoric acid.



3,673,095
OIL AND GREASE ABSORBING COMPOSITION COMPRISING SPHAGNUM MOSS, CALCINED GYPSUM AND PERLITE

Ralph H. Archer, 6429 S. W. 36th St., Portland, Oreg.

Filed July 20, 1970, Ser. No. 56,736
Int. Cl. C09k 3/22; B01j 1/22
U.S. Cl. 252—88 5 Claims

An oil and grease absorbent composition contains comminuted sphagnum moss as a major ingredient and, as a minor ingredient, a sufficient amount of powdered calcined gypsum to render the mixture fire resistant. A minor amount of a lightweight friction material is also desirably added. A preferred composition is approximately 12 parts by volume of comminuted sphagnum moss and approximately 1 part each by volume of powdered calcined gypsum and heat expanded perlite.

3,673,096
PROTEIN SOLUBILIZING WASHING RINSING AND SOAKING COMPOSITIONS

Dieter Walter, Hilden; Walter Fries, Erkrath-Unterbach, and Ernst Gotte, Ratingen-Tiefenbroich, all of Germany, assignors to Henkel & Cie GmbH, Henkelstrasse, Duesseldorf, Germany

Filed Aug. 27, 1969, Ser. No. 853,498
Claims priority, application Germany, Sept. 26, 1968, P 17 92 617.9
Int. Cl. C11d 3/34
U.S. Cl. 252—89 3 Claims

A composition for washing, rinsing and soaking comprising (a) a content of at least one compound selected from the group consisting of dialkyldisulfimides and their alkali metal salts, ammonium salts and organic amine salts, wherein the alkyl groups have from 6 to 10 carbon atoms and (b) a content of at least one compound selected from the group consisting of alkali metal and ammonium polyphosphates, alkali metal silicates and alkali metal and ammonium salts of aminopolycarboxylic acids and polyphosphonic acids, wherein said components (a) and (b) are present in amounts of from 0.5:99.5 to 1:3 by weight. These compositions are useful in solubilizing proteinaceous soil when used alone or in combination with other washing agent additives.

3,673,097
CLEANING COMPOSITIONS

Harry Clarence De Vroome, London, England, assignor to Ayrodev Processes Limited, Poplar, England

Filed Feb. 24, 1969, Ser. No. 801,778
Claims priority, application Great Britain, Aug. 14, 1968, 38,797/68
Int. Cl. C11d 1/38, 3/26
U.S. Cl. 252—153 5 Claims

Electrical machinery whose insulation is contaminated by moisture, salts, carbonaceous matter, and the like is cleaned by spraying with a solution of a water-insoluble, cationic surfactant with a hydroxy-aromatic acid or ester of such acid in a hydrocarbon solvent. The full resistance of the insulation is restored, and the residual protective film formed after volatilization of the solvent may serve as a primer for subsequently applied varnish.

3,673,098
DETERGENT COMPOSITION AND PROCESS

Philip M. Sabatelli, Cincinnati, Ohio, and Charles A. Brungs, Fort Wright, Ky., assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 680,966, Nov. 6, 1967, abandoned. This application July 22, 1970, Ser. No. 57,345
Int. Cl. C11d 7/06
U.S. Cl. 252—156 3 Claims

The invention disclosed is directed to a highly alkaline detergent composition having unexpectedly high tolerance with respect to hard water. The composition includes from about 10 to about 50 parts of an alkaline inorganic detergent component, from about 5 to about 30 parts of a tetra-alkali metal pyrophosphate component, from about 5 to about 30 parts of an alkali metal nitrilo triacetate component, from 0 to about 5 parts of a water-soluble nitrite component, and from 0 to about 5 parts of a low-foaming surfactant. The composition is low-foaming in use dilutions and highly effective for machine dishwashing with less spotting and greater clarity of articles cleaned therewith. Also disclosed is a process for washing articles for cooking and eating using dilute aqueous solutions of the composition.

3,673,099
PROCESS AND COMPOSITION FOR STRIPPING CURED RESINS FROM SUBSTRATES

William Joseph Corby, Allentown; Victor Charles Garbarini, and Malcolm Lunt White, both of Bethlehem, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 19, 1970, Ser. No. 81,754
Int. Cl. C11d 7/06
U.S. Cl. 252—156 7 Claims

Cured resins, such as silicones or polyvinyl cinnamate are stripped from substrates by exposure to a mixture of N-methyl-2-pyrrolidone and a strong base, such as an alkyl or substituted alkyl ammonium hydroxide, to which may be added other compatible organic solvents such as ethylene glycol monoethyl ether.

3,673,100
LIQUID SCINTILLATOR COMPOSITIONS FOR GAMMA-RAY COUNTING

Royal H. Benson, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 720,451, April 11, 1968, Pat. No. 3,573,218. This application April 23, 1969, Ser. No. 818,784
Int. Cl. G01t 1/20; C09k 1/00
U.S. Cl. 252—301.3 R 10 Claims

A scintillator composition and method for liquid scintillation detection and counting of gamma-rays, said composition comprising, (1) a scintillator solution comprised of an aro-

matic hydrocarbon solvent, a scintillation solute and an ethoxylated alkyl phenol and, (2) a loading agent comprised of an aqueous solution of a compound of an element having an atomic number greater than twenty.

3,673,101

PROCESS FOR PREPARING IMPROVED CARBIDE MICROSPHERES FROM ION EXCHANGE RESINS

Robert Lee McKenney, Jr., Silver Spring, and Jacob Block, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,298
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R 4 Claims

A process for controlling the amount of sulfur in metal carbide plus carbon microspheres made from ion exchange resins in which the microspheres are desulfurized by heating under hydrogen, hydrogen plus water or carbon monoxide plus water, at temperatures of 500–900° C. for times of 3 to 25 hours.

3,673,102

CATHODOLUMINESCENT CALCIUM SULFIDE COMPOSITIONS WITH IMPROVED FAST DECAY CHARACTERISTIC

Willi Lehmann, Murrysville, and Frederick M. Ryan, New Alexandria, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1970, Ser. No. 76,400
Int. Cl. C09k *1/12*
U.S. Cl. 252—301.4 S 8 Claims

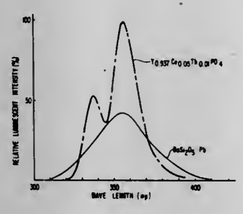
The selected calcium sulfide cathodoluminescent materials which exhibit an inherent rapid decay characteristic after cathodoluminescent excitation exhibit an even faster decay characteristic when a predetermined amount of cobalt is incorporated into the composition. The amount of cobalt is preferably from about 0.001 gram-atom percent to one gram-atom percent taken with respect to the moles of calcium sulfide, with the energy efficiency of luminescence and the length of the time of phosphorescence decreasing with increasing cobalt content.

3,673,103

YTTRIUM ORTHOPHOSPHATE PHOSPHOR

Kenzo Awazu; Kazu Matsunaga; Katsutoshi Muto; Junjiro Kai, and Kyoko Oi, all of Amagasaki-shi, Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1969, Ser. No. 854,187
Claims priority, application Japan, Aug. 31, 1968, 43/62441
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 L 7 Claims



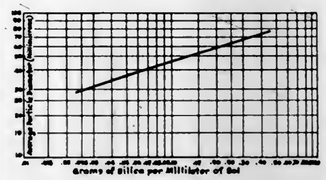
A phosphor consisting of yttrium phosphate as a matrix and cerium and thorium as an activator, represented by the general formula $Y_{1-x-y}Ce_xTh_yPO_4$ wherein x is 0.01–0.1 mol and y is 0.0002–0.05 mol. This phosphor gives a particularly strong luminescence in the near UV wavelength zone of 330–370 millimicrons, and has a light output about 1.5 times as high as a lead-activated barium disilicate ($BaSi_2O_5$:Pb), the light output decrease during light production being markedly small.

3,673,104

METHOD OF PREPARING SILICA SOLS CONTAINING LARGE PARTICLE SIZE SILICA

William L. Albrecht, Naperville, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 719,677, April 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 453,873, April 26, 1965, Pat. No. 3,440,174, which is a continuation-in-part of Ser. No. 165,617, Jan. 11, 1962, abandoned. This application April 28, 1969, Ser. No. 819,861The portion of the term of this patent subsequent to April 22, 1986, has been disclaimed.
Int. Cl. B01j *13/00*; C01b *33/14*
U.S. Cl. 252—313 S 3 Claims



Method for preparing aqueous stable silica sols containing at least 40 percent by weight of silica in the form of large, discrete, spherical particles having a weight-average particle diameter of from 45 to 100 millimicrons. An aqueous acid silica sol feed is added at a critical maximum feed rate to an aqueous alkaline silica sol containing particles having a weight-average diameter of from about 10 to 30 millimicrons while the aqueous liquid phase thereof is continuously evaporated. The pH of the alkaline sol during the whole of the addition is maintained at a value of at least 7.0.

3,673,105

DEFOAMER COMPOSITIONS FOR AQUEOUS SYSTEMS

James H. Curtis, Columbia, S.C., and Fred E. Woodward, Watchung, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed April 11, 1969, Ser. No. 815,498
Int. Cl. B01d *17/00*
U.S. Cl. 252—321 6 Claims

Defoamer compositions and method of defoaming aqueous systems such as latex or paper and pulp systems, for example, compositions being composed of certain fatty amides, inorganic particles (talc, for example), hydrocarbon liquid, an oil soluble polymer and a silicone oil.

3,673,106

EMULSIFIER SYSTEM

John J. Jonas, Winnetka, and Ernest H. Freund, Evanston, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Filed June 18, 1969, Ser. No. 834,500
Int. Cl. B01f *17/34*
U.S. Cl. 252—356 15 Claims

An emulsifier system is described for various products and particularly for food products which desirably incorporate air such as foams. The emulsifier system comprises, in combination, fatty monoesters of polyhydric alcohols stabilized in the alpha crystalline form by a crystal transition inhibitor. The monoesters include glycerol monoesters and 1.2 propylene glycol monoesters. The transition inhibitor is a non-surface active salt compound comprising atoms having strong electronegative charge.

3,673,107

MIXED FIELD RADIATION DOSIMETER MATERIALS OF AMINE SALTS OF ORGANIC ACIDS

Ignatius G. Peters, Devine, Tex., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 18, 1969, Ser. No. 886,373
Int. Cl. G01n *27/78, 31/22*
U.S. Cl. 252—408 2 Claims

Amine salts of organic acids are used as dosimeter materials. The salts react with mixed field ionizing radiation to form stable free radicals which may be detected by the technique of electron spin resonance spectroscopy. The salts have hydrogen contents of from about 9 to about 11 weight percent and thus react with ionizing radiation in a manner similar to human tissue which has about 10 weight percent hydrogen. The materials are useful in studying the effect of radiation on tissue.

3,673,108

HYDROCRACKING CATALYST ACTIVATION TREATMENT

Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,681
Int. Cl. B01j *11/02, 11/30, 11/76*
U.S. Cl. 252—411 R 8 Claims

A hydrocracking catalyst containing an Iron Group metal on a silica-aluming refractory oxide support is deactivated by contact with water vapor at elevated temperatures. The catalytic activity and stability are improved by treating the catalyst in the presence of sulfide with a gas comprising hydrogen and a fluorine compound at a temperature of about 250° to 550° C.

3,673,109

PROCESS FOR THE REACTIVATION OF PLATINUM-ON-ALUMINA CATALYSTS

Eugenia Georgescu; Ion Ion Ghejan; Victor Bugur; Ion Zirna; Theodora Mazare; Elena-Lygia Popescu; Bujor Olteanu; Nicolae Marculescu; Traian-Mircea Filotti; Marius-Aurel Barbul, and Ion Calin, all of Ploiesti, Romania, assignors to Institutul De Cercetari Pentru Prelucrarea Titeiului, Ploiesti-Boulv., Republicii, Romania, Ploiesti, Romania

Filed April 1, 1970, Ser. No. 24,845
Claims priority, application Romania, April 8, 1969, 59667
Int. Cl. B01j *11/18, 11/02*
U.S. Cl. 252—415 3 Claims

A process for reactivating or regenerating a catalyst of the platinum-on-alumina type, comprising the steps of:

a. maintaining the catalyst in a reducing medium, preferably containing hydrogen gas, at a temperature between 400° C and 600° C, for a period of substantially 2 to 8 hours in a velocity of gas flow of 1×10^{-2} to 1×10^{-1} m³ of gas per hour and per kg of catalyst;

b. halogenating the catalyst thereafter in a reducing gas medium at a temperature between 400° C and 550° C with a gas-flow rate of 1×10^{-2} to 4×10^{-1} m³ of gas per hour per kg of catalyst using a halogenated organic compound with one to six carbon atoms per molecule and an atomic ratio of halogen:hydrogen no greater than unity and a partial pressure of this compound between 1 and 100 mm Hg for a period of one-half to 10 hours and in the presence of a moisture content of 10 to 50 ppm to bring the halogen content of the catalyst to 0.1 to 1 percent by weight; and

c. oxidizing the catalyst treated in step (b) with oxygen-containing gas of an oxygen concentration increased from 0.2 to atmosphere concentrations over a period of 5 to 15 hours at a temperature of 400° to 600° C and with a gas-flow velocity of 0.5 to 5 m³ per hour per kg of catalyst.

3,673,110

SURFACE-MODIFIED CELLULOSE

James B. Edwards, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 28, 1970, Ser. No. 102,199
Int. Cl. C11d *17/00*
U.S. Cl. 252—427 12 Claims

An adsorbent mass useful in adsorbing dirt and anionic dye molecules in laundering operations and the like is prepared by modifying a cellulosic substrate to render same anionic and thereafter coating the modified surface with certain nitrogen compounds.

3,673,111

METHOD FOR THE MANUFACTURE OF SOLID PHOSPHORIC ACID CATALYST

Edward Hovarth, Woodland Hills, Calif., and Gary Youngman, Des Plaines, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 13, 1970, Ser. No. 54,612
Int. Cl. B01j *11/82*
U.S. Cl. 252—435 6 Claims

A process for the manufacture of a solid phosphoric acid catalyst. A siliceous adsorbent is admixed with a polyphosphoric acid. The mixture is heated at an elevated temperature and thereafter extruded. High activity - high strength extrudate particles are produced by drying the extrudate first in a steam atmosphere and then in a dry air atmosphere.

3,673,112

HYDROCONVERSION CATALYST PREPARATION

Gerald S. Levinson, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 689,342, Dec. 11, 1967, abandoned. This application May 13, 1970, Ser. No. 36,721
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 11 Claims

Incorporation of 30–65 percent of a hydrogenation metal component into a hydrogel which would yield on drying and calcining without the hydrogenation metals a xerogel of a high compacted bulk density (0.8–1.6 g/cc) low pore volume (0.15–0.45 cc/g.) alumina results in a catalyst having a very high hydrogenation and dentrification activity. Up to about 10 percent fluoride is added to provide a cracking component. The hydrogenation metal component is selected from the oxides of nickel, molybdenum, tungsten, cobalt and mixtures thereof.

3,673,113

PROCESS FOR PREPARING FLUORINATION CATALYST

Daiji Naito, Osaka, and Shigeyoshi Ogawa, Takatsuki, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 30, 1970, Ser. No. 102,926
Claims priority, application Japan, Dec. 30, 1969, 45/1581
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 3 Claims

A process for preparing a fluorination catalyst chromium oxyfluoride which comprises subjecting chromium fluoride to heat treatment at a temperature from 300° to 420° C. in the presence of oxygen and then subjecting the resulting product to heat treatment at a temperature from 500° to 700° C. in the absence of an active gas.

3,673,114
DISPROPORTIONATION CATALYSTS

Keith George Allum, Bracknell, and Peter John Robinson, Isleworth, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jan. 28, 1970, Ser. No. 6,560
Claims priority, application Great Britain, Feb. 7, 1969, 6,681/69
Int. Cl. B01j 11/40
U.S. Cl. 252—454 3 Claims

A catalyst for the disproportionation of olefins is prepared by (i) adsorbing aluminum ions into silica (ii) adsorbing sodium ions and (iii) adsorbing ions of one or more of the metals rhenium, tungsten and molybdenum. The catalyst is activated by heating to 350° to 650° C. for up to 16 hours.

3,673,115
CATALYSTS

Bastiaan Gerardus Linsen, Maasland, and Theo Jan Osinga, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,290
Claims priority, application Luxembourg, Dec. 30, 1968, 57.716
Int. Cl. B01j 11/22
U.S. Cl. 252—459 10 Claims

In a process for the preparation of a nickel-on-silica catalyst, the use of an intimate mixture of an organic base, which base is substantially insoluble in the suspension of silica in aqueous nickel salt solution, as a means of withdrawing hydrogen ions from the solution and causing precipitation of nickel from the solution on to the silica carrier.

3,673,116
RANEY MIXED CATALYST

Gerhard Richter, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 11, 1970, Ser. No. 36,402
Claims priority, application Germany, June 7, 1969, P 19 28 929.3
Int. Cl. B01j 11/22
U.S. Cl. 252—466 T 21 Claims

A Raney mixed catalyst for use as a fuel cell electrode. The catalyst contains nickel, iron and one of the metals titanium or zirconium. The catalyst is prepared from a Raney alloy, which contains aluminum as the inactive component. The alloy is in at least one or two homogeneous quaternary phases.

3,673,117
ELECTRICAL RESISTANT MATERIAL

Duane Arthur Schroeder, East Dundee; Alvin Dennis Weiss, Chicago, and Benedict Clare Giltner, Bensenville, all of Ill., assignors to Methode Development Company, Chicago, Ill.

Filed Dec. 19, 1969, Ser. No. 886,645
Int. Cl. B44d 1/18; H01b 1/06
U.S. Cl. 252—512 8 Claims

Electrical resistance elements are formed using minute amounts of noble metal oxide hydrate in a vitreous binder with or without the inclusion of high electrical resistance metals or their oxides to adjust the ohmic value of the elements.

3,673,118
COMPOSITE ARTICLE CONTAINING HIGH PURITY HOT PRESSED BORON NITRIDE

Victor Mandorf, Jr., Olmsted Falls, and Lionel Clayton Montgomery, North Olmsted, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 822,214, May 6, 1969, abandoned. This application July 1, 1970, Ser. No. 51,525
Int. Cl. H01b 1/06
U.S. Cl. 252—520 12 Claims

High purity boron nitride articles of manufacture having a high density and improved properties. The improved boron nitride articles have a unique acicular crystal structure, an oxygen content of less than 0.5 per cent by weight, a density of at least 1.9 grams/cc., excellent hot strength, low coefficients of thermal expansion with no irreversible thermal expansion, excellent thermal shock resistance, moisture insensitivity and improved dielectric properties. These articles are produced by treating conventional hot pressed boron nitride articles with a suitable solvent to lower their boron oxide (B_2O_3) content,

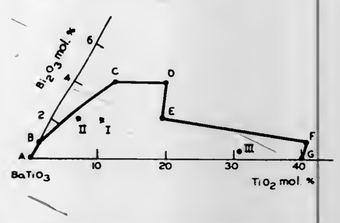


and then sintering the treated material in an inert atmosphere at a temperature of from 1,600° to 2,100° C. in the absence of pressure or mechanical restraint. If it is desired to render these articles electrically conductive, an electrically conductive refractory compound may be incorporated therein. Composite articles produced in this manner can be used to produce resistance heated evaporating crucibles for the vaporization of metals.

3,673,119
SEMICONDUCTING CERAMIC COMPOSITIONS

Hisayoshi Ueoka, Ichikawa-shi; Kazuo Horii, Hunabashi-shi, and Kazumasa Umeya, Ichikawa-shi, all of Japan, assignors to TDK Electronics Co. Ltd., Tokyo, Japan

Filed Oct. 9, 1969, Ser. No. 865,031
Claims priority, application Japan, Oct. 11, 1968, 43/73664; Oct. 12, 1968, 43/74098
Int. Cl. H01b 1/06; C04b 35/00
U.S. Cl. 252—520 1 Claim



Ceramic semiconducting compositions are provided herein in which compositions consist primarily of $BaTiO_3$ and minor amounts of Bi_2O_3 and TiO_2 in the proportions defined in FIG. 1 of the drawings under the Region described by line A-B-C-D-E-F-G and which compositions further contain 0.01 to 4 mol % of MnO_2. The disclosure also provides for a method of producing compositions having the aforementioned proportions by mixing the oxides defined by FIG. 1 with MnO_2, pressing the ceramic composition into the desired shape and then sintering the compositions in air, followed by reducing the compositions in a reducing atmosphere at elevated temperatures. Ceramics produced from the compositions described above exhibit a large capacitance among other desirably electrical properties and may be conveniently produced in a small compact form.

3,673,120
PERFUMERY COMPOSITIONS CONTAINING PATCHOULI OIL AND 8-CAMPHENE CARBINOL

John Francis James, Epping, Essex; Brian George Jaggers, Romford, Essex, and Anthony John Curtis, Southsea, all of England, assignors to Bush Boake Allen Limited, London, England

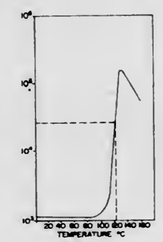
Filed July 8, 1969, Ser. No. 840,029
Claims priority, application Great Britain, July 23, 1968, 35,198/68
Int. Cl. C11b 9/00
U.S. Cl. 252—522 7 Claims

The known compound 8-camphene carbinol has been found to act as a perfumery extender for Patchouli Oil in perfumery compositions when present in a concentration of from 1 to 200 parts by weight per 100 parts by weight of the Patchouli Oil. This extended Patchouli oil may be substituted for natural Patchouli Oil without significant impairment of aroma in many applications.

3,673,121
PROCESS FOR MAKING CONDUCTIVE POLYMERS AND RESULTING COMPOSITIONS

John V. Meyer, Brighton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 27, 1970, Ser. No. 6,086
Int. Cl. H01b 1/06; C08k 1/02
U.S. Cl. 252—511 9 Claims

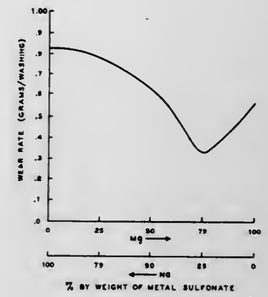


Conductive polymer having a steeply-sloped positive temperature coefficient (PTC) of resistance is composed of crystalline polymer having a narrow molecular weight distribution and filled with conductive particles such as carbon black, tin powder, gold powder, silver powder and other conductive particles which do not oxidize at the temperatures to which the composition is subjected during processing. Additional additives are incorporated to impart desired characteristics. Stabilizing agents which prevent deterioration of the resistance characteristics of the material include alkylated polyhydroxy phenol and phenylbetanapthylamine. (Dialkylphenol-sulfide may be added to reduce degradation at a metal polymer interface thus reducing contact resistance). Flame retardants which do not deleteriously effect the resistance characteristics include phenylbetanapthylamine high chlorinated perchloropentacyclodecane and antimony oxide. The several ingredients are for a preliminary mixed together, then subjected to a more thorough mixing step to effect an adequate dispersion of the filler material throughout the polymer, and then subjected to shearing forces for a limited period of time while maintaining the mix within a desired temperature range. The mix is then formed in the desired configuration as by inserting into a preheated mold while still at an elevated temperature. The formed element is removed from the mold and machined preferably to a rough finish to facilitate bonding of electrically conductive coatings to spaced locations thereof. The element is then coated with electrically conductive coating and annealed to minimize contact resistance.

3,673,122
HYDROGENATED OLEFIN SULFONATE DETERGENT BARS

Gar Lok Woo, Tiburon, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed March 27, 1969, Ser. No. 811,153
Int. Cl. C11d 1/12, 3/065
U.S. Cl. 252—555 4 Claims



Non-soap hydrogenated olefin sulfonate detergent toilet bars having improved slough loss and wear rate characteristics comprise a mixture of the sodium and magnesium salts of hydrogenated olefin sulfonates containing from 10 to 25 carbon atoms in a ratio of the sodium to the magnesium salt of 2:1 to 1:20 and a plasticizing amount of water.

3,673,123
2,2',4,4'-TETRACHLORO-5,5'-DIAMINO-DIPHENYL ETHER

Peter Tacke; Rudolf Binsack, both of Krefeld, and Oskar Weissel, Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 27, 1970, Ser. No. 15,251
Claims priority, application Germany, March 21, 1969, P 19 14 367.0
Int. Cl. C07c 93/14
U.S. Cl. 260—571 1 Claim

The 2,2',4,4'-tetrachloro-5,5'-diamino-diphenyl ether which is useful as starting material for the production of polyamides and polyurethanes and which may be obtained by the reduction of the corresponding dinitro compound.

3,673,124
SOLUBLE OIL COMPOSITION

Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 713,303, March 15, 1968, Pat. No. 3,482,632. This application Aug. 27, 1969, Ser. No. 853,522
Int. Cl. C09k 3/00
U.S. Cl. 252—8.55 D 10 Claims

A soluble oil composition comprising a mixture of liquid hydrocarbon, a surface active agent and butyl Cellosolve that is particularly adapted for use as a displacement fluid in a miscible flooding process. The soluble oil composition can be employed as a substantially anhydrous liquid or as a water-in-oil microemulsion.

3,673,125
METHOD OF PRODUCING POLYVINYL ACETAL POROUS ARTICLES

Kenji Takahashi; Toshio Yamamura; Mitsuzo Ono, and Korekiyo Eda, all of Sowa-machi, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

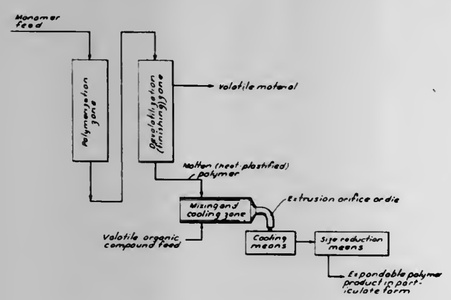
Filed May 6, 1970, Ser. No. 35,104
Claims priority, application Japan, May 10, 1969, 44/35516
Int. Cl. C08j 1/14, 1/30
U.S. Cl. 260—2.5 F 5 Claims

A mixed solution of polyvinyl alcohol and gelatinized starch for manufacturing polyvinyl acetal porous articles is prepared by introducing forcedly at a constant rate a dispersion formed by adding starch particles or a suspension of starch particles to an aqueous solution of polyvinyl alcohol having a relatively low temperature to one end of a cylindrical heater provided with an inner stirrer and a heating means in the outer periphery, heating the cylindrical heater at a sufficient temperature to gelatinize the starch in the dispersion by the time the continuously flowing dispersion reaches the other end of the cylindrical heater and withdrawing the gelatinized dispersion continuously from the cylindrical heater.

3,673,126
CONTINUOUS PROCESS FOR MAKING EXPANDABLE THERMOPLASTIC RESIN COMPOSITIONS

William D. Carmody; Charles J. Thompson, and George J. Butzler, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1967, Ser. No. 682,436
Int. Cl. C08j 1/26
U.S. Cl. 260—2.5 E 3 Claims



A continuous process for the production of expandable thermoplastic polymer compositions obviating the use of a pressure vessel for polymerization is described. Freshly polymerized, devolatilized polymeric melt and a blowing agent are mixed prior to complete cooling of the melt and extruding the mixture at a continuous rate equal to the rate at which the mixture is supplied, to obtain greatly improved product properties.

3,673,127
ULTRAFINE POROUS POLYMER ARTICLE AND METHOD OF MAKING

Joseph L. Weininger, and Fred F. Holub, both of Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 20, 1969, Ser. No. 867,925
Int. Cl. C08f 47/08, 29/12
U.S. Cl. 260—2.5 HA 2 Claims

Ultrafine porous polymer articles with a predetermined maximum pore radius and processes of producing such polymer articles are described wherein a thermoplastic polymer body is contacted with an aqueous solution of a selected monomer, a specified differential pressure is applied between opposite body sides, only the pores with a radius larger than the predetermined radius are wetted by the solution of the monomer, the solvent is evaporated, and the monomer is polymerized in situ. The resulting article is a composite structure consisting substantially of a first thermoplastic polymer, and a small addition of a second polymer in the former pores which were larger than the predetermined maximum pore radius.

3,673,128
CELLULAR POLYOXAZOLIDINONE ELASTOMERS FROM POLYISOCYANATES AND POLYEPOXIDES

Edward F. Hayash, Jr., Killingworth; Harold E. Reymore, Jr., Wallingford, and Adnan A. R. Sayigh, North Haven, all of Conn., assignors to Upjohn Company, Kalamazoo, Mich.

Filed April 8, 1968, Ser. No. 719,678
Int. Cl. C08g 22/46, 22/16
U.S. Cl. 260—2.5 8 Claims

High temperature resistant, low flame spread cellular polymers are disclosed. These polymers are obtained by reacting an organic polyisocyanate and a polyepoxide in approximately stoichiometric proportions in the presence of a tertiary amine catalyst (triethylene diamine preferred) and a blowing agent. Non active-hydrogen containing flame retardants, surfactants, pigments, and like additives can be incorporated into the cellular polymers of the invention. The novel cellular polymers are useful in thermal insulation and like applications where resistance to extreme temperatures and low flame spread requirements must be met.

3,673,129
SYNTHETIC RESIN MULTICELLULAR PRODUCT WHOSE MAIN COMPONENT IS ACRYLONITRILE AND PROCESS FOR PREPARATION THEREOF

Norio Sagane, Kyoto; Issei Kuwazuru, and Isao Kaetsu, both of Osaka-fu, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha

Continuation of Ser. No. 603,777, Dec. 22, 1966, abandoned. This application Dec. 19, 1969, Ser. No. 882,783
Claims priority, application Japan, Dec. 24, 1965, 40/79981
Int. Cl. C08f 47/10; C08j 1/20, 1/22
U.S. Cl. 260—2.5 R 8 Claims

Process for preparing multicellular products which comprises mixing urea and/or a urea derivative, and an acid with a monomeric mixture comprising 60–95 percent by weight of acrylonitrile and 40–5 percent by weight of a vinyl monomer copolymerizable with acrylonitrile, polymerizing the mixture with the use of catalyst and/or by irradiation, and thereafter heating the resulting polymer at 100°–250° C.; and multicellular products produced by the above process, in which fine cells having an average diameter of less than 1.0 mm are substantially uniformly dispersed in the polymer and which product has a specific gravity of less than 0.3 g/cm³.

3,673,130
NON-PUNKING PHENOLIC FOAM

Anthony Joseph Papa, St. Albans, and William Robert Proops, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 4, 1969, Ser. No. 813,768
Int. Cl. C08g 53/10, 51/62
U.S. Cl. 260—2.5 F 5 Claims

Non-punking phenolic foams are obtained by inclusion of certain phosphorus-containing compounds in the reaction mixture. The phosphorus compounds include tris(2-chloroethyl)-phosphate, bis(hydroxymethyl)phosphinic acid, tetrakis(hydroxymethyl)phosphonium chloride, the hydroxyalkyl polyphosphates obtained from the reaction of an alkylene oxide with a polyphosphoric acid, and the adduct of ammonia with phosphorus pentoxide.

3,673,131
PROCESS FOR PREPARING NON-POROUS POLYMERS FROM VINYL MONOMERS

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 610,464, Jan. 20, 1967, abandoned. This application Dec. 1, 1969, Ser. No. 881,283
Int. Cl. C08f 47/10, 1/04, 3/30
U.S. Cl. 260—2.5 R 2 Claims

This invention relates to a process for preparing glassy, nonporous polymers from vinyl monomers by polymerizing the monomer in the essential absence of water, solvents or gases at a temperature less than about 60° C and under a continuously applied compressive force of at least about 300 psi, and wherein the polymerization reaction is conducted in a reactor which is initially essentially completely filled with the monomer to be polymerized.

3,673,132
FOAMS FORMED BY HARDENING EMULSIONS OF GLYCOL IN POLYESTER RESIN

Earl E. Parker, Allison Park, and Charles B. Friedlander, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 2, 1969, Ser. No. 881,592
Int. Cl. C08j 1/14
U.S. Cl. 260—2.5 N 8 Claims

Polyester foams are formed by emulsifying a mixture of glycol in polyester and vinyl monomer and hardening the polyester resin. The resulting polyester resin foam is dimensionally stable, inexpensive to produce, and may be used as furniture, building material and ornamental objects.

3,673,133
SYNTHETIC LATEX FOAM RUBBER AND METHOD OF MAKING SAME

Ernst Schmidt, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 744,677, June 26, 1958, abandoned. This application Dec. 18, 1961, Ser. No. 160,343
Int. Cl. C08j 1/16
U.S. Cl. 260—2.5 L 36 Claims

This invention relates to an internally reinforced synthetic butadiene rubber latex containing a rubber reinforcing substance.

3,673,134
AGRICULTURAL MULCH

Bernard F. Anderson, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1970, Ser. No. 60,724
Int. Cl. C08c 9/06; A01g 13/02
U.S. Cl. 260—5 6 Claims

A film plastic in nature for use as an agricultural mulch. The film is a blend of an ethylene polymer, a substantially amorphous ethylene/propylene copolymer, a natural rubber and a paraffin wax. The films are sufficiently tough and flexible to allow handling and laying out on a planted soil surface, yet they readily rupture under the pressure of a growing seedling to allow plant penetration. The films degrade during a growing season to the point that they can be readily disposed of by plowing and/or disking into the ground.

3,673,135
PRINTING INK

Carl B. Blake, Bronx, and George K. L. Tung, Richmond, both of N.Y., assignors to Frye Industries Inc., New York, N.Y.

Division of Ser. No. 583,688, Oct. 3, 1966, Pat. No. 3,510,340. This application Oct. 6, 1969, Ser. No. 871,118
Int. Cl. C08b 21/08; C08f 39/48; C09d 11/14
U.S. Cl. 260—17 A 3 Claims

A printing ink instantaneously hardenable upon contact with a catalyst comprising 65 to 80 weight percent of a varnish having a major amount of a liquid monomer of acrylic or methacrylic di- or triester and a minor proportion of a resin compatible with the liquid monomer, 10 to 30 weight percent pigment, a tertiary aromatic amine accelerator and 1 to 10 weight percent wax.

3,673,136
POWDERED POLYSACCHARIDE-REINFORCED ELASTOMER MASTERBATCHES, COMPOUNDS, AND RESULTING VULCANIZED RUBBERS

Russell A. Buchanan, and Charles R. Russell, both of Peoria, Ill., assignors to The United States of America as represented by the Secretary of Agriculture

Filed July 24, 1970, Ser. No. 58,187
Int. Cl. C08c 9/12; C08d 9/06; C08f 45/14
U.S. Cl. 260—17.4 BB 9 Claims

Powdered elastomer masterbatches are prepared by grinding dried rubber curds which contain highly effective reinforcing agents. Such finely comminuted elastomer masterbatches provide stable powdered rubber compounds when blended with usual powdered curatives and fine particle fillers. These powdered rubber compounds are formed into finished vulcanized rubber articles by direct heat-compression molding, by extrusion from a simple machine, or by injection molding without prior high shear mixing.

3,673,137
COATING COMPOSITIONS

Auguste Louis Luciene Palluel, Windsor, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 624,128, March 20, 1967, abandoned. This application Dec. 9, 1969, Ser. No. 875,066
Claims priority, application Great Britain, March 25, 1966, 13,323/66
Int. Cl. C08g 5/20
U.S. Cl. 260—19 13 Claims

A coating composition capable of being crosslinked on a substrate to which it is applied which contains an acidic film-forming material containing at least two carboxyl groups and a phenolic material containing at least two 47 groups —CH_2.NR $_1R_2$ substituted in positions ortho and/or para to one or more phenolic hydroxy groups, R_1 and R_2 being alkyl or substituted alkyl groups.

3,673,138
MECHANICAL OXIDATION OF UNSATURATED POLYESTERS

Thomas G. Harris, 110 Jackson Drive, Lancaster, Pa.

Filed Sept. 14, 1970, Ser. No. 72,152
Int. Cl. C08f 27/10, 27/22; C08g 17/14
U.S. Cl. 260—22 TN 1 Claim

Liquid unsaturated polyester resins may be converted to millable compositions by blending the liquid polyester with a metallic drier and oxidizing the liquid mixture at elevated temperatures by mechanically mixing in the presence of an oxidizing atmosphere. A viscous gel forms on oxidation which, on cooling to room temperature, is suitable for compounding, milling and curing to form useful materials such as rubbery compositions, caulking compounds and resilient flooring.

3,673,139
PROCESS FOR THE PRODUCTION OF INJECTION MOULDED AND EXTRUSION MOULDED POLYESTER PRODUCTS

Joseph Hrach, Kufstein/Tirol, Austria, assignor to Sandoz Ltd., Basle, Switzerland

Filed April 6, 1970, Ser. No. 26,114
Int. Cl. C08g 17/003, 17/14
U.S. Cl. 260—22 R 17 Claims

Process for the production of injection moulded and extrusion moulded polyesters from diols and dicarboxylic acids of which at least 85 mol. percent consists of terephthalic acid,

which process consists of condensing in the polyester 0.001 to 1 mol. percent of at least one compound bearing not less than three polyester-forming functional groups, such as OH and/or COOH groups, and incorporating in the polyester, either before or during processing, 0.001 to 2 percent by weight, in relation to the total amount of monomer units, of at least one substance which promotes crystallization.

3,673,140

ACTINIC RADIATION CURING COMPOSITIONS AND METHOD OF COATING AND PRINTING USING SAME

Joseph Francis Ackerman, Cedar Grove; Joseph Weisfeld, Fair Lawn; Robert George Savageau, Pompton Lakes, and George Beeril, North Arlington, all of N.J., assignors to Inmot Corporation, New York, N.Y.

Filed Jan. 6, 1971, Ser. No. 104,343
Int. Cl. C09d 3/66, 11/10
U.S. Cl. 260—22 TN 25 Claims

Printing ink compositions preferably comprising epoxidized soybean oil acrylate or certain derivatives thereof and a radiation sensitizer having a triplet energy between about 42 and 85 kcal/mole. Also, the method of printing with such inks comprising exposing the inks to an amount of actinic radiation effective to polymerize the inks to a non-offsetting state and the printed substrate produced by this method.

Novel alkyd-derived compositions used as vehicles for the above printing ink compositions and preferably comprising the reaction product of

1. an alkyd formed from trimethylol propane, tall oil fatty acid, and adipic acid with
2. the reaction product of toluene diisocyanate and the monoacrylic acid ester of ethylene glycol.

The method of coating with such compositions comprising exposing them, in combination with a radiation sensitizer, to an amount of radiation effective to polymerize them to a non-offsetting state.

3,673,141

MOLDING MATERIAL BASED ON BITUMEN

Hans-Georg Trieschmann, Hambach; Leo Unterstenhoefer, Limburgerhof, and Heinz Berbner, Weiher, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Oct. 29, 1969, Ser. No. 872,367
Claims priority, application Germany, Nov. 5, 1968, P 18 07 071.8; June 27, 1969, P 19 32 588.3
Int. Cl. C08f 45/52
U.S. Cl. 260—28.5 AS 5 Claims

Molding material comprising (a) a specially selected bitumen left as a residue in the distillation of petroleum which has been deacidified with calcium hydroxide and (b) an olefin polymer. The molding material may be pigment-colored and is used in the form of sheeting for insulation in construction.

3,673,142

PREPARATION OF STABLE LATEXES FROM ETHYLENICALLY UNSATURATED POLYMERIZABLE SURFACTANT AND SOLUTION OF PREFORMED WATER INSOLUBLE POLYMER OF AN ETHYLENICALLY UNSATURATED COMPOUND

Frank L. Saunders, and David P. Sheetz, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 16, 1970, Ser. No. 11,867
Int. Cl. C08f 45/24
U.S. Cl. 260—29.6 RW 14 Claims

Stable latexes are prepared by mixing a polymerizable surfactant, water and a substantially water-insoluble polymer dissolved in a non-aqueous solvent to form an initial dispersion of the solution in water, subjecting the dispersion to emulsion polymerization conditions, evaporating the solvent and optionally concentrating the remaining aqueous dispersion.

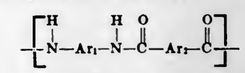
3,673,143

OPTICALLY ANISOTROPIC SPINNING DOPES OF POLYCARBONAMIDES

Thomas I. Bair, and Paul W. Morgan, both of West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 39,566, May 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 693,739, Dec. 27, 1967, abandoned. This application June 24, 1970, Ser. No. 49,539
Int. Cl. C08g 51/50, 51/44
U.S. Cl. 260—30.2 5 Claims

Fibers of high molecular weight p-oriented polycarbonamides of recurring units of the formula:

(I) 

wherein Ar_1 is p-phenylene and/or chloro-substituted p-phenylene, and Ar_2 is p-phenylene. These fibers have an initial modulus in excess of 170 gpd. and an orientation angle of up to 40° and/or a sonic velocity of at least about 4 km./sec. either as-extruded or after maintaining the fibers at 0.99 to 1.50 times their as-spun lengths and heating in a zone maintained between 200° and 1,000° C.

Optically anisotropic spinning dopes of these polycarbonamides of Formula I units, lithium or calcium chloride and certain amide or urea solvents, are also disclosed.

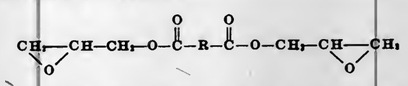
3,673,144

THERMOPLASTIC MOLDING COMPOSITIONS CONTAINING POLYESTERS

Klaus Weissermel, Kelkheim/Taunus; Rudolf Uebe, Hofheim/Taunus, and Horst Pfister, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed July 2, 1969, Ser. No. 838,686
Claims priority, application Germany, July 4, 1968, P 17 69 729.9
Int. Cl. C08g 51/36
U.S. Cl. 260—30.4 R 17 Claims

The present invention relates to polyester molding compositions from linear saturated polyesters, inert inorganic solid materials and 2,3-epoxy propanol esters of polyfunctional carboxylic acids of the formula



which molding compositions may be worked up in the thermoplastic range and from which molded articles can be made which are free from flash-formation.

3,673,145

POLYIMIDE SOLUTION AND METHOD OF PREPARING SAME

Muneyoshi Minami; Masaharu Taniguchi, both of Otsu-shi; Tadao Tsutsumi, Shiga-ken; Masakazo Murakami, Otsu-shi, and Toshiya Yoshii, Otsu-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sept. 2, 1969, Ser. No. 862,601
Claims priority, application Japan, Sept. 2, 1968, 43/62317; Jan. 22, 1969, 44/4147
Int. Cl. C08g 51/28, 51/44
U.S. Cl. 260—32.4 N 7 Claims

Novel polyimide solutions are provided which are obtained by reacting 1,2,3,4-butane tetracarboxylic acid or a functional derivative thereof with an organic diamine for example an aromatic diamine such as diaminodiphenyl ether in certain reaction solvents for example phenols, nitrobenzenes, pyridines, quinolines, N-alkyl lactams and cyanobenzenes at a tempera-

ture of from 100° C. to the boiling point of the reaction mixture until a polyimide solution is obtained having an imidization ratio of 50–98 percent is obtained. The products thus obtained can be employed as varnishes, to make film coating for electric cable, as adhesives or blended with pigments and the like to make pains.

3,673,146

METHOD FOR STABILIZING PIGMENTED POLYCARBONATE RESINS

Arnold Factor, Scotia, N.Y., assignor to General Electric Company

Filed Feb. 24, 1971, Ser. No. 118,577
Int. Cl. C08g 51/04
U.S. Cl. 260—37 PC 4 Claims

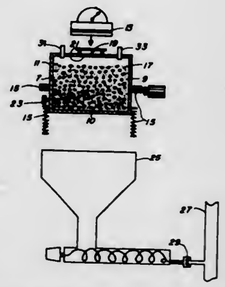
A method is provided for stabilizing polycarbonate resin tinted with ultramarine pigment, involving the incorporation of the ultramarine pigment into the polycarbonate resin as an arylsiloxane-pigment blend. There also is employed with the arylsiloxane-pigment blend, polycarbonate resin stabilizers such as triorganophosphite, and a cyclo aliphatic epoxy compound. The stabilized resin can be remolded without a significant increase in the Yellow Index of the resin.

3,673,147

METHOD OF PREPARING DELUSTERED FILAMENTS AND FIBERS

Thomas P. Bor, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

Filed April 27, 1970, Ser. No. 31,917
Int. Cl. C08g 51/04
U.S. Cl. 260—37 N 9 Claims



The process for preparing delustered filaments and fibers is carried out by adding an amount of delustrant in a ratio of 5 to 20 parts by weight of delustrant per 100 parts of polymer chips under an inert blanket, grinding said delustrant with said polymer chips with grinding balls of about one-half to 1¼ inches in diameter by vibrating at about 2 to 10 mm amplitude and at a frequency of about 600 to 3,600 cycles per minute while incrementally increasing the temperature from about ambient to about 20° C. below the softening point of said polymer and obtaining a pigment dispersion of substantially less than 1 micron particle size and separating the balls from the pigmented polymer.

3,673,148

ABRASION RESISTANT COATING COMPOSITION OF AN ACRYLIC POLYMER, A POLYESTER AND A THERMOSETTING CONSTITUENT

Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1971, Ser. No. 145,535
Int. Cl. C08g 51/04
U.S. Cl. 260—39 R 11 Claims

A coating composition that forms a high quality abrasion resistant finish for fiberglass reinforced plastic sinks and bathtubs contains as the binder

I. an acrylic graft copolymer having attached to its backbone side chain ester units containing reactive hydroxyl groups;

II. a polyester of two or more dicarboxylic acids or anhydrides, a glycidyl ester, a glycol and a triol;

III. an alkylolated medium formaldehyde resin; and contains pigments in a pigment to binder ratio of 50:100 to 250:100 of a blend of a primer pigment such as titanium dioxide and an abrasive pigment of zirconium silicate.

3,673,149

FLAME RETARDANT COMPOSITIONS OF MATTER

Alexander Gaydasch, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 767,546, Sept. 5, 1968, Pat. No. 3,574,231. This application Dec. 7, 1970, Ser. No. 95,946
Int. Cl. C08f 45/60; C08g 51/60
U.S. Cl. 260—45.8 N 8 Claims

Novel compositions of matter comprising a polymeric compound and an N-substituted polyhalopolyhydropolycyclicdicarboximide as exemplified by polypropylene and quanyl-5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboximide possess certain physical properties such as being flameproof or fire resistant.

3,673,150

GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Filed Nov. 20, 1969, Ser. No. 878,501
Int. Cl. C08c 13/20
U.S. Cl. 260—41.5 A 6 Claims

The improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber-reinforced elastomeric products wherein the individual glass fibers are sized, or a bundle of glass fibers are impregnated, with a composition containing a polysulfide.

3,673,151

ALKYLHYCLROXYPHENYL THIOALKANONATE STABILIZERS FOR ORGANIC MATERIALS

David Herbert Steinberg, Bronx, N.Y., assignor to Ciba-Geigy Corporation

Division of Ser. No. 772,368, Oct. 31, 1968, Pat. No. 3,598,854. This application Sept. 21, 1970, Ser. No. 74,202
Int. Cl. C08f 45/58; C08g 51/58
U.S. Cl. 260—45.85 3 Claims

Alkylhydroxyphenylthioloacyl alkanoic acid esters of mono- and polymercaptoalkanoic acid esters prepared by known thiolo esterification procedures, are stabilizers of organic material subject to oxidative deterioration.

3,673,152

ENHANCEMENT OF RESISTANCE OF OLEFIN POLYMERS TO COPPER-CATALYZED OXIDATIVE DEGRADATION

Motonobu Minagawa, Koshigaya; Kenichi Nakagawa, and Minoru Goto, both of Tokyo, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed May 23, 1969, Ser. No. 827,166
Claims priority, application Japan, May 27, 1968, 43/35426
Int. Cl. C08f 45/60
U.S. Cl. 260—45.8 N 15 Claims

Heterocyclic amines or amides are provided which are useful in the enhancement of the resistance of olefin polymers to copper-catalyzed oxidative deterioration.

Stabilizer compositions are also provided consisting essentially of at least one olefin polymer stabilizer and heterocyclic amines or amides; and olefin polymer compositions, such as propylene polymer compositions, containing heterocyclic

amines or amides; and a process for enhancing the resistance of olefin polymers to copper-catalyzed degradation by incorporation of such compounds or of such stabilizer compositions.

3,673,153

THERMOSTABLE POLYESTERS AND PROCESS OF PRODUCING SAME

Erich Behr, Troisdorf, Germany, assignor to Dynamit Nobel AG, Troisdorf Postfach, Germany

Filed March 25, 1970, Ser. No. 22,689

Claims priority, application Germany, March 26, 1969, P 19 15 374.3

Int. Cl. C08g 17/08

U.S. Cl. 260—47 C **4 Claims**

Thermostable polyesters of formula (I) wherein *n* is 40–200, and the carbonyl and carboxy groups on the pheylene radical are in para or meta positions with respect to each other. The polyesters are useful as electrically insulating materials. They are produced by reaction of diacylchlorides of terephthalic or isophthalic acid with 4,4'-dihydroxytetraphenylmethane.

3,673,154

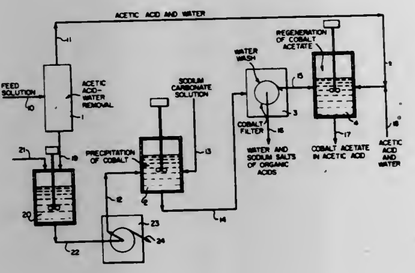
PROCESS FOR THE RECOVERY OF COBALT CATALYST

Alvin E. Trevillyan, Naperville, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,196

Int. Cl. C01g 51/00; C07c 63/02

U.S. Cl. 260—524 R **12 Claims**



There is disclosed a cobalt catalyst recovery process which can provide substantially 100 percent recovery of cobalt from meta- or para-xylene oxidation reaction products, in a catalytically active form relatively free from side reaction, tramp metal and corrosion products. The reaction medium, after recovery of isophthalic or terephthalic acid products, is distilled or flashed, diluted with water to achieve a cobalt concentration and acetic acid concentration sufficient to yield a pH of the solution above 3.0 and to precipitate iron and chromium values. The reaction medium is separated from these precipitates and treated with aqueous sodium carbonate which serves to convert the side reaction organic acids to soluble sodium salts and the cobalt to insoluble cobalt carbonate. Nickel impurities may be converted to a soluble form. The cobalt carbonate is separated out by filtration or the like, and is reconverted to cobalt acetate by treating the carbonate with acetic acid and, if desired, a minor amount of water. The catalyst solution, preferably after water removal, is recycled to the oxidation process.

3,673,155

BIS(ORGANOSILYL)HYDROCARBON MODIFIED POLYAMIDES AND METHODS FOR MAKING THEM

Fred F. Holub; Abe Berger, and Terry G. Selin, all of Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 3, 1969, Ser. No. 881,887

Int. Cl. C08g 20/32

U.S. Cl. 260—65 **7 Claims**

Bis(aminoorganosilyl)hydrocarbons are employed in combination with organic diacids or organic dianhydrides to provide for the production of bis(organosilyl)hydrocarbon modified polyamides including polyamide acids. The bis(organosilyl)hydrocarbon modified polyamides also can contain chemically combined polydiorganosiloxane. The bis(organosilyl)hydrocarbon modified polyamides can be employed to make molding compounds, and polyamide and polyimide insulating films.

3,673,156

COPOLYMERS OF CARBON MONOXIDE WITH CARBONYL COMPOUNDS AND PROCESS FOR THEIR PREPARATION

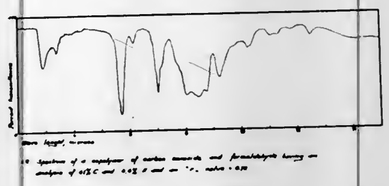
Guidobaldo Cevidalli; Mario Ragazzini, both of Milano, and Mario Modena, Bollate, Milan, all of Italy, assignors to Edison, Milan, Italy

Continuation of Ser. No. 272,073, April 10, 1963, abandoned. This application June 5, 1967, Ser. No. 645,543

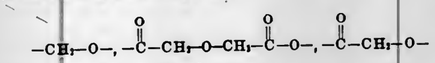
Claims priority, application Italy, April 11, 1962, 7149/62

Int. Cl. C08g 1/02, 1/04

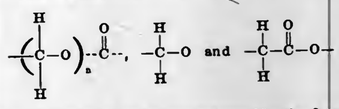
U.S. Cl. 260—67 FP **10 Claims**



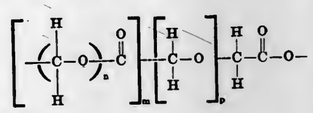
Copolymers of carbon monoxide with carbonylic compounds having all of the groups



and a process for making these copolymers which involves reacting under anhydrous conditions, carbon monoxide and formaldehyde monomer, linear polymers thereof or trioxane in the presence of a catalyst selected from the group of cationic chlorinated and fluorinated derivatives of an element selected from the groups III, IV, V and VIII of the Periodic Table, at a temperature between about −110° C and +250° C under a pressure of about 30 to 5,000 atm. to produce a polymer consisting essentially of all of the structural units:



in a random distribution and as represented by the formula:



wherein *n*, *m* and *p* are whole numbers >0.

3,673,157

ZINC AND MANGANESE GENTISATE AS POLYESTER CATALYSTS AND MOLECULAR WEIGHT ENHANCER

John A. Price, Swarthmore, and Mary J. Stewart, Media, both of Pa., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 17,925, March 9, 1970, abandoned. This application July 31, 1970, Ser. No. 60,111

Int. Cl. C08g 17/013

U.S. Cl. 260—75 R **1 Claim**

Zinc and manganese gentisate and fiber and film-forming polyester resins comprising the condensation polymerization product of (a) a saturated diester, (b) a saturated diol, and (c) a catalytic amount of zinc or manganese gentisate.

3,673,158

SULFOBETAINE GLYCOL MODIFIED POLY(ETHYLENE TEREPHTHALATE)

Arthur M. Reader, Corpus Christi, Tex., and Robert W. Stackman, Morris Township, Morris County, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 838,033, June 23, 1969, abandoned, which is a continuation of Ser. No. 604,138, Dec. 23, 1966, abandoned. This application Aug. 14, 1970, Ser. No. 70,615

Int. Cl. C08g 17/08, 20/20

U.S. Cl. 260—75 N **4 Claims**

Sulfobetaine glycols prepared by reaction of bis (hydroxyalkyl) amines with sultones are incorporated into polyesters and polyamides to improve dyeability.

3,673,159

MANUFACTURE OF POLYURETHANES USING ORGANIC ZIRCONIUM COMPOUNDS AS CATALYSTS

Willem Dijkhuizen, Zuidlaren, Netherlands; Erich Termin, Niederkassel, Germany; Otto Bleh, Bergheim/Sieg, Germany, and Dieter Morgenstern, Rosrath, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed May 11, 1970, Ser. No. 48,775

Claims priority, application Germany, May 10, 1969, P 19 23 934.0

Int. Cl. C08g 22/40

U.S. Cl. 260—77.5 AB **7 Claims**

In the manufacture of a polyurethane by the reaction of a polyol with a polyisocyanate in the presence of a catalyst and in the absence of water, the catalyst used is an organic zirconium compound, preferably a zirconium alcoholate or phenolate, having the formula

$$(Y)mZr(YR)_{4-2m}$$

wherein:
Zr is a zirconium atom
Y is an oxygen or sulfur atom
R is an organic radical of up to 12 carbon atoms, which can be alike or different
m is 0 or 1.

3,673,160

PROCESS FOR PRODUCING BRILLIANT SULFONATED POLYAMIDE-IMIDE FIBERS AND SUCH FIBERS SO PRODUCED

Francois Buisson, and Jean Paul Gresteau, both of Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Filed Feb. 2, 1971, Ser. No. 112,083

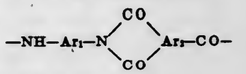
Claims priority, application France, Feb. 12, 1970, 7005024; Nov. 17, 1970, 7041462

Int. Cl. C08g 20/32

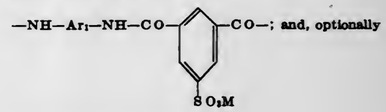
U.S. Cl. 260—78 TF **2 Claims**

A process for producing brilliant thermostable polyamide-imide fibers and such fibers so produced, such process comprising extruding an N-methylpyrrolidone solution of a polymer having a structure characterized by the following linkages:

A. amide-imide linkages of the formula:



B. amide linkages of the formula:



C. amide linkage of the formula:

$$—NH—Ar_1—NH—CO—R—CO—$$

wherein Ar_1 represents a bivalent aromatic radical, Ar_2 represents a trivalent aromatic radical, R represents a bivalent aromatic, aliphatic, cycloaliphatic or arylaliphatic radical, and M represents an alkali or alkaline earth metal, linkages B representing at least 3 percent of the total of linkages A, B and C in an aqueous N-methylpryyolidone coagulating bath; drawing the extruded filaments in air at a rate of at least 1.5 ×; drying the filaments to eliminate N-methylpyrrolidone; and drying the filaments. The filaments obtained are characterized in being brilliant, homogenous, thermostable filaments.

3,673,161

PREPARATION OF POLYMERS OF LACTAMS WITH REDUCED CRYSTALLINITY

Jan Sebenda, Stresnice Plonyru 1709, and Rudolf Puffr, Senetelska, both of Prague 6, Czechoslovakia

Filed March 17, 1970, Ser. No. 20,430

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L **4 Claims**

Lactam polymers of reduced crystallinity are prepared by incorporating the salts of certain polyvalent cations.

3,673,162

COPOLYAMIDES FROM BIS(AMINOPHENYL)SULFONE

Alan Buckley, and Ieuan Thomas, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed April 17, 1970, Ser. No. 29,698

Claims priority, application Great Britain, May 2, 1969, 22,509/69

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R **11 Claims**

The hydrolytic stability (and especially the resistance to immersion in boiling water) of polyamides of bis(amino-phenyl)sulphones (or mixtures thereof with up to 20 mole percent of at least one other diamine) and α,ω-polymethylene dicarboxylic acids having from six to 16 carbon atoms in all is improved by replacing from 3 to 36 mole percent of the dicarboxylic acid with a carbocyclic dicarboxylic acid. The products are useful as thermoplastic moulding materials and for conversion of films and fibers.

3,673,163

PHARMACOLOGICAL PREPARATION CONTAINING AN ACRONYCINE-POLYVINYLPRROLIDONE COPRECIPITATE

W. Douglas Walkling, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed June 16, 1970, Ser. No. 46,810

Int. Cl. C07d 37/12

U.S. Cl. 260—279 R **5 Claims**

A novel pharmaceutical preparation of acronycine comprising an acronycine-polyvinylpyrrolidone coprecipitate of increased solubility.

3,673,164
2-METHYLENE-3-BUTENYL QUATERNARY AMMONIUM MONOMERS AND POLYMERS

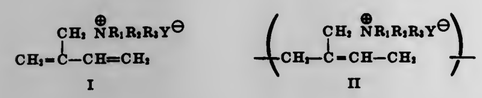
Giffin D. Jones; Gerald R. Geyer, both of Midland, Mich., and Melvin J. Hatch, Socorro, N. Mex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 798,512, Oct. 23, 1968, Pat. No. 3,544,532, which is a division of Ser. No. 381,546, July 9, 1964, abandoned. This application Sept. 3, 1970, Ser. No. 69,443

Int. Cl. C08f 3/84, 15/02, 15/24

U.S. Cl. 260—80.3 N 11 Claims

Novel 2-methylene-3-butenyl quaternary ammonium monomers (I) and polymers (II):



I

II

where R_1, R_2 and R_3 are organic groups, are prepared by reaction of 2-halomethyl-1,3-butadiene with a tertiary amine. The quaternary ammonium group increases the water solubility and hydrophilic properties of polymers containing II. Particularly useful are water-soluble quaternary ammonium polymers active as electroconductive additives for paper and other cellulosic products.

3,673,165
PROCESS FOR PREPARING AN ALTERNATING COPOLYMER OF BUTADIENE AND ACRYLONITRILE

Akihiro Kawasaki, Ichihara; Hiroaki Ueda, Chiba, and Masanobu Taniguchi, Ichihara, all of Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Filed April 16, 1970, Ser. No. 29,300

Claims priority, application Japan, April 28, 1969, 44/33036; May 31, 1969, 44/42082; May 31, 1969, 44/42083; May 31, 1969, 44/42086

Int. Cl. C08d 1/14, 3/04, 3/06

U.S. Cl. 260—82.5 9 Claims

A process for preparing an alternating copolymer of butadiene and acrylonitrile which comprises contacting butadiene and acrylonitrile in liquid phase with a catalyst, said catalyst comprises the first component selected from the group consisting of an aluminum halide and a zinc halide, a vanadium compound as the second component and the third component selected from the group consisting of an organoaluminum compound, an organozinc compound and an organolithium compound. The alternating copolymers obtained by this invention are rubber-like in character and are useful in the field of rubber, plastics industries, etc.

3,673,166
1,2-DIALKOXYBENZENES AS RAMDOMIZER FOR COPOLYMERIZATIONS

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 28, 1970, Ser. No. 102,109

Int. Cl. C08d 1/32, 3/02; C08f 19/08

U.S. Cl. 260—83.7 8 Claims

A method for copolymerizing monomeric materials using organolithium compounds as initiators in which 1,2-dialkoxybenzene is introduced into the reaction in a quantity sufficient to produce random copolymers.

3,673,167
POLYVINYL CHLORIDE FIBERS

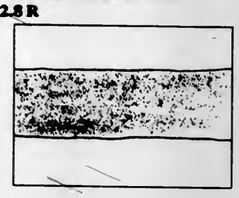
Claude Ledoux, Antony, Hauts de Seine, and Albert De Vries, Chevilly-larve, Val de Marne, both of France, assignors to Produits Chimiques Pechiney Saint Gobain, Neuilly sur Seine, France

Continuation-in-part of Ser. No. 638,177, April 24, 1967, Pat. No. 3,548,049. This application Oct. 30, 1969, Ser. No. 872,560

Claims priority, application France, April 27, 1966, 6659303; March 3, 1967, 6797350; Oct. 9, 1968, 68169192

Int. Cl. D01d 5/08

U.S. Cl. 260—92.8 R 8 Claims



Vinyl chloride homo- and co-polymers are made which have uniform cross section, homogeneous structure, great brilliance, and good transparency. They are far superior in these properties to any polyvinyl chloride homo- or co-polymers which were previously known. They may have any desired shape in cross section, for instance those of a square or a star.

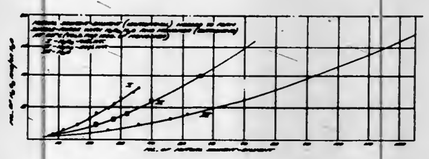
3,673,168
POLYMERIZATION PROCESS

Oliver W. Burke, Jr., 506 Intracoastal Drive, Fort Lauderdale, Fla.; Joseph Austin A. Kiser, 211 S.E. Sixth Court, Pompano Beach, Fla., and Paula Davis, 30027 White St., Gibralter, Mich.

Continuation-in-part of Ser. No. 447,241, April 12, 1965, abandoned, and a continuation-in-part of Ser. No. 805,080, Jan. 29, 1969, abandoned, which is a continuation of Ser. No. 686,350, Nov. 28, 1967, abandoned, which is a continuation of Ser. No. 447,196, April 12, 1965, abandoned. This application Jan. 22, 1970, Ser. No. 4,812

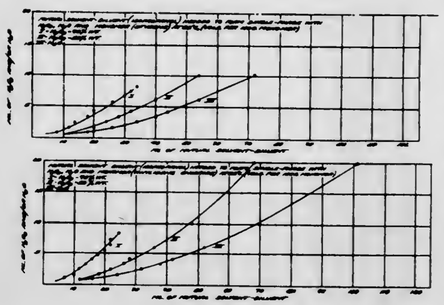
Int. Cl. C08f 1/60, 3/00, 15/00

U.S. Cl. 260—94.2 R 20 Claims





A process for forming polymer material having terminal hydroxyl groups and a number average molecular weight in the range of 500 to 10,000, by (A) forming a single phase polymerization system consisting essentially of hydrogen peroxide, specified vinylidene monomer and/or conjugated diene monomer, and liquid organic mutual solvent diluent comprising at least a major proportion of lower aliphatic saturated oxygenated solvent selected from the alcohols, ether alcohols, keto alcohols and ketones, which system is essentially free of materials that decompose hydrogen peroxide to form



oxygen at below 100° C., and (B) heating said system to temperatures sufficiently above 100° C. to initiate and effect polymerization in said system.

3,673,169
1,3,4-THIADIAZOLYLAZO-3-(CYCLOHEXYLAMINO)ACYLANILIDE DYES

Max A. Weaver; James M. Straley, and William H. Moore, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 16, 1969, Ser. No. 833,744

Int. Cl. C09b 29/08; D06p 3/24, 3/46

U.S. Cl. 260—158 4 Claims

Monoazo compounds having a 1,3,4-thiadiazolyl diazo component and a 3-(cyclohexylamino)acylanilide coupling component are useful for dyeing nylon and polyester textile materials on which the compounds exhibit improved properties such as excellent dyeability, lightfastness and migration on polyamide fibers and excellent resistance to sublimation on polyester fibers.

3,673,170
PHENYL-AZO-NAPHTHOL DYES

Gerhard Gnad, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

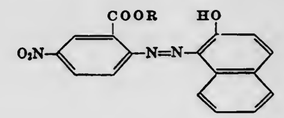
Filed July 25, 1969, Ser. No. 845,055

Claims priority, application Germany, July 26, 1968, P 17 93 039.1

Int. Cl. C07c 107/06; C09b 29/10

U.S. Cl. 260—202 2 Claims

Monoazo dyes having a 2-amino-5-nitrobenzoic ester as diazo component and β-naphthol as coupling component which are useful for dyeing linear polyesters and polyamides, said dyes being generally represented by the formula:



(I)

where R denotes the linear or branched aliphatic, araliphatic or cycloaliphatic radical of an alcohol.

3,673,171
STARCHES CONTAINING NON-IONIC, BASIC AND ACIDIC GROUPS AND PREPARATION AND USES THEREOF

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Continuation-in-part of Ser. No. 733,233, May 31, 1968, abandoned. This application July 28, 1970, Ser. No. 58,988

Int. Cl. C08b 19/01

U.S. Cl. 260—233.3 R 13 Claims

Starches, especially high amylose starches containing nonionic, basic (cationic) and acidic (anionic) groups, preferably hydroxyalkylether (non-ionic), tertiary amino, cyanamide or quaternary amino (cationic) and sulfonic acid or sulfonate groups or carboxylic or carboxylate, or phosphate or phosphonate (anionic), in the starch molecule, are prepared which are especially useful for sizing threads or yarns of mixed fibers such as, for example, cotton fibers and polyester fibers, viz., polyethylene terephthalate fibers, and hydrophobic fibers that are difficult to size.

3,673,172
1,4-DIPHENYL-3,6-[DIMERCAPTO OR EPI (DITHIA OR TETRATHIA)]2,5-PIPERAZINEDIONES

Steve George Svokos, Westwood, N.J., and Robert Bruce Angier, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 833,147, June 13, 1969, Pat. No. 3,560,483. This application April 14, 1970, Ser. No. 28,525

Int. Cl. C07d 93/36

U.S. Cl. 260—239.3 B 10 Claims

This disclosure describes substituted 1,4-diphenyl-3,6-dimercapto-2,5-piperazinediones and substituted 1,4-diphenyl-3,6-epi(dithia or tetrathia)-2,5-piperazinediones useful as antifungal agents.

3,673,173
PROCESS FOR PREPARATION OF 2α,3α-EPITHIOSTEROID

Taichiro Komeno, Osaka, and Hikoso Iwakura, Amagasaki, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed April 30, 1970, Ser. No. 33,522

Claims priority, application Japan, May 8, 1969, 44/35340

Int. Cl. C07c 167/36

U.S. Cl. 260—239.5 4 Claims

A process for the preparation of the hormonal 2α,3α-epithio-5α-steroid of estrane, androstane or the pregnane series which comprises reaction of the corresponding Δ^2-5α-steroid with thiocyanogen halide, followed by treatment of the products under basic conditions, some of the products thereof and pharmaceutical compositions containing the products thereof.

3,673,174
DECONTAMINATION OF REACTION SOLUTIONS CONTAINING DISSOLVED ORGANIC EXPLOSIVES

Charles L. Smith, and William S. Reynolds, Jr., both of Kingsport, Tenn., assignors to the United States of America as represented by the Secretary of the Army

Filed July 30, 1970, Ser. No. 59,764

Int. Cl. C07d 55/16, 55/60

U.S. Cl. 260—239 HM 7 Claims

Process for the decontamination of reaction solutions which are contaminated with dissolved organic crystalline explosives, particularly those explosives commonly known as RDX and HMX. The process involves the selective adsorption of the dissolved explosives on activated carbon.

3,673,175
PREPARATION OF PIPERIDYL-STEROIDS
Geza Schramm, and Horst Riedl, both of Linz, Donau, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz, Donau, Austria
Filed April 26, 1971, Ser. No. 137,699
Claims priority, application Austria, April 24, 1970, A 3750/70
Int. Cl. C07c 173/10
U.S. Cl. 260—239.5 7 Claims

The preparation of piperidyl-steroids having an oxygen-containing group in the 16-position which comprises reacting C_{16}-bromo-cyanamides, in a predominantly aprotic and polar medium with an alkali metal salt of a lower aliphatic carboxylic acid or of benzoic acid, isolating the resulting 16-acyloxy-cyanamide and then reducing this compound to remove the nitrile group.

3,673,176
SUBSTITUTED -7,12, DIHYDROPLEIALINE DERIVATIVES
Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline and French Laboratories, Philadelphia, Pa.
Division of Ser. No. 709,863, March 4, 1968, Pat. No. 3,557,098. This application Aug. 12, 1970, Ser. No. 63,268
Int. Cl. C07d 29/10
U.S. Cl. 260—240 TC 8 Claims

7,12-Dihydropleiadenes in which the nucleus may have chloro, methyl, methoxy, methylthio or trifluoromethyl substituents and the 7-position is substituted by an aminopropylidene, aminopropyl, piperidylidene, piperidyl, pyrrolidylidene, pyrrolidyl, 2-piperidinylethylidene, 2-piperidinylethyl, 2-pyrrolidinylethylidene or 2-pyrrolidinylethyl moiety are useful as tranquilizers and antidepressants. The compounds are generally prepared by reaction of the appropriate amino Grignard reagent with a 7(12H)-pleiadenone followed by acid dehydration of the 7-hydroxy intermediate and subsequent reduction of the unsaturated derivative with phosphorus and hydroiodic acid. The 1,4-addition products also obtained via the Grignard reaction, namely 6-substituted-7(12H)-pleiadenones, are also useful as tranquilizers and antidepressants.

3,673,177
SUBSTITUTED 4-(ANILINOMETHYLENE)-3-GALANTHAMANINONES
Elizabeth Benz Morlock, Bronx, and Leon Goldman, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.
Filed May 4, 1970, Ser. No. 34,591
Int. Cl. C07d 99/04
U.S. Cl. 260—240.3 8 Claims

This disclosure described compounds of the class of substituted 4-(anilinomethylene)-3-galanthamaninones useful as antibacterial agents and central nervous system depressants.

3,673,178
PROCESS FOR PREPARING 2-[2-(ARYLAMINO)-VINYL]-1-(LOWER ALKYL)-3-H-INDOLIUM SALT DYES
Floyd L. Tewksbury, Jr., Eggertsville, and Walter R. Demler, Hamburg, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Nov. 14, 1969, Ser. No. 877,033
Int. Cl. C07d 27/38
U.S. Cl. 260—240.8 16 Claims

Production of water-soluble cationic dyes by reaction of 1-lower alkyl-Δ^{2}- -indolineacetaldehydes, primary and secondary aromatic amines and orthophosphoric acid in an inert water-miscible organic solvent. This improved process provides a substantially quantitative product yield while avoiding addition of dye-precipitating agent to the reaction mass.

3,673,179
C-21 LOWER ALKYLSULFINYL ESTERS OF CERTAIN 21-HYDROXYCORTICOSTEROIDS
Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed April 22, 1970, Ser. No. 31,003
Int. Cl. C07c 169/32
U.S. Cl. 260—239.55 9 Claims

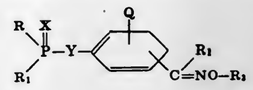
C-21 Lower alkylsulfinyl esters of certain 21-hydroxycorticosteroids are good antiinflammatory agents which have both topical and systemic activities. These compounds are best prepared by a 2-step process which involves the esterification of a 21-hydroxycorticosteroid with a lower alkylsulfide-acid and oxidation of the resulting sulfide ester with a mild oxidizing agent to the corresponding sulfinyl ester.

3,673,180
19-NOR-6,6-ETHYLENE-20-SPIROXENES
Glen E. Arth, Cranford, and Gary H. Rasmusson, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed June 18, 1970, Ser. No. 47,606
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 R 10 Claims

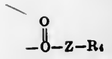
Novel 19-nor-6,6-ethylene-3-oxo-20-spirox-4-enes (or 4,14-dienes) are provided, prepared from the corresponding 19-nor-3-oxo-spirox-4-enes (or 4,14-dienes). The compounds are useful as orally-effective antiestrogens, and are also anabolic agents having low androgenicity.

3,673,181
OXIME CARBAMATE PHOSPHATE, PHOSPHONATE, PHOSPHINATE AND PHOSPHOROAMIDATES AND COMPOSITIONS AND THEIR UTILITY
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.
Division of Ser. No. 730,588, May 20, 1968, abandoned, which is a continuation-in-part of Ser. No. 646,467, June 16, 1967, abandoned. This application June 25, 1970, Ser. No. 49,938
Int. Cl. C07c 93/00
U.S. Cl. 260—240 G 6 Claims

Oxime carbamate phosphates, phosphonates, phosphinates and phosphoroamidates having the general formula:



in which X and Y are independently selected from the group consisting of oxygen and sulfur; R is selected from the group lower alkyl or lower alkoxy, having from one to six carbon atoms inclusive; R_1 is selected from the group consisting of lower alkyl or lower alkoxy having from one to six carbon atoms, inclusive, amino, lower alkyl-substituted amino and phenyl; Q is selected from the group consisting of divalent tetramethylenediene-1,3, lower alkoxy or lower alkyl having from one to four carbon atoms inclusive, each, nitro, halogen and combinations thereof, and lower dialkyl-substituted thionophosphoryloxy; R_6 is selected from the group consisting of hydrogen, lower alkyl having from one to four carbon atoms, and phenyl; and R_5 is selected from the group consisting of hydrogen; substituted carbonate and thiocarbonates of the type



in which Z is oxygen or sulfur, R_4 is lower alkyl having from

one to four carbon atoms, inclusive, and β-chloro-loweralkyl having from two to four carbon atoms; carbamates of the type



in which R_8 and R_9 are independently selected from the group consisting of hydrogen, alkyl having from one to 10 carbons, inclusive, substituted alkyl having one to six carbon atoms inclusive, said substituents selected from the group consisting of hydroxy, halogen, amino, di-lower-alkyl amino, lower alkoxy, and tetrahydrofuryl; lower alkenyl having from two to four carbons, inclusive, carboalkoxy alkyl having a total of from three to eight carbon atoms, inclusive, cycloalkyl having from three to six carbon atoms, inclusive, piperazino, 2-thiazolyl, phenyl, naphthyl, substituted phenyl wherein said substituents are selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower thioalkyl, lower dialkylamino in which said lower alkyl and lower alkoxy moieties have from one to four carbon atoms, inclusive, nitro, cyano, trifluoromethyl, and combinations thereof; and in which



is an N-containing heterocyclic member selected from the group consisting of morpholino, piperazino, pyrrolidino, piperidino, hexamethylenamino, pyrryl, indolyl, imidazolyl, benzimidazolyl, pyrazolyl, 1,3-oxazolidino, and 1,3-thiazolidino; esters of the type

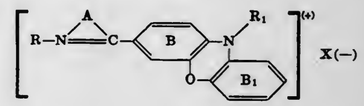


wherein R_7 is selected from the group consisting of alkyl having from one to eight carbons inclusive, trichloromethyl, and lower alkenyl having from 2 to 4 carbon atoms, inclusive, and the radical $-(CH_2)_m-SR$ in which m is 1 or 2, R is alkyl having one to six carbon atoms, alkenyl having two to four carbon atoms, phenyl, substituted phenyl in which said substituents are selected from the group halogen, lower alkyl having one to four carbon atoms, inclusive, and lower alkoxy having one to four carbon atoms, inclusive; lower alkyl sulfonato having from one to six carbon atoms, inclusive; lower alkyl substituted thiophosphoryl wherein the lower alkyl groups independently contain from one to four carbon atoms, inclusive, and 2,2,2-trichloro-1-hydroxyethyl, 4-cyanophenyl, 2,4,5-trichlorophenyl and 4-methylthiophenyl.

The compounds are useful as insecticides, animal contact and systemic parasiticides, herbicides and foliar fungi protectants. Representative compounds are: 3-[O,O-diethylphosphorothioyl] benzaldoxime; 3-[O-(O,O-diethylphosphorothioyl)]benzaldoximino-N'-methyl carbamate; 4[O-O,O-diethylphosphorothioyl)]-acetophenone oxime; 4-[0,0-diethylphosphorothioyl)]-acetophenoneoximino-N'-methyl carbamate; and 4-(O,O-diethylphosphorothioyl)-acetophenoneoximino acetate; 4-[0-(0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-morpholinyl carbamate; 4-[0-(0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-piperidyl carbamate; 4-[0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-azepinocarbamate; 0-Ethyl-0-[4-(N'-methylcarbamyl-oximino)phenyl]-N-methylamido phosphorothioate; 4-[0,0-Diethylphosphorothioyl)]-benzaldoximino-N'-(β-N'', N''-diethylaminoethyl)-carbamate.

3,673,182
NAPHTHOLACTAM-(1,8) BASIC DYESTUFFS
Alfred Brack, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 26, 1968, Ser. No. 755,448
Claims priority, application Germany, Sept. 4, 1967, P 15 69 606.7
Int. Cl. C07d 87/50
U.S. Cl. 260—242 12 Claims

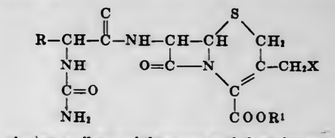
Basic dyestuffs of the formula



are suitable for the dyeing, printing and bulk dyeing of synthetic and semisynthetic materials especially polyamides, acetate rayon and acid modified polyesters, leather, cocoa fibers, paper and jute, for the production of inks and paste for ball point pens, for use in offset printing, for use in dyeing, printing and bulk dyeing materials which completely or predominately consist of polymerized acrylonitrile and or vinylidene cyanide, the dyeings and prints on the last mentioned materials are characterized by outstanding fastness properties, especially fastness to light, wet processing, cross dyeing, decatizing, sublimation, exhaust fumes and rubbing. The dyestuffs are readily soluble, they yield deep dyeings, due to their high yield and very good drawing power and they do not soil wool. In the formula given above A denotes the residual members of a heterocyclic five or six membered ring to which further rings may be annelated, R is hydrogen, alkyl aralkyl, cycloalkyl or aryl, and R may also be linked to A or to another ring which is annelated to the ring containing A, R_1 is hydrogen, alkyl, aralkyl, cycloalkyl or aryl and R_1 may also be linked to B or B_1, and X is an anion.

3,673,183
α-UREIDOCEPHALOSPORANIC ACID COMPOUNDS
Raymond Curry Erickson, Metuchen, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,488
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 7 Claims

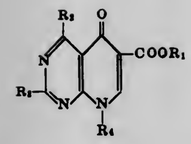
New α-ureidocephalosporanic acid compounds of the general formula



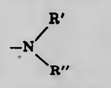
are effective as antibacterial agents and show improved results against certain hard to control organisms.

3,673,184
CERTAIN 2-SUBSTITUTED-5,8-DIHYDRO-5-OXOPYRIDO[2,3-D]PYRIMIDINE-6-CARBOXYLIC ACID DERIVATIVES
Shinsaku Minami, Kouriyama; Toshihiro Shono, Takatsuki; Masanao Shimizu, Kobe, and Yoshiyuki Takase, Amagasaki, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan
Continuation of Ser. No. 577,803, Sept. 8, 1966, abandoned. This application Sept. 2, 1970, Ser. No. 68,558
Int. Cl. C07d 57/20
U.S. Cl. 260—247.2 R 10 Claims

A 5,8-dihydro-5-oxopyrido [2,3-d] pyrimidine derivative represented by the following formula



wherein R_1 stands for hydrogen or a lower alkyl radical; R_2 stands for hydrogen, a lower alkyl radical, hydroxyl group, a halogen atom, a lower alkoxy radical, an amino radical or a lower alkylthio radical; R_3 stands for hydrogen, a lower alkyl radical, hydroxyl group, a lower alkoxy radical, a lower alkylthio radical or a radical represented by the formula



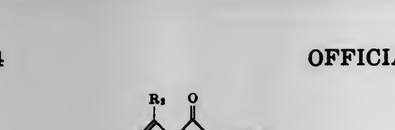
(wherein R' stands for hydrogen, an alkyl radical, a cycloalkyl radical, an amino radical, a hydroxyalkyl group or an alkyl substituted amino alkyl radical, and R'' stands for hydrogen or an alkyl radical, R' and R'' may be the same or a different radical and R' and R'' may bond together to form a 5- or 6-membered heterocyclic ring containing a nitrogen hetero atom); and R_4 stands for hydrogen or an alkyl group. Such derivatives are useful as antibacterial agents.

3,673,185
KETONES OF THE THIAMINE SERIES AND THEIR PRODUCTION

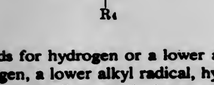
Josef Klosa, Berlin, Germany, assignor to Fischer & Fischer GmbH, Baden, Germany

Filed May 1, 1969, Ser. No. 821,077
Claims priority, application Germany, May 6, 1968, P 17 70 338.7
Int. Cl. C07d 51/42
U.S. Cl. 260—256.5 B 15 Claims

5-mono-substituted ketones of the thiamine series having the formula:



wherein R is hydrogen or an alkyl radical and R_1 is an aryl or heterocyclic radical are produced by reacting thiamine or a mineral acid salt thereof with a compound of the formula:



wherein R and R_1 are as defined above and X and Y are independently selected from the group consisting of lower alkyl radicals.

3,673,186
N HYDROXY ALKYL-N'CYCLOALKYL PIPERAZINES

Henryk A. Cyba, Evanston, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 370,079, May 25, 1964, Pat. No. 3,446,808. This application May 21, 1969, Ser. No. 826,721
Int. Cl. C07d 51/70
U.S. Cl. 260—268 R 4 Claims

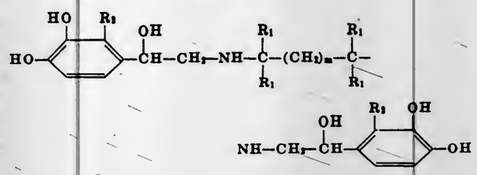
N-hydroxyalkyl-N'-hydrocarbyl saturated cyclic diazine or N-alkoxyalkyl-N'-hydrocarbyl saturated cyclic diazine in which said hydrocarbyl is sec-alkyl or cycloalkyl. The novel compound possesses utility as an additive to retard deterioration or organic substances due to weathering, oxidation, etc., and as a curing catalyst for urethanes.

3,673,187
BIS-(DIHYDROXYPHENYL-ETHYLOL)-SUBSTITUTED ALKYLENEDIAMINES AND THE SALTS THEREOF

Kurt Schromm; Anton Mentrup; Karl Zelle; Ernst-Otto Renth, all of Ingelheim/Rhine; Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhine, Germany

Filed Dec. 2, 1969, Ser. No. 881,606
Claims priority, application Austria, Dec. 3, 1968, A 11776/68; Nov. 10, 1969, A 10533/69
Int. Cl. C07c 91/22; C07d 57/36
U.S. Cl. 260—253 9 Claims

Compounds of the formula pipelines,



wherein

R_1 is hydrogen or methyl,

R_2 is methyl, methoxy, ethoxy or chlorine and, if R_1 is methyl, additionally hydrogen, and

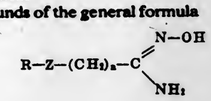
m is a whole number from 0 to 10, inclusive, and their non-toxic, pharmacologically acceptable acid addition salts, useful as bronchial and uterine spasmolytics, antipruritics, vasodilators and antiallergics in warm-blooded animals.

3,673,188
HETEROCYCLIC AMIDOXIMES

Kalman Harsanyi; Kalman Takacs; Zsuzsa Relle nee Somfai; Eva Milak nee Krompecher; Laszlo Tardos; Dezso Korbonits; Pal Klas, and Csaba Gonczy, all of Budapest, Hungary, assignors to CHINOIN Gyogyszer-es Vegyeszeti Termekek Gyara RT, Budapest, Hungary

Filed May 29, 1968, Ser. No. 732,845
Claims priority, application Hungary, June 6, 1967, CI-714
Int. Cl. C07d 35/14
U.S. Cl. 260—288 R 1 Claim

Novel compounds of the general formula



and salts thereof

wherein

R is a member of the group selected from indolyl, benzimidazolyl, benzoxazolyl, benztriazolyl, benzthiazolyl, indazolyl, benzisothiazolyl, pyrimidoimidazolyl, isoquinolinyl, isocarbostyrylyl, quinazolinyl, quinoxalinyl and benztriazinyl and substituted derivatives thereof; whereby the ring containing the heteroatom may be hydrogenated and whereby one or two carbon atoms of said ring may be bound exocyclically with two valence-bonds to an oxygen or sulphur atom of a carbonyl or thiocarbonyl group;

Z is a member of the group consisting of methylene and phenyl substituted methylene;

n is a number selected from the group consisting of 0, 1 and 2

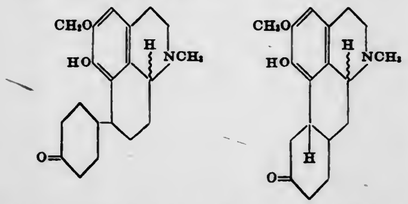
which possess valuable therapeutical properties as anti phlogistics.

3,673,189
TETRACYCLIC ISOQUINOLINE DERIVATIVES

William Vincent Curran, Pearl River, and Leon Goldman, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 5, 1971, Ser. No. 104,141
Int. Cl. C07d 39/00
U.S. Cl. 260—289 R 4 Claims

Compounds with the structure



are prepared from homologous intermediates and are useful as analgesic and antiinflammatory agents.

3,673,190
CHLORINATED PYRIDYLACETYLENE COMPOUNDS

James N. Seiber, Davis, and Vernon D. Parker, Oakland, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 21, 1970, Ser. No. 4,757
Int. Cl. C07d 31/26
U.S. Cl. 260—290 HL 5 Claims

Trichlorovinylaromatic compounds having the general formula

Ar—(CCl CCl$_2$)hd p

wherein Ar is perchlorinated phenyl or perchlorinated pyridyl and

p is an integer of 1 to 3

are dehalogenated and reduced by electrolysis to give an aromatic acetylene compound having the general formula

Ar'—(C CH)$_p$

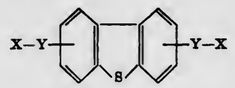
wherein Ar' is the original aromatic nucleus or the original aromatic nucleus containing fewer chlorine atoms. Such compounds are useful to control rice blast.

3,673,191
BIS-BASIC ETHERS AND THIOETHERS OF DIBENZOTHIOPHENE

William L. Albrecht; Robert W. Fleming, and Stephen W. Horgan, all of Cincinnati, Ohio, assignors to Richards-Merrell, Inc., New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,428
Int. Cl. C07d 29/36
U.S. Cl. 260—293.57 11 Claims

The novel bis-basic ethers and thioethers of dibenzothiophene of the present invention have useful antiviral properties. These new compounds are represented by the formula



Formula I

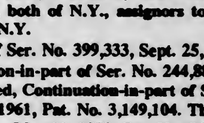
wherein each Y is oxygen or divalent sulfur; and each X is

(A) the group



wherein each A is a straight or branched alkylene chain having from two to eight carbon atoms and which separates the amino nitrogen and Y by at least two carbon atoms; R and R^1 are individually hydrogen, (lower)alkyl having from one to six carbon atoms, cycloalkyl having from three to six carbon atoms, alkenyl having from three to six carbon atoms and having the vinyl unsaturation in other that the 1-position of the alkenyl group; or each set of R and R^1 taken together with the nitrogen atom to which they are attached is a saturated monocyclic heterocyclic group such as pyrrolidino, piperidino, morpholino, or N-(lower)alkylpiperazino; or

(B) the group



wherein *n* is a whole integer of from 0 to 2, *m* is 1 or 2, and R^2 is hydrogen, (lower)alkyl having from one to six carbon atoms, or alkenyl of from three to six carbon atoms and having the vinyl unsaturation in other than the 1-position of the alkenyl group.

This invention also includes pharmaceutically acceptable acid addition salts of the bases represented by Formula I. These new compounds may be prepared by several different methods which are described.

3,673,192
PROCESS FOR ALKYLATING PERYLENE PIGMENTS

John Herman Vander Ploeg, and Earl Weener, both of Holland, Mich., assignors to Chemetron Corporation, Chicago, Ill.

Filed Jan. 3, 1969, Ser. No. 788,921
Int. Cl. C07d 39/00
U.S. Cl. 260—281 10 Claims

A process for simultaneously alkylating and converting a non-pigmentary perylene containing an imido nitrogen group linked to two carbonyl groups to a pigment by reacting the compound with an alkylating agent in the presence of an alkali metal hydroxide and a binding agent. The binding agent is employed in an amount to effect a stiff, plastic mass and the reaction media is heated at an elevated temperature until the reaction is complete whereupon the desired alkylated compound is isolated in a pigmentary form.

3,673,193
4-OXO-1,8-NAPHTHYRIDINE-3-CARBOXYLATES AND DERIVATIVES THEREOF

George Y. Lesher, Schodack, and Monte D. Gruett, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 399,333, Sept. 25, 1964, abandoned, Continuation-in-part of Ser. No. 244,886, Dec. 17, 1962, abandoned, Continuation-in-part of Ser. No. 79,951, Jan. 3, 1961, Pat. No. 3,149,104. This application May 11, 1970, Ser. No. 36,454
Int. Cl. C07d 31/36
U.S. Cl. 260—295.5 B 10 Claims

4-Oxo-1-substituted-1,8-naphthyridine-3-carboxylic acid derivatives, having antibacterial properties, prepared by !-alkylating corresponding 4-hydroxy-1,8-naphthyridine-3-carboxylic acid derivatives.

3,673,194
DERIVATIVES OF 1,4,4A,9B-TETRAHYDRO-8,9B-DIMETHYL-2-PHENYL-1,4-ETHANOBENZOFURO [3,2-C]PYRIDINE-3(2H), 10-DIONE

Elizabeth Benz Morlock, Broux; Jay Donald Albright, and Leon Goldman, both of Nanuet, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 4, 1970, Ser. No. 34,614
Int. Cl. C07d 99/04
U.S. Cl. 260—293.55 9 Claims

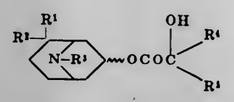
This disclosure describes derivatives of 1,4,4a,9b-tetrahydro-8,9b-dimethyl-2-phenyl-1,4-ethanobenzofuro[3,2-c]-pyridine-3(2H),10-dione useful as antidepressant, anti-inflammatory, or analgetic agents.

3,673,195
DERIVATIVES OF 6,6,9-TRI-LOWER ALKYL-9-AZABICYCLO(3.3.1) NONAN-3α-OR 3β-OL

Naoto Yoneda; Teruo Ishihara; Tetsuji Kobayashi; Yasuzo Kondo, all of Osaka; Kentaro Okumura, Kobe; Michio Kojima, Nara, and Takashi Nose, Osaka, all of Japan, assignors to Tanabe Swiyaku Co., Ltd., Osaka, Japan

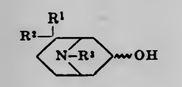
Filed May 25, 1970, Ser. No. 40,394
Int. Cl. C07d 39/00, 99/06
U.S. Cl. 260—293.54 14 Claims

Compounds useful in treating Parkinson's disease have the general formula:

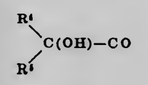


R^1, R^2 and R^3 are lower alkyl radicals. R^4 and R^5 are phenyl, cyclohexyl and thienyl radicals. Pharmaceutically acceptable acid addition salts of these compounds are also within the scope of the invention.

A 6,6,9-tri-lower alkyl-9-azabicyclo[3,3,1]nonan-3α and/or 3β-ol having the formula:



wherein R^1, R^2 and R^3 are as defined above is reacted with an acylating agent which may form an acyl radical having the formula:



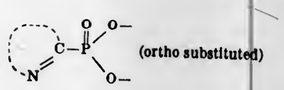
wherein R^4 and R^5 are as defined above.

3,673,196
PHOSPHONATES OF FULL AROMATIC NITROGEN HETEROCYCLICS

Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

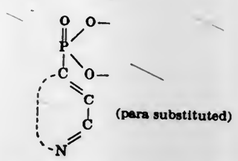
Filed Feb. 24, 1969, Ser. No. 801,856
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 7 Claims

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is ortho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:



(ortho substituted)

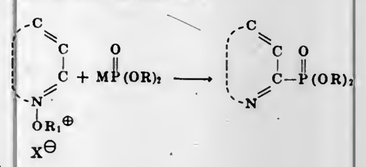
and



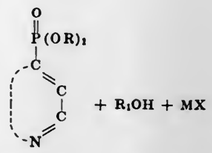
(para substituted)

wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen-heterocyclic compound, wherein the nitrogen atom is in the form of a quaternary alkoxy derivative (N-OR hereinafter defined) with a phosphite salt, preferably in the form of an ester of the phosphite, as exemplified by the following equation:



and/or



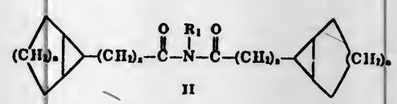
These compounds which may be characterized as phosphonates of nitrogen-heterocyclics have many uses including their use as biocides, such as bacteriocides, herbicides, corrosion inhibitors, chelating agents, etc.

3,673,197
EXO-DIBICYCLOALKANE CARBOXAMIDES

Ronald H. Rynbrandt, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

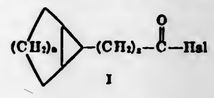
Filed Jan. 14, 1971, Ser. No. 106,602
Int. Cl. C07d 31/44; C07c 103/19
U.S. Cl. 260—295 AM 4 Claims

An exo-dibicycloalkanecarboxamide of the structural formula II:



II

wherein n has the value of 1 to 3, inclusive; wherein x is zero or 1; and wherein R_1 is selected from the group consisting of hydrogen, alkyl of one to six carbon atoms, inclusive, 2-pyridyl, phenyl, and substituted phenyl in which the substituent is alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, halogen, nitro or trifluoromethyl, is produced by reacting 2 molar equivalents of a formyl or acetyl exo-bicycloalkanecarbohalide of the formula I



I

wherein n and x are defined as above, and Hal is chlorine or bromine, with about 1 molar equivalent of an amine H_2N-R_1, in which R_1 is defined as above. Compounds II have antidiabetic activity and can be used in mammals to treat hyperglycemia.

3,673,198
CERTAIN PYRIDYL MALONATES

Peter Doyle, and Joseph Gilbert Stacey, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 682,593, Nov. 13, 1967, Pat. No. 3,546,237. This application Aug. 5, 1970, Ser. No. 61,404
Claims priority, application Great Britain, Dec. 2, 1966, 54,135/66
Int. Cl. C07d 31/42
U.S. Cl. 260—295 R 3 Claims

This disclosure relates to phenyl-pyridyl-alkanoic acids and derivatives which possess anti-inflammatory, analgesic and antipyretic activity, and which reduce the concentration of fibrinogen, cholesterol and triglycerides in blood. It also relates to processes for making said compounds, to pharmaceutical compositions, and to methods of treatment involving said compounds. A representative of said compounds is 6-(4-chlorophenyl)-2-methylpyrid-3-ylacetic acid.

3,673,199
MANUFACTURE OF BIPYRIDYLS

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed April 22, 1970, Ser. No. 31,016
Claims priority, application Great Britain, May 9, 1969, 23,780/69
Int. Cl. C07d 31/42
U.S. Cl. 260—296 D 9 Claims

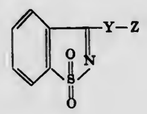
A process for the manufacture of bipyridyls which comprises heating a bipiperidyl or a substituted pyridine derivative wherein the substituent is a piperidyl group or an open-chain group containing one or more nitrogen atoms, in the vapour phase at a temperature of at least 200° C. in the presence of a dehydrogenation catalyst.

3,673,200
3(2-SEC-BUTYL-4,6-DIMITROPHENOXY)-1,2-BENZISOTHIOZOLE 1,1-DIOXIDE

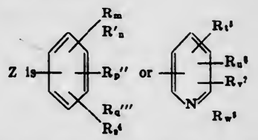
Joseph W. Baker, and Gerald L. Bachman, both of Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 2, 1970, Ser. No. 377
Int. Cl. C07d 91/12
U.S. Cl. 260—301 1 Claim

Herbicidal compositions and methods with a substituted benzisothiazole - 1,1- dioxide of the formula:

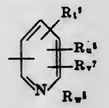


where Y is oxygen or sulfur and



in which R, R′, R″, R‴, R^4, R^5, R^6, R^7, and R^8 are independently selected from the group hydrogen, halo, nitro, cyano, alkyl, having a maximum of eight carbon atoms, aralkyl having a maximum of 14 carbon atoms, haloalkyl having a maximum of eight carbon atoms, and alkoxy having a minimum of five carbon atoms, m, n, p, q, s, t, u, v and w are integers of 0 or 1.

Compounds of the foregoing definition wherein the sum of m, n, p, q, and s is 2 or more and Z is



are new compounds.

3,673,201
THIAZOLYLCARBIMIDOYLUREAS

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 711,192, March 7, 1968, Pat. No. 3,547,937. This application March 2, 1970, Ser. No. 15,905
Int. Cl. C07d 91/32
U.S. Cl. 260—302 R 3 Claims

This invention relates to carbimidoyl ureas which are prepared by reacting the appropriate isocyanates with the appropriate amidines. The compound possess anthelmintic activity.

3,673,202
2,5-BIS(2-BENZAZOLYL)HYDROQUINONES AND THEIR DERIVATIVES

Charles M. Orlando; Joseph G. Wirth, and Darrell R. Heath, all of Schenectady, N.Y., assignors to General Electric Company

Filed Jan. 7, 1970, Ser. No. 1,316
Int. Cl. C07d 91/44, 85/48, 49/38
U.S. Cl. 260—304 10 Claims

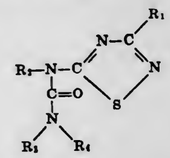
The subject compounds fluoresce in the visible and near-infrared regions of the spectrum when exposed to ultraviolet light. The particular color emitted (from blue to near-infrared) is dependent upon whether the hydroxyl groups is present or has been replaced with various substituents, and upon the other hetero-atom in the benzazole ring. The compounds are photochemically and thermally stable and can be dissolved in organic solvents. They can be incorporated in various polymers to impart their fluorescent properties to the polymers which can be used to produce films, molded objects, or applied as coatings on the envelopes of ultraviolet lamps to produce various colored lights when energized.

3,673,203
1,2,4-THIADIAZOLYL UREAS

Alfred H. Miller, Somerset, N.J., assignor to Esso Research and Engineering Company

Filed Oct. 22, 1969, Ser. No. 870,475
Int. Cl. C07d 91/60
U.S. Cl. 260—306.8 D 5 Claims

Ureas containing the 1,2,4-thiadiazolyl group and represented by the following structural formula have been found to possess utility as novel selective herbicides.



wherein R_1 is C_4—C_8 alkyl ro C_7—C_8 cycloalkyl; R_2 is H, methyl or ethyl; R_3 and R_4 are H or methyl or methoxy.

3,673,204
MANUFACTURE OF N-2-ARYLTHIAZOLE SULFENAMIDE

James P. Shoffner, Elk Grove Village, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 22, 1969, Ser. No. 852,474
Int. Cl. C07d 91/44
U.S. Cl. 260—306.6 A 10 Claims

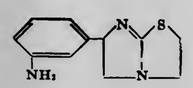
N-aryl-thiazolesulfenamide is prepared by oxidative condensation by reacting a mercaptothiazole and an aryl amine in alcohol solvent and alkali metal hypochlorite at a temperature below 0° C. The preferred N-aryl-2-benzothiazole sulfenamide is used to offset the decrease in scorch encountered upon incorporating a phenylenediamine antiozonant in the rubber formulation.

3,673,205
6-(M-AMINO AND SUBSTITUTED-AMINO PHENYL)-2,3,5,6-TETRAHYDRO[2,1-B]THIAZOLES AND METHOD OF USE

Larry Dean Spicer, Princeton, and John James Hand, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed March 25, 1970, Ser. No. 22,701
Int. Cl. C07d 91/18
U.S. Cl. 260—306.7 4 Claims

dl and l compounds of the formula:



and the pharmaceutically acceptable salts thereof. The invention also relates to a novel method for the preparation of these compounds and to the use of said compounds for treating helminthiasis in warm-blooded animals.

3,673,206
RACEMIZATION OF d(+) 6-PHENYL-2,3,5,6-TETRAHYDROIMIDAZO [2,1-b]THIAZOLE

Milon Walker Bullock, Hopewell, and John James Hand, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 565,101, July 14, 1966, abandoned. This application April 2, 1969, Ser. No. 812,917
Int. Cl. C07d 99/10
U.S. Cl. 260—306.7 10 Claims

This invention describes a method of converting d(+) 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole into the corresponding dl compound. The latter compound is an active anthelmintic which can be resolved into the l(−) highly active component and d(+) inactive component.

3,673,207
OXAZOLIDINE-3-OXYL DERIVATIVES

Harden M. McConnell, Stanford, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syntex Associates, Palo Alto, Calif.

Filed April 17, 1970, Ser. No. 29,662
Int. Cl. C07d 85/26
U.S. Cl. 260—307 F 5 Claims

Novel oxazolidine-3-oxyl compounds, wherein the two-carbon of the oxazolidine is a carbon in the chain of oleic acid, which are useful as spin labels for biological membranes, are prepared by reaction of a 2-amino-2-lower alkyl-alkanol with an oxooleic acid, the resulting product oxidized to the corresponding oxazolidine-3-oxyl.

3,673,208
MIXED ANHYDRIDES OF N-AROYL-1-(LOWER ALKYL)-5-NITRO-2-IMIDAZOLECARBOXIMIDIC ACID AND BENZOIC ACIDS

Christos George Papaioannou, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 17, 1970, Ser. No. 29,653
Int. Cl. C07d 49/36
U.S. Cl. 260—309 9 Claims

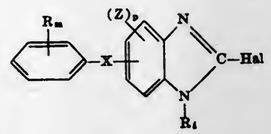
This disclosure describes compounds of the class of mixed anhydrides of N-aroyl-1-(lower alkyl)-5-nitro-2-imidazolecarboximidic acid and a benzoic acid useful as intermediates for the preparation of certain antibacterial and antiprotozoal agents.

3,673,209
BIOCIDALLY ACTIVE BENZIMIDAZOLE COMPOUNDS

Wilhelm Ernst Frick, Baselland; Anton G. Weiss, Basel; Thomas Wenger, and Walter Traber, both of Riehen, all of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

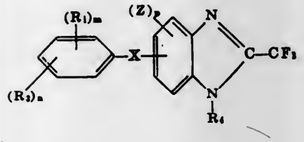
Division of Ser. No. 570,159, Aug. 4, 1966, Pat. No. 3,506,767. This application June 30, 1969, Ser. No. 851,524
Claims priority, application Switzerland, Aug. 6, 1965, 11111/65; Nov. 11, 1965, 11586/65; Jan. 5, 1966, 103/66
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 9 Claims

New benzimidazole compounds are disclosed which have biocidal activity. The compounds have the following structures:



(IV)

and



(VI)

wherein R is hydrogen, halogen or trifluoromethyl; R_1 is fluorine, chlorine, bromine or halogeno lower alkyl; R_2 is fluorine, chlorine, bromine, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfinyl or lower alkyl sulfonyl; R_4 is hydrogen or an alkali metal cation; X is oxygen, sulfur, sulfinyl or sulfonyl; Z in formula IV is halogen, nitro, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-4} alkylthio, trifluoromethyl, lower alkylamino, benzoylamino, halogenobenzoylamino, trifluoromethylbenzoylamino, benzenesulfonylamino, alkylsulfonylamino, alkylsulfinyl, alkylsulfonyl, trifluoromethylbenzenesulfonylamino, trifluoromethylhalogenobenzenesulfonylamino, or sulfo; Z in formula VI is fluorine, chlorine or bromine; m in formula IV is 1 through 5; m in formula VI is 0 through 3; n is 0 through 2; p in formula IV is 0 through 3; and p in formula VI is 1 through 3. The compounds of formula IV are particularly useful as insecticides and acaricides. The compounds of formula VI are particularly useful as insecticides, acaricides, bacteriostats and fungistats.

3,673,210
N-(ω-CYANO-ALKYL)-CARBAMYL-BENZIMIDAZOLES

Werner Daum; Krefeld-Bockum; Hans Scheinpflug; Paul-Ernst Frohberger, both of Leverkusen, and Ferdinand Grewe, Burscheid, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 26, 1969, Ser. No. 880,399
Claims priority, application Germany, Nov. 30, 1968, P 18 12 005.3
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 11 Claims

N-(ω-cyano-alkyl)-carbamyl-benzimidazoles, i.e., 2-(optionally alkoxy-carbonyl and alkyl-carbonyl)-3-[N-(ω-cyano-alkyl)-carbamyl]-4,5,6 and/or 7-(optionally alkyl)-benzimidazoles, which posses fungicidal, anti-bacterial, insecticidal, acaricidal and ovicidal properties and which may be produced by conventional methods.

3,673,211
MANUFACTURE OF α,β-DIHALO-γ-HYDROXYCROTONIC LACTAMS

Ekkehard Winterfeldt, Berlin, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany

Filed March 18, 1969, Ser. No. 808,304
Claims priority, application Germany, March 23, 1968, P 17 70 042.4
Int. Cl. C07d 27/16
U.S. Cl. 260—326.5 FL 6 Claims

Manufacture of α,β-dihalo-γ-hydroxycrotonic lactams by reacting mucohalogenic acid halides with primary amines, as well as the new α,β-dihalo-γ-hydroxycrotonic lactams themselves. The new products are valuable intermediates for the production of insecticides and fungicides.

3,673,212
SUBSTITUTED PHENYLACETIC ACIDS AND ESTERS THEREOF

Rolf Denss, Basel, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 679,224, Oct. 30, 1967, Pat. No. 3,579,535. This application April 29, 1970, Ser. No. 43,637
Claims priority, application Switzerland, Oct. 31, 1966, 15768/66; Jan. 18, 1967, 713/67; Aug. 1, 1967, 11178/67
Int. Cl. C07d 27/26
U.S. Cl. 260—326.3 4 Claims

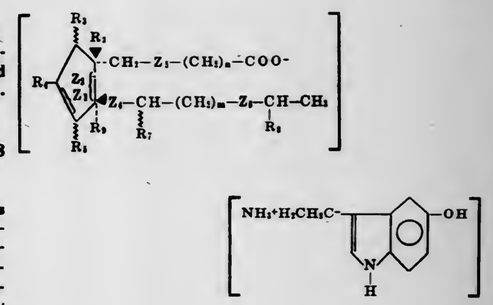
Substituted phenyl acetic acids, addition salts thereof with bases as well as esters thereof, which compounds exhibit useful antiinflammatory (antiphlogistic), analgesic and antipyretic activity, and processes for the production of these compounds, as well as starting materials used in said processes; therapeutic compositions containing these compounds, and methods of treatment, particularly methods of inducing antiinflammatory, analgesic and antipyretic effects in mammals. Illustrative embodiments are 2-[p-(1-pyrryl)-phenyl]-butyric acid, [3-chloro-4-(1-pyrryl)-phenyl]-acetic acid and 2-[p-(1-pyrryl)-phenyl]-propionic acid methyl ester.

3,673,213
INDOLOL PROSTAGLANDIN COMPOUNDS

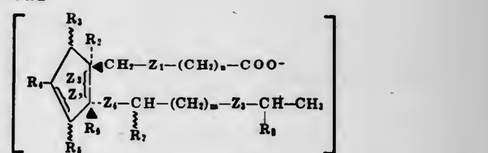
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation

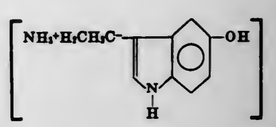
Filed Sept. 8, 1970, Ser. No. 70,392
Int. Cl. C07d 27/56
U.S. Cl. 260—326.14 R 18 Claims

Novel compounds of the formulas:

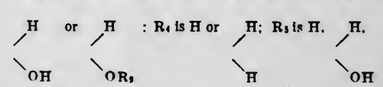


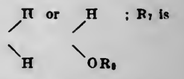
and





wherein R_6 and R_6 are hydrogen when Z_2 is a single bond and Z_2 is a double bond R_6 and R_6 are absent; R_6 is keto,





OH or OR_8; R_8 is H or OH; R_9 is acyl or alkoxyalkyl; Z_1 is $—CH_2CH_2—$ or cis—CH = CH—; Z_2 is a single or double bond; Z_3 is a single bond or a double bond and it is a double bond when R_4 and R_8 are hydrogen; Z_4 is $—CH_2CH_2—$ or trans —CH = CH—; Z_5 is $—CH_2CH_2—$ or cis—CH = CH—; n is 2 to 5 and *m* is 1 to 3. The compounds have improved biological stability and they can serve as a reservoir for prostaglandins that have biological activity, in that different prostaglandin compounds stimulate or inhibit smooth muscles, inhibit gastric secretion, lower or raise blood pressure, inhibit lipolysis and inhibit platelet aggregation.

3,673,214
RING-E SUBSTITUTED 4-CYANO-3-SECOYOHIMBANES AND -CYANO-3-SECOALLOYOHIMBANES

Jay Donald Albright, and Leon Goldman, both of Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 758,593, Sept. 9, 1968, Pat. No. 3,576,004. This application Jan. 11, 1971, Ser. No. 105,641
Int. Cl. C07d 27/54
U.S. Cl. 260—326.3 9 Claims

This disclosure describes compounds of the class of ring-E substituted 4-cyano-3-secoyohimbanes and 4-cyano-3-secoalloyohimbanes useful as analgesics, anti-inflammatory agents, and central nervous system depressants.

3,673,215
SUBSTITUTED CHRYSANTHEMUMATES

Robert Vollrath, Bad Duerkheim; Axel Nuerrenbach, Gruenstadt, and Heinrich Adolphi, Limburgerhof, all of Germany, assignors to Badische Anilin -& Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Land Rhineland and-Pfalz, Germany

Filed Aug. 14, 1969, Ser. No. 850,242

Claims priority, application Germany, Aug. 29, 1968, P 17 93 312.9

Int. Cl. C07d *63/12*; C07c *69/74*; A61k *27/00*

U.S. Cl. 260—332.2 R 10 Claims

New and valuable chrysanthemumates, particularly esters having triunsaturated alcohols, and a process for controlling pests with these esters.

3,673,216
ALKOXYOXETANES

Siegfried H. Schroeter, Schenectady, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 671,576, Sept. 29, 1967, abandoned. This application May 1, 1970, Ser. No. 33,904

Int. Cl. C07d *3/00*

U.S. Cl. 260—333 4 Claims

2-Alkoxyoxetanes are produced by the reaction of an aldehyde or ketone with a vinyl ether in the presence of ultraviolet light. The 2-alkoxyoxetanes produced in accordance with this invention are useful as plasticizers for organic resins, as intermediates for making 3-hydroxy-alkyl ethers utilizing an appropriate Grignard reagent, and 3-hydroxy substituted acetals by reaction with alcohols, and as monomers for polymerization to polyoxyalkylene compounds employing, for example, trialkyl aluminum compounds with water in accordance with known processes.

3,673,217
SUBSTITUTED-DESA-PREGNANES AND DESA-PREGNENES

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.

Division of Ser. No. 499,094, Oct. 20, 1965, Pat. No. 3,574,761, which is a continuation-in-part of Ser. No. 400,206, Sept. 29, 1964, Pat. No. 3,412,107. This application June 13, 1968, Ser. No. 736,587

Int. Cl. C07c *49/00*

U.S. Cl. 260—340.9 14 Claims

This invention is directed to substituted-desA-pregnanes and desA-pregnenes and derivatives thereof which are converted to known 9β,10α-steroids of the pregnane series. The latter compounds are useful as both progestational agents and as salt-retaining agents.

3,673,218
BICHROMONYL COMPOUNDS

Hugh Cairns, and Peter Bennett Johnson, both of Loughborough, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

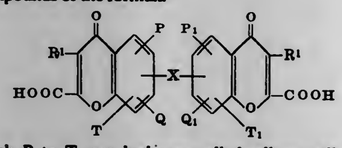
Filed Oct. 28, 1969, Ser. No. 871,972

Claims priority, application Great Britain, Oct. 30, 1968, 51,421/68

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 34 Claims

Compounds of the formula



in which P to T_1 are hydrogen, alkyl, alkoxy, alkenyl, alkenyloxy, substituted alkyl, substituted alkoxy, substituted alkenyl, substituted alkenyloxy, amino, substituted amino aminoalkoxy, substituted aminoalkoxy, nitro, halo, hydroxy, or benzyloxy; the R^1 groups are hydrogen, substituted or unsubstituted alkyl, alkoxy or aryl; and X is a carbon - carbon bond or a single atom, which may be substituted, through which the chromone nuclei are linked, and pharmaceutically acceptable derivatives thereof, are indicated for use in the treatment of 'extrinsic' allergic asthma.

3,673,219
4-PHENYL 2-(2'-HYDROXY-META-TERPHENYL-5'-YL)-DIBENZOFURAN AND 4,4'-DIPHENYL-2,2'-BIDIBENZOFURAN

Allan S. Hay, Schenectady, N.Y., assignor to General Electric Company

Filed June 23, 1970, Ser. No. 49,196

Int. Cl. C07d *5/44*

U.S. Cl. 260—346.2 M 5 Claims

Heating 3,3',5,5'-tetraphenyldiphenoquinone above its melting point but below its carbonization temperature causes an intramolecular disproportionation reaction the progress of which is monitored by the color change. Three sexiphenyl compounds are produced which are separable by chromatography. Two of the products are new compounds, having one and two dibenzofuran groups, respectively in their structures. The bidibenzofuran compound can be converted to 5',5'' diphenyl-m-quaterphenyl-2,2'''-diol, useful in the preparation of polycarbonates and polyester. The other two products can be reworked to serve as a recycle feedstock.

3,673,220
MANUFACTURE OF PYRANTHRONES

Gustav Bock, Neustadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Oct. 9, 1970, Ser. No. 79,681

Claims priority, application Germany, Oct. 14, 1969, P 19 51 708.9

Int. Cl. C09b *3/42*

U.S. Cl. 260—360 6 Claims

A new process for the manufacture of pyranthrones (I) from 2,2'-dialkyl-1,1'-dianthraquinonyls (II) by heating (II) at from 150° to 210° C. in polar organic solvents in the presence of alkali metal acetates.

3,673,221
ACID ANTHRAQUINONE DYESTUFFS

Peter Hindermann, Bottmingen/Basel-Land, and Hubert Meindl, Riehen/Basel, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

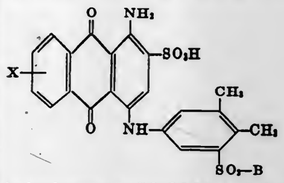
Filed Sept. 22, 1969, Ser. No. 860,042

Claims priority, application Switzerland, Oct. 3, 1968, 14804/68

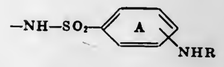
Int. Cl. C09b *1/30*

U.S. Cl. 260—374 7 Claims

Acid anthraquinone dyestuffs are disclosed which are the formula



wherein X is hydrogen or $SO_3\ominus M\oplus$ and B is —OH or

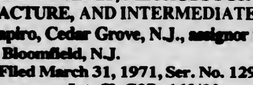


wherein R denotes hydrogen or lower alkyl and wherein any substituent of A other than NHR is selected from hydrogen, halogen, lower alkyl or $SO_3\ominus M\oplus$, and $M\oplus$ is one equivalent of a colorless cation.

These dyestuffs are useful for the dyeing and printing of organic materials especially materials made from natural and synthetic polyamide.

The resulting dyeings are distinguished by purity, good fastness to light, washing and perspiration.

The dyestuffs in which B represents



are moreover valuable as intermediate products for the production of fiber reactive dyestuffs for cellulose and polyamide material.

3,673,222
2-(8-CYCLOHEXYLOCTYL OR 7-CYCLOHEXYLHEPTYL)-1,4-NAPHTHOQUINONE AND PROCESS FOR PREPARATION AND USE THEREOF

Sydney Archer, 52 Wisconsin Ave., Delmar, N.Y., and Roman R. Lorenz, 3 Highland Drive, East Greenbush, N.Y.

Continuation-in-part of Ser. No. 589,202, Oct. 25, 1966, abandoned. This application Nov. 26, 1969, Ser. No. 880,371

Int. Cl. C07c *49/66*

U.S. Cl. 260—396 R 4 Claims

Intermediates for the preparation of 2-hydroxy-3-(8-cyclohexyloctyl)-1,4-naphthoquinone and 2-hydroxy-3-(7-cyclohexylheptyl)-1,4-naphthoquinone, potent antimalarial agents, are prepared as follows: reacting 8-cyclohexyloctanoic acid or 7-cyclohexylheptanoic acid with 1-naphthol to form 2-(8-cyclohexyloctanoyl or 7-cyclohexylheptanoyl)-1-naphthol; reducing the 2-acyl-1-naphthol to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1-naphthol; oxidizing 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1-naphthol to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone; reacting the latter with a peroxide under alkaline conditions to form 2-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone-2,3-oxide; and, hydrolyzing the 2,3-oxide under acidic conditions to yield 2-hydroxy-3-(8-cyclohexyloctyl or 7-cyclohexylheptyl)-1,4-naphthoquinone.

3,673,223
6-THIOCYANATO-16-METHYLENE-4,6-PREGNADIENES, METHODS FOR THEIR MANUFACTURE, AND INTERMEDIATES THEREOF

Elliot L. Shapiro, Cedar Grove, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed March 31, 1971, Ser. No. 129,949

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.4 11 Claims

6-Thiocyanato-16-methylene-17α-lower alkanoyloxy-4,6-pregnadiene-3,20-diones having progestational and anti-androgenic activities are prepared from 6β-thiocyanato-7α-hydroxy-16-methylene-17α-lower alkanoyloxy-4-pregnene-3,20-diones by treatment in a tertiary amine with a hydrocarbonsulfonyl halide having up to seven carbon atoms. The 6-thiocyanato-16-methylene-4,6-pregnadienes of this invention are also prepared by treating a 6β-thiocyanato-7α-hydroxy-16-methylene-17α-lower alkanoyloxy-4-pregnene-3,20-dione or a 7-lower alkanoate ester thereof with an acid selected from the group consisting of p-toluenesulfonic acid or hydrochloric acid in a non-reactive, organic solvent.

3,673,224
STEROID COMPOUNDS OF THE ESTRANE, ANDROSTANE, PREGNANE AND 19-NORPREGNANE SERIES AND THE PREPARATION THEREOF

Poul Borrevang, Rodovre, and Peter Faarup, Soborg, both of Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen, N, Denmark

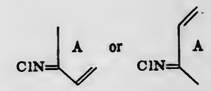
Filed Dec. 16, 1969, Ser. No. 885,654

Claims priority, application Great Britain, Dec. 24, 1968, 61,413/68

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.4 7 Claims

Novel and therapeutically useful steroid compounds of the estrane, androstane, pregnane or 19-norpregnane series and having the partial ring A configuration:



as well as processes for the preparation of these steroid compounds.

3,673,225
NEW 7-ALKYL-STEROIDS

Hendrik Paul De Jongh, Oss, Netherlands, assignor to Organon Inc., West Orange, N.J.

Filed Jan. 16, 1970, Ser. No. 3,516

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.5 3 Claims

The present invention relates to a group of novel 7α,18-dialkyl-steroids of the oestrane series having a double bond originating from carbon atom 5, which compounds have strong oestrogenic, ovulation-inhibiting and antifertilization properties.

3,673,226
SYNTHETIC LUBRICANTS

Robert E. Malec, Birmingham, Mich., assignor to Ethyl Corporation, New York, N.Y.

Filed April 10, 1968, Ser. No. 720,358

Int. Cl. C07c *69/20*, *69/32*; C11c *3/08*

U.S. Cl. 260—410.6 9 Claims

Elimination of water from trimethylolpropane forms a mixture containing a substantial amount of di-trimethylolpropane. Esterification of the mixture with monobasic aliphatic carboxylic acids containing from about 2–12 carbon atoms such that the average acid chain is from 4–9 carbon atoms results in a synthetic ester lubricant especially useful for lubricating gas turbines.

3,673,227
SIMPLIFIED CONTINUOUS RENDERING SYSTEM

Jack G. Keith, Santa Fe Springs, Calif., assignor to Duke, Inc., Germantown, Ohio

Division of Ser. No. 586,292, Oct. 12, 1966, Pat. No. 3,506,407. This application Jan. 12, 1970, Ser. No. 2,142

Int. Cl. C11b *1/12*

U.S. Cl. 260—412.6 7 Claims

A continuous process for the dry rendering of raw materials in the form of animal, poultry and fish byproducts to produce fat and tankage in which the raw materials are cooked to free the fats therefrom in a single cooking operation, the raw materials being reduced to a mean particle size and then cooked under controlled moisture and temperature conditions and maintained in the cooking vessel for a residence time at least equal to one hour flow rate of the materials through the cooker.

3,673,228
PROCESS FOR ADSORBENT BLEACHING OF EDIBLE OILS

Ronald D. Harris, Wyoming, and Leon Levine, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 4, 1969, Ser. No. 855,352
Int. Cl. C11b 3/10
U.S. Cl. 260—428 22 Claims

In a process for adsorbent bleaching of edible oils, adsorbent agent usage is reduced by deaerating and moisture adjusting an oil/adsorbent mixture, then adjusting the temperature of the mixture to range from 200° to 400° F and then directly passing the temperature-adjusted mixture through a bleaching zone at a pressure of atmospheric pressure or greater in the substantial absence of oxygen and under turbulent flow, and finally filtering the adsorbent from the oil. Adsorbent usage is also reduced by utilizing the above deaerating, moisture adjusting, and temperature conditions with or without the use of turbulent flow and utilizing 2 to 7 bleaching stages with more or less equal amounts of fresh adsorbent being used in each stage. Preferably, this multistage process is utilized in combination with the turbulent flow process.

3,673,229
METAL OXIDE ACYLATES AND THEIR PREPARATION

Jacobus Rinse, 77 Anderson Road, Bernardsville, N.J.

Continuation-in-part of Ser. No. 651,120, July 5, 1967, , Continuation-in-part of Ser. No. 840,604, July 7, 1967,. This application March 5, 1970, Ser. No. 16,990
Int. Cl. C07f 13/00, 11/00, 15/02
U.S. Cl. 260—429 R 4 Claims

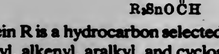
Organic metal compounds containing a high percentage of metal and having a central molecular structure comprising two or three metal atoms connected by oxygen bonds to each other, at least one of the metals being trivalent, and, in turn, connected to two or three acyloxy groups or to three divalent-metal acyloxy groups are prepared by reacting metal acetates or formates with metal oxides or hydroxides and with an aliphatic acid having from 7-22 carbon atoms or with a divalent metal acyl oxide of such acid to form products useful as resin additives, fungicides, anti-corrosives and colorants.

3,673,230
METHOD OF PREPARING HEXAORGANODISTANNANES

Gerald H. Reifenberg, Highstown, and William J. Considine, Somerset, both of N.J., assignors to Mat Chemicals Inc., New York, N.Y.

Division of Ser. No. 773,329, Nov. 4, 1968. This application Jan. 18, 1971, Ser. No. 107,575
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 4 Claims

This invention is a method for preparing compounds of the formula R_3SnSnR_3 comprising pyrolyzing a triorganotin formate of the formula



wherein R is a hydrocarbon selected from the group consisting of alkyl, alkenyl, aralkyl, and cycloalkyl radicals, and separating R_3SnSnR_3.

3,673,231
SEC-PHOSPHINE DITHIOPHOSPHINIC ACID SALTS

Rupert C. Morris, Berkeley, and Ronald F. Mason, Mill Valley, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,659
Int. Cl. C07f 3/06
U.S. Cl. 260—429.9 4 Claims

Zinc salts of hydrocarbyl-substituted or unsubstituted 9-phosphabicyclononane-9,9-dithiophosphinic acid, useful as lubricating oil additives, are prepared by contacting 9-H-9-phosphabicyclononane, optionally having one or more hydrocarbyl substituents on a ring carbon atoms, with sulfur in the presence of ammonium hydroxide, followed by treatment with a zinc salt.

3,673,232
DICYCLOPENTADIENYL IRON COMPOUNDS

Meldon L. Talbot, and Theodore T. Foster, both of Boulder, Colo., assignors to Syntex Corporation, Panama, Panama

Filed April 1, 1970, Ser. No. 24,863
Int. Cl. C07f 15/02
U.S. Cl. 260—439 CY 15 Claims

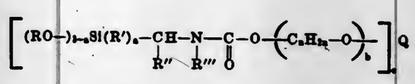
Production of dimers of dicyclopentadienyl iron compounds by the reaction of a dicyclopentadienyl iron compound and a ketonic coupling agent in the presence of an acid catalyst in an organic solvent. The process involves a two-phase system wherein one phase comprises said ketonic coupling agent, a strong acid, and a polar organic solvent; and the second phase comprises said iron compound which is slightly soluble in the first phase. The product dimers of dicyclopentadienyl iron compounds are useful as hematinic agents and in the cure of polymers. Those compounds substituted in at least one cyclopentadienyl ring are novel.

3,673,233
SILYL-SUBSTITUTED CARBAMIC ACID DERIVATIVES

Hans Dietrich Golitz, Koeln-Stammheim, and Walter Simmler, Odenthal-Schlinghofen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

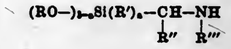
Filed Dec. 2, 1969, Ser. No. 881,622
Claims priority, application Germany, Dec. 4, 1968, P 18 12 564.9
Int. Cl. C07f 7/18
U.S. Cl. 260—448.2 N 6 Claims

New organosilyl-modified carbamic acid esters have the formula

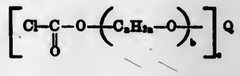


in which R, R′ and R‴ are monovalent hydrocarbon radicals, R″ is a hydrogen atom a methyl radical or a phenyl radical, Q is a monovalent to hexavalent hydrocarbon radical having up to 6 carbon atoms, *a* is 0, 1, 2 or 3, *n* is 2, 3 or 4, *b* is zero or an integer from 1 to 200, and *c* is the valency number of Q.

These carbamic acid derivates are prepared by reacting at a temperature of from 20° to 150° C., an aminomethyl-silane derivative of the formula



with a chloroformic acid ester of the formula



in the presence of a tertiary amine.

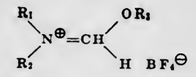
The products are to be used as priming agents imparting adhesion to synthetic resins on siliceous surfaces, as surfactants and as intermediates for organo-polysiloxane resins.

3,673,234
PROCESS FOR PREPARING DIALKYLAMINOALKOXYCARBONIUM TETRAFLUOROBORATE

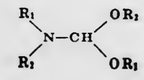
Kenji Ikawa, Osaka, and Fumitaka Takami, Higashiosaka, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed April 22, 1970, Ser. No. 30,932
Claims priority, application Japan, May 15, 1969, 44/37871
Int. Cl. C07c 119/16
U.S. Cl. 260—453 R 3 Claims

Dialkylaminoalkoxycarbonium tetrafluoroborate of the formula:



wherein, R_1, R_2 and R_3 each represents a lower alkyl group, is prepared by reacting dialkylformamide and alkyl chloroformate with sodium fluoroborate. Furthermore, dialkylformamide dialkylacetal of the formula:



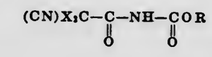
wherein, R_1, R_2 and R_3 are meanings the same meanings as above, is prepared by treating said dialkylaminoalkoxycarbonium tetrafluoroborate with sodium alcoholate.

3,673,235
ESTERS OF N-HALOCYANOACETYL CARBAMIC ACIDS

George A. Burk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 14, 1970, Ser. No. 2,978
Int. Cl. C07c 121/16
U.S. Cl. 260—465.4 6 Claims

Esters of N-halocyanoacetyl carbamic acids having the general formula



where each
X is independently H, Cl or Br where not more than one X is H, and
R is an alkyl of 1—10 carbon atoms
are useful as bactericides and fungicides.

3,673,236
BASICALLY SUBSTITUTED 1-CYANO-0-CARBAMOYL-FORMOXIMES

Hans Ulrich Brechbuhler, Basle, and Kurt Gubler, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 23, 1969, Ser. No. 844,163
Claims priority, application Switzerland, July 24, 1968, 11105/68
Int. Cl. C07c 121/30, 121/42
U.S. Cl. 260—465.4 10 Claims

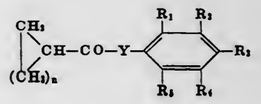
New basically substituted 1-cyano-O-carbamoyl-formoximes are described as insecticides, acaricides and nematocides, which are distinguished from known carbamoyl-oximes by pronounced systemic insecticidal, acaricidal and nematocidal action. A typical compound is 1-diethylamino-O-(N′-methylcarbamoyl)-formoxime. Processes for the production of these compounds are described as well as pesticidal compositions containing these compounds as active substances.

3,673,237
2,4-DINITRO-6-ALKYL PHENYL-CYCLOPROPIONATES

Stefan Janiak, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed March 10, 1969, Ser. No. 805,849
Claims priority, application Switzerland, March 14, 1968, 3767/68
Int. Cl. C07c 69/74
U.S. Cl. 260—468 P 7 Claims

It has been found that cycloalkyl carboxylic acid esters of the general formula



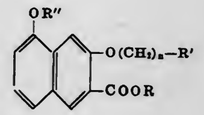
wherein *n* denotes one of the numbers 1, 2 or 3, Y represents oxygen or sulphur and R_1, R_2, R_3, R_4 and R_5 each represents hydrogen or various substituents possess biocidal activity, preferably for combatting weeds, members of the class Arachnoidea and bacteria and fungi.

3,673,238
2-NAPHTHOIC ACID DERIVATIVES

Bill Elpern, White Plains; Harris J. Shapiro; James R. Shroff, both of Bronx, and Harold Soloway, New Rochelle, all of N.Y., assignors to USV Pharmaceutical Corporation

Filed Feb. 10, 1970, Ser. No. 10,294
Int. Cl. C07c 101/42
U.S. Cl. 260—471 A 11 Claims

Napthoic acid derivatives of the formula



where R is lower alkyl, R′ is a secondary amino group and R″ is hydrogen, phenyl-lower alkyl, or substituted phenyl-lower alkyl have hypotensive activity.

3,673,239
PROCESS FOR MANUFACTURING 3,3,5-TRIMETHYLCYCLOHEXYL MANDELATE

Hiroshi Takahashi, Arai, Japan, assignor to Daicel Ltd., Osaka, Japan

Filed Dec. 10, 1970, Ser. No. 97,048
Claims priority, application Japan, Dec. 16, 1969, 44/101145
Int. Cl. C07c 69/76
U.S. Cl. 260—473 A 7 Claims

A process for manufacturing 3,3,5-trimethylcyclohexyl mandelate in which mandelic acid is esterified with 3,3,5-trimethylcyclohexanol in an inert solvent in the presence of an acid catalyst, in which a metal (Zn, Sn, Mg, Ni or Pb) is added to the reaction system at the beginning of or during the reaction, or afterwards, to generate ketone-reductive hydrogen in situ in order to minimize formation of 3,3,5-trimethylcyclohexylphenylglyoxylate.

3,673,240
HYDROXYL-TERMINATED HYDROXYMETHYLABIETANYL ADIPATE

John B. Lewis, and Glen W. Hedrick, both of Lake City, Fla., assignors to The United States of America as represented by the Secretary of Agriculture

Filed May 12, 1970, Ser. No. 36,673
Int. Cl. C07c *69/44*
U.S. Cl. 260—485 G 1 Claim

Ethylene glycol adipic acid polyester was modified by incorporating the naval stores derived 12-hydroxymethyitetrahydroabietanol in the polyester chain. The modified polyester was blended with a poly (ethylene adipate) glycol (mol. wt. 2000) and 1,4-butanediol, $Bu(OH)_2$, giving glycol mixtures which were reacted with toluene diisocyanate TD1. Clear strong polyurethane films (26.6% TDI) from glycol mixtures (average hydroxyl equivalents, OHE, of 252) containing 5, 10, 15, and 20 percent resinyl moiety were prepared and their polymer properties examined. Incorporation of the moiety gave strength, toughness, and stiffness to films which otherwise would have been soft and tacky. Glycol mixtures having higher hydroxyl equivalent values required less isocyanate and addition of the resinyl glycol gave strong elastic films from a composition containing 16.6% TDI.

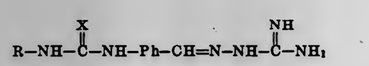
Experimental data suggests that use of the bulky 12-hydroxymethyltetrahydroabietanol may be an important contribution to polyurethane technology.

3,673,241
SUBSTITUTED BENZALDEHYDE GUANYLHYDRAZONES

Adrian Marxer, Binningen, Switzerland, assignor to Ciba Corporation, Summit, N.J.

Filed March 25, 1969, Ser. No. 810,386
Claims priority, application Switzerland, April 4, 1968, 4998/68; Feb. 21, 1969, 2682/69
Int. Cl. C07c *127/16, 129/08, 133/10*
U.S. Cl. 260—501.12 14 Claims

Compounds of the formula



in which R represents an optionally substituted hydrocarbon radical, X represents oxygen or sulphur and Ph a phenylene radical, are useful for the treatment of cardiac insuffiency and as antihypertensive agents.

3,673,242
SULFONIC ACID BETAINES

Heinrich Rinkler, Dormagen; Rudolf Braden, Leverkusen-Schlebusch, and Gunther Nischk, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 588,729, Oct. 24, 1966. This application Jan. 6, 1970, Ser. No. 512
Claims priority, application Germany, Nov. 2, 1965, F 47575
Int. Cl. C07c *143/52*
U.S. Cl. 260—507 R 3 Claims

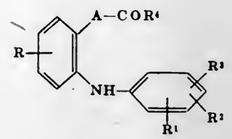
Unsaturated sulfonic acid betaines suitable for use as antistatic agents with high polymers are prepared by reacting an unsaturated N,N-disubstituted acid hydrazide with a sultone.

3,673,243
NOVEL PROCESS FOR PRODUCING O-ANILINOPHENYLALIPHATIC ACID DERIVATIVES

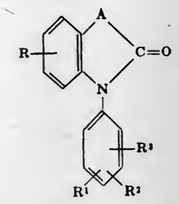
Hisao Yamamoto, Nishinomiya-shi; Atsuko Hirohashi, Ashiya-shi; Takahiro Izumi, Takarazuka-shi, and Masao Koshiba, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 2, 1969, Ser. No. 821,494
Claims priority, application Japan, May 8, 1968, 43/31141; May 13, 1968, 43/32406; May 15, 1968, 43/33113
Int. Cl. C07c *101/44*
U.S. Cl. 260—518 R 4 Claims

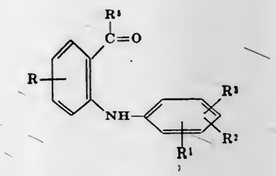
o-Anilinophenylaliphatic acid derivatives being excellent in anti-inflammatory activity and extremely low in toxicity and having the formula,



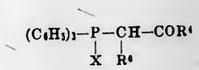
wherein A is vinylene, ethylene, etc.; R, R^1, R^2, and R^3 is hydrogen, halogen or lower alkyl, halogen-substituted lower alkyl or lower alkoxy; and R^4 is hydroxyl or lower alkoxy, are produced advantageously by contacting carbostyryl derivative of the formula,



where A, R, R^1, R^2 and R^3 are as defined above, with compound of the formula, R^4H, wherein R^4 is as defined above, or contacting benzenecarbonyl derivative of the formula,



wherein R, R^1, R^2 and R^3 are as defined above, and R^5 is hydrogen or lower alkyl in the presence of an alkali, with triphenyl-alkoxycarbonylmethylphosphonium halide of the formula,



wherein R^4 is as defined above; R^6 is hydrogen or lower alkyl; and X is halogen, and if necessary, further contacting the obtained o-cinnamic acid derivative with hydrogen.

3,673,244
METHOD OF PRODUCING AROMATIC CARBOXYLIC ACIDS FROM ALKYLBENZENES

Cesare Reni, Busto Arsizio; Luigi Lugo, Milan, and Giorgio Gualdi, Verona, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed June 30, 1970, Ser. No. 51,364
Claims priority, application Italy, July 7, 1969, 19283 A/69
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 12 Claims

A process for the preparation of aromatic carboxylic acids by the oxidation of alkyl benzenes with oxygen or gases containing molecular oxygen in an aliphatic carboxylic acid environment and in the presence of catalysts consisting of the salts of heavy metals in which the oxidation is carried out in the presence as an activator of an organic compound in which the molecule contains both keto and hydroxy groups.

3,673,245
TREATMENT OF OFF-GASES FROM NITRIC ACID OXIDATION OF ANOLONE

Samuel S. Mims, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Sept. 3, 1969, Ser. No. 855,013
Int. Cl. C07c *51/18*
U.S. Cl. 260—531 R 11 Claims

Off-gases, obtained from the nitric acid oxidation of an organic feed comprising cyclohexanol and cyclohexanone and mixtures thereof by contact in a reactor with nitric acid at an elevated temperature whereby adipic acid is produced, the mixture of off-gases comprising nitric oxide, nitrogen dioxide, other oxides of nitrogen, carbon dioxide, nitrogen and carbon monoxide, are mixed with an oxygen-containing gas and the resultant mixture is passed through the organic feed being passed to the nitric acid reactor. This results in utilizing all reactive oxidizing agents in the off-gases and transferring a portion of the highly exothermic reaction from the main reactor to the off-gas scrubber.

3,673,246
PROCESS FOR THE PRODUCTION OF TRICHLOROMETHANE-SULFENYL CHLORIDE

Gerhard Meyer, Obernburg; Helmut Magerlein, and Hans-Dieter Rupp, both of Erlenbach, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Jan. 2, 1970, Ser. No. 5
Int. Cl. C07c *145/00*
U.S. Cl. 260—543 H 10 Claims

Process for producing trichloromethane-sulfenyl chloride (CCl_3SCl) wherein carbon disulfide is reacted with chlorine on activated carbon at temperatures of about −5° C. to +100° C.

3,673,247
HYDROXYBENZENSULFONYL HALIDE PRODUCTION

Harold Wayne Hill, Jr., and Robert W. Campbell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed March 11, 1969, Ser. No. 806,281
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R 7 Claims

The conversion of hydroxybenzenesulfonates to the corresponding hydroxybenzenesulfonyl halides by contacting with a thionyl halide, a phosphorus oxyhalide or a carbonyl halide in the presence of catalytic amounts of selected organic phosphorus compound.

3,673,248
PRODUCTION OF 1,3,4-DIAZAPHOSPHOLANES

Harro Petersen, Frankenthal, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Dec. 5, 1969, Ser. No. 882,711
Claims priority, application Germany, Dec. 18, 1968, P 18 13 648.6
Int. Cl. C07f *9/44*
U.S. Cl. 260—543 PN 8 Claims

Production of 1,3,4-diazaphospholanes by reaction of a N-methylolurea or a N-mercaptomethylurea compound with a phosphorus trihalide, and the new 1,3,4-diazaphospholanes themselves which are flame retardants and starting materials for the production of flame retardants, especially for textiles, surface coatings and plastics.

3,673,249
PROCESS FOR PREPARING TERTIARY AMYL UREA

Frank Meritt Furman, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 9, 1970, Ser. No. 44,898
Int. Cl. C07c *127/14*
U.S. Cl. 260—553 R 3 Claims

This disclosure describes a process for the preparation of tertiary amyl urea which is useful as an intermediate in the preparation of 1-cyano-3-tert.-amylguanidine, a hypotensive agent.

3,673,250
CATALYTIC HYDRATION OF NITRILES TO PRODUCE AMIDES

Francis Clyde Rauch, and Guenter Willi Nachtigall, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 1, 1970, Ser. No. 94,196
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N 16 Claims

Catalytic hydration of a nitrile with water in presence of a homogeneous catalyst in solution with the reactants, is described for the synthesis of an amide. The catalyst comprises two components, one a transition metal compound such as a rhodium compound, the other an organic phosphite, phosphine, arsenite, arsine, stibine or antimonite. One preferred example is rhodium trichloride with triphenyl phosphine as a catalyst for hydration of acrylonitrile to acrylamide. Some complexing of the solution components is suggested. In some embodiments, presence of a further component such as triphenyl phosphine oxide will improve the process.

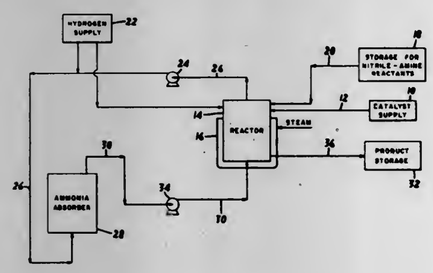
3,673,251
PROCESS FOR THE CATALYTIC REDUCTIVE AMINATION OF NITRILES

Orville D. Frampton, Wyoming, Ohio; Joel B. Pedigo, Wheaton, Ill., and Hans Z. Lecher, Plainfield, N.J., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed April 30, 1969, Ser. No. 820,432
Int. Cl. C07c *85/12*
U.S. Cl. 260—563 D 17 Claims

A cyclic process is provided for preparing secondary and/or tertiary mono-, di- or polyamines by the continuous catalytic reductive amination of mono-, di- or polynitriles, which comprises continuously hydrogenating the nitrile in the presence of a hydrogenation catalyst and a primary or a secondary mono-, di- or polyamine reactant, removing the gaseous byproduct mixture, which consists of ammonia, unreacted

hydrogen and volatilized primary or secondary amine reactant, from the reaction mixture, separating the ammonia from



the gaseous by-product mixture by selective absorption, and recycling the hydrogen and amine reactant.

3,673,252
POLYCHLORO AMIDINES AND PROCESS FOR PREPARING THEM

Clifford L. Coon, Fremont, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of Ser. No. 671,615, Sept. 29, 1967, abandoned. This application Dec. 10, 1970, Ser. No. 96,979

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 R **3 Claims**

The invention comprises a certain novel class of polychlorinated amidines, more specifically, polychlorinated bis(amidines) useful as chlorinating agents, bleaches, disinfectants, insecticides, and fungicides. The specific class of the subject novel compounds comprises the bis(polychloroamidines) having the structural formula

$$Cl_2N-\overset{\overset{NCl}{\|}}{C}-R-\overset{\overset{NCl}{\|}}{C}-NCl_2$$

(in which R is an unsubstituted divalent hydrocarbyl radical defined more fully hereinbelow) produced, for example, by treating the corresponding bis(amidines) with sodium hypochlorite under acid conditions, or an aqueous solution of a bis(amidine) hypochloride and excess chloride with fluorine, preferably diluted with nitrogen.

Still another method involves the treatment of an acidic solution of the bis(amidines) of the class set forth herein with gaseous chlorine, this treatment being effected preferably at ambient temperatures and pressures.

3,673,253
PROCESS FOR THE PRODUCTION OF AMINOGUANIDINE BICARBONATE

Peter Simons, Bergisch Gladbach, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 21, 1968, Ser. No. 707,320

Claims priority, application Germany, Feb. 24, 1967, F 51627

Int. Cl. C07c *133/10*

U.S. Cl. 260—564 F **5 Claims**

Production of aminoguanidine bicarbonate by reacting finely divided solid calcium cyanamide with hydrazine, in the form of mono or dihydrazine sulfate or hydrazine hydrate and sulfuric acid in admixture, in neutral to alkaline aqueous medium, e.g. at pH 7 to about 9.5 and about 15°–90° C, using sulfuric acid for pH adjustment to form aminoguanidine, cooling the reaction mixture, e.g. to about 60°–40° C, to precipitate the resultant calcium sulfate sludge, and treating the sludge-free resultant reaction mixture, e.g. at 25°–50° C, with a bicarbonate precipitating agent, e.g. alkali metal or ammonium bicarbonate or carbon dioxide and alkali metal or ammonium hydroxide, to precipitate the aminoguanidine bicarbonate therefrom;

optionally avoiding iron contamination of the desired product by either adjusting to acid pH, e.g. pH 3–4, the reaction mixture prior to bicarbonate agent treatment to maintain such iron in soluble form, e.g. when Fe content low, or adjusting to about pH 7.5–8.5 the reaction mixture prior to bicarbonate agent treatment followed by air introduction, e.g. at 60°–45° C, to remove the iron content, e.g. when Fe content high-up to about 5 percent, as ferric hydroxide precipitate, the latter alternative being optionally carried out prior to calcium sulfate sludge precipitation (i.e. removal) to effect joint precipitation of such ferric hydroxide and sludge prior to bicarbonate treatment.

3,673,254
PROCESS FOR THE PRODUCTION OF 2-CHLOROALKYL-(OR CYCLOALKYL)-ISOCYANIDE DICHLORIDES

Dieter Arlt, Cologne, Buchheim, and Hans Holtschmidt, Leverkusen-Schlebusch, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 17, 1968, Ser. No. 737,370

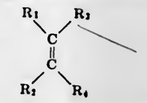
Claims priority, application Germany, Aug. 7, 1967, F 53/59

Int. Cl. C07c *119/00*

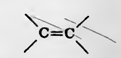
U.S. Cl. 260—566 D **6 Claims**

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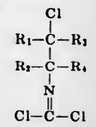
Production of 2-chloro-alkyl-(or cycloalkyl or aromatic)-isocyanide dichlorides by reacting an olefin of the formula



in which R_1 to R_4 each individually is hydrogen, alkyl, cycloalkyl, aromatic having up to 10 carbon atoms, or such radicals optionally substituted with NO_2, halo, or alkoxy, or R_1 and R_2 together with the



group form an alicyclic ring system optionally containing an $-SO_2-$ group with hydrocyanic acid and with a chlorine-contributing compound, e.g. chlorine or sulfuryl chloride, in an amount at least equivalent to the sum total of the quantities of olefin and hydrocyanic acid used, e.g. at a temperature of about −10° to +40° C; the produced isocyanide dichlorides having the corresponding formula



in which R_1 to R_4 are the same as defined above, including $-N=CCl_2$ as optional further substituent for said substituted radicals, and being usable as intermediates for producing plastics auxiliaries, or directly for the production of isocyanates which optionally may be converted in turn with amines into ureas in the known manner, or directly as plant protection agents.

ERRATUM

For Class 260—571 see:
Patent No. 3,673,123

3,673,255
CATALYTIC OXIDATIVE DEHYDROGENATION OF KETONES WITH IMPROVED SUPPORTED GOLD CATALYST

Robert W. Etherington, Jr., Pennington, and Koei-Liang Liauw, Murray Hill, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of Ser. No. 711,864, March 11, 1968, Pat. No. 3,476,808, which is a continuation-in-part of Ser. No. 639,029, May 17, 1967, abandoned. This application Nov. 3, 1969, Ser. No. 873,705

Int. Cl. C07c *45/00*

U.S. Cl. 260—586 R **3 Claims**

An improvement is provided in a process in which ketones and mixtures of ketones and alcohols having at lest one pair of hydrogen atoms on the alpha and beta carbon atoms are oxidatively dehydrogenated to the corresponding ethylenically unsaturated ketone by contacting the ketone and molecular oxygen-containing gas with a catalyst containing a metal of Group IB (Cu, Ag, Au) in the vapor phase (400°–750°C.). The catalyst can be a Group IB metal or oxysalt and can be on a support. Gold and supported gold catalysts are particularly preferred. The improvement is in obtaining high selectivity by the use of a supported gold catalyst (1–50 percent gold) in which the support is a clear, transparent, single crystal alpha-alumina having at least 50 percent and preferably 75 percent of its surface area covered with gold.

3,673,256
3-ENDO-METHYL-3-EXO(4'-METHYLPENTANALYL)-2-METHYLENEBICYCLO[2.2.1HEPTANE AND PROCESS FOR PREPARING SAME

Kenneth M. Pieper, West Chester, and Thomas W. Gibson, Colerain Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 3, 1969, Ser. No. 855,043

Int. Cl. C07c *47/38*

U.S. Cl. 260—598 **6 Claims**

The compound, 3-endo-methyl-3-exo(4'-methylpentanalyl)-2-methylenebicyclo[2.2.1]heptane, and a process for preparing this compound are disclosed. 3-endo-Methyl-3-exo(4'-methylpentanalyl)-2-methylenebicyclo[2.2.1]heptane is valuable as a perfume component.

3,673,257
PROCESS FOR THE PRODUCTION OF AROMATIC HYDROXYALDEHYDES

Eugene P. Di Bella, Rochelle Park, N.J., assignor to Tenneco Chemicals, Inc.

Filed Feb. 2, 1970, Ser. No. 8,029

Int. Cl. C07c *45/16*

U.S. Cl. 260—600 **15 Claims**

Salicylaldehyde and other hydroxybenzaldehydes are prepared by the oxidation of a hydroxybenzyl alcohol in the presence of a platinum catalyst and a cationic oxidation promoter. Among the most effective oxidation promoters are cadmium, cerium, indium, and lanthanum ions.

3,673,258
PRODUCTION OF 2,2,4-TRIMETHYL-3-HYDROXYPENTANAL

Franz Merger, 8 Homburger Strasse, 6700 Ludwighafen; Rolf Platz, 5 Hansastrasse, 6800 Mannheim, and Erich Nebe, 145 Rohrbacher Strasse, 6900 Heidelberg, all of Germany

Filed Dec. 27, 1968, Ser. No. 787,610

Int. Cl. C07c *47/02*

U.S. Cl. 260—602 **6 Claims**

Production of 2,2,4-trimethyl-3-hydroxypentanal by dimerization of isobutyraldehyde in the presence of a basic ion exchanger. The product is a valuable intermediate for the production of polyesters and plasticizers.

3,673,259
PRODUCTION OF AROMATIC SULFONES

Jacob Rosin, Maplewood, and Frank S. Ang, Kearney, both of N.J., assignors to Chris-Craft Industries, Inc.

Filed Oct. 7, 1968, Ser. No. 765,594

Int. Cl. C07c *147/06*

U.S. Cl. 260—607 A **5 Claims**

In the production of aromatic sulfones by the condensation reaction of an arylsulfonyl chloride with an arene, practically quantitative yields of the aromatic sulfone are obtained without the usual purification and work-up problems by conducting the condensation reaction in the presence of relatively large amounts (based on the molar concentration of the arylsulfonyl chloride) of the particular arylsulfonic acid which corresponds to such arylsulfonyl chloride, but substantially in the absence of any metal salts. Using in conjunction with this improved method for producing the aromatic sulfone a new and unique technique for producing the arylsulfonyl chloride, which technique is based on chlorinating the aromatic sulfonic acid with chlorosulfonic acid in the presence of certain organic solvents so that equilibrium of such chlorination is displaced toward formation of the resultant arylsulfonyl chloride, an extremely efficient process has been developed for the production of aromatic sulfones.

This process is described in detail in connection with the production of bis-(p-chlorophenyl) sulfone, which is a commercially important monomer in the manufacture of many thermoplastic polysulfone polymers.

3,673,260
HALOGENATED THIOETHERS AND METHOD OF PREPARATIONS

Christian Esclamadon, Les Chenes, France, assignor to Societe Anonyme dite: Societe Nationale des Petroles D'Aquitaine Courbevoie

Filed May 20, 1969, Ser. No. 826,291

Claims priority, application France, May 21, 1968, 68152543; May 21, 1968, 68152544

Int. Cl. C07c *149/00, 149/18*

U.S. Cl. 260—609 A **21 Claims**

New halogenated thioether compounds of the general formula $R(S-CH_2-CHY-CH_2X)_n$ in which X represents a halogen atom, Y represents a hydrogen atom or a hydroxyl group, R is a mono or divalent cyclic or acyclic unsaturated hydrocarbon residue having up to 20 carbon atoms and *n* is 1 or 2 according to whether R is mono or divalent, are prepared by reacting thietane (thiacyclobutane or trimethylene sulphide) or 3-hydroxy thietane with a double-bonded halogen-substituted hydrocarbon derivative. By means of treatment with an aqueous solution of a base, the new thioether compounds in which Y is hydroxyl may be used to prepare corresponding new 2,3-epoxy-thiopropyl and bis(2,3-epoxy-thiopropyl) compounds.

3,673,261
PERFUME COMPOUNDS AND PROCESS FOR PREPARING SAME

Herbert C. Kretschmar, Greenhills, and William F. Erman, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 12, 1969, Ser. No. 884,686

Int. Cl. C07c *27/00, 35/22*

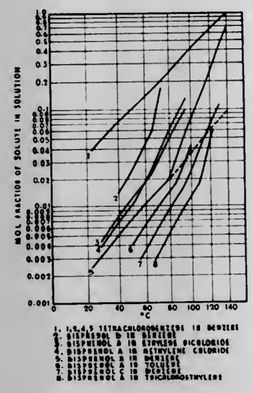
U.S. Cl. 260—617 F **6 Claims**

The compounds 2-methylene-3-exo(trans-4'-methyl-5'-hydroxypent-3'-enyl)bicyclo[2.2.1]heptane, 2-methylene-3-exo-(cis-4'-methyl-5'-hydroxypent-3'-enyl)bicyclo[2.2.1] heptane and 2-methylene-3-exo(4'-methyl-5'-hydroxypentyl)bicyclo[2.2.1]-heptane, all of which are useful as perfumes, and processes for their preparation are disclosed.

3,673,262
CRYSTALLIZATION OF DIPHENYLOL ALKANES

Walter H. Prahl, Karlsruhe, Germany, and Sol J. Lederman, Kenmore, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 177,078, March 2, 1962, abandoned, and a continuation-in-part of Ser. No. 569,541, May 31, 1966, abandoned. This application Dec. 20, 1968, Ser. No. 785,619
Int. Cl. C07c *37/22*
U.S. Cl. 260—619 A 28 Claims



An unexpected marked increase in the solubility of a gem-diphenylol alkane at a temperature above near the atmospheric boiling point of a solvent selected from the group consisting of benzene, toluene, methylene chloride, ethylene dichloride, and trichloroethylene, enables a process for purifying the gem-diphenylol alkane by dissolving it in the solvent at a temperature above the atmospheric boiling point and at a pressure above the vapor pressure of the resultant material, cooling the resultant material, and recovering the resulting crystals of gem-diphenylol alkane therefrom.

3,673,263
DIHYDRO-β-SANTALOL AND PROCESS FOR PREPARING DIHYDRO-β-SANTALOL FROM 3-ENDO-METHYL-3-EXO(4'-METHYL-5'-HYDROXYPENTYL) NORCAMPHOR

Wayne I. Fanta, and William F. Erman, both of Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed March 29, 1968, Ser. No. 717,458
Int. Cl. C07c *35/22*; C11d *3/50*
U.S. Cl. 260—631.5 7 Claims

The novel compound, dihydro-β-santalol, and a process for preparing dihydro-β-santalol from 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor comprising the steps of (1) reacting 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor with an organometallic compound, (2) hydrolyzing the reaction product of Step 1, and (3) selectively dehydrating the hydrolyzed reaction product of Step 2 with a compound selected from the group consisting of Lewis acids, oxalic acid, p-toluenesulfonic acid, sulfuric acid, hydrochloric acid, and hydrobromic acid to obtain dihydro-β-santalol.

3,673,264
METHOD OF PREPARING OPTICALLY ACTIVE PROPYLENE CHLOROHYDRINS AND PROPYLENE OXIDES

Stephen Joseph Kuhn, Sarnia, Ontario, Canada, assignor to The Dow Chemical Company, Midland, Mich.

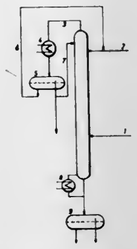
Filed May 21, 1968, Ser. No. 730,929
Int. Cl. C07c *31/34*
U.S. Cl. 260—633 6 Claims

Optically active chlorohydrins are prepared by the action of dichloromethyl methyl ether on an optically active propylene glycol in the presence of a metal halide catalyst. Further treatment of said chlorohydrins with a strong base yields a substantially pure optically active propylene oxide. Said optically active propylene oxides have the same utilities as racemic propylene oxide which may be used as a monomer and chemical intermediate, and additionally, the polypropylene oxide produced from an optically active propylene oxide monomer is a solid, crystalline, optically active polymer. Other utilities for an optically pure sample of a chlorohydrin or propylene oxide are obvious to one skilled in the art.

3,673,265
ISOPRENE RECOVERY

Wolfgang Swodenk, Odenthal-Globusch; Wulf Schwerdtel, Cologne; Paul Lossacker, Leichlingen, and Bruno Engelhard, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 23, 1970, Ser. No. 57,596
Claims priority, application Germany, Aug. 6, 1969, P 19 39 896.0
Int. Cl. C07r *7/08*
U.S. Cl. 260—681 6 Claims



A crude hydrocarbon mixture containing isoprene and isobutene in addition to formaldehyde monomer and polymers, such as is obtained by cracking 4,4-dimethyl-1,3-dioxane, is subjected to distillation in a column which is supplied near its head with liquid water, fouling of the column thereby being reduced and the distillate being obtained in higher purity.

3,673,266
PROCESS FOR PREPARING DIHYDRO-β-SANTALOL FROM 3-ENDO-METHYL-3-EXO(4'-METHYL-5'-HYDROXYPENTYL)NORCAMPHOR

Wayne I. Fanta, Colerain Township, Hamilton County, and William F. Erman, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter and Gamble Company, Cincinnati, Ohio

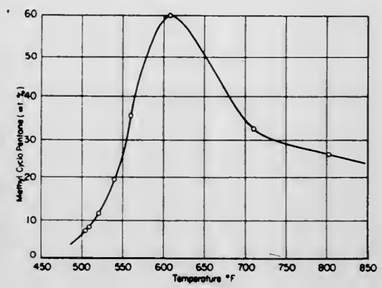
Filed Aug. 20, 1968, Ser. No. 753,897
Int. Cl. C07c *35/22*; C11d *3/50*
U.S. Cl. 260—631.5 12 Claims

A process for preparing dihydro-β-santalol from 3-endo-methyl-3-exo(4'-methyl-5'-hydroxpentyl)norcamphor comprising the steps of (1) reacting 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl)norcamphor with an organometallic compound and, subsequently, hydrolyzing the reaction product with water to obtain a diol: (2) esterifying the primary alcohol of the diol reaction product of Step (1) to obtain a hydroxy ester; (3) dehydrating the hydroxy ester of Step (2) to obtain the ester of dihydro-β-santalol; and (4) saponifying the ester of di-hydro-β-santalol of Step (3) to obtain dihydro-β-santalol is disclosed. Dihydro-β-santalol is useful as a perfume component.

3,673,267
ISOMERIZATION OF CYCLOHEXANE IN THE PRESENCE OF A MORDENITE CATALYST

Nai Yuen Chen, Hopewell Township, Mercer County, and Fritz A. Smith, Haddonfield, both of N.J., assignors to Mobil Oil Corporation

Continuation-in-part of Ser. No. 765,031, Oct. 4, 1968, Pat. No. 3,551,353. This application Oct. 19, 1970, Ser. No. 81,984
Int. Cl. C07c *13/08*
U.S. Cl. 260—666 P 3 Claims



Paraffinic hydrocarbons are isomerized under isomerizing conditions and in the presence of hydrogen with a catalyst of hydrogen mordenite having a silica to alumina mol ratio between about 20:1 and about 60:1, having associated therewith a metal selected from the group consisting of Group IB, Group VIB and Group VIII.

3,673,268
HEXACYCLOTETRACDECANES

Paul Von R. Schleyer, Princeton, N.J., assignor to Union Carbide Corporation

Continuation of Ser. No. 882,787, Dec. 22, 1969, abandoned, which is a continuation of Ser. No. 809,454, Feb. 27, 1969, abandoned, which is a continuation of Ser. No. 409,545, Nov. 6, 1964, abandoned. This application Dec. 15, 1970, Ser. No. 98,438
Int. Cl. C07c *13/28*
U.S. Cl. 260—666 PY 7 Claims

A class of hexacyclotetradecanes which are useful in the preparation of epoxy resins, paints, and varnishes, is prepared by the catalytic isomerization at temperatures of from about 25° to about 250° C. of polycyclic saturated hydrocarbons containing at least 14 carbon atoms and five fused ring systems of from three to eight carbon atoms per ring.

3,673,269
CHLORINATIVE DEHYDROGENATION OF HYDROCARBONS

Delmar Frederick Lohr, Jr., Bedford Heights; Grant Crane, and Edward L. Kay, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 883,259, Dec. 8, 1969, abandoned. This application Sept. 16, 1970, Ser. No. 73,258
Int. Cl. C07c *11/02*
U.S. Cl. 260—677 XA 6 Claims

Aliphatic hydrocarbons of from four to six carbon atoms are dehydrogenated by passing the hydrocarbons and chlorine through a reaction zone containing a catalyst of calcium-nickel phosphate, promoted with a minor amount of chromia, at a temperature of from 450° to 675° C.

3,673,270
HYDROGENATION OF 1,3,7-OCTATRIENE TO 1,6-OCTADIENE AND 1,5-OCTADIENE WITH CERTAIN CHROMIUM CARBONYL CATALYSTS

Lawrence Wayne Gosser, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

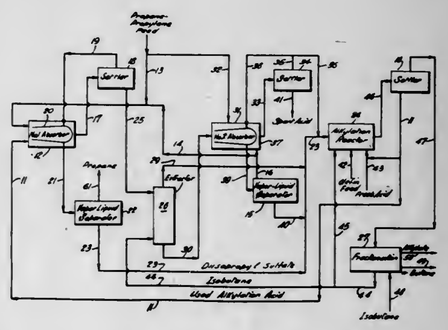
Filed Dec. 11, 1970, Ser. No. 97,315
Int. Cl. C07c *5/16*, *11/12*
U.S. Cl. 260—680 R 10 Claims

1,3,7-Octatriene, which can be made by the dimerization of butadiene, can be selectively hydrogenated to 1,5-octadiene and 1,6-octadiene in the presence of a chromium carbonyl catalyst such as chromium hexacarbonyl, pentacarbonyl(phosphine) chromium and tricarbonyl(arene)chromium complexes. Isomer distribution in the product can be modified by the presence of carbon monoxide. The diene products are useful comonomers for addition copolymers such as ethylene propylene/diene elastomeric copolymers, the diene-derived units forming crosslinking sites for any of the elastomers with conventional sulfur curing systems.

3,673,271
ALKYLATION ACID RECOVERY PROCESS WITH ELIMINATION OF INERT HYDROCARBONS

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 740,916, June 28, 1968, abandoned, which is a continuation of Ser. Nos. 642,739, June 1, 1967, Pat. No. 3,564,073, and Ser. No. 692,623, Dec. 1, 1967, abandoned, and Ser. No. 704,934, April 4, 1968, abandoned. This application Dec. 30, 1970, Ser. No. 102,689
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.62 6 Claims



Process for recovering used sulfuric acid alkylation catalyst and eliminating normal paraffin hydrocarbons from olefin feed stocks for alkylation. Used sulfuric acid catalyst from an

alkylation unit is reacted in a first absorber with a first portion of olefin feed employing a stoichiometric excess of acid for substantially complete conversion of olefin to alkyl sulfate. Unreacted paraffin hydrocarbons are separated from the resulting reaction mixture and removed. The acid phase from the first absorber is extracted with isoparaffin hydrocarbon being alkylated and the raffinate acid therefrom is sent to a second absorber wherein the raffinate acid is reacted with a second portion of olefin feed employing a stoichiometric excess of olefin for substantially complete conversion of the free acid and alkyl acid sulfates to dialkyl sulfates. The dialkyl sulfates are then separated and passed to the alkylation unit. Unreacted olefinic hydrocarbons are separated from the reaction mixture and passed to either the first or second absorber.

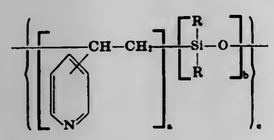
3,673,272

BLOCK COPOLYMERS OF SILICONES WITH VINYL PYRIDINE

John W. Dean, Averill Park, N.Y., assignor to General Electric Company

Filed April 6, 1970, Ser. No. 26,081
Int. Cl. C08g 47/10; C08f 33/08
U.S. Cl. 260—827 5 Claims

Block copolymers of silicones with vinyl pyridine having the formula:



wherein *a* is at least 25, *b* is at least 10, *c* is 1 or more, and R is selected from the class consisting of methyl and phenyl. The materials are useful for the formation of permselective membranes and allow the solubilization of silicones in a polar solvent.

3,673,273

PLASTIC OF POLYAMIDE AND EPOXY RESIN

Karl Schmitt, Herne; Fritz Gude, Wanne-Eickel, and Siegfried Brandt, Herne, all of Germany, assignors to Scholven-Chemie Aktiengesellschaft

Filed July 3, 1968, Ser. No. 742,175
Claims priority, application Germany, July 6, 1967, SCH 40972
Int. Cl. C08g 45/12
U.S. Cl. 260—830 P 9 Claims

Process of producing plastics by reacting polyamides with epoxy resins, characterized by the fact that the diamine used to form the polyamide employed consists of 20 – 100 percent of 1-amino-3-aminomethyl-3,5,5-trimethyl cyclohexane and said polyamide constitutes 10 – 99.8 percent of the mixture. The products can be shaped articles.

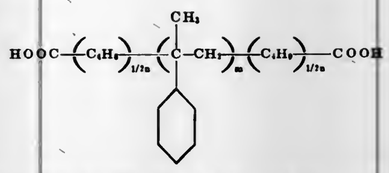
3,673,274

POLYMERIC ADHESIVE CONTAINING A POLYEPOXIDE, A CARBOXY TERMINATED POLYBUTADIENE AND A BIS-2-OXAZOLINE

Donald A. Tomalia, and William K. Glenner, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 29, 1971, Ser. No. 129,253
Int. Cl. C08g 45/04
U.S. Cl. 260—836 3 Claims

Polymeric adhesive compositions comprising essentially stoichiometric amounts of (1) a poly 1,2-epoxyalkyl compound having an average of more than one 1,2-epoxyaliphatic group per molecule, (2) a bis-2-oxazoline or bis-2-oxazine and (3) a carboxyl terminated polybutadiene of the formula



where *n* has an average value of from 2 to about 150, *m* has a value from 3 to 6 and is principally 4.

3,673,275

ACRYLIC POLYMERS CONTAINING EPOXY RADICALS

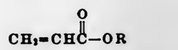
John A. Simms, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 5, 1970, Ser. No. 16,948
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 10 Claims

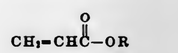
A polymer containing epoxy radicals, useful for toughening epoxy resins, produced by admixing:

A. at least one acrylic polymer selected from the group consisting of

homopolymers and copolymers of monomers having the formula



wherein R = alkyl of two through eight carbon atoms and copolymers formed from up to about 30 percent by weight, based on the total weight of the copolymer, of methyl methacrylate and monomers having the formula



wherein R = alkyl of four through eight carbon atoms; said acrylic polymer characterized by

1. having an average of more than one radical per molecule, said radical selected from the group consisting of



wherein R = H or lower alkyl and wherein at least one of the above radicals is located on a terminal position on the acrylic polymer molecule;

2. having a number average molecular weight of above about 2,000;
3. a glass transition point below about −25° C.;
4. a solubility parameter between 8 and 10.5; and

B. at least one epoxy resin characterized by having an average of at least 1.8 epoxy radicals per molecule,

at a temperature and for a time sufficient to produce said polymer containing epoxy radicals.

3,673,276

FRICTION ELEMENTS

Emil C. Keller, Grosse Pointe, and Raymond E. Spokes, Ann Arbor, both of Mich., assignors to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 672,326, Oct. 2, 1967, abandoned. This application Feb. 12, 1970, Ser. No. 10,801
Int. Cl. C08g 51/10, 37/18, 37/20
U.S. Cl. 260—38 3 Claims

A friction element comprising fillers in an organic binder is

prepared from a binder comprising a thermosetting phenol-formaldehyde resin, a polymer of cashew nut shell liquid, and a Buna-N rubber. The rubber is to have an acrylonitrile content exceeding a specified limit measured in terms of nitrogen content, namely, upward of 9.8 percent nitrogen.

3,673,277

THERMOSETTING RESIN OF POLYAMIDE AND COPOLYMER OF POLYCARBOXYLIC ACID AND AN OLEFIN

Karl Schmitt, Herne; Fritz Guda, Wanne-Eickel, and Siegfried Brandt, Herne, all of Germany, assignors to Scholven-Chemie Aktiengesellschaft, Gelsenkirchen-Buer, Germany

Filed June 3, 1969, Ser. No. 830,115
Claims priority, application Germany, June 5, 1968, P 17 69 515.7
Int. Cl. C08g 41/04
U.S. Cl. 260—857 UN 21 Claims

Thermosetting resin composition comprising:

a. as a first component, polyamide which is substantially non-crystalline and has an average molecular weight of less than 5,000,
b. as a second component, a copolymer of ethylenically unsaturated dicarboxylic acid, anhydride, partial ester, or partial amide thereof, mixture of two or more of the free acid, anhydride, partial ester and partial amide, and an olefin or ethylenically unsaturated ether or ester, or a mixture of two or more of said olefin, ether, or ester, the carboxyl group content of copolymer being 25–70 mole percent, the average molecular weight of the copolymer being less than about 5,000,
c. the weight percent of polyamide being 10–99 percent based on the polyamide plus copolymer.

Thermoset articles produced from the resin can be transparent. The thermosetting resin, thermoset articles, the thermoset resin and the process of producing the thermoset resin are claimed.

3,673,278

FLUORINATED POLYOLEFIN MODIFIED FLAME RETARDANT POLYCARBONATE COMPOSITION

Charles Bialous, Mt. Vernon, Ind., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,823
Int. Cl. C08g 39/10
U.S. Cl. 260—873 9 Claims

A polycarbonate composition consisting of a polycarbonate and a fluorinated polyolefin. The polycarbonate may be either a homopolymer of a halogen-substituted dihydric phenol or a copolymer of an unsubstituted dihydric phenol and a halogen-substituted dihydric phenol or a mixture of the above homopolymer and copolymer, or a mixture of the homopolymer and copolymer with a homopolymer of an unsubstituted dihydric phenol. The fluorinated polyolefin is present in an amount of 0.1–3.0 weight percent and is of the type which does not form fibrils when subjected to a mechanical shearing action.

3,673,279

THERMOPLASTIC RESIN HAVING HIGH IMPACT STRENGTH

Akira Takahashi; Hiroo Kojima; Masao Ogawa, all of Tokyo; Hiroshi Osuka, Kanagawa-ken, and Shoichi Kobayashi, Tokyo, all of Japan, assignors to Showa Denka Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 339,899, Jan. 24, 1964. This application Nov. 22, 1968, Ser. No. 784,517
Int. Cl. C08f 29/24, 19/04
U.S. Cl. 260—876 R 2 Claims

A thermoplastic resin having high impact strength and a process for producing such thermoplastic resin, the thermoplastic resin being obtained by polymerizing a homogeneous mixture comprising, (a) chlorinated polyethylene; (b) acrilonitrile; and (c) styrene. Also, a thermoplastic resin composition having a high impact strength comprising the thermoplastic resin set forth above in admixture with a polyvinyl chloride resin and optionally a minor amount of polymethylmethacrylate.

3,673,280

ELASTOMERIC MATERIALS AND PROCESS THEREFOR

Robert G. Minton, Levittown, and Sidney Melamed, Elkins Park, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 372,476, June 4, 1964, abandoned. This application June 14, 1967, Ser. No. 655,707
Int. Cl. C08f 15/00
U.S. Cl. 260—878 R 23 Claims

Elastomeric materials and methods of producing them comprising:

A. About 50–90 percent by weight of a base elastomeric composition as a "backbone" or main component formed by copolymerizing a mixture comprising

1. about 75–99.9 percent by weight of the base composition of at least one monomer polymerizable to give a rubbery polymer and selected from the group consisting of alkyl (C_2–C_8)acrylates, and mixtures thereof with each other and with up to an equal weight amount of ethylene, propylene, or isobutylene; and
2. at least about 0.1 percent by weight of the base composition of at least one ethylenically unsaturated monomer copolymerizable with (A)(1) and containing at least one radical effective to crosslink said base composition by a reaction which is activated separately from the polymerization reaction; and

B. About 50–10 percent by weight of a reinforcing material for the base composition and dispersed throughout the base composition consisting of a polymer of

1. at least one halogen monomer selected from the group consisting of vinylidene chloride, vinylidene fluoride, vinylidene fluorochloride, vinyl chloride and vinyl fluoride; and
2. up to about 6 percent by weight of the mixture of at least one α,β-monoethylenically unsaturated monomer copolymerizable with (B)(1).

The backbone is crosslinked by virtue of the reaction of the radicals in monomer (A)(2) to make the backbone solvent insoluble. The backbone may optionally contain a diluent and/or a hardener, the latter being a monomer effective to raise the glass transition temperature of the copolymer. Preferably, the elastomers are spun into fibers or extruded into films.

3,673,281

CATALYTIC HYDROGENATION OF POLYMERS CONTAINING DOUBLE BONDS

Klaus Bronstert, Carlsberg; Volker Ladenberger, and Gerhard Fahrbach, both of Schwetzingen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 29, 1971, Ser. No. 111,137
Claims priority, application Germany, March 20, 1970, P 19 13 263.2
Int. Cl. C08d 5/00, 5/02; C08f 27/24
U.S. Cl. 260—880 B 2 Claims

A process for the catalytic hydrogenation of polymers containing double bonds by the action of hydrogen on a solution of the polymer in an inert organic solvent in the presence of a catalyst complex comprising:

A. a compound of iron, cobalt or nickel,
B. an organo-aluminum compound, and
C. a hexa-alkylphosphoric acid triamide of the general formula $OP(NR_2)_3$

in which R stands for alkyl of from one to four carbon atoms, the catalyst components A and B being used in a molar ratio of

from 1 : 40 to 1 : 1 and the components A and C in a molar ratio of from 1 : 0.5 to 1 : 100.

3,673,282
CORE-SHELL VINYL HALIDE POLYMERS HAVING A LONG-CHAIN VINYL ETHER CONTAINING SHELL

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

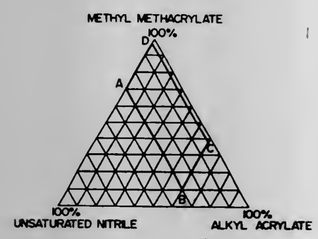
Continuation-in-part of Ser. No. 669,386, Sept. 21, 1967, abandoned. This application May 15, 1970, Ser. No. 37,880
Int. Cl. C08f 15/06, 15/26
U.S. Cl. 260—884 6 Claims

There is disclosed a process for the preparation of copolymers of a vinyl halide and a long-chain aliphatic vinyl monomer. In accordance with the process, an aqueous dispersion is formed of a preformed vinyl halide polymer, a vinyl halide monomer and a long-chain aliphatic ether monomer capable of copolymerizing with the vinyl halide monomer. Copolymerization of said monomers in the presence of the aqueous dispersion of the preformed polymer leads to a polymeric particle whose shell contains a major proportion of the polymeric long-chain aliphatic ether monomer and whose core is essentially devoid of this monomer. This preferential concentration of a lubricating monomer on the outer shell of the particle leads to greatly improved flow with only a minor loss in glass temperature.

3,673,283
VINYL CHLORIDE POLYMER BLENDED WITH A NITRILE-METHACRYLATE-ACRYLATE TERPOLYMER

Akira Tanaka, Yokohama; Tsuyoshi Hattori, Tokyo; Hirotomo Anno, and Testuyo Kawahara, both of Kamakura, all of Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed March 23, 1970, Ser. No. 21,927
Int. Cl. C08f 37/18
U.S. Cl. 260—898 4 Claims



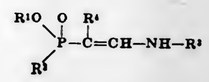
A vinyl chloride polymer composition excelling in processability, transparency and other properties, such composition comprising (I) at least one vinyl chloride polymer selected from the group consisting of vinyl chloride homopolymers and vinyl chloride copolymers, vinyl chloride content of which is at least 70 percent by weight and (II) a copolymer consisting of 2 – 30 percent by weight of an unsaturated nitrile, 10 – 98 percent by weight of methyl methacrylate and 0 – 60 percent by weight of an alkyl acrylate.

3,673,284
2-HYDROCARBYL AMINOVINYL PHOSPHONATES OR PHOSPHINATES

Wataru Nagata, Nishinomiya-shi, and Yoshio Hayase, Sakai-shi, Osaka, both of Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan

Filed Feb. 27, 1969, Ser. No. 803,106
Claims priority, application Japan, March 7, 1968, 43/14901; March 19, 1968, 43/18134; March 19, 1968, 43/18135; March 30, 1968, 43/20805
Int. Cl. C07f 9/38; C07c 45/00
U.S. Cl. 260—944 15 Claims

Reagents particularly useful for the preparation of $\alpha\beta$-unsaturated aldehydes are provided herein, which reagents consist of compounds of the general formula:



wherein R^1 is a lower alkyl group, R^2 is a member selected from the group consisting of R^1O, a lower alkyl group, an aralkyl group of seven to eight carbon atoms and an aryl group of six to seven carbon atoms, R^3 is a member selected from the group consisting of an acyclic or cyclic alkyl group of one to six carbon atoms and an aryl group of six to seven carbon atoms, and R^4 is a member selected from the group consisting of a hydrogen atom, a lower alkyl group, an aralkyl group of seven to eight carbon atoms, and a halogen atom. These compounds react with carbonyl compounds to form unsaturated aldehydes and are especially useful in the synthesis of various pharmaceutical compounds such as various steroids, vitamin A, vitamin D, etc.

3,673,285
PREPARATION OF VINYL ORGANO-PHOSPHOROUS COMPOUNDS

Kingso Chingtsung Lin, Newark, Ohio, assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 12, 1969, Ser. No. 876,139
Int. Cl. C07f 9/28
U.S. Cl. 260—970 8 Claims

Compounds containing a P—H bond add to hydrocarbon acetylenic unsaturation in the presence of metal coordinating catalysts selected from Groups VIA and VIII of the Periodic Table, to produce unsaturated organophosphorus compounds in good yields. The unsaturated organophosphorus compounds find utility as intermediates for polymerization reactions in the production of flame resistant polymers.

3,673,286
METHOD OF MAKING PROPELLANT BODY HAVING VOIDS THROUGHOUT BODY

Robert F. Remaly, Olympia Fields, and William A. Abel, Joliet, both of Ill., assignors to Victor Comptometer Corporation, Chicago, Ill.

Filed Jan. 19, 1970, Ser. No. 4,052
Int. Cl. C06b 21/02
U.S. Cl. 264—3 R 22 Claims

A propellant for caseless ammunition for firearms and processes of manufacture thereof comprising at least partial dissolving of commercial nitrocellulose, wetted with a predetermined amount of a volatile wetting agent such as ethyl alcohol, by a solvent, such as acetone, to form a wet doughy mass of propellant, uniformly mixing a predetermined amount and size of removable filler particles, such as 30 percent coarse and 70 percent fine potassium nitrate particles in the wet doughy mass of propellant, forming a propellant body, and removing the wetting agent, solvent, and potassium nitrate particles to form voids throughout the propellant body.

3,673,287
METHOD OF MAKING CAST-IN-PLACE END-BURNING PROPELLANT GRAINS

Charles E. Thies, Huntsville; Bernard L. Thompson, Toney, and Stanley E. Anderson, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 23, 1968, Ser. No. 786,488
Int. Cl. C06b 21/02
U.S. Cl. 264—3 9 Claims

An improved method of making cast-in-place end-burning propellant grains for rocket motors comprising the steps of applying a release agent to the rocket motor case insulation or rocket motor case, applying a liner/restrictor material over the release agent, casting the propellant directly inside the restrictor, curing the propellant and restrictor material to thereby bond the propellant directly to the restrictor whereby an end-burning propellant grain is formed in the restrictor adjacent the release agent which is adjacent the rocket motor case insulation or the rocket motor case of he rocket motor containing the cast-in-place end-burning propellant grain.

3,673,288
MICROWAVE METHOD FOR TEMPERING TAR-BONDED REFRACTORY BRICKS

Edwin E. Childs, Jr., York, Pa., assignor to Dolomite Brick Corporation of America, York, Pa.

Continuation-in-part of Ser. No. 790,166, Jan. 9, 1969, abandoned. This application Sept. 17, 1970, Ser. No. 73,636
Int. Cl. H05b 9/00; C04b 33/32, 35/02
U.S. Cl. 264—25 12 Claims

Tar-bonded basic refractory articles such as tar-bonded bricks and the like, are heated to tempering temperatures by the application of microwave energy. Tempering may be completely or partially carried out by the microwave heating operation.

3,673,289
QUENCHING INJECTION MOLDED POLYCARBONATE PARTS FOR FATIGUE RESISTANCE

John Gagliani, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,977
Int. Cl. B29c 25/00
U.S. Cl. 264—28 3 Claims

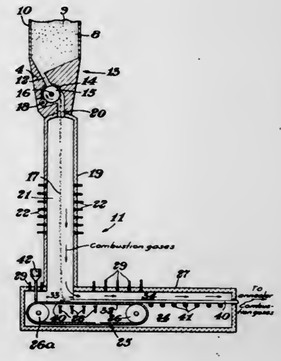
A process for the production of void free enhanced impact fatigue strength polycarbonate parts wherein parts are molded in a heated die and immediately after the molding cycle quenched in a liquid bath such as ice water.

3,673,290
FOAMED CLAY PROCESS

Burton D. Brubaker, and Nathan Waldman, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 26, 1969, Ser. No. 880,013
Int. Cl. C04b 21/00; B28b 1/50
U.S. Cl. 264—43 9 Claims

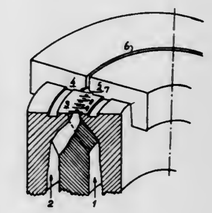
Disclosed is a foamed ceramic material having a relatively small and uniform cell structure. The material is suitable for structural or insulating purposes. A continuous process for producing the foamed ceramic material comprises dropping a bloatable ceramic composition, in particulate form, through a heated zone thereby fusing and bloating the particles, and subsequently collecting the fused particles. To produce the desired cellular structure, the process does not fully bloat the particles during dropping, thereby delaying part of the bloating of the particles until after they have been collected as an agglomerated slab.



3,673,291
METHOD FOR THE PRODUCTION OF SYNTHETIC SHEET MATERIALS

Ole-Bendt Rasmussen, Topstykket 7, Birkerod, Denmark

Filed Dec. 27, 1968, Ser. No. 787,388
Claims priority, application South Africa, Dec. 28, 1967, 67/7792; Great Britain, Dec. 29, 1967, 59,204/67; Denmark, Feb. 27, 1968, 766/68; June 25, 1968, 3028/68; Sept. 11, 1968, 4357/68
Int. Cl. B29d 7/16, 27/00; B29f 3/10
U.S. Cl. 264—46 16 Claims



Method for the production of sheet materials comprising the steps of preparing a fluid lamellar sheet product in which the lamellae are laying in flat sandwich-like arrangement at the surfaces and are perpendicular to the sheet plane in the core zone, setting said sheet product, disrupting the connections between the lamellae in the core zone and separating the sheet product thus formed into two parts in a plane substantially parallel to the sheet plane. In a specific embodiment the fluid sheet product comprises two sets of lamellae, each set forming one surface layer, the lamellae of said two sets being in intermeshing arrangement within the core zone.

3,673,292
PROCESS FOR THE PREPARATION OF GAS PERMEABLE HYDROPHOBIC FOILS FOR ELECTROCHEMICAL CELLS

Klaus Kock, Tubingen-Lustnau, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

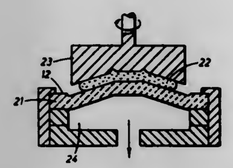
Filed June 11, 1969, Ser. No. 832,501
Claims priority, application Germany, June 12, 1968, P 17 69 595.3
Int. Cl. B29d 27/08; C08f 3/22; H01m 3/02
U.S. Cl. 264—49 8 Claims

Gas permeable hydrophobic foils useful for electrochemical cells prepared by covering a temperature resistant hot plate or mold with a temperature resistant release layer, spraying a suspension or solution of a fluorine containing polymer onto said release layer and sintering the polymer.

3,673,293
MANUFACTURE OF PLASTER OF PARIS MOLD HAVING SPRAYED METAL OXIDE LININGS AND PRODUCT

Ernest Douglas Teague, Welwyn Garden City, England, assignor to Norton Abrasives Limited, Welwyn Garden City, England

Continuation-in-part of Ser. No. 633,129, April 24, 1967, abandoned. This application Feb. 17, 1970, Ser. No. 12,120
Claims priority, application Great Britain, April 29, 1966, 18,986/66
Int. Cl. C04b 39/08; B32b 13/04; B28b 7/36
U.S. Cl. 264—60 9 Claims



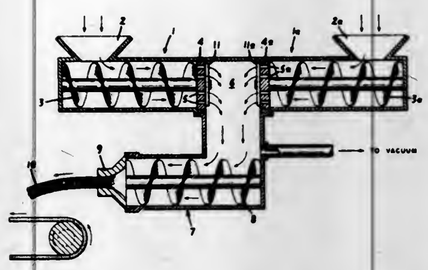
A metal or ceramic form of desired shape and conditioned to permit its later removal from a flame sprayed layer is flame sprayed to form a metal oxide layer of desired thickness having a porosity of 10 percent or more. A plaster of paris slurry is then poured around this layer and allowed to set up at which time the form is removed leaving a plaster of parismold with a flame sprayed metal oxide wear resistant working lining suitable for use in slip casting, etc.

3,673,294
METHOD FOR THE MANUFACTURE OF MARBLEIZED SOAP BARS

Raymond George Matthael, Fair Lawn, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,253
Int. Cl. B29f 3/12
U.S. Cl. 264—75 5 Claims

The manufacture of marbleized toilet bars is accomplished by preparing two or more differently colored batches of soap or detergent particles, the soap or detergent compositions used all having approximately the same viscosity and plasticity. The particles range from three-sixteenths to three inches in diameter and from three-sixteenths to seven inches long. Appropriate proportions of pellets are subsequently charged

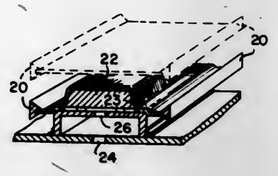


into a vacuum chamber and extruded in the form of a continuous log which is cut and stamped into individual soap bars.

3,673,295
PROCESS FOR SHAPING TEXTILE ARTICLES USING FLUID THERMOFORMING TECHNIQUES

Robert Charles Winchilhofer; Gene Clyde Weedon, both of Richmond, Va., and George Howard Collingwood, West Warwick, R.I., assignors to Allied Chemical Corporation, Broadway, N.Y.

Continuation-in-part of Ser. No. 761,447, Sept. 23, 1968, abandoned. This application Oct. 30, 1970, Ser. No. 85,692
Int. Cl. B29c 17/04, 23/00; D02g 3/04
U.S. Cl. 264—89 6 Claims



Articles are manufactured from textile material composed of filaments prepared from blended fiber-forming polymers having different chemical properties, at least one of the fiber-forming polymers being dispersed as fibrils in a lower melting point polymeric matrix. The article is produced by heating the material to a temperature above the melting point of the matrix-forming polymer but below the melting point of the dispersed fibrils to shrink said article thereby decreasing the porosity thereof and afterwards forming the heated material into a three-dimensional shape using vacuum or other fluid pressure.

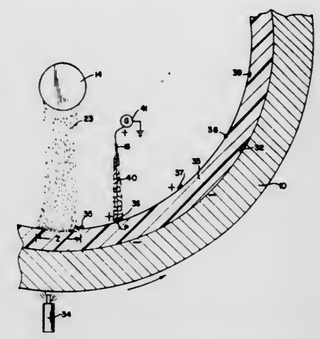
3,673,296
METHOD FOR ELECTROSTATICALLY HOLDING PARTICLES ALONG A MOLD SURFACE

Charles A. Timko, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed May 9, 1969, Ser. No. 826,781
Int. Cl. B29f 5/02
U.S. Cl. 264—24 5 Claims

Particles of plastic material are attracted to a mold surface by impressing an electrostatic charge on the particles subsequent to their deposit, minimizing disturbance of the deposi-

tion stream and sticking of powder in the deposition apparatus. A roll deposition unit and corona bar are employed in association with a rotating mold to form a cylindrical member from powdered plastic material. The unit deposits powder in a strip zone lengthwise of the mold. The corona bar is posi-

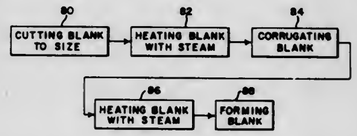


tioned externally of the roll case, parallel to and coextensive with the roll and closest to the cylindrical mold wall in a plane outside the stream of powder flowing from the roll to the mold wall. When the bar is charged and the mold is grounded, the resultant discharge is largely concentrated outside the stream, minimizing electrostatic effect on particles in the stream.

3,673,297
METHODS OF MANUFACTURING ELECTRICAL INSULATING STRUCTURES

Harold R. Moore, R. R. 6 Forest Hills, Muncie, Ind., and Heinz G. Fischer, 12505 W. Centralane, Elm Grove, Wis.

Continuation of Ser. No. 744,210, July 11, 1968, abandoned. This application Oct. 8, 1970, Ser. No. 79,284
Int. Cl. B29b 3/00; B29j 5/06
U.S. Cl. 264—138 2 Claims



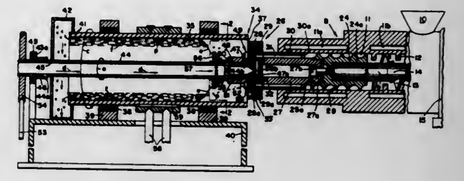
Methods of manufacturing insulating structures for electrical inductive apparatus, such as angular, channel-shaped structures for coil edge insulation. The methods include the step of subjecting the insulator blank to steam for a predetermined period of time, which step is promptly followed by forming the blank into the desired configuration in a heated press.

3,673,298
METHOD FOR COOLING PELLETS SEVERED FROM EXTRUDED PLASTIC STRANDS

Richard W. Miller, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.

Division of Ser. No. 743,783, July 10, 1968, Pat. No. 3,608,142. This application June 11, 1970, Ser. No. 57,874
Int. Cl. B01j 2/20
U.S. Cl. 264—142 6 Claims

A method of cooling pellets severed from extruded plastic strands, the cooling being effected by collecting the pellets in a rotating housing to which cooling liquid is supplied in a manner to form a centrifugally maintained pellet collecting,

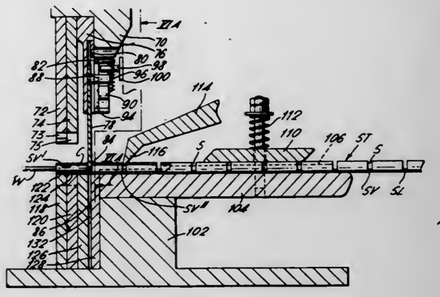


coolant annulus moving as a stream in a spiral path axially away from a die through which the strands are extruded.

3,673,299
METHOD OF APPLYING SLEEVES TO ELECTRICAL CONNECTORS

Ray Mervyn Robins, Auburn, New South Wales, Australia, assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 680,687, Nov. 6, 1967, Pat. No. 3,506,411. This application Feb. 27, 1970, Ser. No. 15,017
Int. Cl. B29d 7/16
U.S. Cl. 264—159 1 Claim



Electrical connectors are post insulated by cold-forming thereon dielectric sleeves which are connected together in end-to-end strip form as a series of sleeves and this strip of sleeves is fed to a crimping station so that the leading sleeve of the strip is cold-formed over an electrical connector at the crimping station. The strip of sleeves may be made by cutting transverse slots in a plastic tube such as, for example, a tube of polyvinyl chloride.

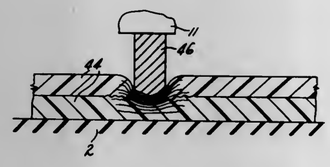
3,673,300
METHOD FOR ROUNDING WELDED EDGE SEAMS

Anton Muhlbach, Frankfurt/Main-Sossenheim, and Gerhard Lauckhardt, Frankfurt Main-Rodelheim, both of Germany, assignors to USM Corporation, Boston, Mass.

Filed June 23, 1970, Ser. No. 49,111
Claims priority, application Germany, June 23, 1969, P 19 31 827.5
Int. Cl. B29c 17/14, 27/02
U.S. Cl. 264—160 2 Claims

A method and apparatus for producing rounded edges on cuts made through welded seams in layers of material by a die placed on the material in which the die is first pressed into but

not through the seams while the weld is soft to roundingly deform the material adjacent the die. After solidification of



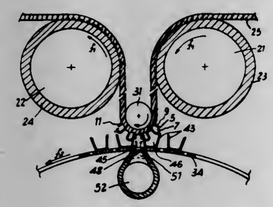
the weld, further die pressure cuts the material to form a welded edge seam having rounded edges.

3,673,301

FLEXIBLE BANDS FITTED WITH HOOKS FOR THE FABRICATION OF SEPARABLE FASTENING DEVICES

Patrick Billarant, 20, Avenue des Folles Chaillou, Nantes, Loire-Atlantique, France

Filed Dec. 2, 1969, Ser. No. 881,533
Claims priority, application France, Dec. 3, 1968, 68176343
Int. Cl. B29c *17/14, 23/00*
U.S. Cl. 264—163 **3 Claims**



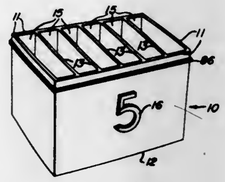
A flexible band having hooks formed of threads of thermoplastic material for engagement with a similar flexible band having elements adapted to cooperate with said hooks so as to constitute a separable fastening device, in which the hooks are obtained by cutting one of the two loop arms of thermoplastic threads, the cutting operation being carried out at a predetermined distance from the crest of each loop. A terminal enlargement is essentially formed on at least one of the two thread extremities which result from the cutting operation.

3,673,302

METHOD FOR FABRICATING BATTERY CASES

Vincent Michael Halsall, Bayside, Wis., and Peter Anthony Cosme, Lockport, Ill., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 608,104, Jan. 9, 1967, Pat. No. 3,509,603.
This application Aug. 19, 1968, Ser. No. 798,205
Int. Cl. B29f *1/14*
U.S. Cl. 264—328 **2 Claims**



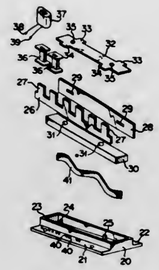
A molding method for injection molding long thin walls of uniform thickness such as the walls of a battery case. The uniform thickness walls are molded between cores. The pressure at the walls is relieved, preferably by withdrawing some of the cores, before the molded part is entirely separated from the mold. Dimensional stability is improved by rigidly supporting the mold cores during the initial stage of plastic injection.

3,673,303

VOLTAGE GENERATING DEVICE FOR CONTROLLING MUSICAL TONE OUTPUT FROM ELECTRONIC MUSICAL INSTRUMENTS

Hiroshi Amano, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Sept. 1, 1970, Ser. No. 68,748
Claims priority, application Japan, Sept. 3, 1969, 44/83514
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **12 Claims**



There is disclosed a voltage generating device of compact structure for controlling musical tone output signals from an electronic keyboard musical instrument to a level corresponding to the magnitude of a key depressing force or the velocity with which the key is depressed. Below the keyboard is positioned a non-magnetic case which supports two parallel magnetic cores and a magnet disposed therebetween which are common to a plurality of keys, and on at least one of the two magnetic cores there are fitted a plurality of coils in a manner that the coils correspond to the respective keys. There is mounted on the underside of each key a magnetic material constituting a magnetic circuit along with the two magnetic cores and the magnet received in the case. On depressing a key, the magnetic material mounted on the key is drawn near the two magnetic cores to generate in the coil a voltage having a level corresponding to the velocity with which the key is depressed, the voltage being used in controlling the corresponding musical tone output signal.

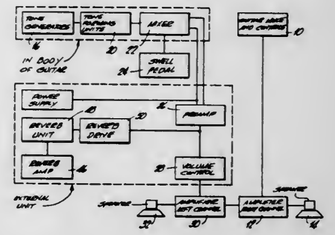
3,673,304

ELECTRONIC GUITAR HAVING PLURAL OUTPUT CHANNELS, ONE OF WHICH SIMULATES AN ORGAN

Attila Dudas, New York, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,236
Int. Cl. G10h *3/00, 5/00*
U.S. Cl. 84—1.01 **4 Claims**

An electric guitar is coupled through one channel of a stereo amplifier to a corresponding speaker in conventional manner while separate means responsive to string movements



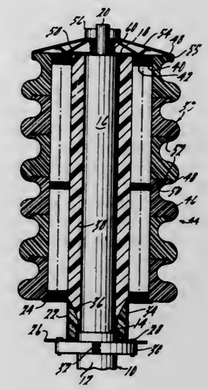
and pedal controls produce an organ like sound amplified in the other channel and reproduced in another speaker.

3,673,305

CAPACITIVELY GRADED MODULAR POTHEAD FOR H-V CABLE

Matthew S. Mashikian, Huntington Woods; James K. Kelley, Carleton, and William C. McMurray, St. Clair Shore, all of Mich., assignors to The Detroit Edison Company, Detroit, Mich.

Filed Nov. 4, 1970, Ser. No. 86,709
Int. Cl. H02g *15/02, 15/22*
U.S. Cl. 174—12 BH **24 Claims**

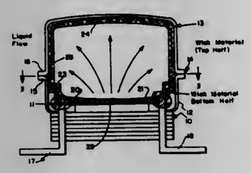


Improved electrical insulating devices, preferably modular, including series connected capacitances provided by flat contacting alternated insulating and conducting elements. The insulating material between conducting elements is a resin including ceramic filler providing desirable variations in dielectric constant. The end capacitance forming elements of each module are of metal and are provided with fastening means for interconnecting the modules.

3,673,306
FLUID HEAT TRANSFER METHOD AND APPARATUS FOR SEMI-CONDUCTING DEVICES

Milton E. Kirkpatrick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 764,468, Oct. 2, 1968. This application Nov. 2, 1970, Ser. No. 89,091
Int. Cl. H01k 1/12
U.S. Cl. 174—15 R 7 Claims



There is disclosed the use of a heat pipe type thermal conductive path within a metallic housing such as a transistor can for a highly efficient cooling of high power semi-conductor devices which normally require large heat dissipation. An electrically non-conductive wick structure is provided which is formed, for example, from high purity silica glass cloth in a shape resembling a hollow "marshmallow" and which forms a liner for the entire transistor can. The wick contacts both the active surface of the semi-conductor device in the bottom of the can and the upper walls of the can. Prior to placing the can upo n its mounting base, an appropriate amount of electrically non-conductive, non-polar working fluid such as high purity organic liquid is loaded so that it entirely fills or saturates only the wick like structure. The working fluid held within the wick is thus in immediate contact with the active surface of the semi-conducting device. In operation, the surface of the semi-conductor device serves as the evaporator section of the closed loop heat pipe. As fluid is caused to evaporate from this region, heat transfer and thus cooling of the device is effected. The vapor thus produced is recondensed over regions of the can which are at slightly cooler temperatures than the semiconductor device. The working fluid vapor thus provides an efficient heat transfer path to the entire radiating surface of the can in order to dissipate the thermal energy of concern.

3,673,307
PIPE TYPE CABLES WITH IMPROVED SKID WIRE PROTECTION

George S. Eager, Jr., Upper Montclair, N.J.; David A. Silver, Roslyn, N.Y., and Carlos Katz, Bayonne, N.J., assignors to General Cable Corporation, New York, N.Y.

Filed April 21, 1971, Ser. No. 135,928
Int. Cl. H01b 9/06
U.S. Cl. 174—25 R 15 Claims

This specification discloses an electric cable with a skid wire that has a lower co-efficient of friction than metal skid wires and is made of synthetic material having electric resistance that is too high for the skid wire to maintain electric continuity between an electrostatic shield of the cable and a metal surface in a pipe or other conduit in which the cable is installed. Metal or other good electrical conducting means extends through the skid wire with exposed surfaces of the metal in position to maintain the desired electrical continuity between the electrostatic shield and the conduit. The skid wire has a perforated metal center strip with plastic extruded along both sides of the strip and locked together in a one piece extrusion

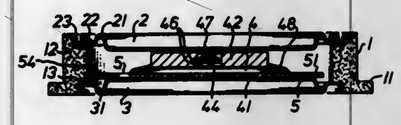


by portions of the plastic extending through the perforations in the strip.

3,673,308
SILICON WAFER CELL

Heinz Juchmann, Belecke, and Peter Lauterbach, Kallenkardt, both of Germany, assignors to Licentia Patent-Verwaltings G.m.b.H., Frankfurt am Main, Germany

Filed April 28, 1971, Ser. No. 138,030
Claims priority, application Germany, April 30, 1970, P 20 21 158.9
Int. Cl. H02g 5/00
U.S. Cl. 174—52 S 2 Claims



In a ceramic housing, a silicon wafer is held centered with respect to the housing by a flat tensioning ring having three protrusions on its inner periphery and three protrusions on its outer periphery, the three protrusions on the outer periphery being in contact with the inner wall of the housing, the three protrusions on the inner periphery being in contact with the outer edge surface of a carrier disc on which the wafer is securely mounted.

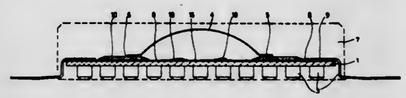
3,673,309
INTEGRATED SEMICONDUCTOR CIRCUIT PACKAGE AND METHOD

Claudio Dalmasso, Turin, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Nov. 3, 1969, Ser. No. 873,499
Claims priority, application Italy, Nov. 6, 1968, 53759 A/68
Int. Cl. H05k 5/02
U.S. Cl. 174—52 PE 20 Claims

An integrated circuit package features a hermetically sealed cap bonded to a substrate by a printed glass frame. Printed circuit metallization extends under the cap and frame from the central area of the substrate surface to the edge of the surface. Connecting lugs are bonded to this metallization at the extremities of the substrate surface. At the central area of the substrate surface, the means for connecting the inner portion

of the metallization to the integrated circuit terminals traverses and insulated support member. The printed metallization

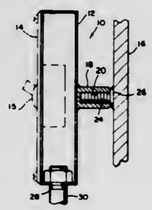


paths can cross each other and are insulated by printed insulation at the crossing points.

3,673,310
ELECTRICAL UTILITY BOX

Robert Louis Welsh, Cherry Hill, N.J., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Dec. 4, 1969, Ser. No. 882,046
Int. Cl. H02g 3/08
U.S. Cl. 174—58 1 Claim

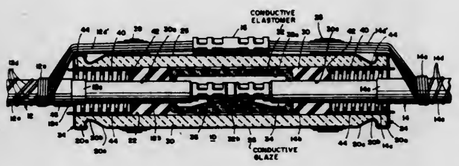


A metallic utility box adapted to be secured to metallic walls. A first end weldable stud is welded to the back of the box and a second end weldable stud is welded by the stud welding technique to the metallic wall at the desired location of the box. Mating thread means on the projecting ends of the first and second studs permit the utility box to be secured in place by threading the studs together. Electrical conduit is secured to the box to prevent the box from rotating and consequently becoming unsecured from the wall.

3,673,311
CORONA FREE COUPLING ASSEMBLY FOR COAXIAL CABLES

Donald O. Misare, Riverside, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Oct. 22, 1969, Ser. No. 868,547
Int. Cl. H02g 15/08
U.S. Cl. 174—73 R 5 Claims

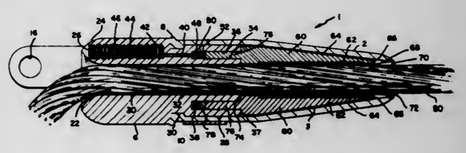


A corona free coupling assembly for connecting high voltage coaxial cables comprising a body of elastomeric insulating material having an elongated bore open at opposite ends for receiving end portions of said cable. A tubular inner shield means is embedded in said body in coaxial alignment in said bore and spaced from opposite ends thereof; a tubular connector sleeve is insertable into the bore of the filler body within the inner shield means for connecting the conductors of said cables in end-to-end relation; integrally formed contact means projecting inwardly of the bore of said inner shield means is provided for making electrical contact between the inner shield means and said connector sleeve when the latter is inserted within the former; conductive outer shield means is provided on the outer surface of an insulating housing receiving the elastomeric filler body for connecting the outer shielding systems of the cables together in coaxial relation with said inner shield means.

3,673,312
INTERNALLY FIRED FEED THRU DEAD END CONNECTOR

William Joseph Vockroth, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 12, 1970, Ser. No. 45,732
Int. Cl. H02g 15/08
U.S. Cl. 174—79 3 Claims

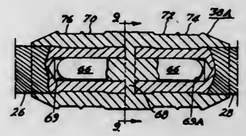


This invention relates to a dead end connector and more particularly to a connector having a housing thru which extends a continuous bore adapted to receive a transmission cable, a chamber containing an explosive charge and a plurality of gripping jaws in circular relation to the bore and operable to be forcibly driven by the explosive charge into a gripping engagement with the transmission cable.

3,673,313
ELECTRICAL JUNCTION FOR HIGH-CURRENT CONDUCTORS AND CONNECTOR AND METHOD SUITABLE FOR MAKING SAME

Wiley J. Pickett, Moorestown, N.J., and Bynum E. Smith, Richmond, Va., assignors to Utility Industries Inc., Westmont, N.J., by said Bynum E. Smith

Filed April 23, 1970, Ser. No. 31,226
Int. Cl. H02g 15/08
U.S. Cl. 174—90 2 Claims



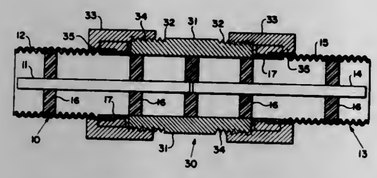
In a junction of the type in which two high-current conductors are bridged by an external sleeve crimped to the exterior of both conductors, additional axially-overlapping connecting elements are employed to provide connection between interior portions of said conductors, the axially-overlapping portions of said connecting elements being held in stable intimate contact with each other by crimping applied to the exterior of said sleeve member. A preferred connector for use in making such a junction comprises a conductive sleeve for receiving the high-current conductors at its opposite ends and a pair of conductive prongs supported axially therein by a conductive support secured conductively to the interior of said sleeve,

said prongs being oppositely directed to fit within corresponding recesses in said high-current conductors, whereby the prongs provide stable electrical connection to said high-current conductors after the exterior sleeve has been crimped.

3,673,314
CABLE CONNECTORS

Detlef Zimmermann; David Campbell, and George De Bortoli, all of Ottawa, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 22, 1971, Ser. No. 117,524
Int. Cl. H02g 15/08
U.S. Cl. 174—88 C 8 Claims

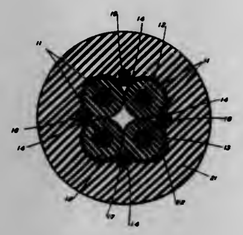


A connection for coaxial cables, which provides reduced return losses and is particularly suitable for cables having corrugated outer conductors. The connection maintains the inner diameter of the outer conductor substantially constant across the joint. A ferrule having an inner sleeve which is expanded to grip the outer conductor between the inner sleeve and an outer sleeve provides good mechanical and electrical connection to the outer conductor. A central tubular member, split into opposed halves, surrounds the joint between the inner conductors and nuts screw on the ends of the tubular member to connect the ferrules to the central tubular member.

3,673,315
SHIELDED CABLE

James A. Lasley, Richmond, Ind., assignor to Belden Corporation, Chicago, Ill.

Continuation of Ser. No. 755,252, Aug. 26, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,511
Int. Cl. H01b 11/10
U.S. Cl. 174—107 5 Claims

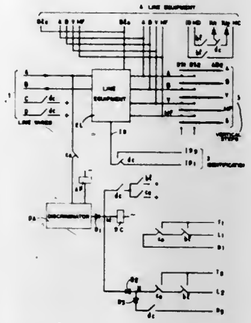


A shielded cable is described including a group of sheathed elongated conductors, a surrounding unitary conductive foil shield formed to follow the outer contour of the group of conductors, a plurality of drain wires extending along the outer surface of the shield in the recesses thereof, and an outer sheath of insulating material surrounding the drain wires and the foil shield.

3,673,316
SWITCHING DEVICE FOR A DOUBLE OPERATION TELEGRAPHY SUBSCRIBER

Claude Rousseau, Joinville-Le-Pont, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunications, Paris, France

Filed Nov. 28, 1969, Ser. No. 880,873
Claims priority, application France, Nov. 28, 1968, 68175811
Int. Cl. H04l 17/16
U.S. Cl. 178—2 R 10 Claims

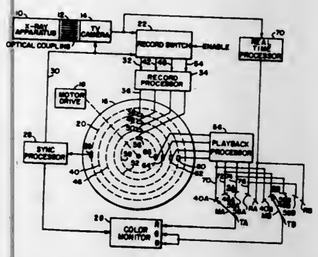


Two-speed routing device for a telegraphic subscriber, enabling the use of the two modulation speeds, one called "normal" and the other called "fast," the fee being different in each case; this device, placed in a link-up exchange, comprises a single line equipment set whose inputs are linked with the input distributor, and a call discriminator element which controls the tripping of a discriminator relay ensuring the changing from one speed of use to another.

3,673,317
COMPARITIVE DISPLAY OF IMAGES IN COLOR

George F. Newell, Pittsburgh, and Paul G. Kennedy, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1970, Ser. No. 102,621
Int. Cl. H04n 9/02, 7/18
U.S. Cl. 178—5.2 R 8 Claims

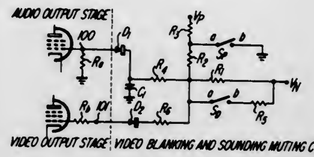


A system for the comparative display of video information wherein first video signals, e.g. corresponding to a first X-ray image, are compared with second video signals, e.g. corresponding to a second X-ray image, are applied to a display, such as a color television monitor, in such fashion that the difference between the first and second images is displayed in color while the common portion thereof are displayed in gray tones.

3,673,318
VIDEO BLANKING AND SOUND MUTING CIRCUIT

Perry Charles Olsen, and Pak Chong Tang, both of Indianapolis, Ind., assignors to RCA Corporation

Filed Feb. 3, 1971, Ser. No. 112,178
Int. Cl. H04n 5/44
U.S. Cl. 178—5.8 R 10 Claims

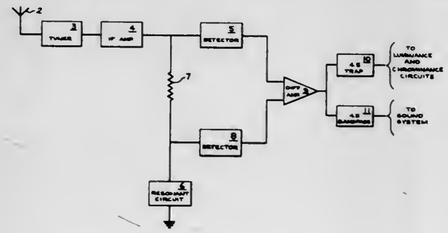


A switching circuit, dependent solely on the value of fixed impedances and supplied direct current voltages, blanks the picture and mutes the sound of a television receiver during its channel selection tuning, either manually or automatically by remote control.

3,673,319
VIDEO COMPENSATION CIRCUIT FOR EMPHASIZED-CARRIER DETECTOR

John G. Humphrey, Chesapeake, Va., assignor to General Electric Company

Filed March 3, 1971, Ser. No. 120,464
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 R 11 Claims



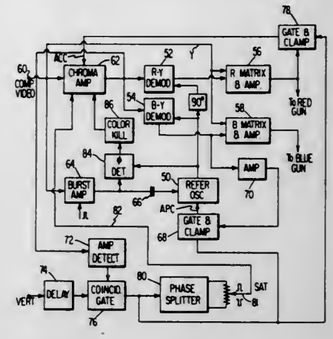
An emphasized-carrier system for a television receiver which allows luminance, chrominance and sound signals to be detected in a common stage. The amplitude of the picture carrier frequency of an IF signal is increased with respect to the other frequencies thereof, and the resulting distorted signal is applied to a first detector device. The incremental change in the IF signal is abstracted and applied to a second detector device. The signals outputted by the two detectors are then subtracted in a differential amplifier to produce an undistorted detected signal.

3,673,320
TELEVISION APPARATUS RESPONSIVE TO A TRANSMITTED COLOR REFERENCE SIGNAL

Peter Swift Carst, Herrliberg/Zurich, and George Schiess, Stallikon, both of Germany, assignors to RCA Corporation

Filed March 8, 1971, Ser. No. 121,842
Claims priority, application Great Britain, March 11, 1970, 11,689/70
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 HE 9 Claims

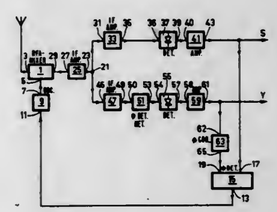
A color reference signal is inserted during the vertical blanking interval of a transmitted television waveform, for utilization by the described apparatus in automatically setting the hue and saturation of the diaplay of an NTSC or PAL receiver. The apparatus responds to the transmitted burst signal to lock the frequency of the sub-carrier oscillator of the receiver and to the transmitted reference signal to adjust the phase of its oscillations.



3,673,321
TELEVISION RECIEVER WITH A PHASE DETECTOR HAVING DUAL PHASE DETERMINING AND CORRECTING NETWORKS

Peter Johannes Hubertus Janssen, Emmasingel Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,335
Claims priority, application Netherlands, April 1, 1969, 6905094
Int. Cl. H04n 5/50
U.S. Cl. 178—5.8 A 7 Claims



An automatic frequency control circuit in a television receiver wherein an intercarrier signal is applied to each of two inputs of a phase detector, which intercarrier signals originates from two intermediate frequency signal paths which differ in that one of them includes a phase-determining network, while a phase correction circuit is incorporated in the signal path to one of the inputs of the phase detector so as to avoid variations at audio frequency in the output signal of the phase detector, which output signal serves as a control signal.

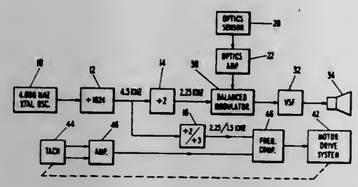
3,673,322
FACSIMILE TRANSMISSION SYSTEM

Larry K. Baxter, Lexington, Mass., assignor to Shintron Company, Inc., Cambridge, Mass.

Filed May 28, 1970, Ser. No. 41,496
Int. Cl. H04n 1/00
U.S. Cl. 178—6 5 Claims

A facsimile transmission system employs a rotating drum at the transmitter upon which the original document is mounted

and a synchronously rotating drum at the receiver having marking means for producing the facsimile. "Video" signals obtained by scanning the original document with a photosensitive device are made to modulate a carrier to convey black and white information by the relative proportions of 0° and



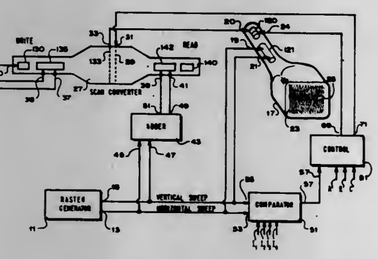
180° phases in the modulated carrier while the shade of black or white is conveyed by the amplitude of the modulated carrier. At the receiver, the modulated carrier is synchronously demodulated to recreate the video signals which are then used to control the marking means so as to produce a facsimile of the original document.

3,673,323

STORAGE DISPLAY SYSTEM

Charles H. Gustafson, Manitou Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 23, 1970, Ser. No. 74,764
Int. Cl. H01j *31/60*
U.S. Cl. 178—6.8 **2 Claims**



A cathode ray tube display is combined with a scan converter tube, a raster generator, a comparator and control circuit to provide a storage display system in which a selected portion of the display can be erased while simultaneously displaying information written on the unselected portion of the display. An adder circuit adds a selected amount of the horizontal sweep to the vertical sweep of the read raster and adds a selected amount of the vertical sweep to the horizontal sweep of the read raster to skew the read raster with respect to the display raster and thereby correct alignment defects in the scan converter tube.

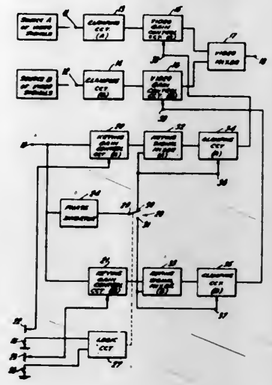
3,673,324

VIDEO MIXING/SPECIAL EFFECTS AMPLIFIERS

Yutaka Ito, Saitama-ken, and Jun Hirate, Tokyo-to, both of Japan, assignors to Tokyo Broadcasting System Inc., Tokyo-to, Japan and Nippon Electric Company Limited, Tokyo-to, Japan

Filed Dec. 22, 1970, Ser. No. 100,557
Claims priority, application Japan, Dec. 23, 1969, 44/104100
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 **8 Claims**

Amplifier apparatus for operating on plural video signals to provide signal mixing, special effects and the like employs parallel video signal processing circuits which supply their output signals to a common video mixer. A keying signal processor is included for developing control voltages for separately varying video gain in the video processing circuits



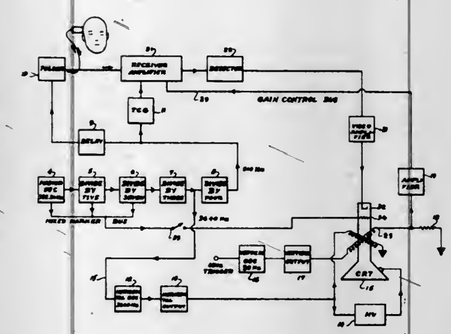
on a time shared basis. The composite arrangement thereby allows independent level control for the multi-channel video information vis-a-vis control signals such as synchronizing signals and/or a color burst.

3,673,325

CATHODE RAY TUBE DISPLAY SYSTEM FOR ULTRASONIC AND RADAR ECHO SIGNALS

Russel L. Upholf, Stamford, Conn., assignor to Hoffrel Instruments Incorporated, Norwalk, Conn.

Filed April 10, 1970, Ser. No. 27,283
Int. Cl. G01s *9/66, 9/08;* **H01j** *29/52;* **G01r** *13/34*
U.S. Cl. 178—7.5 D **6 Claims**



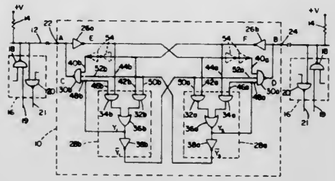
A system for displaying signals, particularly ultrasonic or radar echo signals, on a cathode ray tube, wherein a raster is constructed utilizing vertical and horizontal sweeps of suitable duration, intensity modulation of the electron beam is by application of the echo signals to the grid or cathode and modulation of the amplifier gain by one of the sweep waveforms or a waveform synchronous therewith to display the echo amplitudes on the raster.

3,673,326

COMMUNICATION SYSTEM

Francis F. Lee, 35 Highland Ave., Lexington, Mass.

Filed Aug. 17, 1970, Ser. No. 64,374
Int. Cl. H04l *25/40*
U.S. Cl. 178—71 R **21 Claims**



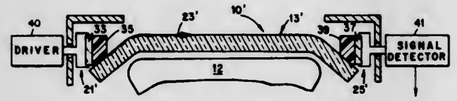
A bilateral repeater for connection in a transmission line arranged to transmit data between two spaced points includes a network having two inputs and two outputs. Each output is connected to a corresponding input at a terminal arranged for connection to the transmission line. The repeater also includes bilateral circuitry responsive to an initiating data signal applied via either of the terminals to an input for transmitting a corresponding data signal via an output to the other of the terminals only as long as the initiating data signal continues to be applied at the first terminal, and the bilateral circuitry includes an inhibiting circuit for preventing transmission of corresponding data signals if initiating data signals are applied at both of the terminals at the same time.

3,673,327

TOUCH ACTUABLE DATA INPUT PANEL ASSEMBLY

Ralph G. Johnson, Los Altos, and David Fryberger, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 2, 1970, Ser. No. 86,011
Int. Cl. H04n *1/00*
U.S. Cl. 178—18 **10 Claims**



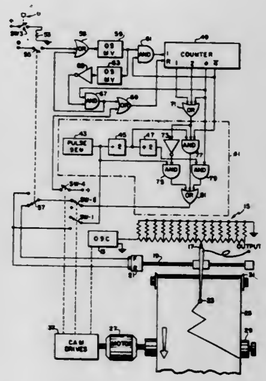
A panel positioned over the face of a cathode-ray tube with transmitters mounted along two adjacent edges of the panel to generate beams, either Rayleigh wave beams or light beams, that propagate through the panel to detectors mounted along opposite panel edges. The beams are directed to intersect in an X-Y matrix pattern. Interruption of intersecting beams by touching the panel at the intersection with a beam interrupting object, such as with a finger, develops discrete output signals at the two detectors that define the intersection. The output signals may be applied to a computer which may also be used to control the CRT to display various successive control panel patterns which have correspondence with the beam matrix intersections and are congruent with the intersections.

3,673,328

RATE OF AMPLITUDE CHANGE CONTROL FOR AUDIOMETERS OF THE VON BEKESY TYPE

Rufus L. Grason, Lincoln, and Joseph Mihaly, Sudbury, both of Mass., assignors to Grason-Stadler Company, Inc., West Concord, Mass.

Filed Feb. 26, 1971, Ser. No. 119,290
Int. Cl. H04r *29/00*
U.S. Cl. 179—1 N **10 Claims**



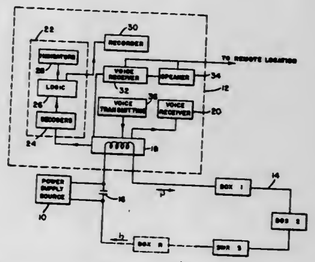
The rate of amplitude change control disclosed herein is adapted for use in an audiometer of the von Bekesy type in which the subject being tested controls the sense or direction of variation in test-tone amplitude, the amplitude level around which the subject hunts at each test-tone frequency being an accurate indication of the threshold of the subject's hearing at that frequency. The control of the present invention causes the rate of change of amplitude to itself vary from a relatively high rate to a relatively low rate as a test sequence progresses. In this way, a substantial amplitude range can be scanned in a short period until the subject's threshold is first reached and then a slower rate enables the final hunting procedure to proceed gradually and therefore relatively accurately.

3,673,329

COMBINED TELEPHONE-TELEGRAPHY SYSTEM

Foster E. Weld, Newton Highlands; Robert W. Lassell, Westwood, and Robert B. McLeod, Clinton, all of Mass., assignors to Gulf & Western Systems Company, New York, N.Y.

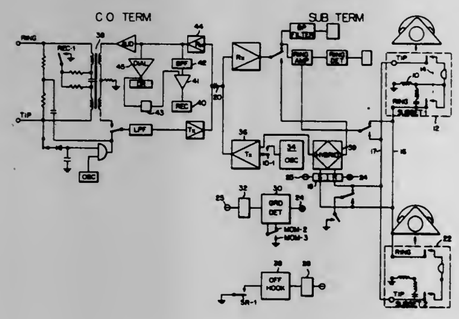
Division of Ser. No. 403,316, Oct. 12, 1964, Pat. No. 3,384,714. This application Feb. 9, 1968, Ser. No. 714,151
Int. Cl. H04m *11/06*
U.S. Cl. 179—3 **6 Claims**



A combined telephone-telegraphy system is disclosed herein and which includes a plurality of local calling boxes and

central station communication equipment connected together in a series circuit. Each local calling box includes telephone equipment for transmitting and receiving voice frequency signals to and from the central station equipment, as well as telegraphy means for transmitting coded box, identifying tone frequency signals to the central station equipment. Each local calling box also includes means for providing electrical power for the local calling box from current flow in the series circuit.

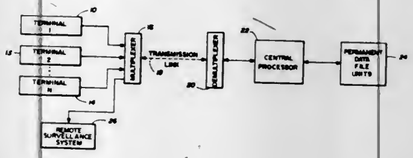
3,673,330
TWO-PARTY AUTOMATIC NUMBER IDENTIFICATION IN SUBSCRIBER CARRIER TELEPHONE SYSTEM
Morris A. Suntop, and Uno Randmere, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,559
Int. Cl. H04j *1/14*
U.S. Cl. 179—2.5 R 3 Claims



Automatic number identification for two subscribers who share a single channel in a subscriber carrier system. A d.c ground connection is made to the subset of one of the two subscribers but not to the other's. When the subscriber having the ground connection goes offhook, initiating transmission of the inbound carrier signal, the subscriber equipment modulates the inbound carrier for a brief interval with a signal at a frequency higher than the highest voice signal permitted on the line. The subscriber carrier terminal equipment at the central office responds to the modulating signal by actuating a relay which remains held up for the duration of the call and effects a ground connection detectable by the conventional automatic number identification equipment at the central office. If the non-grounded subscriber goes offhook, the inbound carrier signal is not modulated and the relay at the central office remains non-energized. The system is not susceptible to "talk-down," because the modulating signal is outside the pass band provided for transmitting voice signals.

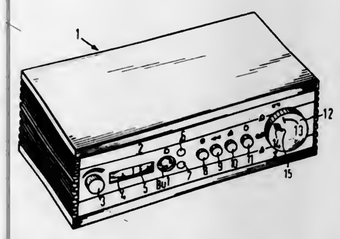
The circuit for sensing which of the two subscribers is offhook includes a transistor, means for grounding the base of the transistor during the identification interval, and means connecting an unreferenced source of direct current between the collector and emitter of the transistor in series with a relay winding. If the offhook subscriber has a d.c. ground connection, the current source becomes referenced by it, and the transistor becomes biased to saturation and conducts current to energize the relay. If the subscriber does not have a ground connection, the current source is referenced only through the base connection and the transistor does not conduct.

3,673,331
IDENTITY VERIFICATION BY VOICE SIGNALS IN THE FREQUENCY DOMAIN
George D. Hair, Irving, and James U. Kincaid, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 19, 1970, Ser. No. 3,991
Int. Cl. G10l *1/04, 1/08*
U.S. Cl. 179—15 B 36 Claims



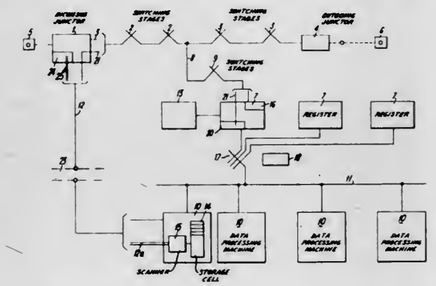
Voice verification is accomplished at a plurality of spaced apart facilities each having a plurality of terminals. Multiplexing structure interconnects the terminals through a communications link to a central processing station. Analog reproductions of voices transmitted from the terminals are converted into digital signals. The digital signals are transformed into the frequency domain at the central processing station. Predetermined features of the transformed signals are compared with stored predetermined features of each voice to be verified. A verify or non-verify signal is then transmitted to the particular terminal in response to the comparison of the predetermined features.

3,673,332
TELEPHONE ANSWERING DEVICES
Willy Muller, Zollikon/Zurich, Switzerland; Bruno Wurm, Dachau-Rothschwaige, and Hermann Haag, Dachau/Buchengassel, both of Germany, assignors to Willy Muller, Zollikon, Switzerland
Filed June 3, 1969, Ser. No. 830,049
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 E 8 Claims



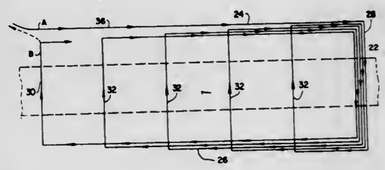
A device for automatic telephone answering which is adapted to play over a text which has been pre-recorded by the user of the device and which can also replay upon command via telephone, messages recorded by callers when actuated by code impulses transmitted through the telephone line. In particular, the present system permits stored messages to be played back and erased by remote control. To effect these functions cyclically the system combines a magnetic recording unit with mechanical drive means in an integrated constructional assembly. In this system, the answering unit and associated means effecting recording and drive thereof are combined into an integrated assembly with control means.

3,673,333
ACCOUNTING SYSTEM FOR TELEPHONIC EXCHANGES
Guy Jean Le Strat, Lannion, and Roger Desplanques, Velizy, both of France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,822
Claims priority, application France, Dec. 18, 1968, 68178920
Int. Cl. H04m *15/06*
U.S. Cl. 179—7 R 4 Claims



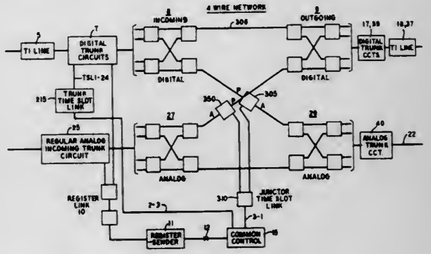
An automatic toll ticketing system provides means for transfering charge information from registers, incoming links and a rate of charge indicator, to a programmed data-processing machine. In case where the transfer is not possible, a second attempt is made, and if insuccessful, a fault signal is provided and busy tone is sent to the subscriber.

3,673,334
ANTENNA FOR USE WITH AN AUDIO INDUCTION COMMUNICATION SYSTEM
Justin L. Turner, Branford, Conn., assignor to Educational Service Programs, Inc., New Haven, Conn.
Filed March 19, 1971, Ser. No. 126,028
Int. Cl. H04b *5/00*
U.S. Cl. 179—82 16 Claims



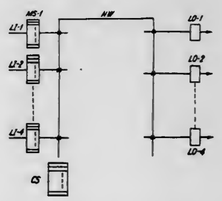
An antenna for use with an audio induction communication system provides a communication field of substantially uniform strength at all points within a given pick-up zone along which receiver-equipped persons are expected to travel or within which such persons are expected to stand while receiving a message through their receivers. The antenna comprises a continuous wire located in the vicinity of the pick-up zone and preferably buried beneath the surface of the earth defining the pick-up zone. The wire is disposed in a plurality of loops each of which loops includes two portions crossing the zone at two different points, such zone-crossing loop portions being arranged so as to include a spaced series of such portions located along the length of the zone and through which the exciting current passes in the same direction, those zone-crossing loop portions through which the exciting current passes in the opposite direction being closely grouped together at one end of the zone.

3,673,335
SWITCHING OF TIME DIVISION MULTIPLEX LINES AND ANALOG TRUNKS THROUGH TELEPHONE CENTRAL OFFICES
Amos Edward Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 24, 1970, Ser. No. 66,192
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AQ 8 Claims



A telephone switching office is disclosed wherein connections may be established between conventional analog trunks and time division multiplex lines. A plurality of digital trunks are employed equal in number to the number of incoming and outgoing time slot channels to be switched through the office. Digital trunks associated with incoming channels are provided with shift registers for storing the bit patterns carrying the information for a respective time slot. This information is outpulsed from the shift registers under control of readout pulses derived from a trunk time slot switch which is set by common control to deliver readout pulses in a time sequence that is appropriate to the selected time slot in the outgoing TDM line to which a cross-office connection is desired. In addition, conversion junctor circuits are provided having encoders and decoders which are selectively gated to deliver the digital information to the appropriate time slot of the TDM line involved in the connection by signals derived from a junctor time slot switch whose operation is dictated by common control Advantageously, both the trunk time slot link switch and the junctor time slot link switches are of the crossbar type.

3,673,336
TIME DIVISION MULTIPLEX SWITCHES
David Michael Thomas, Bayshore, Ottawa, Canada, assignor to International Standard Electric Corporation, New York, N.Y.
Filed Oct. 12, 1970, Ser. No. 79,728
Claims priority, application Great Britain, Oct. 21, 1969, 51,628/69
Int. Cl. H04j *3/08*
U.S. Cl. 179—15 BD 3 Claims



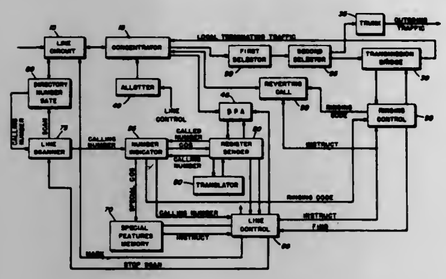
A time division multiplex (TDM) switch is provided which serves a number of highways. Individual subscriber loops are

connectd to the TDM switch in place of some of the TDM channels on the highways. This enables the ratio of TDM channels to individual loops to be altered conveniently.

3,673,337
REVERTING CALL ARRANGEMENT

James Gordon Pearce, Liverpool, England, assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 12, 1966, Ser. No. 586,210
Int. Cl. H04m 3/02
U.S. Cl. 179—17 D 10 Claims

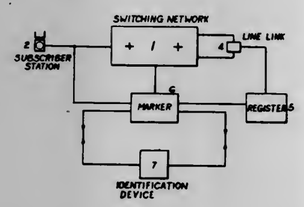


A reverting call arrangement for a common control telephone system which is automatically connected to the calling line circuit shared by calling and called parties along with the selected dial pulse acceptor or register and includes a control bridge relay forming a d.c. loop with the calling line circuit, reverting call relay means responsive to control from the common control and actuation of the control budge relay for connecting a ringing control providing both calling and call party ringing to the calling line circuit, and holding means for holding connection to the calling line circuit during processing of the reverting call.

3,673,338
BI-DIRECTIONAL TRANSLATOR CIRCUIT

Evert Oskar Ekbergh, Dr. Widerstrons gata 70, Hagersten, and Per Gustaf Jonsson, Sorlid, Ronninge, both of Sweden

Filed Aug. 1, 1969, Ser. No. 51,027
Claims priority, application Great Britain, Aug. 1, 1968, 36,736/68
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET 4 Claims

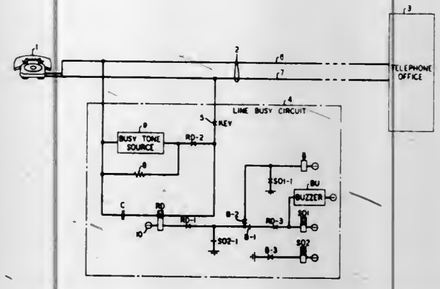


A bi-directional relay translator is provided which responds to a local call for translating the equipment number of a calling line to the directory number of that line and which responds to a terminating call for translating the directory number of the called line to the equipment number of that line. The translation of an outgoing call is initiated by operation of the calling line relay which provides an equipment number identification, following which a translation to decimal directory number is effected. In the reverse direction, when a directory number is registered, completion of the registration initiates a translation of the decimal directory number to an equipment number.

3,673,339
ARTIFICIAL LINE BUSY CIRCUIT

Franklin Adam Korn, Columbus, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 22, 1970, Ser. No. 57,036
Int. Cl. H04m 1/00
U.S. Cl. 179—18 F 10 Claims

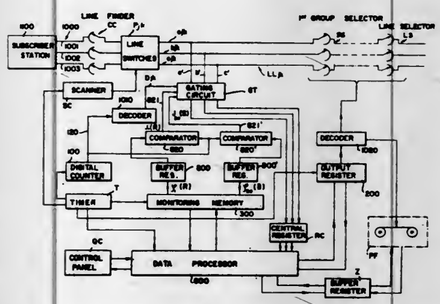


Auxiliary line circuitry is disclosed for making a customer telephone line appear busy for timed periods and only in response to incoming calls. The circuitry is activated by incoming call ringing for connecting a bridge network to the customer line for applying a busy tone thereto, immediately tripping ringing and retaining a timed off-hook signal on the line following a calling party disconnect. Thereafter, the bridge network causes a permanent signal to be automatically originated for making the customer phone appear busy for a period controlled by timers in the auxiliary line circuitry.

3,673,340
DATA-EVALUATION SYSTEM FOR TELEPHONE EXCHANGE

Luigi Cascila; Aldo Perna, and Giuseppe Valbonesi, all of Milan, Italy, assignors to Societa Italiana Telecommunicazioni Siemens SpA, Milan, Italy

Filed April 20, 1970, Ser. No. 30,132
Claims priority, application Italy, April 18, 1969, 15735 A/69
Int. Cl. H04q 11/00; H04m 15/18
U.S. Cl. 179—18 J 11 Claims



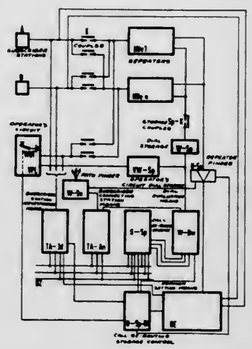
A monitoring memory (300) of the circulating type has a first section (M_C) with 100 phases for the activities of as many

local lines identified by two-digit decimal numbers, a second section (M_B) subdivided into several multiphase storage units (RET) for receiving, evaluating and transmitting information relating to a call involving an associated local line, and a third section (M_S) carrying supplemental information such as the time of day. With 800 phases circulating at a rate of one memory cycle per 800 μs, two consecutive counting phases in the third memory section are stepped once per cycle to produce, consecutively, the 100 line-identification numbers or addresses 00–99. A digital counter (100), operating in synchronism with the first section of the monitoring memory, periodically delivers the addresses of the 100 local lines to a comparator (820) matching them with the progressively changing address information stored in the third memory section for a successive sampling of all the lines at intervals of 100 cycles, or 80 ms; this comparison is facilitated by the concurrent tapping of the two consecutive counting phases of the third memory section (M_S) whereby the two address digits are simultaneously made available. If a line is found engaged, this information is fed to a logic network (E_C) which thereupon seizes an available storage unit (RET) to register the pertinent data in the phases thereof and to feed them to a tape perforator (PF). Upon the response of the called station, or upon premature termination by the calling party, the storage unit (RET) is released; when the call is completed, the same or another such unit and perforator are seized to record the length of the conversation.

3,673,341
CALL RE-ROUTING SYSTEM FOR TELEPHONE INSTALLATIONS

Dieter Finkhauser, Wolfratshausen, and Andre Friese, Gauting, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 6, 1968, Ser. No. 726,918
Claims priority, application Germany, May 12, 1967, S 109850
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BE 4 Claims

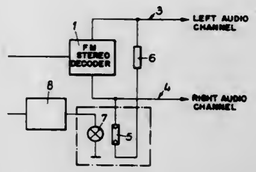


A call re-routing system for communication installations having central storage means with storage locations permanently assigned to subscriber stations. Information stored in these locations determines re-routing of calls to the corresponding stations from the latter station to the station location identified in said storage means, and may be changed at will for cancellation or further re-routing of calls from any subscriber station.

3,673,342
CIRCUIT ARRANGEMENT FOR IMPROVING THE SIGNAL-TO-NOISE RATIO OF A STEREO DECODER

Karl Muller, Frankfurt/Main-Niederrad, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed July 30, 1970, Ser. No. 59,631
Claims priority, application Germany, Aug. 2, 1969, P 19 39 422.0
Int. Cl. H04h 5/00
U.S. Cl. 179—15 BT 13 Claims

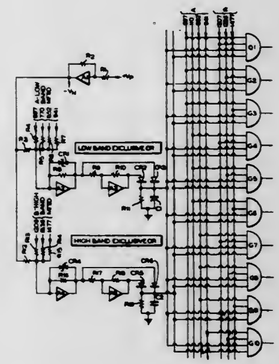


A variable resistor, a photoconductor shone upon by an incandescent lamp the brightness of which is inversely proportional to the carrier strength, or a variable time constant RC-network is connected to the stereo decoder to vary the stereo separation in direct proportion to the carrier strength.

3,673,343
ANTI-JAMMING CIRCUIT FOR MULTI-FREQUENCY SIGNAL DETECTOR

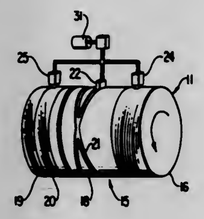
Robert E. Vosteen, 315 W. Center St., Medina, N.Y.

Filed Nov. 21, 1968, Ser. No. 777,770
Int. Cl. H04m 1/00
U.S. Cl. 179—84 VF 11 Claims



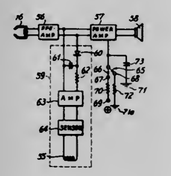
A jam-proof circuit for use with a multi-frequency signal detector system to prevent noise from erroneously actuating the detector system. The circuit employs substantially similar high and low-band exclusive OR circuits interposed between the output of the multi-frequency signal detector means and associated logic circuitry. The exclusive OR circuitry prevents noise from causing erroneous indications to be produced by the logic circuitry which comprises an individual AND gate corresponding to each digit that may be signalled. The digits are identified by the simultaneous transmission of a plurality of different frequencies.

3,673,344
HEAD POSITIONING MECHANISM FOR RECORDED ANNOUNCEMENT APPARATUS
Leary W. Smith, and Ellis H. Bryant, Jr., both of 721 Miami Circle N.E., Atlanta, Ga.
Division of Ser. No. 10,386, Feb. 11, 1970. This application Dec. 7, 1971, Ser. No. 205,597
Int. Cl. G11b *21/04*
U.S. Cl. 179—100.1 C 9 Claims



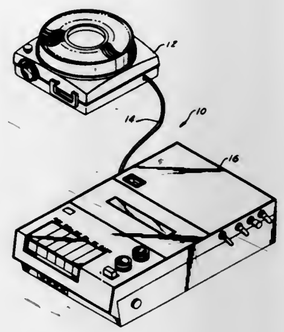
An announcing system for providing a family of recorded announcements through telephone central office equipment to one or more telephone subscriber lines. Each announcement selectively includes weather, temperature, or other periodic and aperiodic information segments. Each announcement is changeable in length from a long cycle which includes a full advertising segment to a short cycle in which a major portion or all of the advertising segment is deleted so that the time required for an announcement is shortened. The length of the announcement cycle is shortened in response to the number of subscriber lines waiting to be connected to the announcing system being in excess of the number of subscriber lines which can be connected to the announcing system by the telephone central office equipment. However, the announcing system also provides for deleting segments of an announcement which are in error without changing the length of the announcement cycle or it being apparent that the announcement segment has been deleted. The weather segment of the announcement is determined by different three digit weather codes and by changing the positions of a plurality of weather announcing heads along a weather announcing drum in response to a plurality of resistances corresponding to the three digit weather codes.

3,673,345
SOUND CONTROL APPARATUS FOR A MAGNETIC TAPE PLAYER FOR CUTTING OFF SOUND FROM THE SPEAKER DURING FAST FEED
Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo-to, Japan
Filed May 26, 1970, Ser. No. 40,523
Int. Cl. G11b *5/44, 15/10*
U.S. Cl. 179—100.2 S 3 Claims



A reproducing output sound control apparatus for a magnetic tape player which is capable of enabling the magnetic tape to change from a normal driving to a fast driving comprises a tape speed changing device operatively changing over the tape speed from normal to fast and vice versa, and a circuit incorporated in a tape reproducing circuit including a switch operable in association with operation of the tape speed changing device, and a condenser and its power supply, the tape speed changing device being operable when changed into a condition that the tape is fast driven to change the switch into a condition that the current supply to the tape reproducing circuit is broken off and to discharge the condenser thereby breaking off the output of the tape reproducing circuit, the tape reproducing circuit slowly becoming operative in connection with the charge of the condenser when the tape speed changing device is changed into a condition that the tape is normally driven.

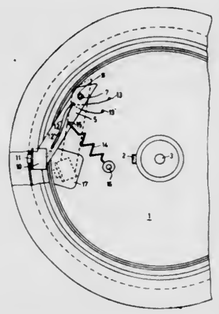
3,673,346
SOUND REPRODUCING AND OPTICAL PROJECTOR FUNCTION CONTROL APPARATUS
Hershel Gordon, Cheltenham Township, and Charles R. McAdoo, Jr., Holland, both of Pa., assignors to Optisonics Corporation, Montgomeryville, Pa.
Filed April 13, 1970, Ser. No. 27,583
Int. Cl. G03b *31/06*; G11b *31/00*
U.S. Cl. 179—100.2 S 10 Claims



A sound reproducing apparatus includes a two channel magnetic tape and transducing head with associated circuitry. A first channel records and reproduces sound. A second channel reproduces and records function control information for controlling the function of an optical projector. The second channel may be used to reproduce and record function control information for controlling the magnetic tape drive motor, or other selected functions. Function control information is in the form of pulses at distinctive frequencies.

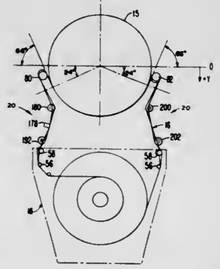
3,673,347
HIGH-FREQUENCY RECORDINGS DEVICE
Johannes Joseph Martinus Schoenmakers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 23, 1970, Ser. No. 49,129
Claims priority, application Netherlands, June 27, 1969, 6909886
Int. Cl. G11b *5/52, 5/54, 23/12*
U.S. Cl. 179—100.2 T 8 Claims

An apparatus for recording and/or reproducing video signals on or from a magnetic tape which is helically wound around a cylindrical drum. The drum comprises two axially aligned drum parts which are separated by a gap in which at least one magnetic head rotates during operation. The magnetic head is arranged on an arm which is pivotably mounted on a rotatable disc and which is in a retracted position when the disc is stationary and pivots outwards under the influence of the centrifugal forces when the disc is rotating. The magnetic head is positioned with respect to the tape by means of abutment faces which are provided on the inner surfaces of



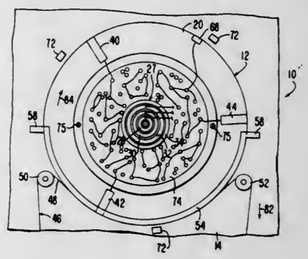
the drum parts adjacent the gap and cooperate with the pivoting arm. Drum parts and magnetic tape are preferably accommodated in a cassette which is placed on an apparatus which includes the head disc.

3,673,348
VIDEO TAPE PICK-UP AND GUIDE SYSTEM FOR CARTRIDGE TYPE REPRODUCING AND/OR RECORDING SYSTEM
Thomas J. Larkin, San Jose, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,058
Int. Cl. G11b *5/52, 23/06*
U.S. Cl. 179—100.2 Z 10 Claims



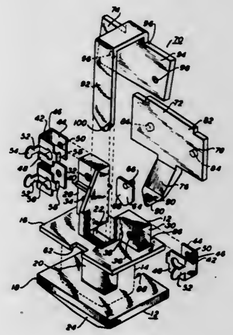
A tape guide and pick-up system for a tape transport of the type having a rotary head assembly. The guide and pick-up system is adapted to be used with a tape cartridge from which a stretch of tape is removed and advanced into a position adjacent to the paths of travel of a rotary head of the head assembly to permit the head to scan the tape stretch as the latter moves relative to the assembly. The guide system includes a number of spaced guides which orient the tape in a manner to cause it to be presented to the head assembly at a helical angle, whereby the tape tracks scanned by the heads will be oblique relative to the longitudinal axis of the tape stretch. The cartridge has an improved brake operated by control means forming a part of the tape transport to cause the tape reels in the cartridge to stop quickly after a tape rewind or fast-forward operation.

3,673,349
ROTARY HEAD ASSEMBLY FOR TAPE TRANSPORT WITH AMPLIFIER CARRIED BY THE ROTOR
Peter Berg, San Jose, and Bertil C. Linder, Milpitas, both of Calif., assignors to Cartridge Television, Inc., New York, N.Y.
Filed June 26, 1970, Ser. No. 50,060
Int. Cl. G11b *5/44, 15/12*
U.S. Cl. 179—100.2 T 10 Claims



An assembly for mounting a number of magnetic heads on a rotor for rotation about a central axis and for electrically connecting the heads to a commutator on the rotor wherein the heads are secured to the rotor adjacent to its outer periphery for scanning a flexible, magnetic tape disposed adjacent to and along a portion of the arcuate path of travel of the heads. Amplifier means carried by the rotor electrically couples the commutator with each head, respectively. A switch network can be carried by the rotor and actuated by a transducer to effect sequential switching between the heads as a function of the rotation of the rotor.

3,673,350
MAGNETIC TRANSDUCER ARMATURE
Stephen Bartok, Clifton; Melvin Kamenir, West Orange, and Andrew J. Begoss, Mount Fern, all of N.J., assignors to Litton Business Systems, Inc., New York, N.Y.
Filed Sept. 16, 1969, Ser. No. 5,382
Int. Cl. G11b *5/22*
U.S. Cl. 179—100.2 C 7 Claims



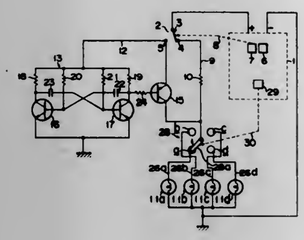
A handheld magnetic transducer comprises a gun-shaped housing having a directional arrow on one surface. The arrow is illuminated by a light within the housing indicating the

operating state of the transducer as determined by a signal device. The housing has dimples in opposed side walls for ease of grasping. The armature is in two parts. Each part has a T-shaped portion the crossbars of which overlap. The armature is inserted within the bobbin and is resiliently held at the crossbars to lock into position with a shim. The bobbin front wall in combination with the armature and shim form the muzzle or reading end of the transducer and has a substantially frustro pyramidal shape. The armature-bobbin structure is held in place by fingers which form a part of the transducer housing. The wires from the coil are secured to clips. The clips or terminal are U-shaped members spring retained on arms of the bobbin. The clips each have a flange portion for engaging an aperture in the arm. The reading portion of the transducer is hemispherical in shape with the gap defining an arc thereon such that the transducer is capable of rotation or positioning about one of three axes while moving relative to a record.

3,673,351
TAPE FEED INDICATOR DEVICE FOR A TAPE RECORDER

Takeharu Niioka, Yokohama, and Ryoji Hosokawa, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed March 26, 1971, Ser. No. 128,438
Claims priority, application Japan, March 27, 1970, 45/28929
Int. Cl. G06b *5/38*; G11b *5/28*
U.S. Cl. 179—100.2 R 4 Claims



A tape feed indicator device for a tape recorder comprising a switch for changing over a power source to a first or a second circuit in interlocking relationship with a device for changing a tape feed from a low to a high speed or vice versa; low tape feed indicator means included in the first circuit to be controlled by the power source; and means included in the second circuit for intermittently generating voltage when the second circuit is connected to the power source, thereby controlling the indication means by the intermittent voltage.

3,673,352
MAGNETIC HEAD ASSEMBLY

Yoshiyo Wada; Hisao Kinjo, both of Yokohama; Toshi Suzuki, Kamakura, and Fumio Akuwa, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

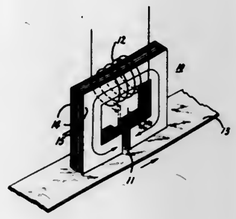
Filed July 9, 1970, Ser. No. 53,552
Claims priority, application Japan, July 11, 1969, 44/54578
Int. Cl. G11b *5/10, 5/58*
U.S. Cl. 179—100.2 C 13 Claims

A magnetic head assembly comprises at least one resilient film-like member held in tension over a drum-shaped support. A magnetic head holder and at least one head core are provided on an upper resilient member. The head core can follow the variation of contact caused by an uneveness of the magnetic surface of a magnetic medium.

3,673,353
MAGNETIC TRANSDUCER HAVING A COMPOSITE MAGNETIC CORE STRUCTURE

Jerome J. Tiemann, Schenectady, N.Y., and Louis G. Gitzendanner, Oklahoma City, Okla., assignors to General Electric Company

Filed July 16, 1970, Ser. No. 55,362
Int. Cl. G11b *5/16, 5/24*
U.S. Cl. 179—100.2 C 2 Claims

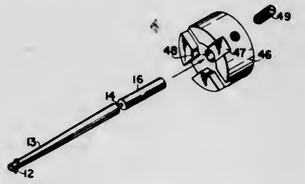


A magnetic transducer for read-write applications is disclosed in which the magnetic circuit comprises a stack of laminations of generally "C" shape having a read-write winding inductively associated therewith. The read-write gap is provided by the opposed ends of the stacked laminations, and the laminations are of two different types; that is, they have different magnetic characteristics and are preferably of different materials. The outer laminations have relatively low initial permeability relative to the remaining laminations so that they are ineffective during the read operation but have sufficiently low coercive force so that they are magnetized during the write operation. The inner laminations of the stack have relatively high initial permeability so that they are magnetized during the read operation. In this way, the effective height of the stack and, accordingly, the width of the read-write gap is narrower during the reading operation than it is during the writing operation, being essentially equal to the total stack for writing and essentially equal to the inner laminations for reading.

3,673,354
SEMICONDUCTOR STRESS TRANSDUCER

Fujio Oda, Ashiya, and Shuichi Obata, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 4, 1970, Ser. No. 34,505
Claims priority, application Japan, May 8, 1969, 44/36846; May 8, 1969, 44/36847; May 8, 1969, 44/36848; May 8, 1969, 44/36849; May 8, 1969, 44/36850; May 8, 1969, 44/36851; May 8, 1969, 44/36852; May 8, 1969, 44/36853; May 8, 1969, 44/36854; May 8, 1969, 44/36855
Int. Cl. H04r *1/16, 9/12, 11/08*
U.S. Cl. 179—100.41 V 9 Claims

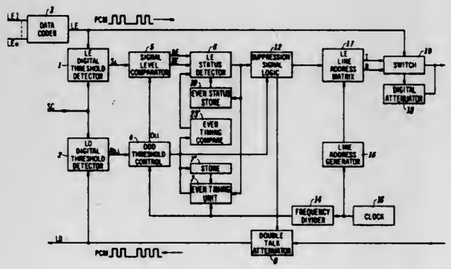


A semiconductor stress transducer having a pair of spaced electrodes disposed on an electrically insulating thin-film base of a flexible nature, a semiconductor piezo-resistive film being evaporated across the electrodes, means for applying an external stress to the evaporated semiconductor film so that a change in the external stress causes a change in the tension of the semiconductor film, and means for deriving an electrical signal from the electrodes due to a change in the internal resistance of the semiconductor film response to the change in the externally applied stress.

3,673,355
COMMON CONTROL DIGITAL ECHO SUPPRESSION

Robert Ernest La Marche, Atlantic Highlands, and Carl Jerome May, Jr., Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 2, 1970, Ser. No. 68,921
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.6 17 Claims

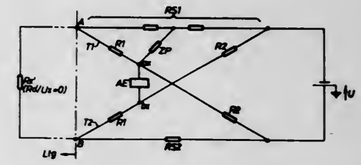


Circuitry for accomplishing digital echo suppression for a plurality of two-way transmission circuits is disclosed. Analogue signal levels on each line of each associated transmit-receive pair are periodically converted into pcm codes and applied to common time-shared circuitry, which includes a time-divided memory, in the time slot allocated for that pair. The common circuitry translates the pulse codes into echo suppressor control signals by combining them with code signals representing the past signal bearing statuses of the lines and timing signals stored in the time-divided memory to determine if the respective present activity statuses of the line pair are such that echo suppression is required.

3,673,356
LOOP MONITOR CIRCUIT

Eberhard Herter, Stuttgart, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 5, 1969, Ser. No. 855,721
Claims priority, application Germany, Sept. 19, 1968, P 17 62 897.6
Int. Cl. HO4m *1/24*
U.S. Cl. 179—175 5 Claims

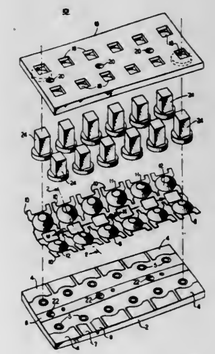


A circuit for determining the resistance of a loop by connecting the loop terminals through like resistances to respective poles of a voltage source. Each terminal is also connected to the opposite pole of the source through a voltage divider, the dividers being symmetrical. An evaluating device is bridged across taps in the voltage dividers, the taps being positioned to produce like resistive ratios in the dividers.

3,673,357
TACTILE RESPONSE SWITCH WITH UNITARY CONTROL STRIP OF INDEPENDENTLY OPERABLY PLURAL DISC CONTACTS

Andrew John Molchan, Indianapolis, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

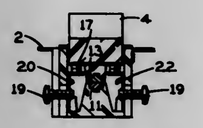
Filed March 29, 1971, Ser. No. 128,997
Int. Cl. H01h *5/30*
U.S. Cl. 200—5 A 4 Claims



A tactile response switch comprises a unitary cantilever-snap disc mechanism in which the cantilever provides reliable electrical contact properties and the snap disc provides a tactile response to contact closure. A plurality of independent contact closures can be made by operation of a single contact button and the properties of the cantilever and the snap disc

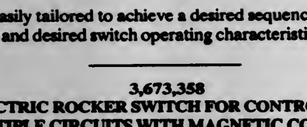
can be easily tailored to achieve a desired sequence of contact closures and desired switch operating characteristics.

3,673,358
ELECTRIC ROCKER SWITCH FOR CONTROLLING MULTIPLE CIRCUITS WITH MAGNETIC COUPLING MEMBERS
James R. Harmon, 10040 S. W. 40th St., Miami, Fla.
Filed March 31, 1971, Ser. No. 129,883
Int. Cl. H01h 9/54
U.S. Cl. 200—6 R 2 Claims



An electric rocker switch for controlling a plurality of different circuit combinations. The rocker is pivotally mounted in a frame and held in normal "off" position by a spring-urged member and adapted for movement in each of two "on" directions including a permanent magnet mounted in each end of the rocker, positioned to engage mating magnets for holding the rocker in each of its two "on" positions. The rocker contains a plurality of contacts to engage mating contacts in the body of the switch, which contacts may be connected to control a plurality of different circuits.

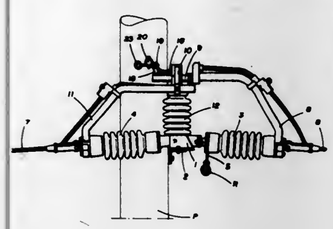
3,673,359
ENGINE IGNITION TIMER WITH IMPROVED ADJUSTABLE PLATES
Vernon C. Wickman, Milwaukee, Wis., assignor to AMF Incorporated
Filed Jan. 4, 1971, Ser. No. 103,499
Int. Cl. H01h 19/00
U.S. Cl. 200—19 R 3 Claims



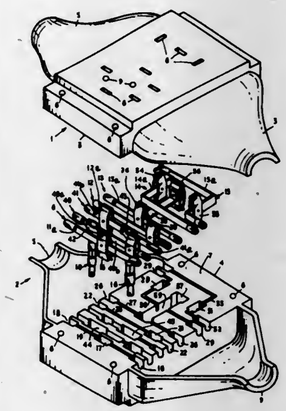
The position of the breaker contacts with respect to the timing cam is adjusted by providing a worm gear set for adjustably rotating the breaker contact carrying plate.

3,673,360
BOOSTER TRANSFORMER SWITCH
John G. Pahl, 1624 E. Alpine Ave., Stockton, Calif.
Filed March 24, 1971, Ser. No. 127,667
Int. Cl. H01h 31/00
U.S. Cl. 200—48 R 7 Claims

A switch, of pole-mounted type, adapted for connection, in an electrical power supply system, between a feed cable and a load cable; the switch, in one position, normally providing direct connection between the feed cable and the load cable, and, in another position, breaking such direct connection and establishing a by-pass connection —including a booster transformer—between the feed cable and load cable whereby to "-boost" the current value in said load cable under a condition of undue voltage drop therein. The switch also provides a shunt operative to prevent the load cable from being taken completely out-of-circuit as the switch is actuated from said one position to such other position; said shunt—which includes a resistor—also serving to preload the booster transformer, with less than the full feed voltage, before the switch closes in such other position.



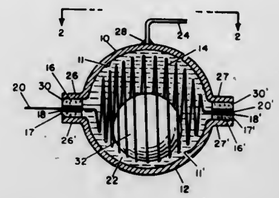
3,673,361
PLUG SOCKET FOR USE IN A DISTRIBUTOR SYSTEM FOR ELECTRICAL POWER
Reginald W. Bulgin, 16 Cook St., Caringbah, New South Wales, Australia
Filed May 4, 1970, Ser. No. 34,004
Claims priority, application Australia, May 7, 1969, 54560/69
Int. Cl. H01r 19/50
U.S. Cl. 200—51.03 7 Claims



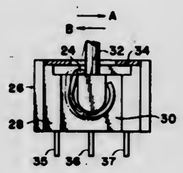
A plug socket for use in a distributor system for electrical power having at least five internal terminal members for joining two multi-conductor cables, the terminal members being selectively engageable by plug pins inserted into the socket and at least one of the terminal members including switch means to disconnect a conductor of one cable from its corresponding conductor in the other cable.

3,673,362
ELECTRIC IMPACT SWITCH
Robert J. Carlson, Somerville, and Royal A. Reymann, Jr., Wharton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army
Filed May 14, 1971, Ser. No. 143,374
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 7 Claims

This invention relates to an omni-directional intermittent, normally open electric impact switch having two hollow hemispherical terminal means which are circumambient to and insulated from a weighted helical spherically shaped spring which acts as the pole piece of the switch. A non-conducting fluid retained within a volume formed by the two hemispherical terminals dampens the movement of the weighted spring pole piece. The switch becomes operational when an impact causes one or more turns of the helical weighted spring pole to deflect and contact the inner walls of the spherical terminal.



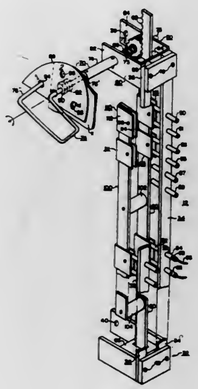
3,673,363
RETURN MECHANISM FOR AN AUTOMATICALLY RETURNING SWITCH
Tadahisa Nakamura; Hirozi Fujimoto; Makoto Yamamoto, and Yukito Shintomi, all of Kawasaki, Japan, assignors to Fujisoku Electric Co., Ltd., Kawasaki-shi, Japan
Filed June 1, 1970, Ser. No. 42,022
Claims priority, application Japan, May 31, 1969, 44/50820; Dec. 4, 1969, 44/115383
Int. Cl. H01h 3/00
U.S. Cl. 200—153 K 5 Claims



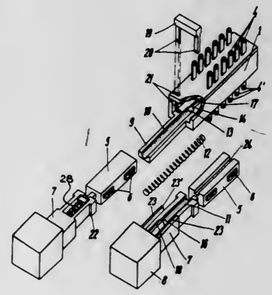
Return mechanism for an automatically returning switch comprises a return spring of particular shape and means for mounting this return spring on the switch box. The return spring is made of a spring wire and includes a mounting portion in one plane and an arm, or bridging, portion in another plane, preferably normal thereto, for exerting a spring action on the switch actuator rod. The mounting means for the mounting portion of the spring includes at least one groove in the wall of the switch box which permits one arm portion to move independently of the other arm portion.

3,673,364
TRANSFORMER SLIDE SWITCH WITH CONTACT CLAMPING MEANS
Kenneth R. Klein, Niles, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 13, 1970, Ser. No. 89,397
Int. Cl. H01h 15/08, 1/56
U.S. Cl. 200—16 C 5 Claims

An electrical series-multiple switch adapted for mounting within the casing of an electrical transformer, and actuable from without the casing. The switch, which may be used for single or polyphase applications, includes at least one cooperative pair of insulating shaft members, which carry a plurality of complementary electrical contacts spaced across the longitudinal dimensions of the shaft members. One of the pair of insulating shaft members is movable rectilinearly, relative to the other, in response to rotary movement of an operating shaft, which changes the relationship of the electrical contacts and the operating position of the switch.



3,673,365
SLIDE KEY SWITCH WITH IMPROVED PLUNGER ACTUATING MECHANISM WITH LOST MOTION COUPLING
Rudolf Schadow, Konigsbacher Zeile 23, 1000 Berlin 28, Germany
Filed Dec. 18, 1970, Ser. No. 99,377
Claims priority, application Germany, May 6, 1970, P 20 23 109.8
Int. Cl. H01h 15/24
U.S. Cl. 200—16 R 10 Claims

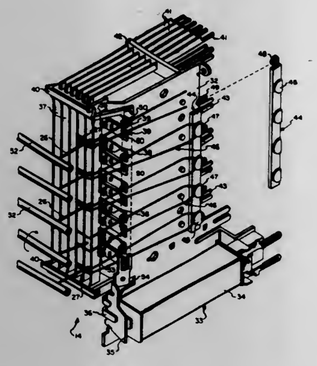


A slide key switch unit contained within a housing having a front opening with an extending portion, extending beyond the front opening of the housing. A plurality of electrical contacts are formed in the housing and a helical adjusting spring is disposed in the extending portion and urged against a key actuating plunger which is also slidably disposed in the front opening of the housing and engaging the extending portion.

3,673,366
CROSSBAR SWITCH

Clifford Edward Symes, Galion, Ohio, assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 10, 1971, Ser. No. 141,876
Int. Cl. H01h 9/00
U.S. Cl. 200—175 7 Claims

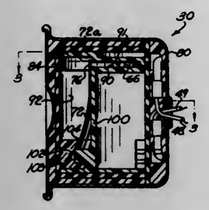


A crossbar switch is shown which utilizes a plurality of select units and a plurality of hold unit assemblies mounted on a frame. All of the armatures for the select units are located on one end of the crossbar switch frame, and a plurality of select-off-normal switches are positioned on the opposite end. Each hold unit is composed of a hold armature assembly, a plurality of fixed contacts, a plurality of movable contacts under the control of movable cards and a plurality of select fingers, which in conjunction with the hold armature, translate the selected cards to close the movable contacts which are under the control of the selected card. There is also provided a select finger holder having a plurality of mounting posts which frictionally engage the support member of the hold unit, said holder further including a plurality of mounting buttons for receiving and supporting the select fingers.

3,673,367
CRASH SENSOR

Hermann Kaiser, Detroit, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 814,132, April 7, 1969, Pat. No. 3,618,117, which is a continuation-in-part of Ser. No. 753,948, Aug. 20, 1968, Pat. No. 3,552,768. This application Nov. 4, 1970, Ser. No. 86,683
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 8 Claims

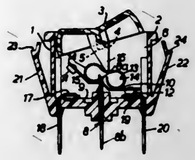


An improved sensor assembly for actuating a vehicle safety apparatus upon the occurrence of an accident includes a mass which is movable from an initial position to an actuated position in response to the occurrence of an accident. When the mass is in its actuated position, the safety apparatus is activated to protect the occupant of the vehicle. A plurality of spring contact fingers bias the mass toward its initial position. Cam means is associated with the contact fingers and act to apply a preload to the mass. As the mass moves toward its actuated position, the number of spring fingers which cooperate to bias the mass decreases and the biasing force exerted by the remaining spring fingers increases. Thus, the mass moves from its initial position to its actuated position against a biasing force which may be controlled by the configuration of the spring fingers and the cam member.

3,673,368
ELECTRICAL SWITCH

John Arthur Howe, Tollerton, and Leslie Oliver Bryan, Stapleford, both of England, assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 18, 1971, Ser. No. 107,375
Int. Cl. H01h 13/28
U.S. Cl. 200—67 G 5 Claims

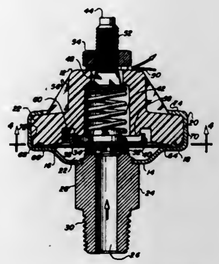


The invention comprises a snap-over switch comprising a casing housing in which is mounted a rocker arm carrying spaced movable contacts respectively engageable with a respective fixed contact on rocking movement of the arm by a pivoted switch actuator member through the intermediary of a leaf spring located on the rocker arm, the spring being shaped to provide a central portion in superposed spaced relation to the rocker arm and engageable by the switch actuator member and a looped portion at each end respectively engaging portions of the rocker arm extending from opposite sides of the support about which the arm pivots.

3,673,369
DIAPHRAGM PRESSURE SWITCH WITH INTEGRAL STOP MEANS FOR DIAPHRAGM SEALING

Frank C. Weaver, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Nov. 25, 1970, Ser. No. 92,558
Int. Cl. H01h 35/34
U.S. Cl. 200—83 B 2 Claims

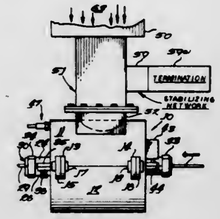


A diaphragm pressure actuated switch comprising two housings sandwiching the diaphragm therebetween. Integral circumferentially spaced stops with a length less than the diaphragm thickness project from one housing, and extend through the diaphragm into contact with the other housing, thereby preventing fracture of the diaphragm upon the application of excessive clamping forces.

3,673,370
MICROWAVE APPLICATOR SYSTEM WITH CYLINDRICAL RESONANT CAVITY

Ray M. Johnson, Danville, Calif., assignor to Cryodry Corporation, San Ramon, Calif.

Filed April 3, 1970, Ser. No. 25,402
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 17 Claims



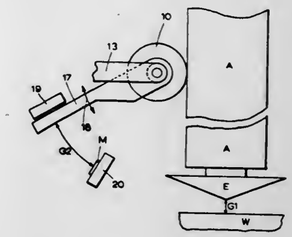
A cylindrical microwave resonant cavity is excited in the TM_{010} mode to generate an electric field extending parallel to the axis of the cavity and having a maximum intensity along the axis. A filament or thread is conveyed axially through the cavity and heated. The cavity housing is formed into two sections along radial planes. The sections are hinged about a line parallel to the axis to facilitate opening the housing and cleaning its interior. Liners may be provided to cover the interior of each section. A slot is formed between the sections opposite the hinge line for threading the filament into its operative axial position. Clamps are provided to resiliently urge the sections together, yet the clamps permit adjustment of the angle of inclination between the sections by means of a screw mechanism to tune the resonant frequency of the cavity to the operating frequency of the microwave source. Air, preheated by cooling the source, is routed through the feed guide into the cavity to purge vapors from the cavity and prevent accumulation of residue. An electrical interlock is provided to inhibit operation of the microwave source when the sections are separated beyond a predetermined limit.

3,673,371
GAP MONITORING ELECTRIC-DISCHARGE-MACHINING APPARATUS

Gordon Victor Smith, and Eric John Ward, both of Gloucester, England, assignors to Sparcatron Limited, Gloucester, England

Filed March 26, 1971, Ser. No. 128,405
Claims priority, application Great Britain, April 14, 1970, 17,764/70
Int. Cl. B23p 1/14
U.S. Cl. 219—69 G 6 Claims

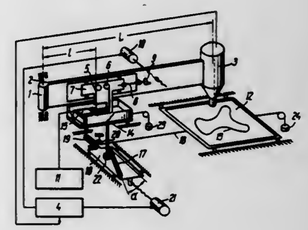
The invention provides electrical discharge machining apparatus including in combination, a gap monitoring circuit registering machining energy flow across a working gap between a tool electrode and a workpiece in terms of voltage and/or current; a servo system which effects advance and retraction of the tool electrode to maintain the working gap within predetermined dimensions; a retraction detection means registering the extent of retraction of the tool electrode. In addition there is provided a subsidiary control circuit which is effective to operate at least one of (i) a warning device which may be visible or audible, (ii) means for disconnecting the supply of machining power to the inter-electrode gap, (iii) means for fully retracting the tool electrode; this subsidiary circuit being effective only when the following conditions exist simultaneously: the gap monitoring circuit registers machining energy flow at normal working levels and the retraction detection means registers retraction of the tool electrode to such an extent that the tool electrode and the workpiece are separated by more than a predetermined distance.



3,673,372
COPYING SYSTEM FOR CUTTING OUT ARTICLES OF COMPLEX SHAPE BY THE ELECTROEROSION METHOD

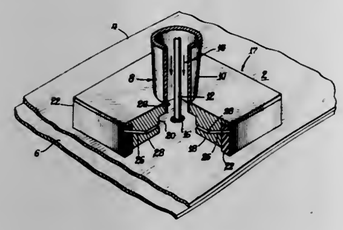
Viktor Jurievich Veromaa, ulitsa Soldata korzuna, 3, kv. 159; Vladimir Alexeevich Rozanov, Tikhoretsy prospekt, 9, korpus 8, kv. 74, and Mikhail Yakovlevich Rabinovich, ulitsa Rustaveli, 18, kv. 40, all of Leningrad, U.S.S.R.

Filed June 7, 1971, Ser. No. 150,397
Int. Cl. B23p 1/12
U.S. Cl. 219—69 V 1 Claim



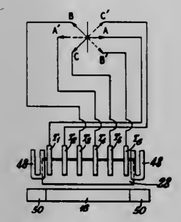
A copying system for cutting out articles of complex shape by the electroerosion method, which for the purpose of using enlarged drawings as master-forms has a traverse that swings about an axis passing through one end thereof, and carries an electrode-tool, its other end carrying a pickup, the traverse being swung by one of the drives of the tracing system. The copying system also has a supplementary carriage moved by the second drive of the tracing system, and connected to the board of the master-form by means of a flexible tie, while its connection with the carriage whereon secured is the working table, is realized through a sine converter disposed on said supplementary carriage and capable of regulating its angle of inclination.

3,673,373
WELD SUPPORT FOR WELDING APPARATUS
Donald S. Lovett, Charleroi, Pa., assignor to McGraw-Edison, Elgin, Ill.
Filed Feb. 10, 1971, Ser. No. 114,301
Int. Cl. B23k 9/16
U.S. Cl. 219—74 5 Claims



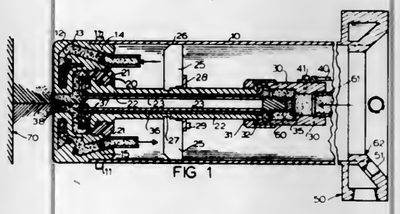
A weld support for a gas shielded metal arc welding apparatus is disclosed as having a welding block provided with a relatively flat surface, a resilient rubber strip around the periphery of the flat surface, a welding chamber within the block and a plurality of gas exhaust passages connecting the welding chamber and the exterior of the block and having bends intermediate their extremities. A shielding chamber is affixed to the welding block around an opening into the welding chamber for receiving and holding a nozzle of the welding apparatus perpendicular to the flat surface of the welding block and enclosing shielding gas fed through the nozzle into the welding chamber. When a weld is being made, the welding block is held against the material being welded to maintain the welding apparatus perpendicular to the material. The rubber strip assists in maintaining this perpendicularity by accommodating any irregularities in the surface of the material. The rubber strip also prevents flow of molten weld material away from the vicinity of the weld spot. The bend in the gas exhaust passages prevent weld spatter from escaping from the welding chamber.

3,673,374
SURFACE METAL WELDING PROCESS AND APPARATUS
Clifford A. Hauck, Somers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 701,932, Jan. 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 359,952, April 15, 1964, abandoned. This application April 22, 1970, Ser. No. 30,947
Int. Cl. B23k 9/04
U.S. Cl. 219—76 8 Claims



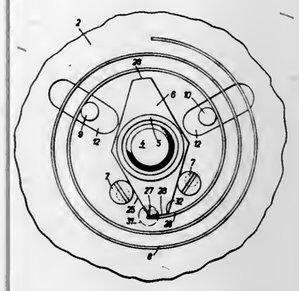
Material is melted in the surface of a metal body by maintaining a plurality of 300 to 10,000 ampere electric arcs, each energizing between an electrode surrounded by a gas cup or nozzle and such surface. The nozzles are positioned about ¼ to about 1 gas cup diameter from the surface. The arcs are swept across the work by self-induced electro-magnetic interaction while providing relative motion between the surface and the arcs. The speed of such motion is correlated with the current of such arcs.

3,673,375
LONG ARC COLUMN PLASMA GENERATOR AND METHOD
Salvador L. Camacho, Raleigh, N.C., assignor to Technology Application Services Corporation, Raleigh, N.C.
Filed July 26, 1971, Ser. No. 165,941
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 4 Claims


FIG 1

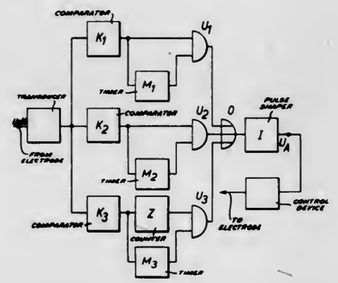
A long arc column plasma generator and method provide a means and method for initiating and sustaining an exceptionally long transferred arc. The improved vortex strength, mass flow rate and radial pressure gradient are obtained by a new relationship between the nozzle length, the nozzle diameter, and the vortex chamber width.

3,673,376
METHOD FOR ATTACHING THE INNER END OF A BALANCE SPRING TO ITS COLLET
Jean-Claude Kullmann, Rue de la Ruche 39, La Chaux-de-Fonds, Canton, Neuchatel, Switzerland
Filed Aug. 19, 1969, Ser. No. 851,315
Claims priority, application Switzerland, Aug. 26, 1968, 12748/68; Feb. 10, 1969, 2005/69
Int. Cl. B23k 9/00
U.S. Cl. 219—121 LM 10 Claims



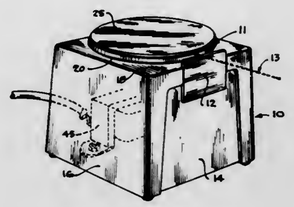
The balance spring and the collet are held in precise positions on a work table so that the upper edge of the inner end of the spring is flush with an upper face of the collet and at least sufficiently near to the latter to enable a laser beam aimed at this zone to weld together the collet and the spring.

3,673,377
APPARATUS AND METHOD FOR CONTROLLING OR MONITORING ELECTRIC WELDING PROCESSES
Friedrich Erdmann-Jesnitzer, Hannover-Linden, and Dietrich Rehfeldt, Hannover-Vinnhorst, both of Germany, assignors to Rademat S.A., Luxembourg-Ville, Luxembourg
Filed Sept. 18, 1969, Ser. No. 859,021
Claims priority, application Germany, Nov. 2, 1968, P 18 06 648.3
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 2 Claims



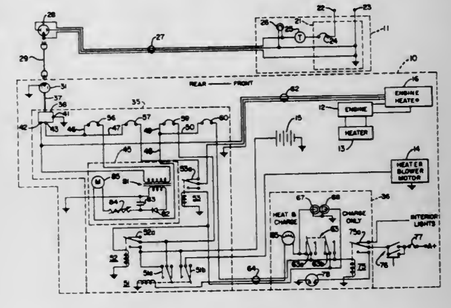
A method and apparatus for controlling or monitoring electric arc welding processes by analyzing an input signal derived from a welding parameter by means of a transducer. This input signal is analyzed with respect to its amplitude, duration and occurrence frequency during a preselected period and an error signal is generated to indicate the error or defect at the seam which is welded and to drive the welding apparatus toward the correct adjustment.

3,673,378
ARCH WIRE ANNEALER
Peter C. Kesling, Green Acres, La Porte, Ind.
Filed Feb. 1, 1971, Ser. No. 111,194
Int. Cl. C21d 9/62
U.S. Cl. 219—156 1 Claim



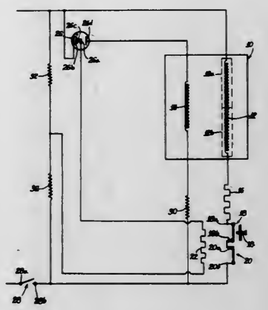
A device for annealing end portions of wire, including first and second contact members between which the wire is placed and to which electrical power is provided, wherein the wire completes the circuit, and wherein the contact members are such that varying lengths of wire can be annealed, and wherein one contact member is movable to present another portion thereof in association with the other contact member.

3,673,379
MOTOR VEHICLE WARM-UP AND BATTERY CHARGER SYSTEM
Richard F. Eversull, 5009 Ogallala Place, Cheyenne, Wyo.
Filed March 20, 1970, Ser. No. 21,382
Int. Cl. B60l 1/02
U.S. Cl. 219—202 2 Claims



A utility system for motor vehicles can be energized by remote control and is especially useful in cold weather for charging a battery and heating the engine and interior of the vehicle without starting the engine. A battery charger furnishes the necessary DC power and is connected to simultaneously charge the vehicle battery and run the blower while the engine heater is on; or, in the alternative, will only charge the battery in response to the setting of a selector switch in the vehicle. Preferably, a cable carries AC power from a building to the vehicle and a switch at the building turns the system on and off. A alarm is activated if entry is made into the vehicle without disconnecting the power cable which is plugged into the vehicle.

3,673,380
GLOW SWITCH RELAY FOR BLANKET OVERHEAT CONTROL SWITCH
George C. Crowley, Winnetka, Ill., assignor to Northern Electric Company, Chicago, Ill.
Filed Oct. 26, 1971, Ser. No. 192,090
Int. Cl. H01h 37/00
U.S. Cl. 219—212 4 Claims

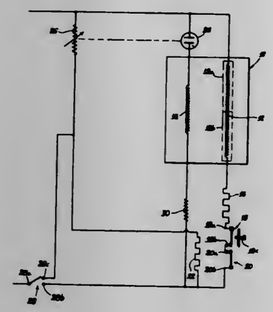


An overload protection circuit for an electric heating blanket is provided. A sensing element in the blanket is coupled to a gas filled tube which has a pair of contacts that are opened when an overload condition is sensed, causing a bimetallic element to open a second pair of contacts connected in series with the heating element.

3,673,381
THERMOSTATLESS BLANKET CONTROL CIRCUIT

George C. Crowley, Winnetka, and Gordon S. Carlson, Northbrook, both of Ill., assignors to Northern Electric Company, Chicago, Ill.

Filed Oct. 26, 1971, Ser. No. 192,181
Int. Cl. H01h 37/00
U.S. Cl. 219—212 6 Claims

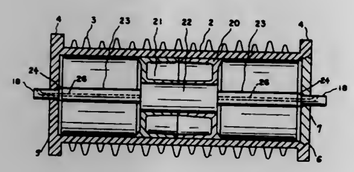


An overload protection circuit for an electric heating blanket is provided. A sensing element in the blanket is coupled to a neon-filled diode. When an overload condition is sensed the diode ceases to emit light and a bimetallic element in series with a light-responsive resistor causes a pair of contacts in series with the heating element to open.

3,673,382
ELECTRICALLY HEATED HAIR CURLER

Francis J. Gaffney, East Norwalk, Conn.; Joseph F. Degen, Rockville, and Gerald F. Clark, Thurmont, both of Md., assignors to North American Philips Corporation, New York, N.Y.

Filed Dec. 9, 1969, Ser. No. 883,418
Int. Cl. A45d 2/36; H05b 1/00
U.S. Cl. 219—222 4 Claims

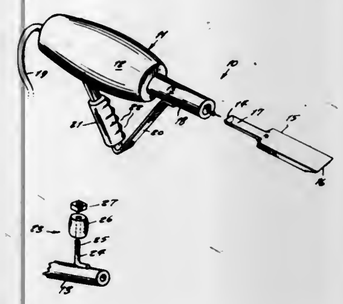


A cylindrically shaped plastic hair curler having an electrical resistor positioned therein for heat generation. Heat transfer elements positioned within the hair curler for conducting the heat from the resistors to the cylindrical walls include a heat-sink surrounding the resistor and in contact with and conforming to the inner surface of the plastic hair curler. The heat-sink is formed of two shell members having aligned, inwardly projecting cavities for housing the electrical resistor. The resistors may also be supported on a spool member which will support the heat transfer members which surround and are in contact with the resistors. A shell heat-sink member may then surround the heat transfer members to carry the heat of the resistors to the outer wall of the curler.

3,673,383
ELECTRICALLY HEATED SCRAPING TOOL

George V. Sofia, 2202 E. 9th St., Brooklyn, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,253
Int. Cl. A47l 13/02; H05b 1/00; B26b 3/00
U.S. Cl. 219—227 2 Claims

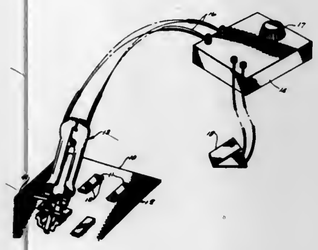


A glazier's tool for use in scraping the windshield retaining channel of an automobile includes a case having electric heating means therein in heat exchange relationship with a protruding tubular sleeve extending forwardly from the case. A steel chisel is removably received in the sleeve. A V-shaped support bracket is secured to the bottom of the casing and sleeve for supporting the chisel at a correct angle with respect to the surface being scraped. The rear leg of the bracket is provided with a heat insulating hand grip. An upwardly extending heat insulating hand grip may also be provided on the sleeve if desired.

3,673,384
INTEGRATED CIRCUIT EXTRACTOR TOOL

Per Aron Burman, Temple City, and Harold E. Drew, Arcadia, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,061
Int. Cl. H05b 1/00; B25b 7/02; B23k 3/00
U.S. Cl. 219—230 16 Claims



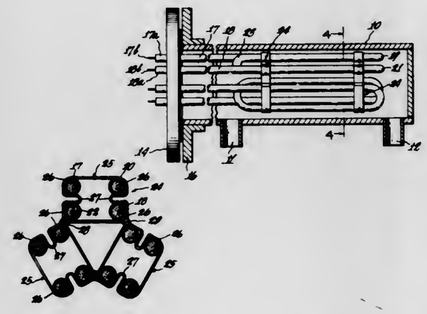
A hand tool is described for removing integrated circuit components or the like from printed circuit boards. The tool has a plierlike action for bringing a pair of heated jaws each provided with a flat electric resistance heater against the component leads for melting the solder attaching the component to the board. An adjustable stop prevents the heated jaws from contact and damaging the board. A pair of pincer jaws are mounted on one of the heated jaws so as to be movable in a direction transverse to the direction of movement of the heated jaws. Cams on the pincer jaws are actuated by the other heated jaw to close the pincer jaw in response to closure

of the heated jaws. The pincer jaws have a turned end for gripping beneath a component for lifting the component after the solder is melted.

3,673,385
ELECTRIC HEATING ASSEMBLY

Lester D. Drugmand, and Sidney J. Temple, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 4, 1970, Ser. No. 95,250
Int. Cl. H05b 3/02; F24h 1/10
U.S. Cl. 219—335 7 Claims



A heating assembly of the type wherein a plurality of metal sheathed electric heating elements are arranged in a cluster, each having one end connected to a flange member, the elements being elongated and cantileverly extending from the flange member, and means for holding end portions of said heating elements in predetermined laterally spaced relation, comprising a sheet metal band for each heating element having sockets for receiving and holding the end portions, the sheet metal bands being connnected together.

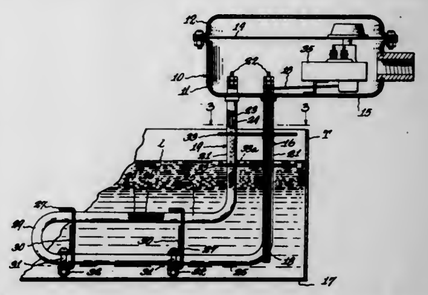
In a preferred form, the sheet metal band is of rectilinear formation with socket portions formed at the four corners to receive respective ends of the legs of a heating element. The sheet metal bands are connected to each other so that their socket portions hold the pairs of legs of all elements in spaced relation.

3,673,386
ELECTRIC IMMERSION HEATERS

Lester D. Drugmand, and Sidney J. Temple, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 19, 1970, Ser. No. 82,003
Int. Cl. H05b 3/06; F24h 1/02
U.S. Cl. 219—523 4 Claims

An electric heater construction particularly adapted to have its heating portion submerged in a substance contained in a tank. The heater comprises a terminal box which is disposed above and out of contact with the tank substance and a plurality of tubular members extending downwardly from the terminal box in side-by-side manner and immersed in the tank substance, one of said tubular members being adapted to contain a thermal element influenced by the thermal conditions of the tank substance, and the other tubular members containing electric heating elements for heating the tank substance. The tubular elements are held in predetermined side-by-side relationship by a plate which has openings to pass the respective tubular elements, said one tubular element being fixed in its plate opening and the other tubular elements freely passing through their plate openings, whereby to hold the tubular members in predetermined side-by-side relationship while permitting relative longitudinal movement thereof. A conventional sheathed electric heater of hairpin formation may be used for the heating elements, the terminal pins defining cold heater lengths and the plate is fixed to the one tubular element

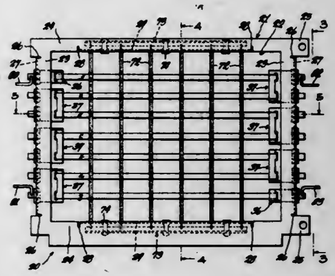


substantially at to the lower end of the heater cold lengths and carries means to indicate a warning concerning a low liquid level in the tank.

3,673,387
ELECTRIC HEATERS

Lester D. Drugmand, and John F. Volker, both of Pittsburgh, Pa., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 22, 1971, Ser. No. 117,361
Int. Cl. H05b 3/06
U.S. Cl. 219—532 6 Claims



An electric heater, particularly for use in a xerographic system, having a frame defining a rectangular opening, and a plurality of reaches of ribbon resistor spanning one pair of opposed walls defining the opening. A plurality of support members span the other pair of opposed walls. The resistor ribbon is extremely thin to generate heat quickly when an electric current is passed therethrough, and is transversely corrugated. The support members extend transversely of the ribbon reaches at places spaced longitudinally thereof and each support member comprises a pair of supports which engage opposite sides of the ribbon.

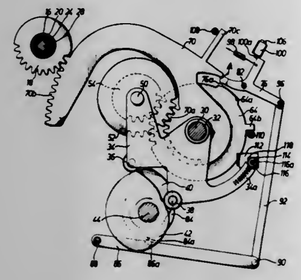
3,673,388
SETTING DEVICE

Claes-Goran Lindelow, Stockholm, Sweden, assignor to Svenska Dataregister AB

Filed Sept. 24, 1970, Ser. No. 75,010
Claims priority, application Sweden, Oct. 1, 1969, 13486/69
Int. Cl. G06k 3/00
U.S. Cl. 235—92 R 8 Claims

A setting device, the preferred embodiment having, type printing wheels settable to different positions by electric pul-

ses including a pulse producing device emitting pulses to a counting machine which emits a pulse to at least one of a plurality of solenoids, each one representing one order, and energizes the solenoids when the machine has received a predetermined number of pulses from the pulse producing device, the number of pulses representing the symbols to be set. Each type printing wheel cooperates with one differential



arrangement for each order which also includes one rotatable gear provided with teeth, one of which, via an intermediate coupling device, is engaged by the solenoid when energized, to be stopped in a position corresponding to the symbol to be set. Two driving rotatable gears of the differential arrangement rotate the type printing wheel and the rotatable gear provided with the teeth, respectively.

3,673,389

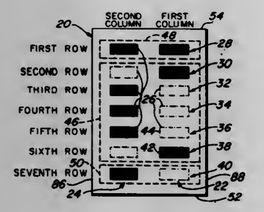
IDENTIFICATION AND REGISTRATION SYSTEM

Christos Basil Kapsambelis, Canton, and David Janett Collins, Duxbury, both of Mass., assignors to Computer Identics Corporation, Westwood, Mass.

Filed March 2, 1970, Ser. No. 15,596

Int. Cl. G06k 7/08, 7/10; G07f 7/02; G06k 19/06

U.S. Cl. 235—61.11 R **10 Claims**



A medium and a system for reading information arrayed in a plurality of sets on the medium, each of the sets including a plurality of items arranged to form a plurality of subsets of items, each subset including an item from at least one of the sets, the items being binary representations having either a first or a second state including means for simultaneously scanning each of the subsets, means for generating an input signal each time a subset is scanned and storage means for receiving an item of information from each set each successive scan of a subset.

3,673,390

PULSE COUNTERS

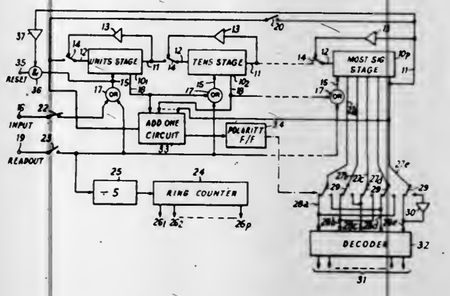
Peter Eric Krebs, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Nov. 16, 1970, Ser. No. 89,581

Claims priority, application Great Britain, Dec. 1, 1969, 58,624/69

Int. Cl. H03k 21/16, 27/00

U.S. Cl. 235—92 SH **7 Claims**



A pulse counter has stages (such as decade stages) formed from binary circuits and preferably each based on a shift register. In the invention the binary circuits are reconnected in one large shift register whereby the digits can be shifted through the register to pass through one stage in turn, whereat they are read out in turn.

3,673,391

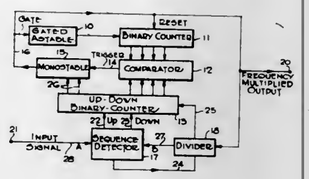
DIGITAL FREQUENCY MULTIPLYING SYSTEM

James H. Lougheed, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 16, 1970, Ser. No. 98,505

Int. Cl. H03k 5/00; G01r 23/02

U.S. Cl. 235—150.3 **7 Claims**



A frequency multiplier in which an output pulse train is obtained, at a frequency related to the frequency of a sequence of input pulses. A counter is connected to a fixed oscillator and an output pulse generated each time the count reaches the same number as that stored in a separate up-down counter. The output frequency is controlled by varying the number stored in the up-down counter. This control is obtained by applying the output pulse train to a dividing circuit, which sets the overall multiplying factor of the system, and comparing the time of occurrence of the output pulses from the dividing circuit and the input pulses to the system to provide an appropriate change in the number stored in the up-down counter.

3,673,392

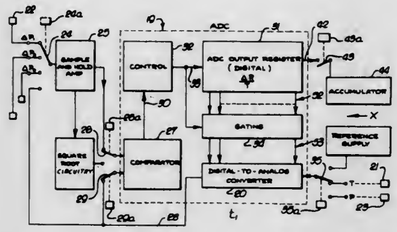
REMOTE TERMINAL COMPUTING UNIT TO COMPUTE B/A × C VALUES, FOR USE BY CENTRAL COMPUTER

Wayne E. Holm, Costa Mesa, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed Feb. 2, 1970, Ser. No. 7,818

Int. Cl. G06j 1/00

U.S. Cl. 235—150.5 **17 Claims**



A computing unit adapted for use in a computing system, but located proximate the parameter measurement location, comprises converter means that includes a digital to analog converter (and may also include an analog to digital converter); an input terminal for a variable A to be connected to the converter means to provide reference input, and an input terminal for a variable B to be connected to the converter means operating as a divider during a first time interval to produce an output representative of the quantity B/A; and an input terminal for a variable C to be connected to the digital to analog converter operating as a multiplier during a second time interval to produce an output representative of the quantity B/A × C.

3,673,393

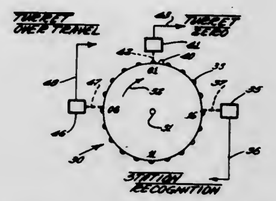
TURRET INDEXING CONTROL CIRCUIT

Thomas G. Schober, West Seneca, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,383

Int. Cl. G06f 15/46

U.S. Cl. 235—151.1 **4 Claims**



A turret indexing system for machine tools having a position counter for representing turret position, with a predetermined coded signal being operable to automatically index the turret to an initial position and to insert a corresponding initial count in the position counter at start up.

3,673,394

MEASURING METHOD AND APPARATUS

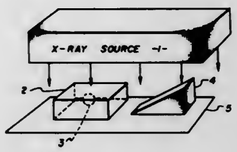
Frederick Hartmann, Rolling Hills Estates, Calif., assignor to North American Rockwell Corporation

Filed Feb. 18, 1969, Ser. No. 800,179

Int. Cl. G01n 23/04

U.S. Cl. 235—151.3 **17 Claims**

Measurement of the shape, location, and density of a hidden object is provided by passing energy such as X-rays through the object in two mutually angulated directions and measuring the changes in energy. The measured changes in the two directions are then combined to reconstruct the shape of the hidden object. Details of a number of reconstruction



techniques are set forth. There is disclosed a reconstruction by hand; the basis for reconstruction by a general purpose computer; a special purpose computer for shape reconstruction; and an alternative solution which may be by hand or by computer.

3,673,395

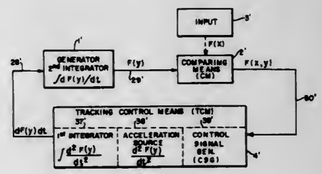
HIGH SPEED DIGITAL TRACKING SYSTEM

Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation

Filed Feb. 5, 1971, Ser. No. 112,993

Int. Cl. H03k 25/04; G01b 7/02

U.S. Cl. 235—151.11 **23 Claims**



Disclosed is a digital readout system, in which a to-be-measured function $F(x)$ (e.g., space position of an Inductosyn transducer) is tracked and measured by a measuring function $F(y)$ (e.g., electrical signal). The to-be-measured function $F(x)$ typically exhibits velocities $dF(x)/dt$ and/or accelerations $d^2F(x)/dt^2$. In order to match the variations of $F(y)$ to those of $F(x)$, $F(y)$ exhibits an acceleration d^{2n} of $F(y)/dt^2$ which by system design at least exceeds any acceleration $d^2F(x)/dt^2$ of $F(x)$ which is to be encountered. The measuring function $F(y)$ is then derived by two controlled integrations of $d^2F(y)/dt^2$. The first integration, controlled by the error signal from an Inductosyn transducer, produces the velocity $dF(y)/dt$ of $F(y)$. The second integration, controlled by the sign of the velocity $dF(y)/$produces $F(y)$ itself. $F(y)$ tracks and is an accurate measure of $F(x)$. Additionally, the velocity $dF(x)/dt$ of $F(x)$ is tracked by the velocity $dF(y)/dt$ of $F(y)$. A second order servo system is produced in which both the velocity and position of the measuring function $F(y)$ track the velocity and position of the to-be-measured function $F(x)$.

3,673,396

NUMERICALLY CONTROLLED CONTOURING SYSTEM

Susumu Seki, Kokubunji-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 440,187, March 16, 1965, abandoned. This application Dec. 30, 1968, Ser. No. 787,951

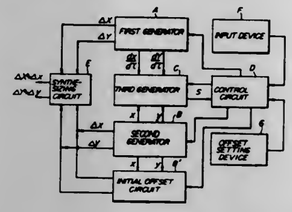
Claims priority, application Japan, March 16, 1964, 39/14378

Int. Cl. G05b 19/24

U.S. Cl. 235—151.11 **1 Claim**

Numerically controlled contouring system wherein original command pulses (ΔX, ΔY) and offset pulses (Δx, Δy) are

synthesized so as to obtain offset command pulses ($\Delta X + \Delta x$, $\Delta Y + \Delta y$) for following the offset curve at a desired offset distance away from an original curve $X(\tau)$, $Y(\tau)$ and an operation for producing said offset command pulses is con-



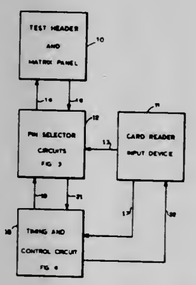
trolled so that the inner product of the tangential direction $(dX/d\tau, dY/d\tau)$ of the original curve and a variable (x, y) varying along the circumference of a circle having a radius equal to the offset distance and a center lying on the original curve, is made zero.

3,673,397

CIRCUIT TESTER

Bruce M. Schaefer, Santa Clara, Calif., assignor to The Singer Company, New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,478
Int. Cl. G06f 9/04, 15/20
U.S. Cl. 235—153 **5 Claims**



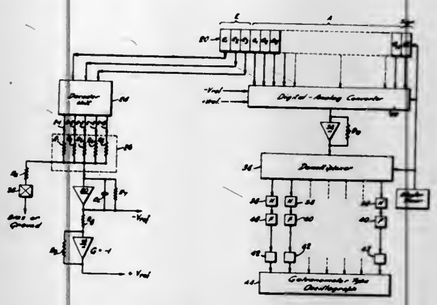
The disclosed embodiment of the present invention is an automatic circuit tester for providing stimuli to, sensing responses from, and sensing the condition of individual input and output terminals of the circuit under test. Identical circuit means are provided for each input and output terminal of the circuit under test, and each includes a storage device for storing a prediction of the expected response of the stimulus to be applied to a corresponding input terminal of the circuit under test. Each of the circuit means also includes a logic circuit for comparing the prediction of the expected response and producing a "fail" signal upon the occurrence of non-coincidence therebetween. Each of the circuit means are automatically provided with data corresponding to the prediction of the expected response or the stimulus to be applied to the circuit under test from a programmable record such as a data processing card. In addition, each circuit means is capable of responding to or providing stimulus in the proper form to the corresponding terminal in accordance with the type of logic employed in the circuit under test. This is accomplished by employing translators for converting input and output signals to appropriate signals which are compatible with the type of logic employed in the circuit means and in the circuit under test. Each circuit means is programmed by programable data processing cards and the information programmed on such cards is strobed by appropriate timing and encoding circuits into a corresponding one of the circuit means.

3,673,398

SEISMIC PLAYBACK SYSTEM

Robert J. Loffbourrow, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 842,477, July 17, 1969, abandoned. This application June 30, 1971, Ser. No. 158,582
Int. Cl. H03k 13/00
U.S. Cl. 235—154 **8 Claims**



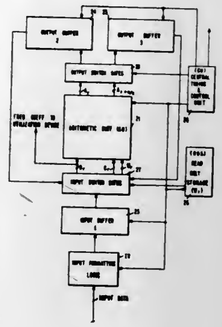
Hereinafter disclosed is methodology and apparatus for converting wide dynamic amplitude range digital data recorded in floating point digital word form, comprising a binary coded mantissa and a binary coded exponent, to an analog signal or visible display, such as an oscillogram of selectively compressed dynamic amplitude range. The digital word occupying a number of binary bit positions is, in algebraic form, $\pm AG^{-E}$; wherein A represents the mantissa or argument, G represents the base or radix of the number system used and E represents the exponent. Since the base G is constant (at for example 8) the only binary bits that need to be recorded are those representing the mantissa A and the exponent E. In reconverting the digital data to analog form for making an oscillogram, wiggle trace or other visible display, the invention contemplates selectively compressing the dynamic amplitude range of the analog signals and at the same time avoiding the introduction of serious distortions.

3,673,399

FFT PROCESSOR WITH UNIQUE ADDRESSING

Peter J. Hancke, Apalachin; Monroe Judkovics, Endicott, and Robert J. Urquhart, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1970, Ser. No. 48,624
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **21 Claims**



A real time digital Fourier analyzer using the Cooley-Tukey algorithm for calculating the Fast Fourier Transform. An

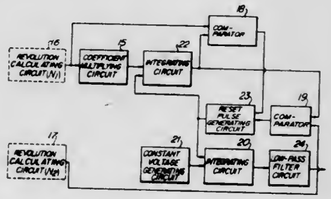
arithmetic unit simultaneously performs the two complex calculations $A_r = B_r + W_r C_r$ and $A_{r+N/2} = B_r - W_r C_r$. The calculated results are simultaneously stored and retrieved in an in-place operation in dual buffers in successive iterations. Addressing of the buffers uses a single binary address counter and sequential bit complementing for simultaneously addressing both buffers. Parity checking of the binary counter output address controls multiplexing logic to selectively address the buffers to store the calculated results into the desired buffer storage locations.

3,673,400

SLIP RATIO CALCULATING DEVICE

Osamu Ito, Tokyota, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed May 28, 1970, Ser. No. 41,293
Claims priority, application Japan, June 9, 1969, 44/45200
Int. Cl. G06g 7/16
U.S. Cl. 235—196 **3 Claims**



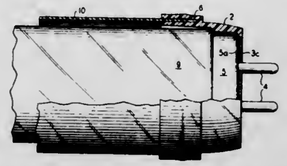
A slip ratio calculating device for calculating a slip ratio, i.e., the ratio of two revolutions are prepared, one of the voltage signals is multiplied by one n-th in a coefficient multiplying circuit. This coefficient-multiplied output is integrated in a first integrating circuit and then compared with the other of said voltage signals in a comparator. This comparator generates an output when the two input signals become equal. The resultant output works to reset the integrating circuit through a reset pulse generating circuit. The first integrating circuit renews integration upon disappearance of a reset pulse. There is provided a second integrating circuit which integrates the output of a constant voltage generating circuit and is reset by said reset pulse. The peak value of the integrated voltage is proportional to the revolution ratio. Thus, the ratio of two revolutions which is subjected to restless change can be obtained in the form of the peak value of the output voltage from the second integrating circuit.

3,673,401

FLUORESCENT LAMP PROTECTION APPARATUS

Paul R. Du Pont, Gillette, N.J., assignor to Thermoplastic Processes Inc., Stirling, N.J.

Filed Oct. 29, 1969, Ser. No. 872,321
Int. Cl. H05b 33/04
U.S. Cl. 240—11.4 **4 Claims**



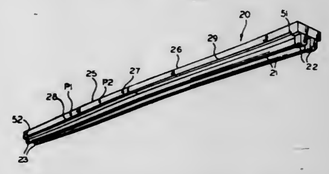
A fluorescent lamp jacket assembly is disclosed employing an expansible or dilatable plastic jacket which substantially encloses the entire length of the glass envelope of a fluorescent lamp and is held to the lamp by means of a pair of plastic end caps so that rupturing of the glass lamp envelope will not be accompanied by bursting or separation of the jacket or its end caps, thereby containing all the debris ensuing from the implosion reaction accompanying breaking of the fluorescent lamp.

3,673,402

EXTENDIBLE LIGHTING FIXTURE

Harvey I. Welss, 8837 Kastner, Skokie, Ill.

Filed Oct. 19, 1970, Ser. No. 81,746
Int. Cl. H05b 33/00
U.S. Cl. 240—51.11 R **14 Claims**



A flourescent lighting fixture housing is manufactured in a compact size and shape. While in this compact size, the fixture is shipped, warehoused, and otherwise manipulated prior to installation. To facilitate further manipulation during the actual installation itself, it is possible to mount the fixture while in its compact condition, and to thereafter extend it to its full length. There are many savings which result from such a fixture.

3,673,403

LIGHT ASSEMBLY RAISING AND LOWERING MECHANISM WITH PIN AND DOG DEVICE

Roger P. Woods, 5607 Lakeview Drive, Calgary 10, Alberta, Canada

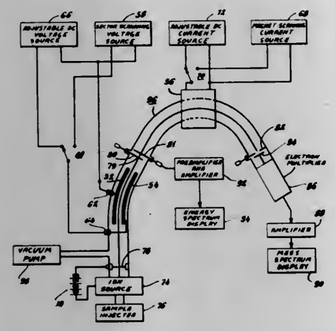
Filed March 24, 1971, Ser. No. 127,687
Int. Cl. F21v 21/14, 21/36
U.S. Cl. 240—64 **4 Claims**



A raising and lowering mechanism for a light assembly in a high mast lighting structure includes a light assembly supporting ring encircling a hollow pole on which the light assembly is mounted. The ring has a fixed operating position at the top of the pole. A winch with flexible line means is employed to impart travelling movement to the ring and light assembly up and down the pole. Flexible line branches are connected to the ring at diametrically opposite points. A pair of upright pins are fixedly mounted on the ring and each pin cooperates with a pair of pivoting dogs mounted in the housing to define the

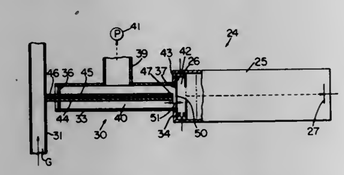
fixed operating position and to release the ring and light assembly from such position by suitable operation of the winch.

3,673,404
ION KINETIC ENERGY ANALYSIS
Harold W. Major, Jr., Trumbull, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed May 15, 1970, Ser. No. 37,565
Int. Cl. B01d 59/44
U.S. Cl. 250—41.9 ME 1 Claim



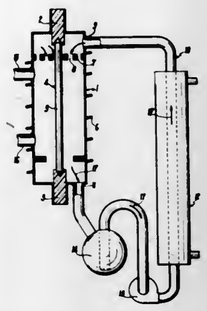
A method of ion kinetic energy analysis is provided by forming ions including metastable ions from a vaporized sample material, accelerating the ions toward a target collector electrode through an electric field, and for an interval of time for enhancing the probability of decomposition of the metastable ions in an area along a trajectory of the ions intermediate the ion source and the electric field, varying the electric field intensity for causing daughter ions of differing kinetic energy to be successively focused at a point along the trajectory and providing a spectrum display of the intensity of the ions formed at the point in synchronism with the field variation.

3,673,405
GAS INLET SYSTEM FOR A MASS SPECTROMETER
Charles J. Moorman, and Fred A. Reuter, both of Cincinnati, Ohio, assignors to The Bendix Corporation
Continuation-in-part of Ser. No. 812,582, March 28, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,576
Int. Cl. H01J 39/34
U.S. Cl. 250—41.9 S 11 Claims



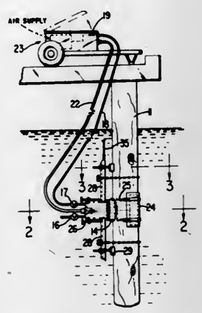
A mass spectrometer having an improved inlet system which assures that there is a minimum time lag, generally of the order of milliseconds, between changes in the composition of a material being analyzed and the analysis of corresponding changes in the associated spectra. The inlet system includes a primary leak directly opposite and closely spaced to a secondary leak leading into an ionization chamber so that changes in the composition of a gas leaving the primary leak are more rapidly communicated to the ionization chamfer for faster analysis by the mass spectrometer.

3,673,406
ISOTOPE SEPARATION APPARATUS
Guy Nief, Paris, and Jean-Pierre Morand, Arcueil, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed July 18, 1969, Ser. No. 843,058
Int. Cl. G01n 21/26; G01j 3/42
U.S. Cl. 250—43 8 Claims



Apparatus for the photochemical separation of an isotope from a mixture of isotopes of an element, such as mercury, comprising at least one monoisotopic discharge lamp mounted in a fluid-tight chamber, an electrically conductive winding exciting the discharge lamp, means for circulating a liquid non-oxidizable and unreactive with the element through the chamber to continuously flush the walls of the chamber and the lamp, and an inlet and outlet in the chamber for introducing and exhausting a gaseous mixture containing the element and at least one substance which reacts with the isotope to be separated.

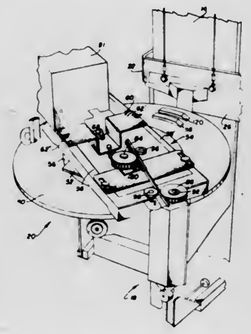
3,673,407
RADIOGRAPHIC APPARATUS FOR UNDERWATER INSPECTION OF WOODEN PILINGS
George C. Wiswell, Jr., 1014 Pequot Road, Southport, Conn.
Filed Feb. 19, 1969, Ser. No. 800,432
Int. Cl. H01J 37/20
U.S. Cl. 250—52 3 Claims



An underwater apparatus employing radioactive material comprising a cylindrical chamber having a flexible end wall with the chamber being mounted against an underwater object through which the radiant energy rays are to be passed for radiographic purposes so that the flexible wall conforms to the surface of the object. A film pack is retained on the other side

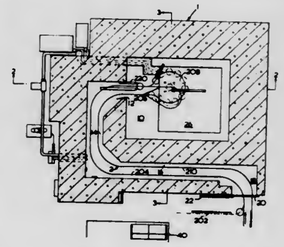
of the object opposite the flexible wall, and water is evacuated from the chamber. A source of radiation is positioned through a flexible conduit into the closed chamber opposite the flexible wall. The chamber has an inlet valve connected to a source of air under pressure and an exhaust valve.

3,673,408
COMBINATION RADIOGRAPHIC APPARATUS
Merton Moss, 6701 N. Keeler, Lincolnwood, Ill.
Filed April 27, 1970, Ser. No. 32,217
Int. Cl. G03b 41/16
U.S. Cl. 250—61.5 26 Claims



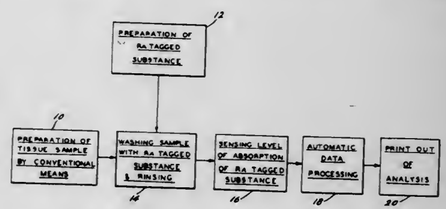
A combination radiographic apparatus for taking panoramic, intra oral, occlusal and cephalometric and other types of radiographs of the head, jawbone and teeth, said apparatus comprising a rotating anode tube X-ray source, a film holder assembly and means for interchanging the pivot point of rotation relative to the subject being X-rayed. Pivot shifting means are also provided for shifting the pivot point by shifting the apparatus relative to the subject; the subject remaining stationary or shifting a free standing or sitting subject to predetermined positions with the apparatus remaining stationary. The X-ray source and film holder assembly are disposed opposite each other, the subject matter to be X-rayed being placed directly in line between the source and the film.

3,673,409
IRRADIATION APPARATUS FOR PROVIDING A HIGH INITIAL IRRADIATION OF THE PRODUCT
William R. Green, Ottawa, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed March 27, 1970, Ser. No. 23,273
Claims priority, application Canada, Feb. 6, 1970, 074167
Int. Cl. G21h 5/00
U.S. Cl. 250—106 R 6 Claims



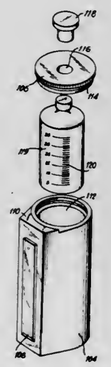
There is disclosed apparatus for the radioactive irradiation of products whose composition requires a relatively high intensity of irradiation for a short period followed by a relatively low intensity of irradiation for a longer period. In order to efficiently utilize the source, the product is passed into the center of a rack of source material and thereafter passed around the outside of the rack. The product is cooled by water during irradiation and the same water is used to effect rotation of the product.

3,673,410
METHOD OF EXAMINATION OF CELL SAMPLES USING A RADIOACTIVELY TAGGED DYE
John H. Waite, 46 Grove St., Haddonfield, N.J., and John H. Nodine, 523 Richards Road, Wayne, Pa.
Continuation-in-part of Ser. Nos. 836,439, June 25, 1969, abandoned, and Ser. No. 24,441, April 30, 1970, abandoned. This application June 9, 1970, Ser. No. 44,818
Int. Cl. G21h 5/02; G01t 1/20
U.S. Cl. 250—106 T 26 Claims



A sample of cells from a body under investigation is treated with a radioactively tagged substance which is determined to be selectively absorbed by one or more predetermined cell types sought to be identified either as disease producing cells or abnormal cells of the body and distinguished from other cell types. The radioactively tagged substance is aborbed in different amounts by some cells and rejected by other cells. After treatment and washing, the level of radioactivity of the cell sample is sensed in order to determine from the degree of absorption of the radioactively tagged substance information about the presence of absence of disease. The technique may be applied to mass screening for disease of a particular type or types by collecting and identifying similar samples from many subjects and using a predetermined common standard of radiation level to eliminate those samples which are clearly free from disease.

3,673,411
HOLDER FOR RADIOACTIVE MATERIAL
Herman Glaser, New Hyde Park, N.Y., assignor to Nuclear Associates, Inc., Westbury, N.Y.
Continuation-in-part of Ser. No. 782,311, Dec. 9, 1968. This application March 3, 1970, Ser. No. 16,017
Int. Cl. G21f 7/02
U.S. Cl. 250—108 R 7 Claims



Holder for radioactive material fabricated of high density material to reduce transmission of energy, either by radiation

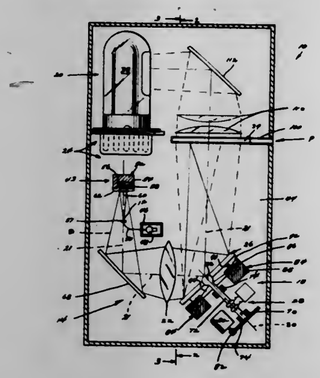
or particle bombardment, either inwardly or outwardly thereof while yet enabling observation of material within an inner container or vial.

3,673,412

RADIANT ENERGY BEAM SCANNING METHOD AND APPARATUS

Gaylor G. Olson, Inglewood, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed March 2, 1970, Ser. No. 15,372
Int. Cl. G01J 1/20; G11b 7/08
U.S. Cl. 250—201 8 Claims



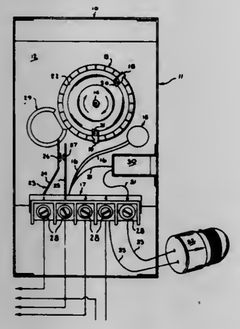
A radiant energy beam scanning method and apparatus having means for projecting a beam of radiant energy toward and bringing the beam to focus within a scanning plane, scanning means for deflecting the beam laterally to cause scanning motion of the beam along a prescribed scan track within the scanning plane, and servo means for sensing lateral departure of the beam from the scan track, generating tracking error signals related to the direction of such departure, and controlling the scanning means in response to the tracking signals to maintain the beam on the scan track. A recording and playback method and apparatus embodying the scanning apparatus for recording a data track on a record and subsequently playing back the data track.

3,673,413

TIME AND LIGHT CONTROLLED SWITCHING CIRCUIT

Art Lee, El Paso, Ill., assignor to General Electric Company

Filed Aug. 28, 1970, Ser. No. 67,899
Int. Cl. G09f 11/10; H01h 47/24; H05b 37/02
U.S. Cl. 250—206 7 Claims



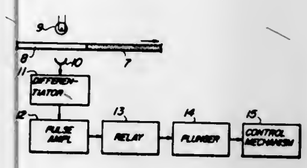
A control system comprising a device for turning ON and OFF a motor at set times each day, for turning ON lights during the ON period of the motor upon the onset of darkness, and for turning the lights OFF at the same time as the motor, the device including a timer and its contacts, a relay, a filter capacitor, a resistor, diode, and a photocell, the latter being mounted remotely, the motor of the timer and a series combination of the photocell and relay coil being connected across line voltage in parallel, the contacts of the timer for a predetermined period of time each day connecting line voltage to the rotator motor load and to the normally closed contacts of the photocell controlled relay which are held open during the day, the contacts of the timer also supplying electrical power to the lighting circuits when the relay is de-energized, and the normally closed relay contacts being open during the daylight hours when the resistance of the photocell is minimum thereby allowing maximum current flow to energize the relay coil thus keeping the relay contacts open.

3,673,414

AUTOMATIC TAPE FEED CONTROLLING MEANS

Hiroshi Taniguchi, Hirakata; Takahiro Nakamura, Neyagawa, and Hideki Sakamoto, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd.

Filed Sept. 8, 1970, Ser. No. 70,035
Claims priority, application Japan, Sept. 18, 1969, 44/75589
Int. Cl. H01J 39/12
U.S. Cl. 250—206 4 Claims



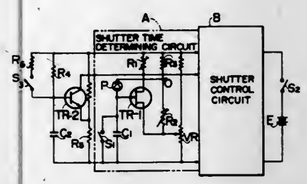
The prescribed position along the running direction of the tape is detected and taken out as an electric signal. The unidirectional component of the differentiated output of the detected electric signal is taken out for controlling the tape driving system to feed or stop the tape in a steady condition.

3,673,415

SHUTTER OPERATING CIRCUIT HAVING MEANS TO CLOSE SHUTTER WHEN LIGHT IS INSUFFICIENT

Hirofumi Yoshimura, Okaya and Hisatoshi Takahata, Shimosuwa-Machi, both of Japan, assignors to Yashica Company Limited, Tokyo, Japan

Filed Nov. 4, 1970, Ser. No. 86,653
Claims priority, application Japan, Nov. 8, 1969, 44/105631
Int. Cl. G01J 1/00; H01J 39/12
U.S. Cl. 250—214 P 4 Claims



In a shutter operating circuit comprising a shutter time determining circuit including a photo-electromotive element, and a high input impedance transistor; means to initiate the operation of the shutter time determining circuit; a shutter control circuit controlled by the shutter time determining circuit; and a source of supply connected to said two circuits, there are provided a series circuit connected across the source

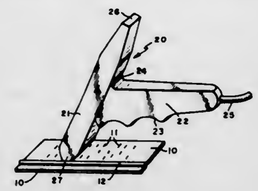
and including serially connected resistor and capacitor, and a switching transistor with its base electrode connected to the juncture between the resistor and the capacitor, the series circuit acting to trigger the switching transistor to operate the shutter control circuit when the shutter time determining circuit fails to operate after elapse of a predetermined interval after the operation of the initiating means.

3,673,416

HAND HELD PHOTO-OPTICAL READER FOR PRINTED DOCUMENTS

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Filed March 19, 1970, Ser. No. 21,139
Int. Cl. G01n 21/30; G06k 7/00; H01J 39/12
U.S. Cl. 250—219 DC 5 Claims



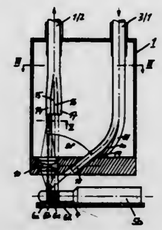
A reader which is designed to be held in the hand and to be scanned over a document for reading intelligence contained on the document in the form of printed code. The reader contains no moving parts and comprises essentially a housing with a reading aperture through which the printed matter is exposed, a photo electric cell array to sense the coded print, and a lens positioned so as to focus the printed information obtained through the aperture onto the photocell array; a light source whose direct light is shielded from the photocells is positioned contiguous to the aperture to shed light on the printed matter to be read.

3,673,417

PHOTOELECTRIC SCANNING APPARATUS FOR DETECTING CODE MARKINGS

Robert Wahli, Unterengstringen, Switzerland, assignor to Ciba-Geigy AG

Filed Aug. 7, 1970, Ser. No. 62,088
Claims priority, application Switzerland, Aug. 12, 1969, 12217/69
Int. Cl. G06c 9/06
U.S. Cl. 250—219 D 4 Claims



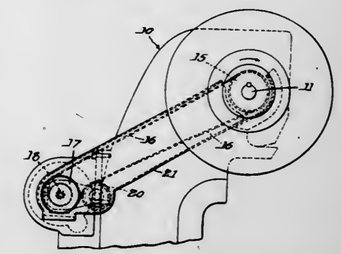
A photoelectric scanning head is provided for identifying ampoules by detecting different combinations of color-coded rings on the necks of the ampoules which are moved past the head in a direction aligning the axes of the ampoules at right angles to their direction of travel. The head includes a plurality of first optical systems having lenses arranged in a staggered relationship in relation to the direction of travel of the ampoules, the lenses imaging light from the code rings via associated optical fibers to a photosensitive device which provides signals corresponding to the coding provided by said rings to identify the ampoule being scanned. The rings are illuminated by a plurality of second optical systems which comprise a bundle of optical fibers which guide separate beams of light from a source onto the rings as they are being scanned. The ends of the optical fibers of the second optical systems are positioned in the head in the same staggered relationship as the lenses of the first optical systems.

3,673,418

AUTOMATIC REGISTERING APPARATUS

Chester M. Wlig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Sept. 14, 1970, Ser. No. 71,994
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DR 5 Claims



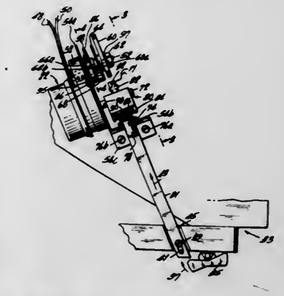
The strip material which is fed intermittently in desired feed lengths is provided with register marks at feed length intervals and photoelectric means continuously scan the strip to detect the marks and effect adjustment of the feed rolls either forwardly or rearwardly through the brake mechanism so as obtain the desired accurate registration of the marks. The photoelectric means produce electric signals as the marks are scanned and said electric signals are passed by shutter means only in the event the mark is detected in either the lead or in the lag zones. The electric signals thus passed are caused to produce electric pulses which are delivered to an electric motor having driving relation with the brake mechanism.

3,673,419

AUTOMATIC SHUT-OFF MECHANISM FOR COPYING MACHINE

Torulf Aasen, Hollywood, Fla., assignor to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed March 16, 1970, Ser. No. 19,994
Int. Cl. G06m 7/00
U.S. Cl. 250—222 R 6 Claims



An automatic shut-off mechanism for a copying machine. A timing motor determines when no new original document to be copied has been fed into the machine for 60 seconds. At the completion of the timing cycle, an auxiliary contact in the

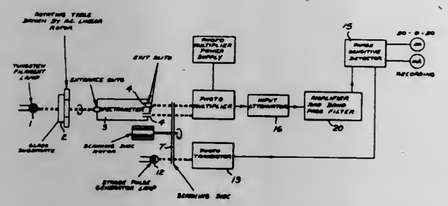
main power line is opened. In order to close this contact, the main on-off switch on the front panel of the machine must first be turned off, the auxiliary contact being closed at this time by a mechanical linkage to the main switch. Whenever a new document to be copied is fed into the machine during the running of the timing motor, the motor resets to the "zero" time position and the timing cycle begins once again.

3,673,420

THICKNESS CONTROL SYSTEM FOR MULTI-LAYER OPTICAL THIN FILM WORK

John Ward, Elizabeth Park, and Ross Paterson, Vale Park, both of Australia, assignors to The Commonwealth of Australia care of The Secretary of Supply, Parkes, Canberra, Australia

Filed May 8, 1969, Ser. No. 823,013
Claims priority, application Australia, May 10, 1968, 37631
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 TH 8 Claims



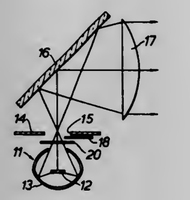
A method and apparatus for controlling the thickness of multi-layer optical thin film work by balancing light from each side of a particular wavelength through a chopper which alternately passes the light to filtering and detecting means so arranged that when a quarter wavelength or a multiple thereof has been deposited a balanced reading will be restored, a strobe pulse variable in time in relation to the processed waveform being used to select a reference point which will give enhanced accuracy of deposition control.

3,673,421

LIGHTING SYSTEMS FOR ROAD VEHICLES

Harris Vernon Hicks, Lichfield Staffs, and Kenneth James Jones, Sutton Coldfield, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 734,300, June 4, 1968, which is a continuation-in-part of Ser. No. 485,788, Sept. 8, 1965, abandoned. This application Feb. 12, 1969, Ser. No. 798,744
Claims priority, application Great Britain, Oct. 1, 1968, 46,450/68The portion of the term of this patent subsequent to Dec. 23, 1986, has been disclaimed.
Int. Cl. G01d *5/34*
U.S. Cl. 250—229 6 Claims



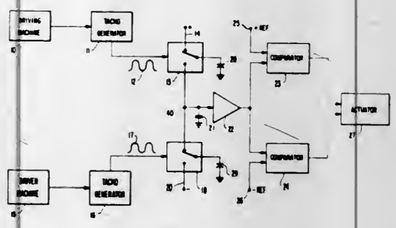
1. A lighting system for a road vehicle, comprising in combination a light source and associated lens for producing a beam of light illuminating the road in front of the vehicle, a mask having therein an aperture, focusing means associated with the light source and arranged so that an image of the light source appears in the aperture, and a well defined image of the aperture is projected forwardly to constitute said beam, a shutter movable from a rest position across the aperture, and means sensitive to light received from an oncoming vehicle for progressively moving the shutter across the aperture so as to cut off sufficient of the beam to avoid dazzling the driver of the oncoming vehicle.

3,673,422

LOSS OF SYNCHRONISM DETECTOR

Harry G. Parke, Brooklyn, N.Y., assignor to Galbraith-Pilot Marine Corporation, Brooklyn, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,283
Int. Cl. H02j *1/00*
U.S. Cl. 307—87 13 Claims



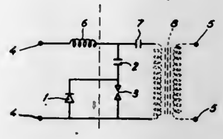
A driving machine and a driven machine are to be kept in synchronism. Tachometer generators attached to both machines generate signals which charge a capacitor either positively or negatively with respect to a given reference, and should the charge on this capacitor increase above a certain level, a circuit breaker means opens the line connecting the armatures of the two machines.

3,673,423

ELECTRONIC HIGH FREQUENCY PULSE GENERATOR

Luis Valls Planas, Barcelona, Spain, assignor to Neutra Cuatro S.A., Barcelona, Spain

Filed Oct. 19, 1970, Ser. No. 82,054
Claims priority, application Spain, Oct. 17, 1969, 373222
Int. Cl. H03k *3/00*
U.S. Cl. 307—107 4 Claims



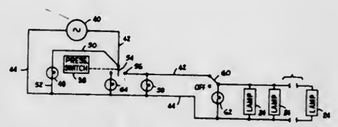
An electronic high frequency pulse generator, connected to the A.C. feed mains, constituted essentially by a voltage limiter, a diode and a capacitor arranged in such a way that alternate half-cycles of the alternating feed current produce a high frequency pulse usable in a plurality of industrial processes.

3,673,424

PRESSURIZED LIGHTING SYSTEM

Graydon A. Phleger, Jr., Cocoa, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1971, Ser. No. 114,849
Int. Cl. H01h *35/18*
U.S. Cl. 307—118 3 Claims



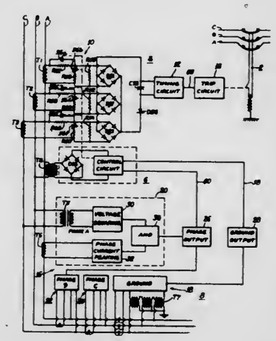
A safety lighting system for a chain of lamps, each of which is housed within a hermetically sealed translucent tubular housing member. A control box is provided for supplying electrical power to the lamps in the lighting assemblies. A pressurized source of inert gas is fed through the control box at a predetermined pressure and through each of the sealed translucent tubular housing members. A pressure sensitive switch is provided in the control box for disconnecting the electrical power to the lamps when the pressure of the inert gas within any of the translucent tubular housing members drop below a predetermined level.

3,673,425

DIRECTIONAL CURRENT RELAY

Michael J. Plichta, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 1, 1971, Ser. No. 176,912
Int. Cl. H02h *3/18*
U.S. Cl. 307—127 14 Claims



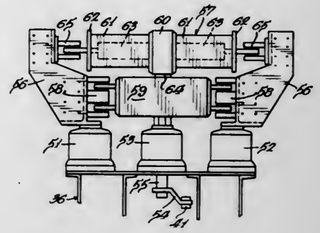
A current direction indicator including control means for performing a predetermined operation in a poly-phase electrical power system independently of the magnitude of current flow in the polyphase system. A separate current direction indicating circuit is provided for each phase and includes a first circuit for producing a signal in response to a change in polarity of current in one of the phases of the system, a second circuit for producing a signal functionally related to the polarity of the voltage between two of the phases of the system and a third circuit which produces an output signal when both signals of the first and second circuits occur simultaneously. The control means operates in response to the output signal to initiate the predetermined operation in the system.

3,673,426

PHASE REVERSAL SWITCH AND/OR CIRCUIT BREAKER

Donald E. Weston, East Sebago, Maine, and Raymond F. Kupetis, Chicago, Ill., assignors to H. K. Porter Company, Inc., Chicago, Ill.

Filed March 31, 1970, Ser. No. 24,079
Int. Cl. H01h *35/00*
U.S. Cl. 307—127 11 Claims



Apparatus for selectively connecting a rotary electric machine to an electric power distribution system for use as a generator supplying power to the system or as a motor drawing power from the system, comprising in a three phase system, a switch for the common phase, a pair of switches for each of the other two phases, and interphase means coupling one switch of each of said pairs to the opposite of said two phases, whereby machine phases A, B and C may be connected to system phases A, B and C respectively, or system phases A, B and C may be connected to machine phases B, A and C respectively; and for other phase reversing service.

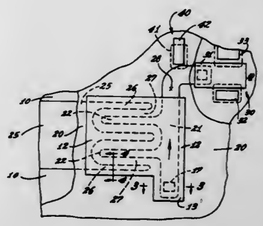
Also, improved switch construction for performing the above and other functions.

3,673,427

INPUT CIRCUIT STRUCTURE FOR MOS INTEGRATED CIRCUITS

Michael R. McCoy, and Glen E. Nixon, both of San Jose, Calif., assignors to Electronic Arrays, Inc., Mountain View, Calif.

Filed Feb. 2, 1970, Ser. No. 7,768
Int. Cl. H011 *19/00*
U.S. Cl. 307—202 6 Claims

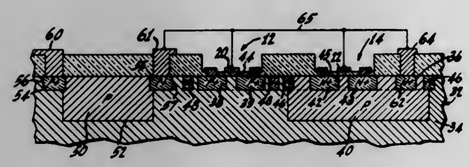


An MOS integrated circuit has input circuit bonding pads individually used as gate in a protective transistor, having channel width larger than the linear dimensions of a pad, and having turn-on voltage above normal input signal levels. The transistor switches into the circuit attenuating resistance, and a zener diode is shunted parallel to the input signal path in the interior of the IC-chip.

3,673,428
INPUT TRANSIENT PROTECTION FOR COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT DEVICE

Terry George Athanas, Lebanon, N.J., assignor to RCA Corporation

Filed Sept. 18, 1970, Ser. No. 73,343
Int. Cl. H01l 19/00
U.S. Cl. 307—202 9 Claims

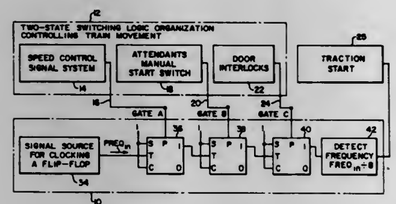


In a CMOS integrated circuit of the type which includes a diffused P type region in which the N type transistors are formed, a resistor-region is provided by diffusion at the same time as that P type region. A diode having low breakdown is established by forming P+ type regions or N+ type regions in electrical communication with the resistor so that the diode breakdown is effectively dominated by the impurity concentration characteristics of the P+ type or N+ type regions.

3,673,429
PSEUDO-AND GATE HAVING FAILSAFE QUALITIES

Robert H. Perry, Monroeville, and Thomas C. Matty, Belle Vernon, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 789,536, Jan. 7, 1969, abandoned.
This application Oct. 19, 1970, Ser. No. 82,101
Int. Cl. H03k 19/22
U.S. Cl. 307—218 9 Claims

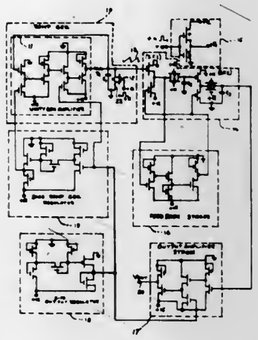


There is disclosed a circuit for performing an AND gate function using two-state D.C. switching logic as the gate inputs, including a sequence of flip-flop stages connected as a pulse frequency dividing network. Each flip-flop stage of the network is individually actuated into its operative role in the divider network by application of one of the logic signal inputs thereto as the stage operating potential. Simultaneous presence of TRUE logic conditions are sensed by application of a pulsing signal of predetermined frequency to the input of the dividing network and detection of the divided frequency at its output. Failure of any component or combination of components of this circuitry produces a no-output condition which is deemed failure in a failsafe manner.

3,673,430
COS/MOS PHASE COMPARATOR FOR MONOLITHIC INTEGRATION

William J. Donoghue, Somerset, N.J., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 23, 1971, Ser. No. 173,896
Int. Cl. H03d 13/00
U.S. Cl. 307—232 3 Claims

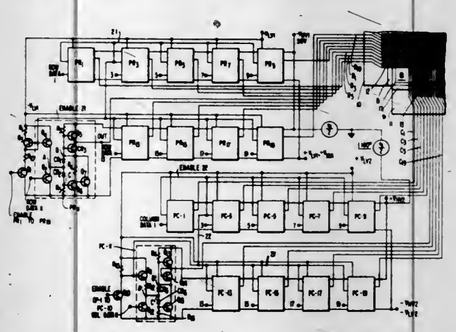


A phase comparator integrated circuit apparatus for comparing a pair of AC signals and providing a substantially pure DC output. The phase converter utilizes the time difference between pulses from two different input signals to provide a DC voltage which is free from AC ripple.

3,673,431
LOW VOLTAGE PULSER CIRCUIT FOR DRIVING ROW-COLUMN CONDUCTOR ARRAYS OF A GAS DISCHARGE DISPLAY CAPABLE OF BEING MADE IN INTEGRATED CIRCUIT FORM

Thomas Edward O'Brien, Philadelphia, Pa., assignor to Owens-Illinois, Inc.

Filed May 28, 1971, Ser. No. 147,764
Int. Cl. H05b 41/00
U.S. Cl. 307—241 3 Claims



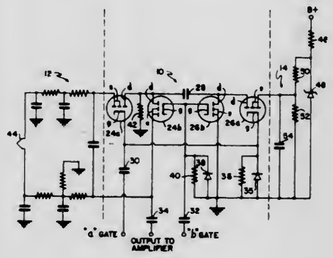
There is disclosed an interfacing system for driving row-column conductor arrays to the gas discharge display panel in a low cost integrated circuit assembly. Due to the requirement of opposite polarity or bidirectional signals being applied to the conductors in the arrays, although the integrated circuits are functionally identical in translating low level logic signals to high voltage pulse signals which are algebraically added to sustainer voltages, the circuits are modified so as to permit

NPN PNP transistors to be formed on the same chip and thus simulate a power PNP transistor.

3,673,432
DIFFERENTIAL VOLTAGE LEVEL DETECTOR WITH MICROVOLT SENSITIVITY

Emile G. Smith, Bethel, and William L. Puskas, Trumbull, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed July 28, 1971, Ser. No. 166,874
Int. Cl. G01r 17/02; H03k 17/22, 17/60
U.S. Cl. 307—246 8 Claims

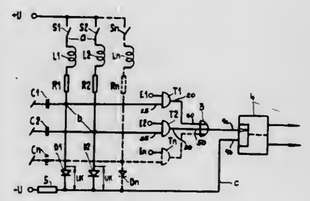


An accurate overtemperature detector includes a system which enables the measurement of very low thermocouple voltages by detecting the difference between the thermocouple input signal voltage and an internally generated reference voltage. The detection is accomplished in a chopper-comparator which balances a millivolt thermocouple signal against an internally generated reference millivolt signal developed by a zener reference diode. In balancing the two voltage levels, one against the other, a chopped difference voltage is generated having a polarity and magnitude proportional to the difference. The difference voltage is then conditioned and applied to a decoder from which a control voltage is developed.

3,673,433
CIRCUIT ARRANGEMENT FOR SELECTIVELY CONNECTING AT LEAST TWO INPUTS TO A COUNTING STAGE POSSESSING AT LEAST ONE PREPARATORY INPUT AND ONE TRIGGERING INPUT AND INCLUDING CONTACT BOUNCE SUPPRESSION CIRCUITRY

Hanspeter Kupfer, Geroldswil, Switzerland, assignor to Albiswerk Zurich AG, Zurich, Switzerland

Filed July 26, 1971, Ser. No. 166,070
Claims priority, application Switzerland, Aug. 21, 1970, 12523/70
Int. Cl. H03k 17/28, 17/16
U.S. Cl. 307—247 A 2 Claims

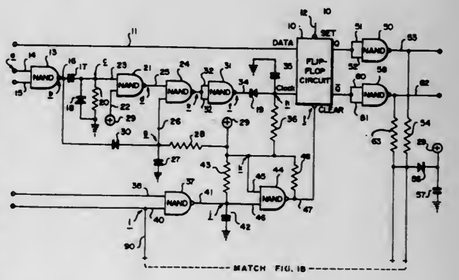


A circuit arrangement for selectively connecting at least two inputs to a counting stage equipped with at least one preparatory input and one triggering input, wherein these inputs are connected in circuit with the triggering input of the counting stage through the agency of associated gates and a successively arranged common gate. A respective input of each associated gate is connected to a voltage via a respective switch controlling such gate. For the purpose of slowing down or retarding the switching-in signal flank there is connected in series with each switch an inductance coil and a damping resistor which collectively form in conjunction with a respective grounded capacitor an at least approximately critically damped series oscillating circuit. The junction point between each damping resistor and associated capacitor is connected via a diode and a common resistor to an oppositely poled voltage, and the junction point between each such diode and the common resistor is connected with the preparatory input of the counting stage.

3,673,434
NOISE IMMUNE FLIP-FLOP CIRCUIT ARRANGEMENT

Michael D. McIntosh, Greencastle, Pa., assignor to Landis Tool Company

Filed Nov. 26, 1969, Ser. No. 880,080
Int. Cl. H03k 3/12
U.S. Cl. 307—247 14 Claims



A noise immune data processing flip-flop circuit arrangement is described in which the clock input for one or more transition triggered flip-flops is fed to the clock input terminal of respective flip-flops via a NAND circuit means which prevents the start of charging of a capacitor, across which triggering voltage is to appear, via a resistor until an input pulse fed to the NAND circuit appears which has at least a given duration thereby making the flip-flop immune to noise pulses of shorter duration. Additionally, the pulse for triggering must have a still greater duration sufficiently long enough to allow the capacitor to reach the transition voltage level for the flip-flop providing further protection from false triggering by noise pulses of still greater duration than the given duration. The clear input for the flip-flop is also provided with NAND circuit means, and the Q and Q outputs from the flip-flop are fed to NAND circuits which are connected to a single voltage supply source via resistors.

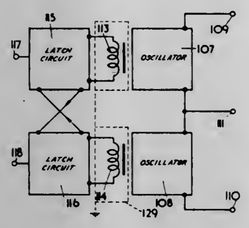
3,673,435
ELECTRONIC RELAY

Brian Stanley, Infinity, Knowle Gardens, Combe Martin, Devon, England

Filed March 17, 1970, Ser. No. 20,240
Claims priority, application Great Britain, March 18, 1969, 14,189/69
Int. Cl. H03k 17/74
U.S. Cl. 307—257 10 Claims

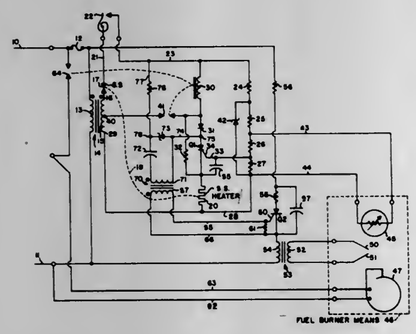
An electronic relay having two push-pull oscillators connected in series. Each oscillator has two transistors and a transformer having, in addition to its input and feedback

windings, a control winding. Each oscillator is controlled by a latch circuit which can prevent oscillation by connecting a low



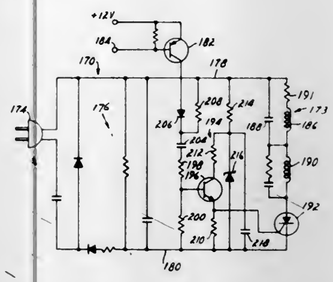
resistor across the control winding. The latch circuits are interconnected so that only one oscillator can oscillate at any time.

3,673,436
LATE PHASE FIRING SWITCHING CIRCUIT
James R. Adams, Jr., Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 11, 1971, Ser. No. 105,395
Int. Cl. H03k 17/28; F23q 3/00
U.S. Cl. 307—246 7 Claims



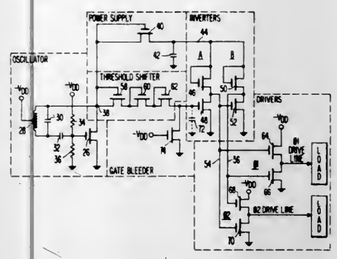
A control system is provided for energizing an electrical load, in the form of a spark ignition transformer, so that the load is energized for a portion of a half wave of the applied alternating current voltage. The control circuit utilizes a capacitor in series with the primary winding of a pulse transformer with this combination paralleled by a Zener diode for triggering a solid state switch such as a Triac or silicon controlled rectifier. The capacitor is charged through the pulse transformer primary by the applied alternating current voltage during the early or rising portion of the applied wave form causing a pulse of the wrong polarity to be applied to the gate of the silicon controlled rectifier until the Zener breakdown voltage is reached, at which voltage the capacitor is held charged. When the applied voltage declines to the Zener breakdown potential and the Zener causes to conduct, the capacitor is allowed to discharge through the pulse transformer primary causing a pulse of the proper polarity to trigger the solid state switch that in turn generates a spark through a step-up transformer.

3,673,437
DAMPED SINUSOIDAL CURRENT PULSE GENERATOR AND METHOD
Donald A. Wright, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed June 29, 1970, Ser. No. 50,840
Int. Cl. H03k 17/00
U.S. Cl. 307—252 J 7 Claims



A damped sinusoidal electromagnetic field is produced by oscillatory current flow in a conductor of an inductive component of an underdamped LC resonant circuit. Energy is stored in the resonant circuit when the resonant circuit is coupled to a steady state D.C. electrical energy source by the triggering into conduction of an SCR connected in series with the resonant circuit and the D.C. source. Energy is transferred to the resonant circuit by an inductor connected in series therewith. The inductance of the inductor is sufficiently less than that of the inductive component of the resonant circuit such that sufficient energy is stored in the resonant circuit at a sufficient rate to cause current flow in the SCR to ultimately cease. Thereupon the SCR shuts off the transfer of energy from the D.C. source to the resonant circuit, and damped sinusoidal oscillation occurs in the resonant circuit to produce a damped sinusoidal electromagnetic field. The SCR is intermittently triggered into conduction to produce an intermittent series of damped sinusoidal electromagnetic fields.

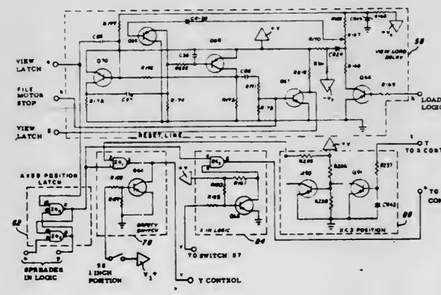
3,673,438
MOS INTEGRATED CIRCUIT DRIVER SYSTEM
George E. Land, Berwyn, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 21, 1970, Ser. No. 100,065
Int. Cl. H03k 3/26
U.S. Cl. 307—270 15 Claims



An integrated circuit driver system utilizing Metal-Oxide-Silicon Field-Effect Transistors (MOS FET's) is disclosed for operation in a two-phase mode for driving a substantially capacitive load. A preferred embodiment of the invention makes use of an alternating current (ac) voltage having a

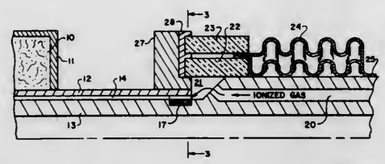
peak-to-peak magnitude somewhat greater than the direct current (dc) supply potential. An auxilliary dc power supply is implemented for converting the ac voltage to an operating potential for inverters which in turn provide the phase inverted signals required by a pair of drivers. The latter generate the alternate phases of the output voltage presented to the load. Additionally, the system exploits the MOS threshold voltage dropping properties to realize a threshold shift of suitable magnitude to insure the required duty cycle of the driver output pulse waveforms.

3,673,439
RESETTABLE TIMING CIRCUIT
Samuel Reader Pearson, Farmers Branch, Tex., assignor to Texas Instrument Incorporated, Dallas, Tex.
Filed Jan. 5, 1971, Ser. No. 103,964
Int. Cl. H03k 17/26
U.S. Cl. 307—293 1 Claim



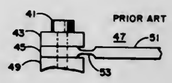
A timing circuit is discloed wherein a single output pulse is generated after a preselectable delay. In response to a first programmed input, the output pulse occurs after a first delay, while control circuitry modifies the duration of the delay in response to a second programmed input. Generation of the output pulse automatically resets the timing circuit so that a new timing cycle may be initiated.

3,673,440
UNINSULATED IN-CORE THERMIONIC DIODE
T. O. Paine, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Jerry P. Davis, La Canada, Calif.
Filed Oct. 15, 1968, Ser. No. 767,741
Int. Cl. H01j 45/00
U.S. Cl. 310—4 5 Claims



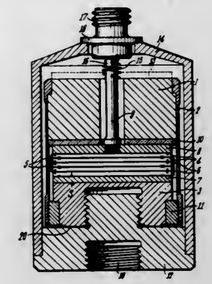
A thermionic energy converter is provided by a plurality of diodes externally heated by a reactor and externally connected in series-parallel arrangement. Each diode assembly comprising a tubular anode within a tubular cathode is located in the core of a nuclear reactor. Ceramic spacers and seals are located at the ends of the diode tubes outside the reactor core. A conductive coolant system is connected directly to the ends of the tubular anodes of a first group of diodes. A conductive bus connects the cathodes of the first group of diodes to complete a parallel arrangement. A second group of diodes in a similar parallel arrangement is connected in series with the first by a direct electrical connection from the bus of one group to the coolant system of the other. Each coolant system is independent of the others and is driven by a separate pumping device that preserves the electrical integrity of the diodes connected thereto.

3,673,441
CONTROL APPARATUS
Larry H. Royster, Cary, N.C., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 1, 1969, Ser. No. 820,927
Int. Cl. H04r 17/00
U.S. Cl. 310—8.6 4 Claims



A spring mounted transducer where the plane of the spring is perpendicular to the longitudinal axis of the transducer and is parallel to the direction of flexure of the transducer. The mounting of the spring is at the transducer centerline for greater efficiency and longer life and the spring in an optional embodiment has a reduced thickness flexing section at the centerline of the transducer along with an improved clamp for greater spring reliability.

3,673,442
TEMPERATURE COMPENSATED PIEZOELECTRIC ACCELEROMETER
Hans Conrad Sonderegger, Sulz-Rickenbach Im Dornaer, Switzerland
Continuation of Ser. No. 430,629, Feb. 5, 1965. This application Dec. 4, 1967, Ser. No. 701,799
Claims priority, application Switzerland, Feb. 14, 1964, 2099/64
Int. Cl. H04r 17/00
U.S. Cl. 310—8.4 13 Claims



An acceleration measuring device which includes within a casing a piezo-electric system, a seismic mass and a relatively fixed abutment; temperature-compensating elements are provided at the outer end or ends of the piezo-electric system which have a coefficient of expansion greater than that of the materials of the adjacent elements.

3,673,443
PRESSURE TRANSDUCER WITH REDUCED TEMPERATURE SENSITIVITY

Vernon H. Siegel, Clarence, N.Y., assignor to Sundstrand Data Control Incorporated, Redmond, Wash.

Continuation of Ser. No. 22,132, April 1, 1970, abandoned, which is a continuation of Ser. No. 703,621, Feb. 7, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,330
Int. Cl. H01v 7/00
U.S. Cl. 310—8.7 2 Claims

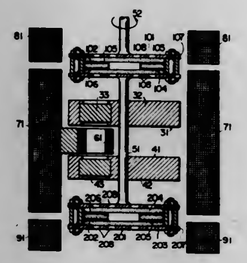


Disclosed is a piezoelectric pressure transducer particularly suited for use with an engine gauge for measuring pressures in internal combustion engines or for sensing pressure in other severe temperature environments. A thin, flat diaphragm is protected by a ceramic shield and other elements of the gauge are made of material having a low thermal expansion such as invar. Access to the diaphragm is by way of a small annular, stepped groove to cool the gases acting on the diaphragm. A piezoelectric element such as quartz having two sensitive axes is employed and long term temperature effects are nullified by applying compensating stresses to the second axis of the piezoelectric element.

3,673,444
ROTARY ELECTRIC MACHINE

Ushio Kawabe, Nishitama; Hiroshi Kimura, Kita; Hiroshi Tomeoku, Hachioji, and Toshio Doi, Minamitama, all of Japan, assignors to Hitachi, Ltd., Chiyoda-ku, Tokyo, Japan

Filed Oct. 9, 1970, Ser. No. 79,546
Claims priority, application Japan, Oct. 9, 1969, 44/80794
Int. Cl. H02k 9/00
U.S. Cl. 310—10 11 Claims

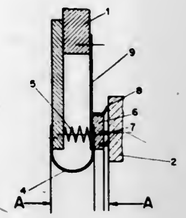


A rotary electric machine having a superconducting rotor and bearings, which utilize the magnetic solid property of an inhomogeneous hard superconducting material, for forming an a.c. generator or motor.

3,673,445
DUST SEAL FOR ELECTRIC MOTORS

Hansrudolf Rutz, Wettingen, and Tassilo Schmollinger, Gebenstorf, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 21, 1970, Ser. No. 99,836
Claims priority, application Switzerland, Jan. 7, 1970, 95/70
Int. Cl. H02k 5/12
U.S. Cl. 310—88 4 Claims

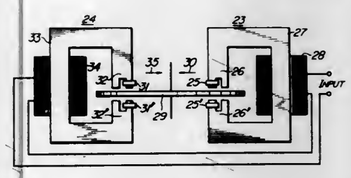


A dust seal structure applied to electric motors to prevent ingress of dust and other foreign matter into the air gap between the stator and rotor includes a stator supported ring-shaped lip seal member and a ring-shaped spacer member which bear in an axial direction against a corresponding surface on the rotor. The lip seal and spacer members are mounted on an axially movable support ring which is carried by the radially inner ends of a circumferential array of flexible strips whose outer ends are secured to the stator, and compression springs associated with the flexible strips exert an axially directed force which is transmitted to the lip seal and spacer members thus to enable the latter to follow any axial movements of the rotor. The spacer member which is non-yieldable absorbs axial thrust exerted by the springs and thus prevents the lip seal from being deformed as well as acting as a guide for the seal.

3,673,446
INDUCTION DISC TYPE RELAY

Mitsuo Watai, Mito, and Koya Ito, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 19, 1970, Ser. No. 91,013
Claims priority, application Japan, Nov. 21, 1969, 44/92969
Int. Cl. H02k 17/10
U.S. Cl. 310—172 4 Claims

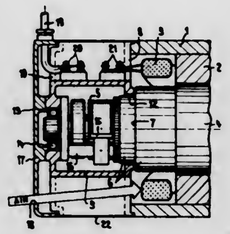


An induction disc type relay adapted to apply to an induction disc a rotational torque proportional to an input so that an operating output is produced at the expiration of a predetermined time dependent on the magnitude of the input after the application of the input. Included in the relay are two sets of shading coils and reluctance paths responsive to the same input signal for applying the rotation torque to the induction disc, whereby and desired time lag characteristic can be readily obtained.

3,673,447
COMMUTATOR COOLING MEANS

Bruno Zumbach, Grunemattstrasse 8, CH-2552, Orpund-Biel, and Heinz Zumbach, Bartolomausweg 16, CH-2500, Biel, both of Switzerland

Filed Aug. 20, 1968, Ser. No. 760,382
Claims priority, application Switzerland, Aug. 24, 1967, 11907/67
Int. Cl. H02k 9/28
U.S. Cl. 310—227 8 Claims

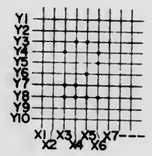


An electric machine having a rotor winding connected to a collector or to slip rings and brushes contacting said collector or slip rings, said collector or slip rings and brushes being capsuled in a supporting structure for the one bearing of the machine and the brushes, axial cooling-air ducts being formed in said structure for admitting cooling air to the windings of the machine.

3,673,448
CATHODE RAY TUBES HAVING ROW AND COLUMN ELECTRODES ATTACHED TO OPPOSITE SIDES OF INSULATING SUBSTRATE

Tadashi Nakamura, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed Oct. 8, 1969, Ser. No. 864,798
Claims priority, application Japan, Oct. 12, 1968, 43/73904
Int. Cl. H01J 29/46, 29/06, 29/74
U.S. Cl. 313—86 1 Claim

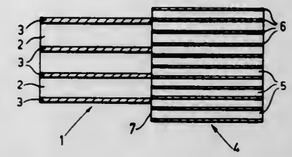


In a cathode ray tube wherein an electron beam emitted from a cathode electrode is focused by an electron lens and deflected by a deflecting device upon a flourescent screen, a character forming means is provided across the path of the electron beam comprising an insulating substrate and electrode elements formed on the opposite sides of the substrate which are arranged in a matrix. The substrate and electrode elements are formed with aligned perforations at respective cross points of the matrix and the perforations of the electrode elements at selected cross points are caused to create positive field to permit passage of the electron beam to display a selected character, numeral or pattern.

3,673,449
CHANNEL AMPLIFYING DEVICE COMPRISING A PLURALITY OF COUPLED CHANNEL PLATES

Gilbert Eschard, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed April 1, 1970, Ser. No. 24,675
Claims priority, application France, April 4, 1969, 6910558
Int. Cl. H01J 43/00
U.S. Cl. 313—105 3 Claims

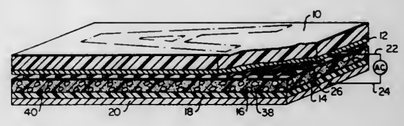


A channel amplifying device comprising a plurality of coupled channel plates, the diameters of the channels on either side of the coupling area being different from each other, one channel of one of the channel plates opening out in a plurality of channels of the channel plate coupled therewith.

3,673,450
ELECTROLUMINESCENT TECHNIQUES AND DEVICES

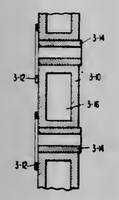
Sam L. Leach, Palos Verdes Peninsula, Calif., assignor to Spectra-Tech Corporation, El Segundo, Calif.

Filed Jan. 30, 1970, Ser. No. 7,157
Int. Cl. H01J 1/62
U.S. Cl. 313—108 A 11 Claims



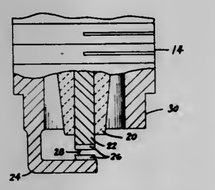
New electroluminescent techniques and devices are disclosed which render a product that is more commercially saleable, reliable, and economically feasible than heretofore was the case in the art. A stacked, multi-layered electroluminescent device is generally provided, comprising a first supporting layer or sheet of Mylar, for example, a front electrode that is transparent or at least translucent to visible light, a phosphor-filled layer of dielectric material, an additional dielectric layer if desired, and a rear electrode plate. Disposed in intimate contact with the front electrode and preferably between the electrode and the phosphor-filled layer is a web of electrically conductive filaments to obviate deleterious effects of electrode separations. The provision of a photo-sensitive electrically conductive material as the rear electrode is contemplated, which material can be photographically exposed and then developed so as to produce any desired pattern or configuration of electroluminescence. The phosphor-filled layer itself is contemplated to comprise a chemically inert layer of polypropolyene, for example, this layer being made electrically conductive by the insertion of a plurality of electrically conductive particulates dispersed throughout so as to thereby effectively control the dielectric constant thereof. Desirably, the electrically conductive particulates comprise phosphor particles novelly processed to include an adsorbed layer in the form of a glass coating thereon, the glass coating itself being provided with a discontinuous layer of stannous oxide.

3,673,451
LUMINOUS GAS ALPHANUMERIC DISPLAY DEVICE
Raymond W. Tackett, Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Sept. 30, 1969, Ser. No. 862,365
Int. Cl. H01J 61/66, 61/32
U.S. Cl. 313—109.5 4 Claims



An array of luminous gas portions of a common envelope is used to present an alphanumeric display. The common envelope has a plurality of openings arranged in a matrix-like configuration. Each opening has a central conductor, while a common conductor encircles all of the central conductors. The selective application of a predetermined potential between one of the central conductors and the common conductors causes the luminous gas in the envelope surrounding the selected conductor to glow. By simultaneously applying the potential to a selected plurality of central conductors and the common conductor a luminous display is provided.

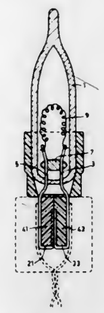
3,673,452
SPARK PLUG
Ronald F. Brennen, 3921 Crystal Lake Drive, Pompano Beach, Fla.
Filed Sept. 21, 1970, Ser. No. 73,735
Int. Cl. H01t 13/20
U.S. Cl. 313—141 5 Claims



A spark plug for a combustion engine or a combustion chamber, in which the electrodes of ferrous metals or ferroalloys have a coating fused directly thereon by a process known in the art as "electronic sputtering." The coating forms a very thin laminar deposit of a high temperature resistant metal, for example, one of the carbides of tungsten, titanium and chromium.

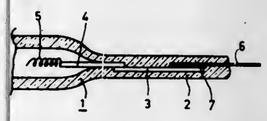
3,673,453
ELECTRIC LAMP COMPRISING A LAMP BASE OF A SYNTHETIC MATERIAL
Cornelis Prijn, Emmasingel, Eindhoven, Netherlands, and Franco Benedetti, Condove, Italy, assignors to U.S. Philips Corporation, New York, N.Y.
Filed April 27, 1970, Ser. No. 32,286
Claims priority, application Netherlands, May 2, 1969, 6906704
Int. Cl. H01j 5/48
U.S. Cl. 313—318 1 Claim

An electric lamp comprising a lamp base of a synthetic resin in which current conductors projecting from the envelope of



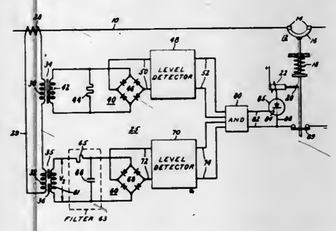
the lamp extend over a portion of their length outside of the lamp base to function as contacts to an external power supply.

3,673,454
ELECTRIC INCANDESCENT LAMP WITH AN IMPROVED PINCH SEAL
Victor Rosalie Noteiteirs, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,775
Claims priority, application Netherlands, Nov. 1, 1969, 6916499
Int. Cl. H01J 5/52
U.S. Cl. 313—332 3 Claims



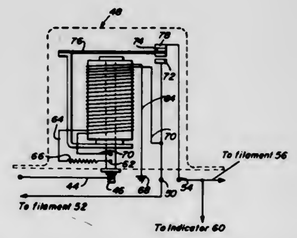
An electric incandescent lamp, having a quartz bulb provided with at least one pinch seal, has substantially reduced cracking of the pinch seal during operation of the lamp by the interposition of a foil of vanadium or vanadium alloy between the usual thin foil molybdenum connection to the wire-type current conductors of the lamp.

3,673,455
HIGH SPEED SENSOR FOR INITIATING CIRCUIT BREAKER TRIPPING
Clyde G. Dewey, Drexel Hill, Pa., assignor to General Electric Company
Filed Nov. 18, 1970, Ser. No. 90,567
Int. Cl. H02h 7/26, 3/08
U.S. Cl. 317—29 R 6 Claims



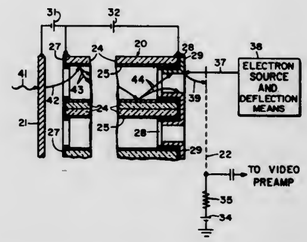
Discloses a high speed sensor for initiating tripping of a transmission-line circuit breaker in response to the occurrence of a fault on the transmission line. Comprises current-magnitude sensing means and rate-of-change of current sensing means that coact to produce sensor operation when the instantaneous magnitude of the line current and its rate of change for a predetermined duration exceed predetermined levels.

3,673,456
HEADLIGHTS WITH SAFETY RELAY CONTROL
Wesley Allan Sonius, 315 E. Cedar, Pocatello, Idaho
Filed Jan. 29, 1970, Ser. No. 6,811
Int. Cl. B60q 1/04, 9/00
U.S. Cl. 315—83 6 Claims



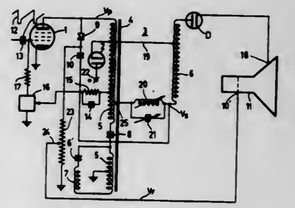
A dual winding relay is connected between the voltage source and headlights of a vehicle. When circuit continuity through the headlight low beam filaments is present, both windings on the relay conduct and cause full energization and switch-over of the relay contacts to a first state completing a current path through the low beam filaments. In the event a low beam filament is burned out, only one of the windings will become energized. Under these circumstances, the relay maintains a second state whereby the relay contacts connect the voltage source with a standby low beam filament.

3,673,457
HIGH GAIN STORAGE TARGET
William M. Seckinger, Bath, and Robert A. Simms, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Nov. 25, 1969, Ser. No. 879,787
Int. Cl. H01J 29/41
U.S. Cl. 315—12 7 Claims



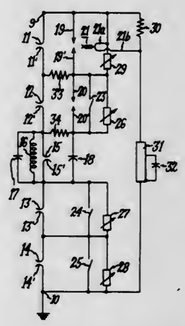
An image conversion device of the type wherein an input photon image is converted to a photoelectron image which creates on a storage target a charge pattern corresponding to the input optical image. According to this invention a multichannel plate is disposed in intercepting relationship with the photoelectrons to provide electron multiplication of the photoelectron image.

3,673,458
CIRCUIT ARRANGEMENT COMPRISING SWITCHING MEANS FOR PERIODICALLY INTERRUPTING A CURRENT SUPPLIED TO AN INDUCTING COIL
Anthonie Jannis Moggre, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 17, 1969, Ser. No. 877,199
Claims priority, application Netherlands, Nov. 20, 1968, 6816601
Int. Cl. H01J 29/70
U.S. Cl. 315—27 R 6 Claims



A circuit for obtaining a focus voltage that varies with the final anode voltage has a rectifier, a resistor, and a capacitor connected to a horizontal output transformer, which is specially designed to be resonant at the fifth harmonic. The series arrangement of the diode and the capacitor is connected between primary and secondary windings of the transformer, namely the anode of the diode is connected to a tap on the primary, and the remaining end of the capacitor is connected to that end of the secondary winding to which a capacitor for the fifth harmonic tuning is connected. The other capacitor end is connected to a tap on the primary. The latter tap comprises a much smaller number of turns than the first-mentioned tap to which the anode of he diode is connected. The required focusing voltage is derived from the resistor which is arranged between the cathode of the diode and ground.

3,673,459
TWO-WIRE PREIONIZER FOR SURGE VOLTAGE ARRESTERS
Thomas J. Carpenter, Pittsfield, Mass., assignor to General Electric Company
Filed Nov. 18, 1970, Ser. No. 90,654
Int. Cl. H01t 1/00
U.S. Cl. 315—36 11 Claims



A preionizer for a surge voltage arrester, such as a lightening arrester, is formed by twisting the ends of a pair of wires, at least one of which is insulated except at its end, together so

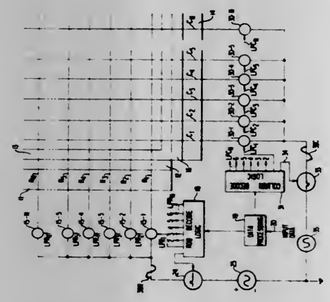
that the exposed ends of the wires form an ionizing gap that is essentially as long as the thickness of insulation between the two wires. After the ionizing gap is formed, an epoxy bead is used to encapsulate the twisted portion of the preionizer in order to maintain the desired gap spacing. The epoxy bead may also be utilized to position the ionizing gap adjacent a main gap or a trigger gap that is to have its sparkover level stabilized by the preionizing action of the twisted-wire preionizer of the invention.

3,673,460

LOW VOLTAGE PULSE SYSTEM FOR ADDRESSING GAS DISCHARGE DISPLAY/MEMORY PANELS

William E. Johnson, Temperance, Mich., and Larry J. Schmersal, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Sept. 15, 1970, Ser. No. 72,417
Int. Cl. H05b 37/02
U.S. Cl. 315—169 R 4 Claims



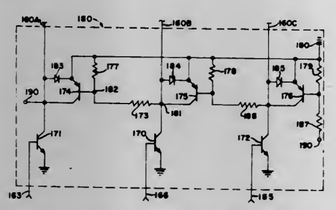
There is disclosed a low voltage pulse addressing system for addressing gas discharge display/memory panels wherein a portion of the pulse voltage is combined with the sustainer voltage so as to reduce the voltage required from each line drive pulsing circuit so as to permit utilization of low voltage integrated circuits.

3,673,461

CIRCUIT FOR DRIVING THE CATHODES OF A DISPLAY DEVICE

Mark F. Eisenberg, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 8, 1970, Ser. No. 44,434
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV 7 Claims



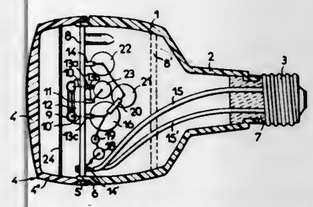
A multiphase circuit for driving the cathodes of a gas cell display device utilizing transistor drivers for sequentially driving each phase and switching circuitry cooperating with the drivers for de-energizing the previously "on" cathodes and rapidly shutting off the previously operating driver. The cells energized by an "on" cathode are caused to glow when there is a concurrent signal on the proper anode. The output of each driver is coupled to a switching transistor which, when caused to conduct, feeds a standoff voltage to a preceding phase and the collector of the driver associated with that phase, rapidly restoring the phase to a voltage level below the ionization point of the gas cells. A resistor across the emitter and base of the switching transistor maintains a proper bias and a diode across its collector and emitter protects the switching transistor from surges at shutdown.

3,673,462

FLASHING ELECTRIC LAMP

Jean Rene Marie Girard, Boulogne sur Seine, France, assignor to Orthotron, Long-Jumeau, France

Filed July 7, 1970, Ser. No. 52,968
Claims priority, application France, July 9, 1969, 6923304
Int. Cl. H05b 31/04
U.S. Cl. 315—200 A 10 Claims



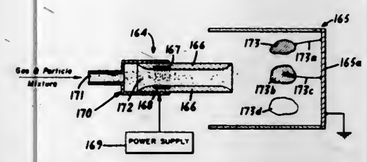
The invention relates to a flashing electric lamp comprising a casing closed at the front by a removable glass and at the rear by a standard electric lamp base. A flashing electronic tube is located inside the casing and forms with electric components a relaxation oscillator. The invention has particular utility for signalling by lights, for illuminated decorations and for illuminated panels.

3,673,463

METHODS AND APPARATUS FOR ELECTROGASDYNAMIC COATING

Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Incorporated, Livingston, N.J.

Division of Ser. No. 601,270, Nov. 15, 1966, abandoned, which is a continuation-in-part of Ser. No. 512,083, Dec. 7, 1965, abandoned
This application June 30, 1969, Ser. No. 837,562
Int. Cl. B03c 3/06
U.S. Cl. 317—3 4 Claims



Methods and apparatus for applying coating materials to articles, using electrogasdynamic apparatus providing a flow channel having a dielectric boundary which has a length-/width ratio of greater than 2.5. Gas containing particulate coating material is ionized to create an electrical discharge field for imparting an electrical charge to the particles prior to passage through the dielectrically bounded flow path and thereby creating a high space charge potential. In special applications, a free-radical forming monomer gas or a fusible particle substance is carried in an inert gas into the electrical discharge field and through the flow channel toward the article to be coated. In any case, the charged particles are subjected to an axial charge repelling field (due to space charge effects) in the flow channel to raise the electrical potential of the particles, and thereby the potential gradient between the particles and the workpiece.

ERRATUM

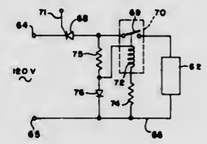
For Class 317—29 R see:
Patent No. 3,673,455

3,673,464

ENERGIZATION SYSTEM WITH SAFETY PROVISION FOR FAULTY RECTIFIER

John T. Lamb, Mansfield, and Carl L. Anderson, Shiloh, both of Ohio, assignors to The Tappan Company, Mansfield, Ohio

Continuation-in-part of Ser. Nos. 754,304, Aug. 21, 1968, and Ser. No. 841,200, July 14, 1969, which is a division of Ser. No. 651,865, July 7, 1967. This application Oct. 7, 1970, Ser. No. 78,825
Int. Cl. H02m 1/18; H02h 7/10
U.S. Cl. 317—43 3 Claims



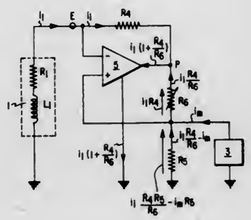
A fail-safe spark ignition system for gas burners includes a spark energy monitoring circuit for controlling the gas valve and bimetal spark gap disabling means for eliminating radio interference. Two circuit arrangements are shown for protection against short circuit failure of rectifiers energizing the gas-valve solenoid or other load from an AC power source, using a second rectifier and a fuse or fusible resistor for circuit disconnection.

3,673,465

STABILIZING MAGNETIC FIELDS

Werner Tschopp, Eggenbergstrasse 11, Forch, Switzerland

Filed June 24, 1971, Ser. No. 156,241
Claims priority, application Switzerland, Oct. 13, 1970, 15111/70
Int. Cl. G05f 7/00
U.S. Cl. 317—123 10 Claims



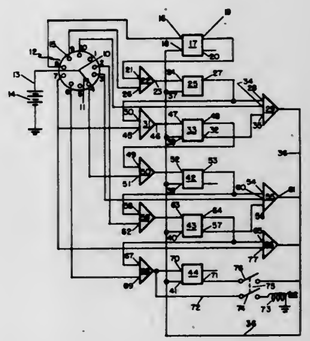
A method and apparatus for automatically stabilizing the magnetic field produced by a coil, the stabilization being effected by connecting between the ends of the coil an electronic device which provides a negative resistance which is equal in magnitude to the resistance of the path over which current flows through the coil, so that the resistance between the coil ends is essentially zero and flux disturbances are automatically compensated by the counterflux induced in the coil by such disturbances.

3,673,466

SEQUENCE ELECTRONIC COMBINATION LOCK

Paul C. Krueger, 20 Wabash Ave., Wharton, N.J.

Filed May 14, 1971, Ser. No. 143,379
Int. Cl. E05b 49/00
U.S. Cl. 317—134 9 Claims



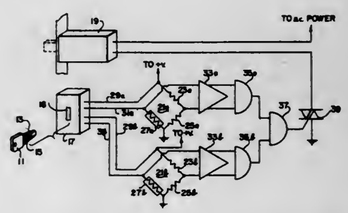
An electronic combination lock circuit which includes a source of direct current connected to the rotary pole of plural position switch. The pole connects the source to selected switch contacts in a predetermined sequence and order. The contacts are applied to combination of "AND" and bistable elements whereby the switch must first be set to a "ready" contact before the combination number which by selective action controls the direction of rotation. In the event the switch is rotated past the combination number, the bistable elements are reset and the lock memory is wiped clean. Thus after the first combination number is dialed, the direction of rotation reversed, and the next combination number dialed subsequent to the second "ready" number and again, if passed, the memory is reset. This is repeated for all the combination numbers after which the source is applied so as to a utilization network or to operate a release, alarm, or other output component. It is clear that other variations can be included as for example, having to pass a combination number more than once before proceeding to the next term.

3,673,467

RESISTIVELY-CODED SECURITY SYSTEM

William Eisenreich, White Plains, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 28, 1970, Ser. No. 84,679
Int. Cl. E05b 49/00; H01c 1/02
U.S. Cl. 317—134 10 Claims



An electronic key-actuated security system including keys each constituted by a plurality of electrically resistive elements. Key-receiving means includes conductors which provide connections with resistive elements of a key received. The system includes a plurality of bridges each associated with

one of the resistive elements of a key received. Each of said bridges has first, second and third impedance arms, a respective one of the key resistive elements being connected as a fourth impedance arm of each said bridge. The first and second arms define a first preset impedance ration, and the third and fourth arms define a second impedance ration, the bridge being electrically balanced when these ratios are equal. Logic gate means is interconnected with each of the bridges and supplies an output signal when all of the bridges are balanced. Electrically actuatable means, e.g., a latch, is responsive to this output signal for indicating thereby the receiving of a key having resistive elements causing balancing of all the bridges. A key for use with the system includes a nonconductive portion adapted to be inserted in the key-receiving means. Pairs of contacts are bilaterally symmetrical with respect to an axis of symmetry extending in the direction of insertion of the key with the result that the key is adapted for bilateral insertion.

3,673,468

SEMICONDUCTOR RECTIFYING ARRANGEMENT

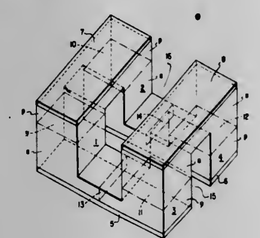
Horst Schafer, Wendelstein, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H., Nurnberg, Germany

Filed March 30, 1970, Ser. No. 23,690

Claims priority, application Germany, April 1, 1969, P 19 16 555.0

Int. Cl. H01l *5/00*

U.S. Cl. 317—234 **9 Claims**



A single plate of semiconducting material is provided with n-conducting and p-conducting zones at predetermined locations. The grooves are placed in the plate as a function of the location of the n- and p-conducting zones. Metal conductive paths are then placed on the semiconducting plate as a function of the location of the n- and p-conducting zones and the grooves. There results, for example, a rectifying bridge circuit formed in a single piece of semiconducting material.

3,673,469

TRANSFERRED ELECTRON DEVICES

David John Colliver, and Cyril Hilsum, both of Malvern, England, assignors to Minister of Technology in Her Britanic Majesty's Government of the United Kingdom of Great Britain and Norther Ireland, London, England

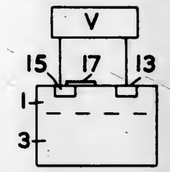
Filed June 9, 1970, Ser. No. 44,850

Claims priority, application Great Britain, June 10, 1969, 29,476/69

Int. Cl. H01l *9/00*

U.S. Cl. 317—234 R **3 Claims**

A transferred electron device, such as an oscillator, comprises a body of semiconductor material exhibiting the transferred electron effect, a cathode on the body comprising a region of metal giving good ohmic contact with the body and an anode on the body giving efficient extraction of current carriers and consisting of material other than a metal which would give good ohmic contact. The anode may be an n^+ region of semiconductor or a Schottky barrier diode. The structure is suited to higher frequency operation with larger physical device dimensions.



3,673,470

HOUSING FOR TRANSISTORS HAVING UNSOLDERED CONNECTIONS FOR OPERATING AT VERY HIGH FREQUENCIES

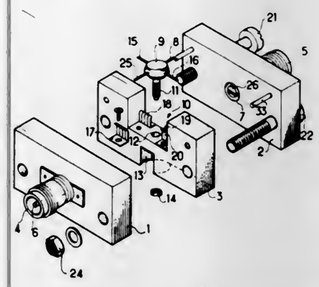
Guy Louvel, Antony, France, assignor to Compagnie Industrielle Des Telecommunications cit-Alcatel, Paris, France

Filed May 27, 1971, Ser. No. 147,561

Claims priority, application France, May 27, 1970, 7019386

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **3 Claims**



The device enables a transistor to be removed from a circuit without its connections having to be unsoldered or soldered again, and comprises a middle part bearing the transistor, one of whose electrodes is connected to the ground of the middle part and two lateral flanges fitted with plug sockets for receiving the other two electrodes of the transistor. The middle part and the two flanges can be installed together by means of screws. The two flanges can also be installed without the middle, allowing the invention to be used for making measurements on power amplifiers at frequencies greater than 1 Gc/s.

3,673,471

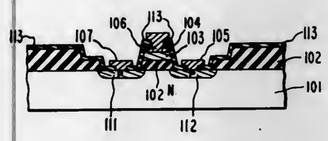
DOPED SEMICONDUCTOR ELECTRODES FOR MOS TYPE DEVICES

Thomas Klein, Palo Alto, and Federico Faggin, Cupertino, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 8, 1970, Ser. No. 70,978

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **1 Claim**



The threshold voltage required to invert an MOS device is

both shifted and selectively controlled by using appropriately doped semiconductor material as the gate electrode.

3,673,472

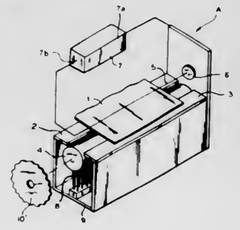
ELECTROSTATIC PHOTOCOPYING MACHINE

Raymond B. J. Liebens, Brussels, Belgium, assignor to ICP, Inc., Skokie, Ill.

Filed March 23, 1970, Ser. No. 21,978

Int. Cl. H01t *19/00*

U.S. Cl. 317—262 A **6 Claims**



A high voltage means for an electrostatic photocopy machine for charging photosensitive copy paper so that an image of an original document may be superimposed thereon. A wire connected to the high voltage side of a high voltage source is spaced from the sensitive side of the copy paper. A roller positioned in an opposed relationship with the wire moves the copy paper through the high voltage means. The peripheral edge of the roller is electrically conductive and connected to the reference voltage side of the high voltage.

3,673,473

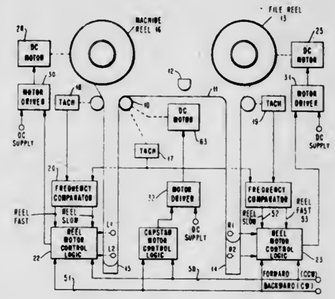
MAGNETIC TAPE UNIT REEL MOTOR TENSION CONTROL

Allen J. Werner, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,993

Int. Cl. B65h *23/20*; H02p *5/00*

U.S. Cl. 318—7 **6 Claims**



A magnetic tape unit having a machine reel, a file reel, a machine vacuum column, a file vacuum column and a reversible capstan disposed between the vacuum columns. An upper and a lower tape loop position sensor is located in each column. These sensors control the associated reel motor to institute a brake mode of operation therefore when the loop is between the sensors, and to institute a drive mode of operation, to move tape in the same direction as the capstan is moving tape, whenever the loop is in danger of being pulled out of a column or of being buttoned in a column.

A digital capstan tachometer is driven by the capstan, and two digital tape tachometers, one located on each reel-side of a vacuum column, are driven by the tape adjacent the reel. The outputs of the tape tachometers are compared to the output of the capstan tachometer to originate a reel-fast or a reel-slow signal for each reel. These signals are utilized to modify control of the associated reel motor in a manner to inhibit the drive mode and institute a coast mode upon the presence of a reel-fast signal, and to inhibit the brake mode and institute a coast mode if a reel-slow signal occurs when the capstan is rotating in a direction to move tape out of the associated vacuum column.

3,673,474

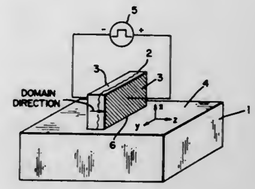
MEANS FOR GENERATING (A SOURCE OF) SURFACE AND BULK ELASTIC WARES

Richard M. White; Robert E. Lee, and Charles W. Turner, all of Berkeley, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 25, 1970, Ser. No. 75,523

Int. Cl. H01v *7/00*

U.S. Cl. 318—116 **8 Claims**



A source of high frequency elastic waves are generated by placing a Gunn effect oscillator in close proximity to a piezoelectric or an electrostrictive solid. The device creates a moving source of sound near the surface of the solid. The sound will be radiated from the surface of the solid as bulk or surface elastic waves. Elastic waves can be generated from both surfaces in certain situations.

3,673,475

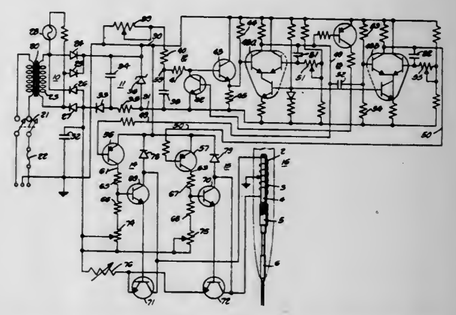
PULSE DRIVE CIRCUIT FOR COILS OF DENTAL IMPACT TOOLS AND THE LIKE

Ralph H. Britton, Jr., Palo Alto, Calif., assignor to Fred M. Hufnagel, Nevada City, Calif.

Filed Sept. 15, 1970, Ser. No. 72,277

Int. Cl. H02k *33/12*

U.S. Cl. 318—122 **10 Claims**



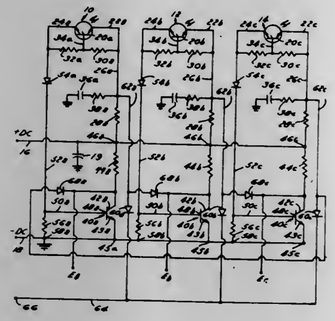
A drive circuit for dental percussion tools or hammers and the like including a power supply coupled with a timing circuit

which provides suitable output pulses of selectable frequency. The output of the timing circuit is connected to a recoil-drive pulse forming circuit which includes one shot multivibrators one of which generates recoil pulses and the other of which generates drive pulses immediately following the recoil pulses. These pulses are amplified and applied to the solenoid of the dental hammer unit to alternately energize coils of the solenoid to cause the armature to reciprocate rapidly and impart repetitive impacts to a tool element. The circuit includes means for enabling adjustment of pulse frequency, pulse width and pulse amplitude.

3,673,476
SIGNAL PRODUCING APPARATUS ADAPTABLE FOR USE WITH VARIABLE RELUCTANCE MOTORS

Douglas R. Hamburg, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 8, 1971, Ser. No. 121,655
Int. Cl. H02k 29/00
U.S. Cl. 318—138 **7 Claims**



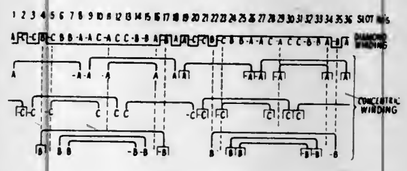
A circuit is described for producing periodic electrical signals upon the repeated sequential activation of a plurality of sensor units. The sensor units preferably include solid state switching devices in the form of light-activated silicon-controlled rectifiers. The circuit may be used to indicate the relative angular velocity of one body rotating with respect to another body. In such case, the electrical signals have frequencies proportional to the angular velocity of the rotating body. When applied to disc-type variable reluctance motors, the circuit may be used with additional apparatus to indicate the position of the motor's rotor relative to its stator. The signal indicative of rotor position may be used for purposes of variable reluctance motor speed and torque control.

3,673,477
POLE-CHANGING, THREE-PHASE ALTERNATING CURRENT INDUCTION MOTOR, WITH SINGLE-LAYER STATOR WINDING

Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England

Filed Feb. 9, 1970, Ser. No. 9,546
Claims priority, application Great Britain, Feb. 18, 1969, 8,791/69
Int. Cl. H02p 7/48
U.S. Cl. 318—224 R **3 Claims**

A three-phase, two-speed pole-changing induction motor, using the pole-changing method of pole-amplitude modulation, which has a single-layer stator winding, diamond or concentric coils being used as preferred. The stator coil layout is derived from the stator coil layout of a corresponding double-layer winding for the same alternative pole-numbers.



The present invention provides a two-speed, three-phase alternating current electric motor having a single layer stator winding with alternative connections providing alternative pole-numbers by a modified method of pole-amplitude modulation.

3,673,478
SEMICONDUCTOR PELLET FITTED ON A METAL BODY

Hideru Onegawa, Kodaira-shi, and Katuei Kobayashi, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 763,201, Sept. 27, 1968. This application Oct. 31, 1969, Ser. No. 871,802
Int. Cl. H01l 3/00
U.S. Cl. 317—234 R **7 Claims**

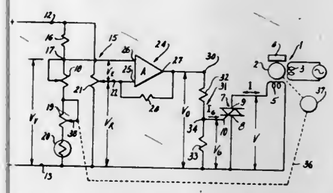


A semiconductor device which includes a metal lead, a metal foil of gold or the like connected with the metal lead by way of a first intermediate alloy layer which is formed between the metal lead and the metal foil, and a semiconductor pellet fixed to the metal foil with a second intermediate alloy layer formed between the semiconductor material and the metal foil.

3,673,479
SINGLE TRIAC REVERSIBLE MOTOR CONTROL

Alfred A. Horton, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed April 30, 1971, Ser. No. 139,089
Int. Cl. H02p 7/62
U.S. Cl. 318—208 **10 Claims**

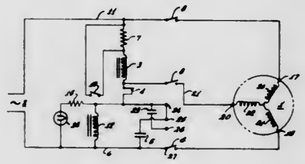


A single phase AC motor, biased to rotate in one direction, is made to stop when a controlled circuit tending to cause rotation in the opposite direction is energized by a half wave rectified alternating current and is made to rotate in the opposite direction when the controlled circuit is energized by alternating current. A triac rectifies the control current when fired in only one quadrant and passes alternating current when fired in two quadrants, a modulated DC gating current determining whether the triac is fired in one quadrant, in two quadrants or in none. Speed control may be exercised by controlling the phase angle of the firing.

3,673,480
CIRCUIT FOR OPERATING POLYPHASE INDUCTION MOTORS FROM SINGLE PHASE SUPPLY

Colin G. Johnstone, 38732 Puerta St., Palmdale, Calif.

Filed Oct. 26, 1970, Ser. No. 83,847
Int. Cl. H02p 1/44
U.S. Cl. 318—221 G **16 Claims**

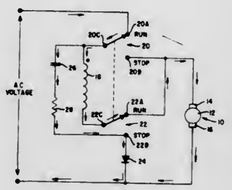


A circuit for providing the phased currents necessary for starting and operating polyphase motors from a single phase voltage supply. Out of phase currents are obtained by connecting a capacitor to one or more of the motor windings. Upon the motors' reaching nearly full speed, a potential voltage relay operates to remove the capacitor from the motor circuit. Chatter of the potential voltage relay is avoided by inclusion in the circuit of a series resistor which is selectively shorted by a further relay connected in parallel with the starting capacitor.

3,673,481
DYNAMIC BRAKING FOR UNIVERSAL MOTORS

James T. Hardin, Lambertville, Mich., assignor to Eltra Corporation, Toledo, Ohio

Filed May 20, 1970, Ser. No. 39,098
Int. Cl. H02p 3/24
U.S. Cl. 318—246 **5 Claims**

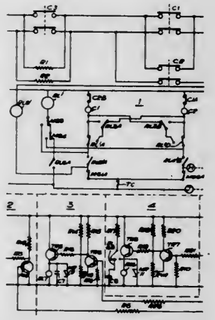


A dynamic braking system for universal electric motors operating on alternating current is disclosed which utilizes the discharge of a condenser to momentarily energize the series field of the motor after the power circuit to the motor is broken and the field connected accross the terminals of the rotating armature to initiate dynamically braking of the armature to bring it to a stop within a few revolutions.

3,673,482
AUTOMATICALLY OPERATING AND CONTROLLING RECIPROCATING MOTION

Anthony Walter Davey, Hathern, England, assignor to Herbert Morris Limited, Loughborough, Leicester, England

Filed March 5, 1971, Ser. No. 121,337
Claims priority, application Great Britain, March 12, 1970, 11,816/70
Int. Cl. H02p 7/36
U.S. Cl. 318—266 **6 Claims**

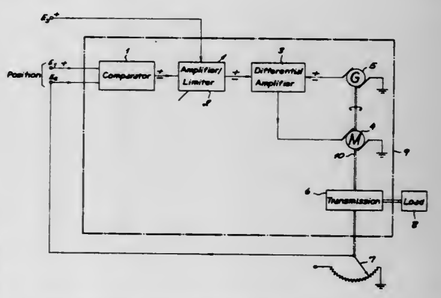


A linear induction motor for automatically operating a reciprocating member or door incorporating a control system for the motor by which the door is accelerated at full thrust to travelling speed, means for reducing the motor thrust to enable the door to coast at approximately constant speed until reaching a limit switch which initiates reverse thrust braking, with means to automatically cut out the braking as soon as the door has stopped and means for driving the door at low thrust to a final limit switch, an overspeed relay for initiating the reversal of the motor thrust when the door speed exceeds a predetermined value.

3,673,483
TWO-WAY DRIVE FOR OPTICAL SYSTEMS AND THE LIKE

Karl Gunter Hess, Waldlaubersheim, Germany, assignor to Jos. Schneider & Co. Optische Werke, Bad Kreuznach/Rhineland, Germany

Filed Oct. 12, 1970, Ser. No. 80,018
Claims priority, application Germany, Oct. 14, 1969, P 19 51 672.4
Int. Cl. G05b 5/01
U.S. Cl. 318—618 **4 Claims**



A load, such as a servomotor for the positioning (e.g. tilting) of a television camera, is operable by a control circuit

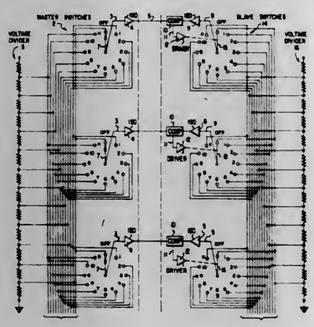
provided with an input (E_i) for a position signal and another input (E_s) for a speed signal. The positioning signal is applied, together with a feedback signal (E_s) from a position sensor, to a comparator whose positive or negative output generates an error signal of corresponding polarity and of a magnitude determined by the speed signal. A reversible load motor, coupled with the position sensor, also drives a generator to produce a reference signal of either polarity, the difference between the error signal and the reference signal producing a drive voltage of one or the other polarity for the load motor until the system is in balance.

3,673,484

REMOTE SERVO CONTROL CIRCUIT FOR REMOTE CONTROLLED SWITCHES AND SWITCHBOARDS

Michael A. Tabet, Norfolk, Va., assignor to Tabet Manufacturing Co., Inc., Norfolk, Va.

Filed May 19, 1970, Ser. No. 38,823
Int. Cl. G05b 11/14
U.S. Cl. 318—674 **4 Claims**



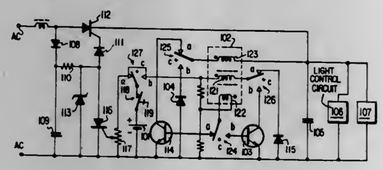
A unique remote control circuit is used to permit the automatic control of switches and switchboards from a remote location. The remote control circuit of this invention permits such control with only one low-power control wire per switch. The control circuit is a simple transistorized comparator circuit which drives a rotary solenoid which causes the controlled or slave switch to move to a position corresponding to the position of the control or master switch.

3,673,485

DUAL OSCILLATOR CHARGER-INVERTER CIRCUIT

Zoltan Vital, Brussels, and Jean Orban, Clabecq, both of Belgium, assignors to Photronic International Establishment, Vaduz, Liechtenstein

Filed April 20, 1971, Ser. No. 135,591
Claims priority, application Belgium, April 23, 1970, 88149; Aug. 24, 1970, 93115; Nov. 3, 1970, 95875
Int. Cl. H02j 7/00; H02m 3/22
U.S. Cl. 320—2 **5 Claims**



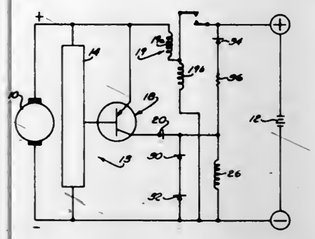
In a system for supplying power to a load selectively from a rechargeable battery or from an external power source and for recharging the battery from such power source, a dual converter connectable between the battery, the load and the power source and including components forming a first converter for delivering power from the battery to the load and a second converter for converting the energy from the power source into oscillations and applying such oscillations for recharging the battery, the arrangement being composed of switch means for operatively connecting only one converter at a time, a single transformer core, and a plurality of winding wound on the core, with at least one of the winding being common to both converters.

3,673,486

BATTERY CHARGING SYSTEM

Marion L. Snedeker, Cleveland, Ohio, assignor to VLN Corporation, Cleveland, Ohio

Filed Sept. 3, 1970, Ser. No. 69,234
Int. Cl. H02j 7/00
U.S. Cl. 320—25 **10 Claims**



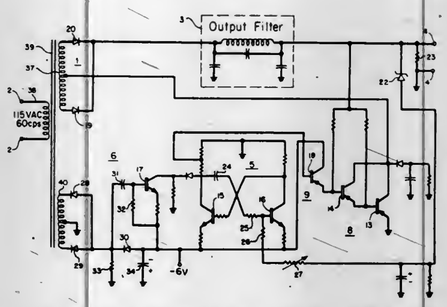
A circuit for preventing the buildup of a generating system when it is inadvertently connected in a reverse polarity employs a resistor-diode series combination which is connected between the field winding of a generator that charges the battery and one terminal of the battery. When the battery is connected with a correct polarity, current flows through the field winding of the generator in one direction and no current flows through the diode since the diode is reverse biased. However, when the battery is connected with a reverse polarity, the diode is forward biased and current flows through the diode and its series resistor, and through a parallel combination of field discharge diodes and the field winding. The reverse current in the field will prevent the excitation necessary to build up a voltage output.

3,673,487

REGULATED D.C. POWER SUPPLY

Melvin C. Hendrickson, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 8, 1970, Ser. No. 70,193
Int. Cl. H02m 7/12
U.S. Cl. 321—18 **7 Claims**



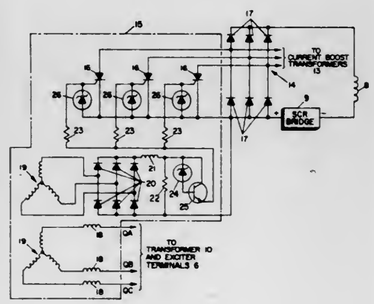
A switching-type regulating power supply which dissipates little power, minimizes radio frequency interference, and provides a constant DC output voltage has a full-wave rectifier with a regulating means in its common return circuit to switch the full-wave rectified current supplied to an output filter on and off. The current is switched on when there is zero voltage across the full-wave rectifier thus minimizing radio-frequency-interference-causing surge currents, and this is accomplished by a phase synchronizer which is coupled to the input terminals of the full-wave rectifier and also coupled to the control means which applies a variable duty cycle control voltage to the regulating means. The control means is coupled to the output voltage filter and generates a variable duty cycle control voltage in response to changes in the DC output voltage of the supply. This varying duty cycle control voltage is applied to the regulating means allows current to flow to the output filter which results in output voltage stabilization.

3,673,488

ROTATING ALTERNATOR CURRENT GENERATOR SYSTEM

William H. Spiller, Waynesboro, Va., assignor to General Electric Company

Filed May 17, 1971, Ser. No. 143,935
Int. Cl. H02p 7/06, 9/26
U.S. Cl. 322—28 **2 Claims**



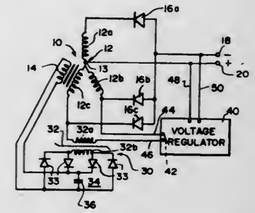
The invention relates to rotating alternating current generator systems. Generator excitation is normally controlled by varying the field current to the exciter. An SCR rectifier circuit responsive to exciter output voltage normally provides controlled direct current for the exciter field while a diode rectifier circuit responsive to exciter output current provides direct current only during transient conditions when the exciter voltage may be low. The current boost diode rectifier circuit is coupled to current transformers located in the exciter output lines. The current boost circuit including the current transformers is designed to take advantage of the characteristic of most alternators that its short-circuit excitation requirement is considerably less than its rated-load excitation requirement, for the same alternator line current. Some exciters, notably salient-pole alternators, do not have the large separation between the short-circuit excitation condition and the rated-load excitation condition. Thus, it is difficult to design current transformers with a ratio low enough to insure that the current boost circuit will be regenerative under short-circuit conditions, and yet with a ratio high enough so that the current fed back will not interfere with the exciter field current supplied by the SCR circuit under normal operating conditions. A static switch, of unique design, is provided to insure compatibility between the SCR circuit and the diode rectifier circuit under normal operation, and yet permit the current feedback to be sufficient to support an exciter short circuit, regardless of the separation between the short circuit and rated-load circuit excitation conditions.

3,673,489

ALTERNATOR AND REGULATOR CONTROL SYSTEM

James A. Riff, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 5, 1971, Ser. No. 169,431
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **9 Claims**



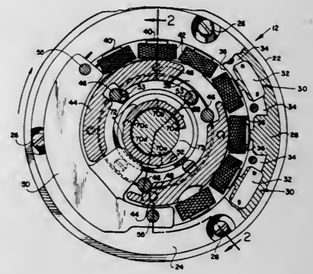
An alternator and regulator control system includes diodes connected to the output windings of the alternator to pass unidirectional current pulses and to cause blocking of current when voltage in the output winding reverse biases the diodes. This blockage of current produces a high reverse voltage pulse in the output winding which is then delivered to the field winding of the alternator through electronic switch means to cause excitation of the alternator to develop high power output in the stator windings of the alternator. The electronic switch is a thyristor and forms part of a feedback circuit which is controlled by a voltage regulator that controls the output voltage of the alternator.

3,673,490

COMBINED ALTERNATOR AND IGNITION TRIGGER SIGNAL GENERATOR WITH ARRANGEMENT FOR SUPPRESSING SPURIOUS TRIGGER SIGNALS

Robert T. Magrane, Agawam, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Sept. 29, 1970, Ser. No. 76,451
Int. Cl. H02p 9/40
U.S. Cl. 322—50 **12 Claims**



An alternator driven by an internal combustion engine is combined with a trigger signal generator for generator voltage signals used to trigger the breakerless ignition system of the engine. The alternator includes a flywheel having a rim carrying a plurality of main permanent magnets for inducing voltage waveforms in main generating coils located on a stator core positioned adjacent the rotor. The trigger signal generator comprises a triggering magnet and coil assembly located adjacent the path of a flux varying member residing radially inwardly of the path of movement of the main magnets. The production of spurious trigger signals in the trigger coil by the leakage flux of the main magnets is suppressed by both a mag-

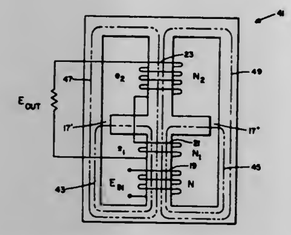
netic shunt, physically positioned between the triggering magnet and coil assembly and the path of the main magnets, providing a lower reluctance path for the leakage flux which path bypasses the triggering magnet and coil assembly and by constructing the flux varying member and the triggering magnet and coil assembly in such a form as to cause the induction in the trigger coil of voltage pulses which occur simultaneously with and counteract such spurious signals.

3,673,491

MAGNETIC SQUARE WAVE VOLTAGE GENERATOR

Orestes M. Baycura, 2238 Central Park Drive, Campbell, Calif.

Filed Dec. 21, 1970, Ser. No. 99,872
Int. Cl. H01f 35/00, 29/00
U.S. Cl. 323—48 3 Claims



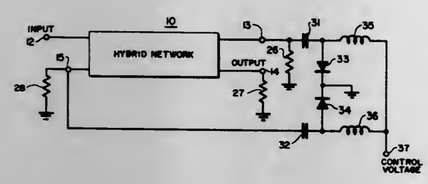
A magnetic square wave voltage generator comprising at least one core having both a high impedance flux path and a low impedance flux path. An input winding couples each of the high and low impedance flux paths and one output winding couples the high impedance flux path and another output winding couples the low impedance flux path. The two output windings are series connected and when a sinusoidal signal is applied to the input winging it results in a square wave output signal across both series connected output windings.

3,673,492

VOLTAGE CONTROLLED HYBRID ATTENUATOR

Russell A. Gilson, Oakhurst, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 27, 1971, Ser. No. 166,377
Int. Cl. H01p 1/22; H03h 7/24
U.S. Cl. 323—74 3 Claims



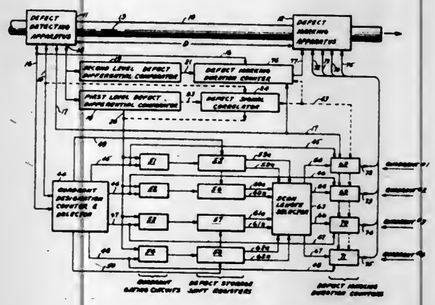
This disclosure relates to attenuators and, particularly, to controllable, constant-impedance attenuators. More particularly, this disclosure describes a voltage or current-controlled absorptive attenuator, using a four terminal hybrid circuit, wherein the amount of power passed from the input terminal to the output terminal can be varied from zero to maximum by controlling the amount of power diverted to the other two, quadrature terminals of the hybrid network.

3,673,493

ONE-PROBE METHOD AND APPARATUS FOR DETECTING, CORRELATING, AND CLASSIFYING DEFECTS IN TEST MEMBERS

John P. Hoffman, Coopersburg, and Robert C. Booth, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation

Continuation-in-part of Ser. No. 816,762, April 16, 1969, abandoned. This application April 21, 1970, Ser. No. 30,583
Int. Cl. G01r 33/12
U.S. Cl. 324—37 23 Claims



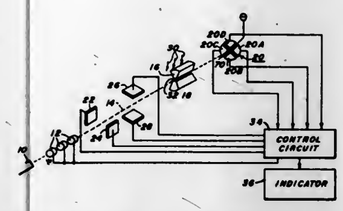
Nondestructive test apparatus detects both straight and skewed defects in test members such as steel bars and billets having either curved or flat surfaces. Detecting means, including a probe adapted to scan a surface of said member cyclically during relative lengthwise movement therewith, produces electrical signals representative of defects detected in said member. Electrical signals cause defect pulses to be produced and these pulses are coordinated with probe position pulses in electronic circuits which classify the defects according to location, or location in combination with level of defect severity and/or length, in a longitudinally extending section of the test member. A signal correlator may be added to reject noise and false defect pulses as well as to accommodate skewed defects when either or both such situations are encountered. The finally processed defect pulses are utilized, for example, to activate reworkable or rejectable defect markers downstream of the probe over a section of the scanned surface where the defects occurred in said member.

3,673,494

ELECTRON BEAM MAGNETOMETER SENSOR

Edmund J. Vitek, Glen Burnie, and Robert A. Yeates, Linthicum, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1969, Ser. No. 862,376
Int. Cl. G01r 33/00, 33/02
U.S. Cl. 324—41 11 Claims



Described is a device for detecting disturbances in magnetic fields, particularly the magnetic field of the earth, by means of a vacuum tube containing an electron gun which emits an

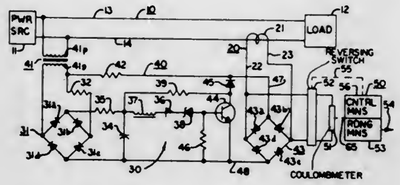
electron beam and directs it between spaced pole pieces located within the envelope of the vacuum tube itself. The earth's magnetic field surrounding the tube is concentrated at the gap between the pole pieces such that the presence of a magnetically permeable body near the tube will alter the magnetic field intensity across the gap and cause the electron beam to deflect. This deflection is sensed by electrical circuitry to indicate the existence of a disturbance and its magnitude. The invention finds utility, for example, in geophysical exploration and in detecting concealed items of magnetically permeable material, such as concealed guns.

3,673,495

APPARATUS AND METHOD FOR MEASURING ELECTRICAL ENERGY CONSUMPTION

Richard E. Riebs, Hales Corners, Wis., assignor to McGraw-Edison Company, South Milwaukee, Wis.

Filed Feb. 24, 1971, Ser. No. 118,355
Int. Cl. G01r 21/00
U.S. Cl. 324—142 20 Claims



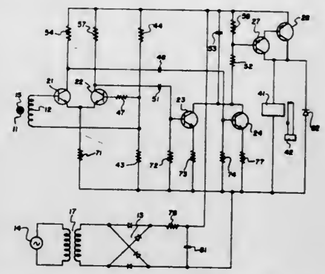
A current transformer is connected to an electrical power circuit to provide a measure of the current in the power circuit. The current measure is applied through a reversing switch and a diode rectifying bridge to a coulombmeter and is controlled by commutating the bridge with a voltage from a voltage transformer connected to the electrical power circuit. The connections are made to apply current to the coulombmeter during the portion of the current cycle that occurs during a selected voltage half cycle. The current measure is further controlled by a modulating circuit connected to respond to the voltage of the power circuit and to pulse modulate the current as a function of voltage level. A control means responds to a selected condition of the coulombmeter to reverse the control current connections to the coulombmeter. A reading means senses the number of reversal operations to thereby provide an indication of the total amount of energy consumed in the power circuit over a selected period.

3,673,496

MOTION DETECTING CIRCUIT

Raymond L. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 19, 1970, Ser. No. 21,113
Int. Cl. G01p 3/56
U.S. Cl. 324—161 2 Claims



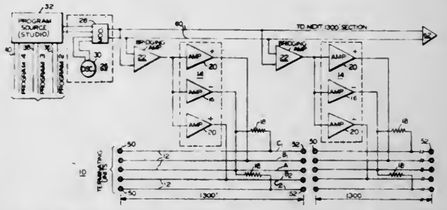
A circuit for detecting rotary motion of a shaft (or detecting that the shaft has stopped) includes a tachometer driven by the shaft. The tachometer output is amplified and converted by a transistor circuit so that the resulting signal can be used to operate a relay even when the shaft rotational speed is low. The relay operates suitable indicating or controlling means.

3,673,497

UNDERGROUND RADIO COMMUNICATION SYSTEM FOR ROADWAYS

John Peter Thrasher, Kensington, Md., assignor to Peter V. Gureckis, Potomac, Md.

Filed Oct. 28, 1970, Ser. No. 86,921
Int. Cl. H04b 1/04
U.S. Cl. 325—180 5 Claims



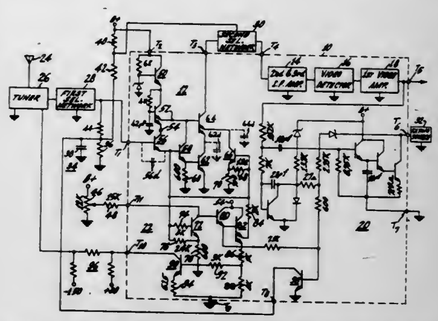
A roadway radio communication system for transmitting radio communication signals to vehicles traveling along a roadway, including airport runways, in which four or more conductor array of communication antennas, parallel oriented longitudinally beneath the road surface and/or ground surface, constitute radiation antenna means, and in which the communication signals are fed to the center and adjacent pairs of wires in out-of-phase relation, and the communication radio signals are applied to the outermost pair of wires in cancelling-phase relation for developing an antenna pattern immediately over the roadway and in which the antenna pattern does not substantially extend over lateral areas beyond the edge of the roadway, and in which the wires constituting the radiation antenna means are of substantial sized conductors measured along their diameter and the conductor is encased in a generally low dielectric constant insulation material of substantial thickness in relation to the diameter of the conductor wire.

3,673,498

GAIN CONTROLLED CASCODE-CONNECTED TRANSISTOR AMPLIFIER

Jack Rudolph Harford, Flemington, N.J., assignor to RCA Corporation

Filed May 19, 1970, Ser. No. 38,842
Int. Cl. H04b 1/16
U.S. Cl. 325—319 20 Claims



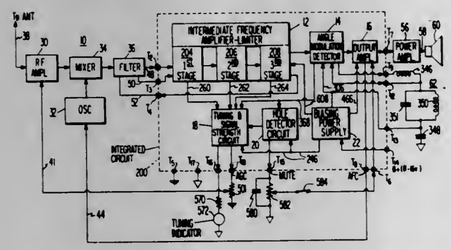
A gain controlled amplifier system suitable for use as an intermediate frequency television amplifier and adapted for

construction in integrated circuit form. A gain controllable cascode amplifier arrangement includes a relatively high maximum gain, common emitter transistor coupled to one emitter of a double emitter, common base output transistor. The arrangement also includes a degenerated common emitter transistor having a smaller collector to substrate capacitance than that of the first common emitter transistor. The degenerated transistor is coupled to the second emitter of the output transistor. AGC and signals are supplied to the two common emitter transistors via an emitter follower. A feedback loop includes the resistor of the follower and is coupled to the inputs of the common emitter transistors to maintain fixed bias thereat upon reception of intermediate level signals and consequent cut off of the first common emitter transistor. The emitter follower acts as a gain control stage and ultimately as a varactor attenuator for high level signals.

3,673,499
COMBINED TUNING AND SIGNAL STRENGTH INDICATOR CIRCUIT WITH SIGNAL STRENGTH INDICATION DERIVED FROM EACH IF AMPLIFYING STAGE

Jack Avins, Princeton, and Jack Craft, Somerville, both of N.J., assignors to RCA Corporation

Filed Aug. 26, 1970, Ser. No. 67,010
Int. Cl. H03j 3/12
U.S. Cl. 325—398 11 Claims

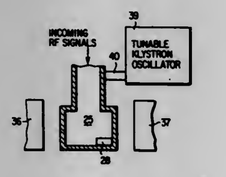


A tuning and signal strength indicator circuit for FM receivers which enables accurate tuning and signal strength indication on a single indicator for input signal waves ranging from threshold value to receiver overload. Indicator current is obtained by summing contributions from signal waves obtained after the quadrature phase shift network of the detector and several points in the multi-stage amplifier-limiter driving the detector.

3,673,500
CYCLOTRON RESONANCE FREQUENCY-SELECTIVE LIMITER USING INHOMOGENEOUS RF MAGNETIC FIELD

Dickron Mergerian, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1970, Ser. No. 45,102
Int. Cl. H04b 1/10
U.S. Cl. 325—473 10 Claims

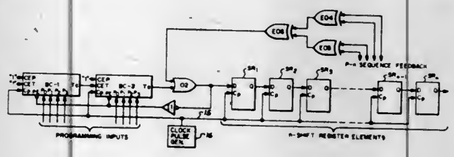


A tunable limiter is disclosed which utilizes a semiconductor containing an excess of free electrons and having a cyclotron resonance line which is inhomogeneously broadened. The semiconductor is exposed to a static magnetic field and spatially inhomogeous RF electric field at the cyclotron resonance frequency, within a waveguide cavity. The RF electric field is derived from the incoming signal, which contains information as well as possible jamming signals. By virtue of the thermo-electric-cyclotron-resonance effect, power from signals exceeding a saturation level set by the intensity of the RF field causes saturation of the limiter, but only at the frequency of those signals. This provides limiting of intense jamming signals without disturbing information signals at nearby frequencies.

3,673,501
CONTROL LOGIC FOR LINEAR SEQUENCE GENERATORS AND RING COUNTERS

David L. Zeph, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 18, 1971, Ser. No. 172,809
Int. Cl. G11c 19/00; H03k 21/00, 21/34
U.S. Cl. 328—37 9 Claims

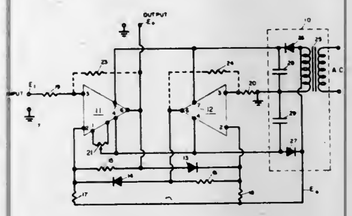


A control logic for linear sequence generators and ring counters to prevent "latch-up" in the "0" state having a linear sequence generator including a shift register with modulo-2 exclusive-OR feedback from the shift register to the shift register input and feedback through binary counters to detect and count $n-1$ consecutive "0"s in the shift register to feed a "1" into the shift register to prevent "0" state latch, where n is the number of shift register stages used.

3,673,502
VOLTAGE SENSING SWITCH

Charles Gardner Swain, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 10, 1971, Ser. No. 141,810
Int. Cl. H03k 5/20
U.S. Cl. 328—146 8 Claims

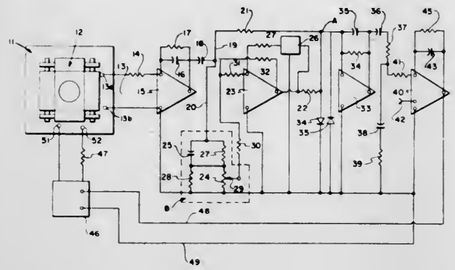


An improved electronic switch for sensing a voltage applied to either an inverting or a noninverting input of one of two voltage amplifiers uses an alternating sweep voltage applied to one input of each amplifier and means for connecting the output of each amplifier to an input of the other amplifier so that switching of the output state of either amplifier suppresses switching of the other amplifier during any sweep voltage cycle; which one of the two amplifiers changes its output state during any cycle is determined by the polarity and magnitude of the voltage being sensed after a nearly constant time within each cycle.

3,673,503
HARMONIC SUPPRESSION CIRCUIT

Harold F. Parker, Lee, Mass., assignor to General Electric Company

Filed July 6, 1971, Ser. No. 160,034
Int. Cl. H03b 1/04
U.S. Cl. 328—167 3 Claims

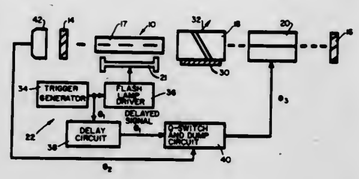


A harmonic suppression circuit in which the fundamental component of the test voltage is blocked out by means of a phase inverting, frequency selective amplifier while the harmonic component of the test voltage is fed back out of phase with the normally generated harmonic component of the test voltage.

3,673,504
LASER WITH COMBINED Q-SWITCH AND SYNCHRONIZED CAVITY DUMP CIRCUIT

Ronald P. Hilberg, Redondo Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 686,076, Nov. 28, 1967, Pat. No. 3,577,097. This application Dec. 23, 1969, Ser. No. 889,823
Int. Cl. H01j 17/02
U.S. Cl. 328—210 6 Claims

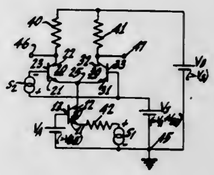


A high voltage electrical waveform generator circuit is provided which generates a voltage waveform having a positive d.c. voltage leading edge and a negative d.c. voltage trailing edge to the modulator. A gas trigger tube is provided in the circuit which generates a positive d.c. voltage leading edge in its plate circuit when it is independently triggered by a trigger signal. Another gas trigger tube generates a positive voltage when it is triggered by another trigger signal. A coupling circuit which couples the plate circuits of the trigger tubes includes capacitor which converts the positive voltage generated by the other trigger tube into the negative d.c. voltage trailing therefor edge of the voltage waveform. The coupling circuit may also include differentiator which allows the voltage levels on the trigger tube plates to be independently varied without affecting each other.

3,673,505
SYNCHRONOUS DEMODULATOR EMPLOYING A COMMON-BASE TRANSISTOR AMPLIFIER

Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 13, 1970, Ser. No. 89,273
Int. Cl. H03d 3/18
U.S. Cl. 329—50 6 Claims

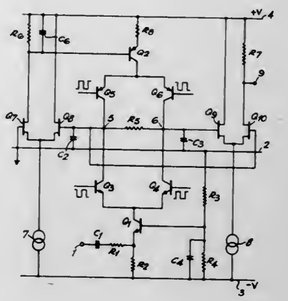


Input signals are coupled in common to the emitter electrodes of a pair of transistors arranged in a differential amplifier configuration, and are synchronously detected by switching signals coupled to the respective transistor base electrodes. The coupling to the emitter electrodes is through a transistor arranged in a common-base amplifier construction, with the signals to be demodulated being applied to the amplifier transistor emitter electrode via an included stabilizing resistor.

3,673,506
ELECTRONIC PHASE SENSITIVE DETECTOR CIRCUITS

Eric Andrew Faulkner, Reading, England, assignor to Brookdeal Electronics Limited, Bracknell, England

Filed Feb. 16, 1971, Ser. No. 115,524
Claims priority, application Great Britain, March 11, 1970, 11,589/70
Int. Cl. H03d 1/18
U.S. Cl. 329—103 4 Claims

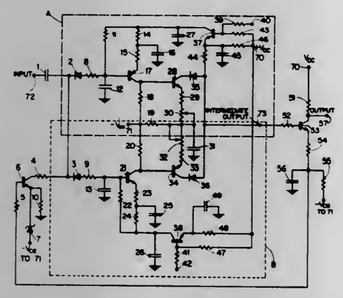


A phase-sensitive detector circuit comprises two long-tailed pairs of transistors of complementary type connected together and switched by a reference signal so that the transistors of each pair joined to each other conduct simultaneously. The signal input is applied to a tail of one of the pairs and a feedback circuit operates to control the tail of the other pair to tend to maintain the mean voltage at a junction point between the two pairs at a constant value. A resistance is connected across the junctions between the pairs and the output is taken differentially from the junctions.

3,673,507
TWO CHANNEL READ AMPLIFIER

Robert S. Prescott, Lexington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 29, 1970, Ser. No. 33,029
Int. Cl. H03f 3/68
U.S. Cl. 330—30 R 18 Claims

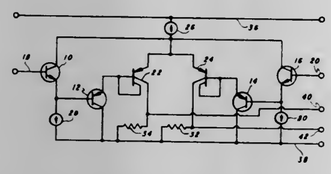


Two amplification channels for use with a read-head of a tape transport device of a computer system comprised of transistors, and associated diodes, resistors and capacitors, are each independently set for optimum response to one of two modes of information stored on a magnetic medium. Electronic switching means are provided for activating one channel or the other in accordance with the type of signal being read. The operating points of the two amplification channels are stabilized by a common biasing means.

3,673,508
SOLID STATE OPERATIONAL AMPLIFIER

Michael J. Callahan, Jr., Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 10, 1970, Ser. No. 62,461
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 12 Claims



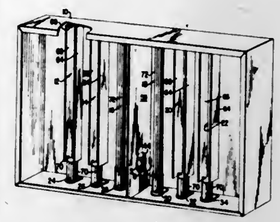
A low input current, high response rate solid state operational amplifier is provided by coupling low input current emitter follower circuits to the inputs of a differential amplifier circuit which has been gain stabilized by the use of multiple collector transistors and current feedback.

3,673,509
INTERDIGITAL PREAMPLIFIER

Robert B. Cooper, Jr., Oklahoma City, Okla., assignor to Edwin J. Sossen, Oklahoma City, Okla., a part interest

Filed Aug. 7, 1970, Ser. No. 62,056
Int. Cl. H03f 3/04
U.S. Cl. 330—31 8 Claims

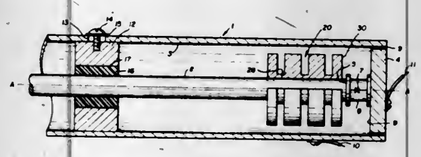
A bandpass preamplifier for isolating a narrow frequency band, especially in the VHF or UHF range, from interference or out-of-band radiation generated by high energy transmitters operating at frequencies near the desired band. The circuit includes a first turnable combline bandpass filter, employing strip line inductive elements, which provides a narrow band input to a field effect transistor amplifier. A second similar filter receives the amplified signal and furnishes a very narrow band output signal characterized by very strong attenuation of out-of-band interference.



3,673,510
BROAD BAND HIGH EFFICIENCY AMPLIFIER

Martin L. Grace, Framingham, and Harold J. Pratt, Jr., Andover, both of Mass., assignors to Sperry Rand Corporation

Filed Oct. 7, 1970, Ser. No. 78,720
Int. Cl. H03f 3/10
U.S. Cl. 330—34 10 Claims

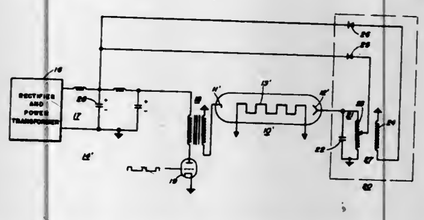


An active high-efficiency-mode semiconductor device is coupled to oscillating high frequency fields in a transmission line network for amplifying those electromagnetic fields, the apparatus taking the form of a single port high frequency device. The transmission line network provides means for elimination of time delayed triggering of undesired oscillations within the amplifier.

3,673,511
POWER RECOVERY CIRCUIT

Herbert W. Bickert, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1965, Ser. No. 428,289
Int. Cl. H03f 3/54
U.S. Cl. 330—44 10 Claims



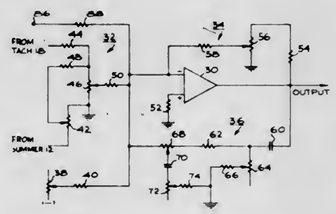
A power recovery circuit for use with an electron beam tube having a resonant circuit containing a capacitor in parallel

with an inductive element connected to the collector of the tube. A unidirectional conducting circuit connected between the inductive element and the power supply, which supplied energy to the cathode of the tube, feeds energy back to the power supply.

3,673,512
SERVO AMPLIFIER

Ronnie G. Walters, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Sept. 22, 1970, Ser. No. 74,427
Int. Cl. H03f 1/36
U.S. Cl. 330—97 6 Claims

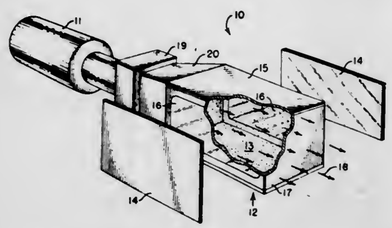


A servo amplifier is provided with associated circuitry which affords substantially independent compensation of both its frequency response and gain over the usable bandwidth whereby in a servo loop lead-lag compensation can be provided to establish desired output characteristics for the servo loop.

3,673,513
ELECTRON BEAM-INITIATED CHEMICAL LASER SYSTEMS

David W. Gregg, Lafayette; Ray E. Kidder, Pleasanton, and Burton Krawetz, Livermore, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 26, 1970, Ser. No. 40,652
Int. Cl. H01s 3/22, 3/09
U.S. Cl. 331—94.5 12 Claims

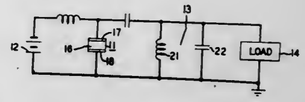


An electron beam-initiated volumetrically ignited chemical laser system wherein a short, high energy charged particle pulse directed through an explosive gaseous mixture within an optical cavity uniformly ignites the explosive mixture in the optical cavity. The energy released in the conflagration creates a large population inversion in lasing energy states of transient and resulting chemical species. Volumetric ignition is distinguished from point ignition in that with point ignition a large volume of material is consumed via the propagation of a macroscopic burn or slow front whereas no such macroscopic front occurs for volumetric ignition. The electron beam provides a means to obtain "multipoint" ignition throughout the volume of material.

3,673,514
SCHOTTKY BARRIER TRANSIT TIME NEGATIVE RESISTANCE DIODE CIRCUITS

Donald James Coleman, Jr., Warren, and Simon Min Sze, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 31, 1970, Ser. No. 103,253
Int. Cl. H01l 3/00; H03b 7/14; H03f 3/10
U.S. Cl. 331—107 R 7 Claims

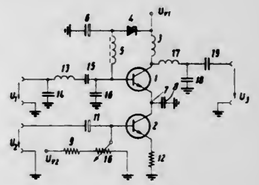


In a preferred form, a negative resistance diode comprises a semiconductor wafer contained between two Schottky barrier contacts. The diode is biased below avalanche breakdown, but above a critical "reach-through" voltage, which, with appropriate diode parameters and an appropriate external circuit, causes minority carriers to be injected by the forward-biased contact to give a transit time negative resistance. When used as an oscillator, the device gives a significantly lower noise figure than analogous Impatt diodes. Amplifier and voltage limiter embodiments are also described.

3,673,515
EMITTER ELECTRODE CURRENT CONTROLLED AMPLITUDE MODULATOR

Karl-Heinz Kersten, and Wolfgang Patschan, both of Heilbronn, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Danube, Germany

Filed Nov. 25, 1969, Ser. No. 879,859
Claims priority, application Germany, Nov. 30, 1968, P 18 11 943.2
Int. Cl. H03c 1/06
U.S. Cl. 332—31 T 11 Claims



A circuit arrangement for amplitude modulation comprises a controllable component such as a transistor driven by the signal to be modulated and whose emitting electrode is connected to a current source, such as a further transistor, the current delivered from the current source to the controllable component being varied in magnitude by the modulation signal.

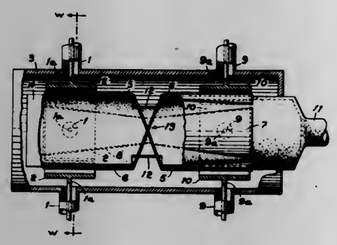
3,673,516
CONTINUOUS PHASE SHIFTER/RESOLVER EMPLOYING A ROTARY HALFWAVE PLATE

William M. Spanos, Wayne, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

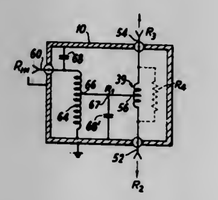
Filed Feb. 8, 1971, Ser. No. 113,532
Int. Cl. H01p 1/18, 3/04
U.S. Cl. 333—5 19 Claims

A rotary coaxial phase shifter/resolver providing continuous low-loss phase shift or signal resolving capability over a broad band or frequencies. A rotatable balanced coaxial halfwave

plate is capacitively coupled between balanced input and output dual orthogonally polarized coaxial launchers, which launchers are in turn coupled to respectively input and output feed arrangements appropriate to the particular mode of operation. The input and output launchers each consist of a stationary balanced stator having a plurality of concentrically arranged capacitive plates to permit excitation of duel orthogonal coaxial balanced line modes and a balanced rotor having a plurality of capacitive plates in one-to-one correspondence with and concentrically arranged inside the stator plates about the same axis for coupling and transferring the signals in the two orthogonally polarized modes. The halfwave plate includes a pair of orthogonal balanced transmission lines, the conductors of one of which are reversed to provide a 180° phase reversal between the input and output launchers for one of the orthogonally excited electric field components. The relative phase/polarization shift derived from input launcher to output launcher is in a two-to-one correspondence with the physical angle of rotation of the halfwave plate.

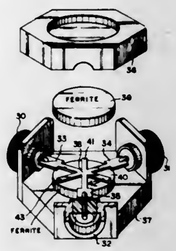


3,673,517
RESISTORLESS RADIO FREQUENCY HYBRID SIGNAL SPLITTER
Sergei L. Ticknor, Eariville, N.Y., assignor to Jerrold Electronics Corporation, Philadelphia, Pa.
Filed Sept. 19, 1968, Ser. No. 760,751
Int. Cl. H03h 7/48
U.S. Cl. 333—8 **8 Claims**



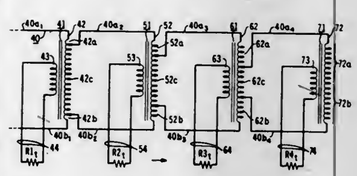
A radio frequency signal splitter is described wherein a hybrid coil utilizes a ferrite core whose RF resistance is selected bearing predetermined ratios to the characteristic impedances of the RF input and RF output lines. Several embodiments are described.

3,673,518
STUB TUNED CIRCULATOR
Kenneth L. Carr, Bedford, Mass., assignor to Ferrotec, Inc.
Continuation of Ser. No. 468,844, July 1, 1965, abandoned. This application March 10, 1971, Ser. No. 122,977
Int. Cl. H01p 1/32, 5/12
U.S. Cl. 333—1.1 **19 Claims**



A strip line Y-junction ferrite circulator is tuned by locating a stub at the junction between a pair of arms. Each stub acts to adjust the impedance presented at the input arm.

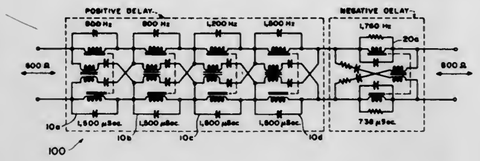
3,673,519
IMPEDANCE MATCHING TRANSFORMER FOR COUPLING TRANSMISSION LINES
Gilbert August Van Dine, Winfield Twp., Du Page County, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Jan. 22, 1971, Ser. No. 108,803
Int. Cl. H03h 7/38, 7/48
U.S. Cl. 333—6 **13 Claims**



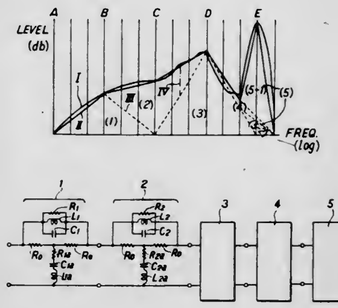
A transformer circuit for tapping a branching line to a main two-wire transmission line comprising a primary winding having two end sections serially connected respectively in the two wires of the main line and a midsection connected across it. The secondary winding originates the branching line and is coupled to the entire primary winding.

3,673,520
DELAY EQUALIZER NETWORK INCLUDING NEGATIVE DELAY CIRCUITS
Roland C. Taylor, 60 Hudson St., New York, N.Y.
Continuation-in-part of Ser. No. 803,661, March 3, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,613
Int. Cl. H03h 7/04
U.S. Cl. 333—28 R **6 Claims**

An equalizer circuit for equalizing delay in the passband of signals in a transmission line employs both positive and negative delay equalizer sections. By use of negative delay which subtracts from the delay in the line, uniform delay of lower time magnitude is obtainable than by use of positive delay circuits alone. Also, by using one or more negative delay sections a given equalization envelope is obtainable employing fewer equalizer sections. Lattice or bridge-T circuits are employed in the delay equalizer. The negative delay lattice sections include resistance elements selected in accordance with criteria herein set forth to provide the negative delay.



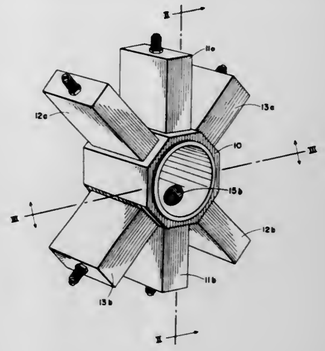
3,673,521
EQUALIZING TRANSMISSION LOSS UTILIZING GRAPHICAL METHOD FOR SELECTING EQUALIZER NETWORKS
Hiroshi Yuguchi, Yokohama, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan
Filed Jan. 11, 1971, Ser. No. 105,479
Claims priority, application Japan, Jan. 14, 1970, 45/3729
Int. Cl. H03h 7/14; H04b 3/14
U.S. Cl. 333—28 R **2 Claims**



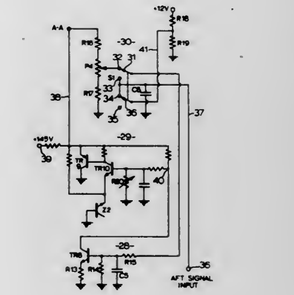
In an attenuation equalizer used to make the total transmission loss of a transmission path essentially the same for all frequencies in the range being transmitted, a desired characteristic determined for compensating a distorted frequency characteristic of the transmission path to be equalized is divided into a plurality of equilateral triangles so that each characteristic of the equilateral triangles is realized by a unit circuit, such as a constant resistance circuit of second degree function type.

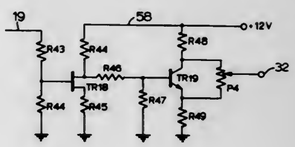
3,673,522
MICROWAVE BALANCED EXTERNAL CAVITY REJECTION FILTER
Arvid Ramkrishnarao Bastikar, Kanata, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed April 5, 1971, Ser. No. 131,280
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—73 W **2 Claims**

In an axially symmetrical waveguide, a balanced external cavity filter comprising a plurality of resonant cavity pairs coupled to the waveguide and disposed on the circumference of the same in a plane orthogonal to its axis, constitutes a novel mode-filter rejecting undesired polarizations in certain waveguide propagation-modes determined by the angular positions of the cavity pairs and their coupling to the waveguide at frequencies at which the cavity pairs are resonant.



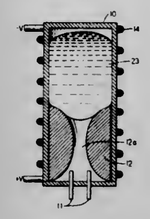
3,673,523
SIGNAL TRANSLATING NETWORKS AND CONTROL CIRCUITS FOR THE TUNERS OF SIGNAL RECEIVERS
William G. Russell, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Calif.
Filed Oct. 5, 1970, Ser. No. 78,027
Int. Cl. H03j 3/06
U.S. Cl. 334—15 **7 Claims**





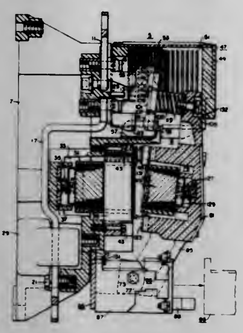
A signal receiver of a type employing a varactor tuner is provided with a network that compensates for the different sensitivities of different ones of the channels to which the receiver can be tuned and that also provides manual fine tuning.

3,673,524
PISTON MERCURY SWITCH
Terrell Nicholson Lowry, Genoa Township, Delaware County, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed March 17, 1971, Ser. No. 125,184
Int. Cl. H01h 29/02
U.S. Cl. 335—52 6 Claims



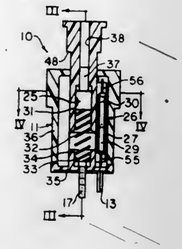
A bistable magnetically operated mercury switch is disclosed which comprises a magnetic piston contained in a hermetically sealed chamber along with a globule of mercury. As the piston is moved from one end of the chamber to the other end under the influence of an external magnetic field, the mercury is displaced through an aperture in the spindle to the opposite end of the chamber where it electrically connects terminals.

3,673,525
CONTACTOR
James D. Collins, Buffalo, and Thomas A. Wiledon, Alden, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed March 30, 1971, Ser. No. 129,173
Int. Cl. H01h 51/06
U.S. Cl. 335—132 9 Claims



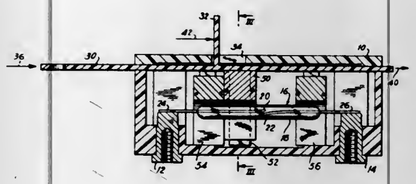
A contactor comprises an insulating carrier comprising a pair of spaced leg portions at one end thereof that are pivotally supported to support the insulating carrier for pivotal movement about a fixed pivot. An overload relay is removably supported on the contactor between the spaced leg portions of the insulating carrier. The insulating carrier supports a movable contact structure and a magnetic armature to provide a movable structure movable between open and closed positions. Opening movement of the movable structure is limited by engagement of the movable structure with stop means on a removable arc hood structure. When the arc hood structure is removed the movable structure can be moved past the open position to a maintenance position.

3,673,526
MAGNETIC SWITCHES AND METHOD AND APPARATUS FOR MAKING SAME
Arnold Aage Brevick, Roselle, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Nov. 23, 1970, Ser. No. 91,712
Int. Cl. H01h 3/12, 51/28
U.S. Cl. 335—205 17 Claims



Pushbutton switch in which a coiled return spring holds a magnet in a socket of a pushbutton and against a roll pin which is accessible after assembly for slidable adjustment to fix the position of the pushbutton at which the magnet actuates a reed switch positioned alongside the path of movement of the magnet. The adjustment is performed by hand or automatically by mechanism controlled from the reed switch. Integral fingers on the pushbutton spring inwardly during assembly and then outwardly to act as a return stop. A one piece stamping supports the reed switch and is cut during construction to provide both terminals of the switch.

3,673,527
REED SWITCH ANG MAGNETIC OVER-CENTER DEVICE THEREFOR
Edgar Wolf, New Hyde Park, N.Y., assignor to Redactron Corp., Hauppauge, N.Y.
Filed Feb. 19, 1971, Ser. No. 116,850
Int. Cl. H01h 5/02
U.S. Cl. 335—207 12 Claims



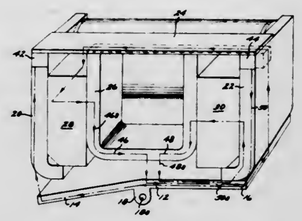
A reed switch which is magnetically actuated is provided with a magnetic arrangement which affords an over-center feel or force gradient or curve. The arrangement includes oppositely polarized and spaced magnets between which is located a further magnet which directly operates the reed switch or which is connected to another magnet which operates the switch.

3,673,528
WIDE FREQUENCY RESPONSE LINE SCAN MAGNETIC DEFLECTOR
William C. Hughes, Scotia, N.Y., assignor to General Electric Company
Filed March 1, 1971, Ser. No. 119,584
Int. Cl. H01f 7/00
U.S. Cl. 335—210 10 Claims



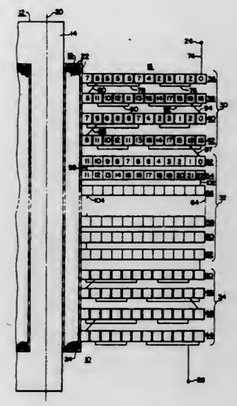
A magnetic deflector for an electron beam is disclosed. The deflector is characterized by a frequency response of several megahertz and a linear deflection. The wide frequency response and linearity are achieved by utilizing particularly shaped pole pieces within the electron beam gun. In additional embodiments, combinations of deflecting elements are disclosed.

3,673,529
MAGNETIC ACTUATOR
Joseph A. Garratt, Orange, and Leonard P. Ash, Anaheim, both of Calif., assignors to Babcock Electronics Corporation, Costa Mesa, Calif.
Filed May 13, 1971, Ser. No. 142,883
Int. Cl. H01f 7/08
U.S. Cl. 335—234 12 Claims



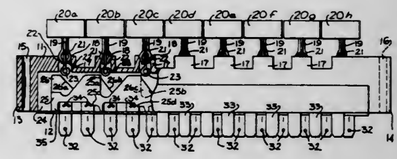
A magnetic actuator, such as is frequently used to control the operation of electrical contacts of electromagnetic relays. The actuator has a pair of permanent magnets which retain a symmetrically-shaped armature in either of two alternative operating positions. An electromagnet is employed to aid the magnetic flux of one of the permanent magnets and to counteract the magnetic flux of the other in determining the position of the bi-stable armature. A common piece or pole is provided for the several permanent magnet circuits, which pole piece can be adjusted with respect to the armature with equal effect upon the flux flow therein.

3,673,530
ELECTRICAL WINDINGS
Robert I. Van Nice, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 8, 1970, Ser. No. 96,010
Int. Cl. H01f 15/14
U.S. Cl. 336—70 10 Claims



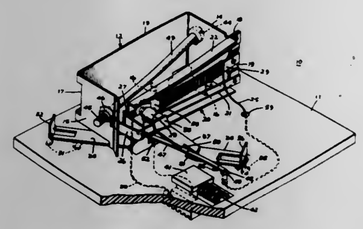
A winding for electrical inductive apparatus, having a plurality of axially spaced, serially connected pancake coils. A first group of pancake coils at one end of the winding are of the interleaved turn type, and a second group of pancake coils, connected to the first group, are of the continuous type. The degree of interleaving of the first group, and the radial spacing between the conductor turns of each pancake coil of the first group, are selected to provide a series capacitance for the first group which is a maximum of four times the series capacitance of the second group.

3,673,531
ELECTRICALLY RELEASED LATCHING SWITCH FOR TIMER-CONTROLLED APPLIANCES AND THE LIKE
Victor H. Zane, Connersville, Ind., assignor to Design and Manufacturing Corporation
Filed Aug. 13, 1970, Ser. No. 63,488
Int. Cl. H01h 61/02
U.S. Cl. 337—77 6 Claims



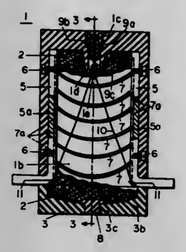
Switch means, movable between an "OFF" and an "ON" position. Latch means are provided in association with the switch means for holding the switch means in its "ON" position. The latch means is responsive to an electrical signal from an external source to release the switch means for return to its "OFF" position.

3,673,532
THERMAL SWITCH MECHANISM
Ralph H. Allison, Jr., Morrison, Ill., assignor to General Electric Company
Filed Dec. 30, 1970, Ser. No. 102,650
Int. Cl. H01h 61/02
U.S. Cl. 337—102 7 Claims



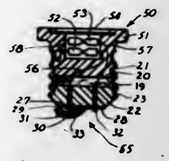
A thermal switch mechanism includes a pair of spaced apart arms. A thermal actuator is mounted on one arm and extends toward the other, with a toggle spring interconnecting the actuator and the other arm. A heater is positioned for selectively heating the actuator so that the actuator selectively will move in opposite directions. A stationary contact is provided on each side of the actuator, which carries a movable contact for engagement with each of the stationary contacts, depending on the direction of movement of the actuator. A screw extends between the arms for setting the distance therebetween to adjust the switch differential. An insulator is normally positioned between the movable contact and one of the stationary contacts and is movable therefrom. A second, normally open switch is interconnected with the insulator. When the insulator is moved from between the movable contact and one of the stationary contacts, the normally open switch is closed.

3,673,533
ELECTRIC LOW-VOLTAGE FUSE HAVING TERMINAL BARS
Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Aug. 17, 1971, Ser. No. 172,470
Int. Cl. H01h 85/08, 85/12, 85/20
U.S. Cl. 337—161 5 Claims



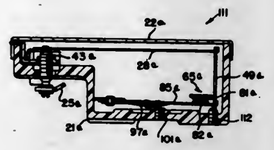
A polyphase fuse has a housing shaped substantially prismatically and subdivided into a plurality of chambers each provided for a phase fuse unit, or pole fuse unit, of the polyphase fuse. Each of the chambers contains a pair of terminal bars spaced by the housing itself so as to dispense with additional insulating spacers arranged between each pair of terminal bars. The juxtaposed surfaces of each pair of terminal bars are provided with fuse-link-receiving grooves. Each fuse link means includes a groove-engaging spacing tab and a substantially C-shaped center portion positioned generally transversely to the pair of terminal bars. The fuse link means of each phase unit of the polyphase fuse are superimposed and form a stack, the spacing between the contiguous C-shaped center portions thereof being determined by the length of their spacing tabs.

3,673,534
DOUBLE LIFE LIGHT BULBS, FUSES, AND THE LIKE
Robert C. Marinace, 2440 Valentine Ave., New York, N.Y.
Filed May 4, 1971, Ser. No. 140,194
Int. Cl. H01h 85/20; H01k 1/64, 9/04
U.S. Cl. 337—258 13 Claims



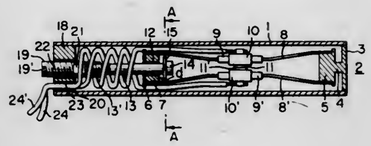
Double life light bulbs, fuses, and the like comprising a plurality of conducting filaments arranged in parallel having a common lead and a base comprising a hollow threaded member electrically connected to the common lead; an insulating member with open channels extending therethrough disposed in the lower end of said threaded member; a plurality of conducting members, each having an end connected, respectively, to one of the conducting filaments and the other end extending through the insulating member; and two contact members of ductile, conductive material, said contacts being bent through a 90° angle and being mounted on the exterior of the insulated section of said threaded member with the lines of fold of the respective contact members lying adjacent to one another, the vertically projecting sections of the contacts laminated together in an insulated relationship, the mounted section of the contacts having openings therein for receiving the respective conducting members; the insulated laminate structure being capable of being folded through 180° to expose, alternately, each of the available contacts.

3,673,535
ELECTRICAL SWITCH HAVING A SNAP BLADE MEANS AND METHOD OF CALIBRATING THE SAME OR THE LIKE
David M. Rosenberg, and Siegfried E. Manecke, both of Indiana County, Pa., assignors to Robertshaw Controls Company, Richmond, Va.
Continuation of Ser. No. 714,992, March 21, 1961, which is a division of Ser. No. 300,468, Aug. 7, 1963, which is a continuation of Ser. No. 263,033, March 5, 1963, Pat. No. 3,238,337. This application April 19, 1971, Ser. No. 135,419
Int. Cl. H01h 11/00, 37/12, 37/26
U.S. Cl. 337—347 12 Claims



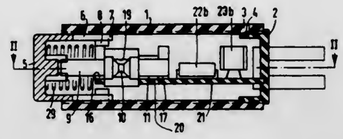
An electrical switch having a snap blade means of the over-center variety that is confined in its movement to only the negative rate area thereof on one side of its over-center position and to a method for calibrating such an electrical switch by simple adjustments of an adjusting member engaging the snap blade means and an adjustable stop means that limits movement of the snap blade means relative to a fixed contact that cooperates with the blade means and is spaced from the stop means.

3,673,536
THERMOSTAT SWITCH
Kenshi Kondo, No 3-5, Ohkura 1-chome, Setagaya-ku, Tokyo, Japan
Filed Nov. 30, 1970, Ser. No. 93,588
Int. Cl. H01h 37/20, 37/48
U.S. Cl. 337—392 3 Claims



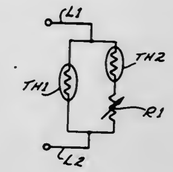
Thermostat switch with metallic, flexible, contact-point plates positioned longitudinally within a thermosensitive sleeve. The two flexible plates are coupled at one end thereof, through a support, to one end of the sleeve and at the opposite end thereof, through another support and a screw rod, to the other end of the sleeve. With a temperature change, the sleeve expands or contracts more than the flexible plates, thereby causing these plates to flex closer to, or away from, each other and thus make or break the thermo-contact. The first mentioned support support has a reduced diameter section which minimizes the delay in thermostatic response to temperature changes. Means for preventing the flexible plates from distorting and for keeping the sleeve moisture-tight are included.

3,673,537
CONTACTLESS SWITCHING DEVICE
Karl Greger, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Filed Sept. 22, 1970, Ser. No. 74,335
Claims priority, application Germany, Sept. 23, 1969, P 19 48 027.4
Int. Cl. H01c 1/12
U.S. Cl. 338—12 3 Claims



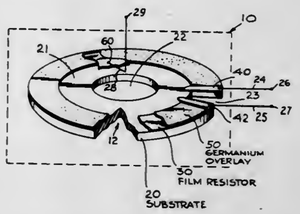
A galvanomagnetic resistor is fixedly mounted on a magnetizable yoke structure. A displaceable actuator comprises a permanent magnet having a longitudinal axis and being rotatably mounted in the yoke structure at a part of the yoke structure opposite that at which the galvanomagnetic resistor is mounted. The actuator has a direction of travel substantially transverse to the longitudinal axis of the magnet.

3,673,538
COMPOSITE THERMISTOR TEMPERATURE SENSOR HAVING STEP-FUNCTION RESPONSE
Robert C. Faxon, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 5, 1969, Ser. No. 882,799
Int. Cl. H01c 7/02
U.S. Cl. 338—25 7 Claims



A temperature sensor including first and second PTC thermistor elements each having a well-defined transition temperature above which the resistance of the element rises relatively abruptly and below which it changes relatively little, the transition temperature of the second element being substantially greater than that of the first element. The thermistor elements are substantially identically thermally responsive to a body whose temperature is sensed by the sensor. The elements are electrically interconnected to cause the sensor resistance to be an equivalent resistance which varies as a function of the resistance of the elements and changes relatively abruptly at temperatures determined by the transition temperatures of the elements thereby providing the sensor with a step-function R vs. T characteristic.

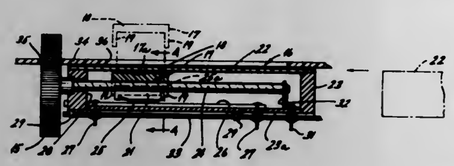
3,673,539
ELECTRICAL RESISTANCE ELEMENT WITH A SEMICONDUCTOR OVERLAY
Robert M. Healy, Warrenville, Ill., and Robert Marshall, Meguon, Wis., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed May 11, 1970, Ser. No. 36,047
Int. Cl. H01c 9/02
U.S. Cl. 338—154 6 Claims



A thin film overlay of a semi-conductive material, such as germanium, silicon, indium antimonide, titanium oxide or ferric oxide, covers the resistor track of a film resistance element. A resistance element incorporating this improvement, as compared with one having a noble metal overlay, has a much lower temperature coefficient of resistance. A germanium overlay may be provided by evacuating the space about the resistive element to a pressure of about 2×10^{-6} torr, supplying the germanium material in granular particles ranging in fineness between 180–320 mesh by vibration and gravity in a steady and even flow thereof to the evacuated space at a point with respect to which the resistor track is exposed, and then evaporating the germanium at the point by electrical resistance heating to vaporization temperature at about 1,850° C.

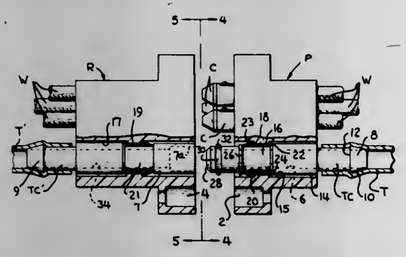
When used in a potentiometer with a movable contact, a resistance element so made exhibits superior wear stability, and good contact resistance variation characteristics.

3,673,540
INDICATING DEVICE FOR TUNING APPARATUS
Robert M. McDonough, Philadelphia, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed Jan. 26, 1971, Ser. No. 109,826
Int. Cl. H01c 9/02
U.S. Cl. 338—196 4 Claims



A lead screw operated potentiometer used in a VVC tuning system for a television receiver is provided with a station indicator driven by the tracking arm of the potentiometer, and visible through a transparent dust cover that is snapped-over the potentiometer body.

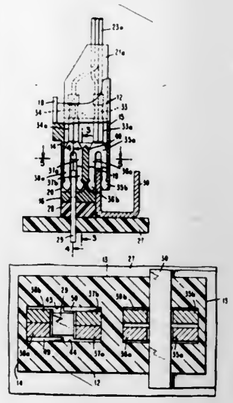
3,673,541
COMPOSITE ELECTRICAL AND FLUID OR AIR CONNECTOR
Robert Volinskie, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation of Ser. No. 732,424, May 5, 1968, abandoned. This application Aug. 6, 1970, Ser. No. 61,788
Int. Cl. H01r 13/52
U.S. Cl. 339—16 R 3 Claims



This disclosure relates to a detachable connector which is defined by a plug member having male electrical contacts and a male tube coupling, and a receptacle member having female electrical contacts and a female tube coupling. The male contacts and coupling are keyed relative to the female contacts and coupling. The tube coupling is sealed against leakage when a connection is effected.

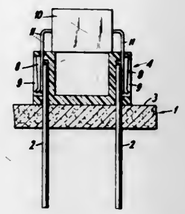
3,673,542
CONNECTOR ASSEMBLY WITH TINE SKEWING HOUSING
Edmund J. Di Stefano, and Arthur E. Enderley, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 17, 1970, Ser. No. 47,073
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 7 Claims

A new connector assembly provides improved electrical and mechanical contact between a pin of a circuit board and two connector forks that form part of the connector assembly. The assembly includes a plastic housing in which the tines of the two connector forks are skewed so that one of the two tines of each fork makes substantially full contact with one of two opposite sides of the pin and the other tine makes a cooperating partial contact on the other side. In the preferred connector assembly, the housing has two projections that each



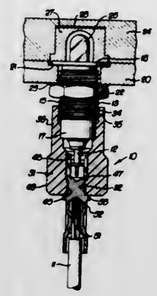
extend along one of two diagonally opposite edges of the pin and along the adjacent non-contact making sides of the pin so that the tines nearest the projections are held in substantially full contact with the pin. The other two tines are allowed to extend somewhat beyond the other edges of the pin. The housing is also able to hold a single contact fork. A single unskewed contact fork is approximately centered on the pin between the diagonally opposing projections of the housing.

3,673,543
MICRO-CIRCUIT PACK RECEPTACLE
Peter Garner, Fanwood, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed April 27, 1970, Ser. No. 31,958
Int. Cl. H01r 13/50
U.S. Cl. 339—61 M 5 Claims



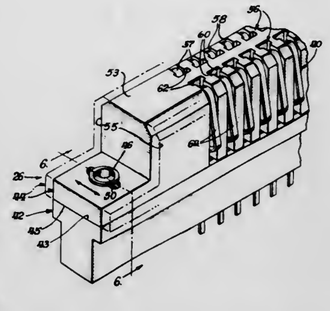
The receptacle of the invention comprises a body having a plurality of apertures adapted to accommodate the leads of a micro-circuit pack and the corresponding pins secured to a wire wrap panel, and disposed in each aperture is a spring means for maintaining a frictional and electrical contact between each leg of the micro-circuit pack and the respective upstanding pin secured to the wire wrap panel.

3,673,544
CONNECTOR FOR LAMP SOCKET
James N. Dupree, South El Monte, Calif., assignor to Dupree, Inc., El Monte, Calif.
Filed Sept. 2, 1970, Ser. No. 69,049
Int. Cl. H01r 33/34
U.S. Cl. 339—61 L 1 Claim



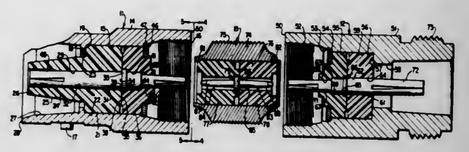
An electrical connector for connecting wire conductors to lamp sockets, such as those used for edge lighted panels. A connector comprising an insulating body and a conductor contact carried within the body, with the contact having a crimp wire receiver on one end and a split barrel terminal receiver on the other. The insulating body is a unitary resilient plastic member which is a push fit onto the socket and which carries the contact into sliding engagement with the conductor pin of the socket.

3,673,545
MINIATURE CONNECTOR CONSTRUCTION—ADJUSTABLE OR FLOATING
David F. Rundle, Camp Hill, Pa., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Nov. 10, 1969, Ser. No. 875,060
Int. Cl. H01r 21/28
U.S. Cl. 339—64 M 12 Claims



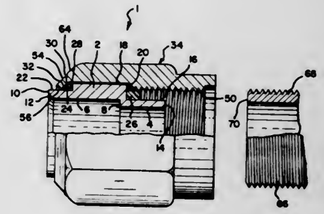
Miniature connector plug of the kind utilized in a package or assembly incorporating a large number of connectors, for use with a socket assembly incorporating the like number of sockets, all of the plugs and all of the sockets being arranged in planes, each plug having portions shiftable transversely for accommodating misalignment between the respective plugs and sockets in a progression of such large numbers of the connectors.

3,673,546
ELECTRICAL CONNECTORS
John L. Green, Magnolia House, High St., and Robert Nelson, 135, Arkwrights, both of Harlow, Essex, England
Continuation-in-part of Ser. No. 706,488, Feb. 19, 1968, abandoned. This application April 20, 1970, Ser. No. 30,126
Int. Cl. H01r 13/54
U.S. Cl. 339—89 C 6 Claims



Means for establishing electrical connection selectively between coaxial electrical connectors having similar or different coupling end configurations comprises a plurality of adapters each having first and second coupling ends, the first coupling end of each adapter being such that it can matingly engage the coupling end of a respective one of the said electrical connectors, and the second coupling ends of all the adapters being of the same internally threaded configuration, and a conductive coupler having an external threaded configuration fitting with both adaptors and conductor ends that can matingly engage the conductors of each of the adapters.

3,673,547
CONNECTOR FOR COAXIAL CABLE
George W. Ziegler, Jr., Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 22, 1970, Ser. No. 39,840
Int. Cl. H01r 13/54, 17/04
U.S. Cl. 339—89 C 5 Claims

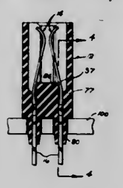


A connector for a coaxial cable including an outer sleeve adapted to threadably mate with a coupling member and rotatable on an inner sleeve for termination on a coaxial cable, the inner and outer sleeves being separated by washers and a seal which absorbs compression forces and prevent torque transmitted from the coupling member and mated outer sleeve to the coaxial cable.

3,673,548
PRINTED CIRCUIT BOARD CONNECTOR
William R. Mattingly, Jr., Santa Ana, and David S. Goodman, Orange, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,826
Int. Cl. H05k 1/07; H01r 13/64
U.S. Cl. 339—186 M 4 Claims

A printed circuit board connector having a plurality of contacts mounted in the connector housing. The contacts are formed of a spring contact portion having a contacting surface and a terminal portion interconnected by a central mounting

portion. The contact is inserted in the housing in an unstressed condition and abuts a housing inner wall member upon partial insertion, the contact being positioned adjacent the inner wall member upon full insertion into the housing with a portion of the contact abutting the inner wall member. The contact surface of the contact is normally adjacent the top end of the



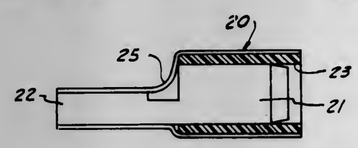
housing, remote from the contact portion adjacent the inner wall member. Moreover, the inner wall member may define an edge against which the printed circuit board engages to limit its movement upon insertion of the board into the housing. The contact mounting portion may be provided with means for engaging the housing so as to correctly position the contact in the housing.

3,673,549

FULLY INSULATED QUICK DISCONNECT

Ward L. Bilkey, Chesterland, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 41,998
Int. Cl. H01r 9/08
U.S. Cl. 339—220 R **10 Claims**



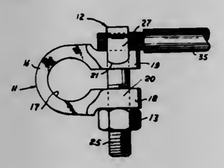
Quick disconnect connectors are provided which are fully insulated. A thin wall tubing having a wall thickness of from about 0.0005 to about 0.005 inch is employed to provide full insulation of the electrical connector terminal. No secondary operations are required to achieve full insulation and standard crimping dies can be used.

3,673,550

CABLE TERMINAL

Joseph Sherman, Rte. 2, Box 907C3, Fort Worth, Tex.

Filed Dec. 11, 1970, Ser. No. 97,256
Int. Cl. H01r 11/26
U.S. Cl. 339—225 **3 Claims**



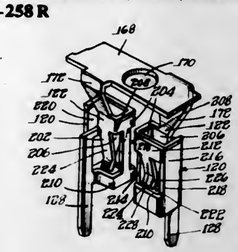
A replacement terminal for connecting a battery cable to a battery terminal post includes an integral split ring having parallel outward projecting lugs with a gap between. The clamp defines a tapered bore for enclosing the battery post. A hook bolt extending through aligned bores in the lugs provides an eye at one end for clamping an exposed cable end to one lug. A nut threaded on the opposite end of the hook bolt provides the clamping force for clamping the cable to the ring and for clamping the ring to the battery post.

3,673,551

INTEGRATED CIRCUIT TERMINAL AND METHOD

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Products Company, Downers Grove, Ill.

Filed Nov. 28, 1969, Ser. No. 880,574
Int. Cl. H01r 5/04, 11/22; H05k 1/12
U.S. Cl. 339—258 R **6 Claims**



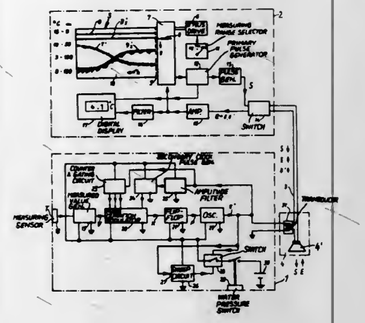
A sheet metal terminal is formed of spring metal such as brass with a plurality of terminals attached to one another in chain fashion by a carrier strip of scrap of the metal blank from which the terminals are formed. Each terminal has a mounting lug or tongue. The lugs or tongues of a plurality of interconnected terminals are inserted through aligned apertures in a pair of parallel rows in a printed circuit board, following which the terminals are flow soldered to the printed circuit board, and the scrap interconnection is cut off. A pair of rows of terminals thus is provided into which the terminals of a "crab pack" integrated circuit may be plugged.

3,673,552

METHOD AND APPARATUS FOR COMPILING MEASURED VALUES OF A VARIABLE PARAMETER

Siegfried Mross; Hans Grossheim, both of Bremen, Germany, and Michel Aubert, Wimermeux, France, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed March 30, 1970, Ser. No. 23,691
Claims priority, application Germany, March 28, 1969, P 19 15 956.9
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **19 Claims**



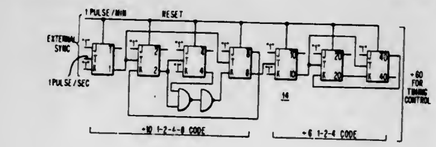
A method and apparatus primarily intended for commercial fishing craft for compiling at an observation station measured values of a variable parameter existing at one or more measuring locations spaced from the observation station by producing a signal which is a function of the instantaneous value of the variable parameter, feeding it to a pulse duration modulator, to produce a modulated pulse whose duration is a function of the instantaneous value of the variable parameter, and controlling the initiation of the modulated pulses by a system which emits a train of spaced wave pulses through one or more acoustical transducers, so that the initiation of the modulated pulses is in a fixed time relation with the wave pulses. A suitable short-interval range recording device is disposed at the observation station, and is connected for receiving the modulated pulses and recording their duration along with the echose of the wave pulses. When a plurality of measured value generators is used, a programmed switch mechanism may be employed to connect the individual generators with their respective wave pulse generators.

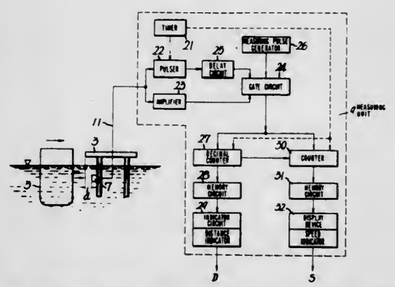
3,673,553

MEASURING INSTRUMENT FOR PILOTING SHIP FOR DOCKING OR LEAVING

Takahiro Miura, Kawasaki, and Miaki Yamamoto, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki Seizosho, Tokyo, Japan

Filed June 8, 1970, Ser. No. 44,397
Claims priority, application Japan, June 17, 1969, 44/47809
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **4 Claims**





A measuring instrument for piloting a ship for docking or leaving a pier having at least two spaced ultrasonic transducer means provided under water on the side of the pier for transmitting ultrasonic beams substantially perpendicular to the mooring line joining the front surfaces of dolphins, measuring means respectively corresponding to the ultrasonic transducer means, means for measuring the distance between the ship and the pier and the speed of the ship, and means for reporting the measured results to a pilot on the ship.

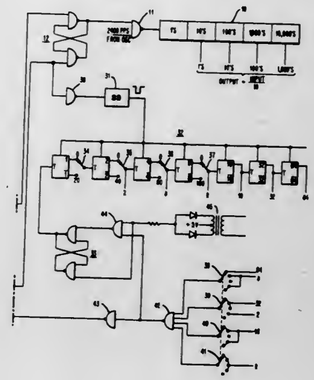
3,673,554

DEPTH SOUNDER DIGITIZER

Silvan E. McAlpin, Dallas, Tex., assignor to Mobil Oil Corporation

Filed Sept. 30, 1969, Ser. No. 862,204
Int. Cl. G01s 9/68
U.S. Cl. 340—3 R **4 Claims**

a water depth digitizer produces an averaged digital readout synchronized with an external clock. The digital readout is produced from a depth sounder having a timing cycle which is asynchronous with respect to the clock. A digital counter is started in response to the occurrence of selected acoustic ranging pulses. Pulses which are proportional in time to the velocity of sound in water are counted until the returned echo



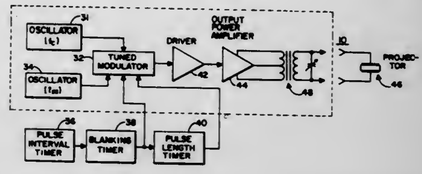
from the sea bottom stops the count. Ten counts are accumulated in the digital counter which is arranged to count in decades. The least significant decade is dropped to produce a readout directly representing water depth.

3,673,555

MODULATED CARRIER ACOUSTIC BEACON

Ilmar G. Raudsep, Seattle, Wash., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 741,191, June 28, 1968, Pat. No. 3,559,161, which is a continuation-in-part of Ser. No. 655,662, July 24, 1967, abandoned. This application Oct. 23, 1970, Ser. No. 83,350
Int. Cl. H04b 11/00
U.S. Cl. 340—5 R **4 Claims**

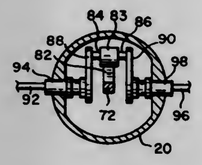


An underwater beacon for transmitting an acoustic signal characterized so as to facilitate accurate determination of the position of an acoustic receiver array relative to the beacon. The beacon comprises a pair of oscillators whose output signals are supplied to a modulator which is further controlled by a timer so as to produce a periodic modulated carrier frequency signal, each period of which is made up of predetermined intervals of unmodulated carrier, modulated carrier, and silence. The output of the modulator is supplied to a driver which energizes an acoustic projector.

3,673,556
TWO-LEVEL DEPTH CONTROLLERS FOR SEISMIC STREAMER CABLES

Paul G. Biggs, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed July 15, 1970, Ser. No. 55,038
Int. Cl. B63b 21/56; G01v 1/16; H01b 7/12
U.S. Cl. 340—7 PG 11 Claims

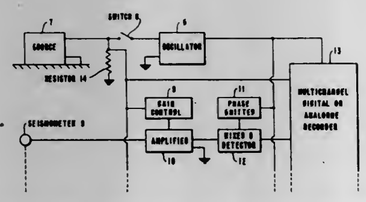


This invention relates to controllers for seismic streamer cables for controlling the depth of the streamer cable while it is towed through a body of water. The controller is adapted to maintain the streamer cable at one predetermined level, and upon receipt of a remote-control signal the controller moves the cable to another predetermined level.

3,673,557
DISCONTINUOUS COHERENT WAVE ACOUSTIC HOLOGRAPHY

Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 659,984, Aug. 8, 1967, Pat. No. 3,503,037. This application Feb. 3, 1970, Ser. No. 8,206
Int. Cl. G01v 1/34
U.S. Cl. 340—15.5 H 2 Claims



The response to deep reflecting layers in an acoustic hologram is improved by varying the time at which acoustic wave relating to to various images are radiated either by pulsing the source of coherent waves or turning the source off after a steady state has been established and gating the receivers so that acoustic waves relating to very strong and very weak images are not being received at the same time.

3,673,558
POLYADDITION PRODUCTS AND PROCESS FOR THEIR MANUFACTURE

Rosemarie Toepel, Basel; Heinz Abel, Reinach; Arthur Maeder, Therwil, and Klaus-Dieter Leifels, Binningen, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

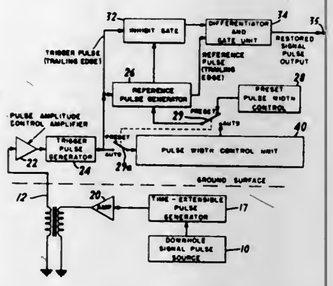
Filed May 4, 1970, Ser. No. 34,596
Int. Cl. C08g 51/24
U.S. Cl. 260—29.2 EP 13 Claims

A stable preparation of reaction products is provided which is prepared by first reacting a liquid polyglycidyl ether of a polyphenol with an aliphatic di-primary diamine and thereafter further reacting the resulting adduct with an epoxy compound. The ratio of epoxide group equivalents to amino group equivalents in the first stage is 1:3 to 5.5 and in the second stage 1:2 to 5. The preparations are useful in the textile industry e.g. for rendering wool non-felting. Especially suitable are the preparations when applied in combination with a dyeing process.

3,673,559
PULSE RESOLUTION SYSTEM

Robert J. Schwartz, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 593,385, Nov. 10, 1966, abandoned. This application Sept. 18, 1968, Ser. No. 767,904
Int. Cl. H03k 4/10; H04b 3/00
U.S. Cl. 340—18 30 Claims



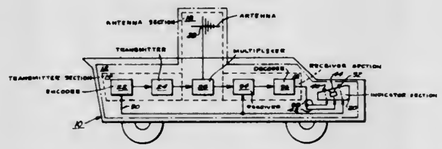
Apparatus in an earth bore logging system for restoring two or more closely occuring pulses which have become distorted through transmission from subsurface equipment to the surface to the extent that such pulses tend to merge into a single pulse of longer duration. Each pulse from the subsurface signal source is extended in duration to a predetermined pulse width when widely separated from adjacent pulses, and is extended to a greater extent when a successive pulse occurs during the predetermined pulse width period. The pulses are then transmitted to the surface where such extended pulses are amplitude normalized. Each normalized received pulse at the surface is used to generate a pulse having a duration proportional to the duration at which the amplitude of the normalized pulse exceeds a given level. Each of the trigger pulses in turn results in the production of a reference pulse terminating after termination of a trigger pulse of normal duration, representative of a single pulse before transmission. A first output pulse is generated in response to one of the trigger and reference pulses and a second output pulse is generated only upon time coincidence of the trigger pulse and termination of the reference pulse. The widths of the reference pulses may be automatically adjusted according to variations in the average widths of the trigger pulses.

3,673,560
VEHICLE ALERTING SYSTEM

Max K. Barsh, and James N. Edwards, both of Claremont, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed May 21, 1970, Ser. No. 39,493
Int. Cl. G08g 1/09
U.S. Cl. 340—33 10 Claims

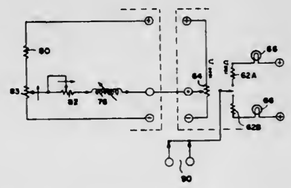
Disclosed is a system for alerting persons in vehicles of the presence in their vicinity of vehicles devoted to responding to emergency situations; the former may be passenger automobiles, buses or other means of public transportation, etc. and the latter may be police cars, fire trucks, ambulances or the like. The system comprises a complete radio station installation in each emergency vehicle and a receiver installation in each passenger vehicle, and both installations may utilize much of the radio equipment already found in such vehicles for other purposes. Thus, in the passenger vehicle, the equipment may comprise an adapter operative to override any normal reception of the car radio to provide an audible and/or visible indication, or a separate indicating receiver of minimum complexity, whereas, in the emergency vehicle, the equipment may comprise a separate modem or one multiplexed to equipment ordinarily serving another function. In the preferred form, the emergency vehicle modem includes a coder-transmitter and a receiver-decoder-indicator both multiplexed to the same antenna, and the passenger vehicle receiver is similar to the receiving equipment of the emergency vehicle.



3,673,561
STEERING INDICATOR

Harry Bronstein, 9872 Bridle Road, Philadelphia, Pa.

Filed Aug. 6, 1969, Ser. No. 847,863
Int. Cl. B60g 1/00
U.S. Cl. 340—52 R 10 Claims



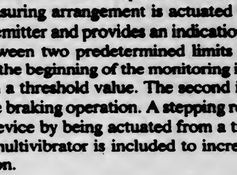
A steering indicator including gearing to transmit rotation of the steering shaft of an automobile to a worm drive gear. Movement of the worm drive gear changes the position of the pair of insulated brushes which makes contact along resistance areas and this has the effect of changing the resistance in two circuits. One circuit involves an indicating meter, such that a given amount of rotation of the steering shaft causes a change in circuit resistance to cause corresponding deflection of the indicating meter, thereby giving the reading of the front wheels position. The second circuit includes a pair of indicator lights, such that change of resistance in the second circuit causes one of the lights to glow more brightly as the steering wheel is turned further away from its straight ahead position to give additional warning to the driver.

3,673,562
ANTI-THEFT DEVICES FOR MOTORCYCLES, BICYCLES AND THE LIKE

Eugene F. Buell, Box 418, Grubbs Road R.D. #2, Gibsonia, Pa.

Filed April 29, 1970, Ser. No. 32,827
Int. Cl. B62h 5/20
U.S. Cl. 340—63 3 Claims

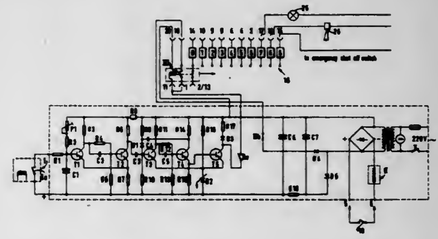
In an anti-theft device for a motorcycle or the like, a key-operated interrupt switch and a normally open solenoid switch are in series between a power source and a signal means. A tilt switch is provided parallel to the interrupt switch and solenoid switch such that, if the motocycle is tilted while the interrupt switch is closed, the signal means is actuated and the solenoid switch closed to maintain the actuation. The tilt switch is carried from a normally-inoperative to a normally operative position as the interrupt switch is moved from its open to its closed position.



3,673,563
VEHICLE BRAKE CONDITION TESTING AND SIGNALLING ARRANGEMENT

Heinz Thielen; Harald Grundmann, and Franz Putz, all of Eschweiler, Germany, assignors to Rheinische Braunkohlenwerke AG, Koeln, Germany

Continuation-in-part of Ser. No. 759,536, Sept. 9, 1968, abandoned. This application May 4, 1971, Ser. No. 140,860
Claims priority, application Germany, Sept. 7, 1967, 16734251
Int. Cl. B60q 1/44
U.S. Cl. 340—71 15 Claims



An arrangement for monitoring and testing of the wear state of mechanical brakes. The movable member which is to be braked operates in conjunction with a signal emitter that emits pulses as a function of the displacement of the movable member. A measuring arrangement is actuated by the pulses from the signal emitter and provides an indication of the braking interval between two predetermined limits of which the first determines the beginning of the monitoring interval and is dependent upon a threshold value. The second is determined by the end of the braking operation. A stepping relay is used as the indicating device by being actuated from a trigger circuit. A monostable multivibrator is included to increase the reliability of operation.

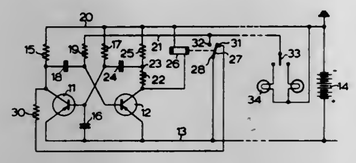
3,673,564
ASTABLE SWITCHING CIRCUIT

Heinz Kammerer, Nellingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 8, 1969, Ser. No. 864,674
Claims priority, application Germany, Oct. 18, 1968, P 18 03 843.2
Int. Cl. B60q 1/38
U.S. Cl. 340—81 R 9 Claims

An astable circuit arrangement for providing periodically spaced pulses to a flashing directional light system in motor vehicles. Two transistors of identical conductivity type are intercoupled through capacitive and resistance networks so as

to generate the required pulses for actuating the flashing light. The coil of a relay is also actuated by these pulses, and a single-pole, double-throw switching contact arrangement of the relay connects a resistor in parallel with the emitter-collector



path of one of the transistors, which conducts when the relay coil is de-energized. In the other state of the switching contact arrangement, one terminal of the motor vehicle battery is directly applied to the flashing lamps.

3,673,565

DIRECTION INDICATOR FOR AUTOMOBILE

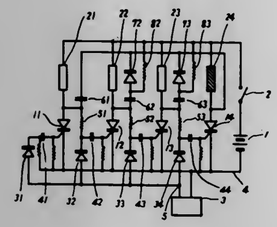
Seiichi Okuhara, 5, Yoyogi 3-chome, Shibuya-ku, Tokyo, Japan

Filed Nov. 14, 1969, Ser. No. 876,853

Claims priority, application Japan, Feb. 5, 1969, 44/8128; March 6, 1969, 44/16469; March 18, 1969, 44/20071; July 26, 1969, 44/58769

Int. Cl. B60q *1/38*

U.S. Cl. 340—82 **11 Claims**



An automotive direction and stoplight signalling system using semi-conductor circuits to control the operation of the lights, the circuit operating a first set of two or more lights sequentially to indicate a turn to the right and a second set of lights to indicate a turn to the left. The circuit also includes means to operate all lights simultaneously to indicate that the vehicle is slowing down or stopping.

3,673,566

USE OF A PLURALITY OF SCANNING DIRECTIONS FOR CHARACTER CENTER LINE DETERMINATION

Thomas Pieter Reede, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

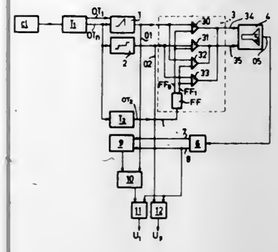
Filed May 5, 1970, Ser. No. 34,651

Claims priority, application Netherlands, May 10, 1969, 6907226

Int. Cl. G06k *9/04*

U.S. Cl. 340—146.3 AE **7 Claims**

Device for determining the character center line i.e. the line interconnecting the centers of the line elements of a character, comprising a part for displaying a character characterized in that a scanner is provided for scanning the character throughout the character surface in at least two orthogonal directions, a detecting device is provided for determining per scan an intersection of a character line element, while by further detecting circuitry the centers of said intersections can be determined, the set of the centers thus obtained forming



the character center line (FIG. 5). The device may furthermore comprise a checking device for suppressing dark signals of too long a duration and/or light and dark signals of too short a duration.

3,673,567

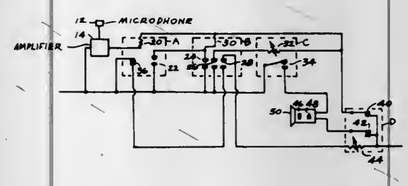
REMOTE DOG-BARK SUPPRESSOR

John F. McClellan, Sr., Stansbury Mill Road, Monkton, Md.

Filed Oct. 28, 1970, Ser. No. 84,552

Int. Cl. G11b *5/00*

U.S. Cl. 340—148 **14 Claims**



An acoustic system for remotely suppressing dog barks by replaying the barks of a dog to the dog, creating a mimicking effect by volume change, time delay, modulation change, or pitch change, in one or more combinations appropriate to the dog; pitch change includes rebroadcasting the barks to the dog at pitch frequencies above the characteristic range of human hearing; an arbitrary-sound embodiment is disclosed.

3,673,568

TIME DIVISION DATA TRANSMISSION SYSTEM HAVING INTERROGATION SIGNAL PASSED THROUGH MATRIX SWITCHES TO JUNCTORS VIA ALL FREE PATHS

John Brian Terry, Maldon, England, assignor to The Marconi Company Limited, London, England

Filed April 8, 1970, Ser. No. 26,732

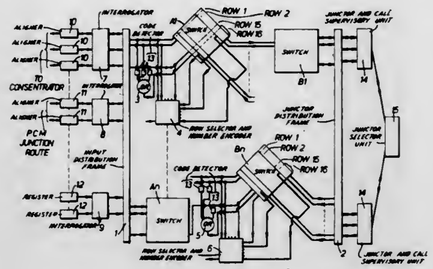
Claims priority, application Great Britain, April 14, 1969, 19,090/69

Int. Cl. H04q *9/00*; H04j *3/00*; H04m *3/00*

U.S. Cl. 340—147 R **17 Claims**

A time division multiplex data transmission arrangement has means for applying path interrogation signals to the free row inputs of the device interconnection switches, a switch units wherein each switch has an interrogation signal row and

means for detecting the occurrence of an interrogation signal on any row input this signal being passed to all column outputs of the switch which are free whereby the interrogation signals



pass to the next switches connected to the switch unit output columns such that the signals pass progressively through the switches of the switch unit until they appear via all free paths at the junctors.

3,673,569

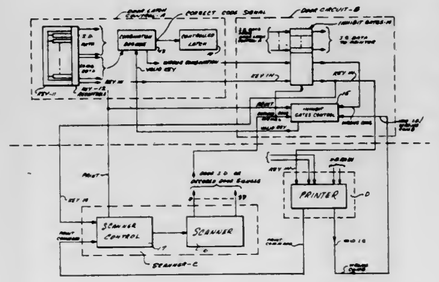
MULTIPLEXER FOR CONTROLLING AND MONITORING CODED KEY OPERATED ACCESSES

Robert A. Hedin, and Everett E. Dukes, Jr., both of Yorba Linda, Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed April 19, 1971, Ser. No. 135,265

Int. Cl. G06k *17/00*; H04q *3/02*; E05b *47/00*

U.S. Cl. 340—147 R **12 Claims**



A multiplexer for scannings a plurality of controlled accesses, or doors, for determining if access or entry has been attempted. The scanner is coupled to a multiplicity of such accesses for determining if a key has been placed in its receptacle for operating a controlled latch. The key is preferably an electrical key having unlocking and identification information recorded thereon. If a key-in condition is determined, the scanner is momentarily stopped to allow the information derived from the key to be processed for determining the validity of the unlocking information and the key user identification information. This I.D. control information is also recorded for providing a record of the key usage relative to the time of day, the door and the recorded control information. If the control information is completely valid as to the unlocking information and the identification information only, then is the controlled latch operated.

3,673,570

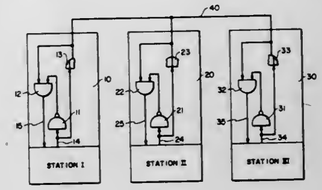
COMBINATION EMITTER FOLLOWER DIGITAL LINE DRIVER/SENSOR

Harland J. Cashman, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 11, 1969, Ser. No. 857,103

Int. Cl. H04q *11/00*

U.S. Cl. 340—147 **2 Claims**



A combined digital line driver and sensor for both transmitting and receiving digital control signals between a plurality of stations over a single conductor. Each station includes an emitter follower which acts as a fraction of an OR gate for driving the digital control signal over the transmission line. The transmission line is connected to one input of a two-diode AND gate. The other input to the AND gate is connected to the input of the emitter follower via an inverter amplifier. The output of the AND gate will contain the received control signal transmitted from some other station unless the associated station is also transmitting a control signal.

3,673,571

CREDIT-AND ACCESS-CONTROL EQUIPMENT

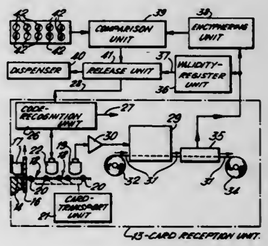
Geoffrey Ernest Patrick Constable, Cheltenham, England, assignor to Smith Industries Limited, London, England

Filed Nov. 19, 1970, Ser. No. 91,018

Claims priority, application Great Britain, Nov. 21, 1969, 57,005/69

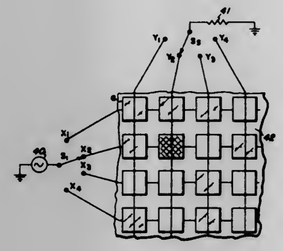
Int. Cl. G06k *5/00*

U.S. Cl. 340—149 A **13 Claims**



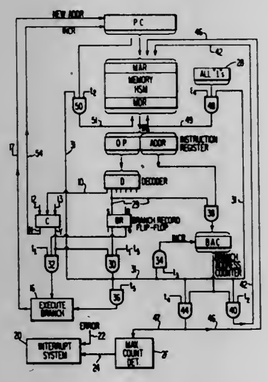
A money-dispensing system is operative to dispense money in response to a bank-customer's magnetically-encoded credit card and keyed-entry of his personal-identification number only if this number accords with the customer's account number as read from an accounting record provided from the card. The record is printed out by a printing drum that is rotated in accordance with signals representing the account number read out from the card by a magnetic reading-head.

3,673,572
ELECTROLUMINESCENT DEVICE
Philip O. Silva, Fairport, and Gary A. Dir, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,060
Int. Cl. G08b 5/22; H05b 37/00; H01l 29/18
U.S. Cl. 340—166 EL 15 Claims



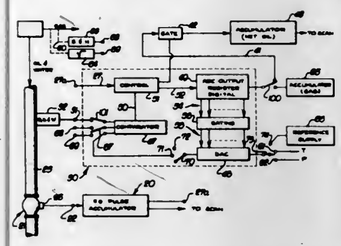
An electroluminescent device wherein a memory switch, which requires no holding current or voltage for its maintenance, controls the operation of the electroluminescent layer. When the device is arrayed in a coordinate pattern, individual area of the device can be selectively addressed to form a pattern of visual data.

3,673,573
COMPUTER WITH PROGRAM TRACING FACILITY
Richard Deming Smith, Northborough, Mass., assignor to RCA Corporation
Filed Sept. 11, 1970, Ser. No. 71,455
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 4 Claims



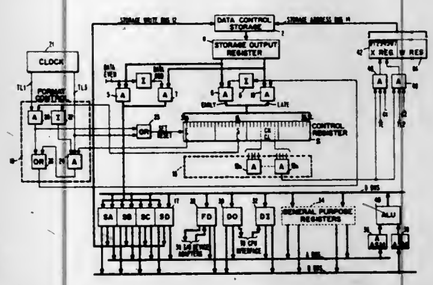
A computer system is disclosed which includes means operative during the execution of a program to record the addresses of all of the branch instructions which result in the taking of the branch path specified by the instruction. The record of addresses is useful in program debugging procedures for determining the place in a program at which an error occurred.

3,673,574
NET FLUID COMPUTING UNIT FOR USE WITH CENTRAL COMPUTER
Wayne E. Holm, Costa Mesa, Calif., assignor to Hydril Company, Los Angeles, Calif.
Filed Feb. 2, 1970, Ser. No. 7,940
Int. Cl. G01l 5/00
U.S. Cl. 340—172.5 15 Claims



A computing unit usable in a system for computing the quantity of fluid A in a mixture of fluids A plus B flowing during selected intervals of time includes: an accumulator for pulses produced by suitable metering means, each pulse representing the flow of a predetermined quantity of a mixture of fluids A plus B (as for example oil and water); the accumulator having an output which represents the total quantity of fluid A plus B flowing during at least one of the intervals; a converter responsive to such pulses repeatedly to digitize an input signal which represents the proportion of fluid A in the mixture, and as a function of pulse reception, there being an output register connected to receive the digitized signal; and an accumulator for the contents of the register to accumulate a digital quantity which represents the net amount of fluid A in the mixture that has flowed from the beginning of that one interval.

3,673,575
MICROPROGRAMMED COMMON CONTROL UNIT WITH DOUBLE FORMAT CONTROL WORDS
Paul T. Burton, Sunnyvale; Walter E. Cole, San Jose, both of Calif.; Henry E. Frassetto, Jr., Endicott, N.Y.; Robert G. Gibson, Binghamton, N.Y.; Allan Greenberg, Poughkeepsie, N.Y., and Louis E. Handloff, San Jose, Calif., assignors to Raymond Radlinsky, Endwell, N.Y. and International Business Machines Corporation, Armonk, N.Y.
Filed June 29, 1970, Ser. No. 50,408
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 6 Claims



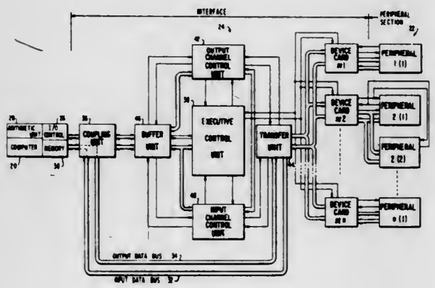
A microprogrammed common control unit for effecting the transfer of data between I/O (input/output) devices and the main storage unit of a data processing system, uses both long

format control words and short format control words, the short words having half as many bit positions as the long words in the preferred embodiment, thereby minimizing the size of control storage required.

Addressing of the control storage unit effects readout of one long word or a pair of short words. Predetermined bits in each control word cause transfer of a first part (half) of the next accessed long word or either one of a next accessed pair of short words to a control register for execution. If a long word has been accessed, one of said bits is effective during execution of the first part of the long word to initiate the transfer of the second word to the control register for execution after the termination of the execution of the first part of the word.

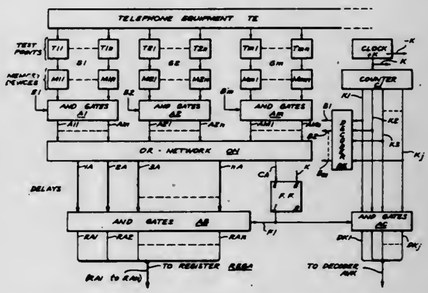
Consecutive decode of the first and second portions of a long word permits a smaller control register and substantial sharing of decode circuits by different long format control word fields entered into at least partially corresponding positions of the control register, thereby effecting substantial economies.

3,673,576
PROGRAMMABLE COMPUTER-PERIPHERAL INTERFACE
John C. Donaldson, Jr., Peabody, Mass., assignor to E.G. & G., Inc., Bedford, Mass.
Continuation-in-part of Ser. No. 886,689, Dec. 16, 1969, abandoned. This application July 13, 1970, Ser. No. 54,556
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 39 Claims



An interfacing network for providing asynchronous data transfers directly with a computer memory and external devices. Computer instructions from the computer arithmetic unit are decoded in an executive control unit. Certain instructions ready an input or output channel control unit which thereafter controls data transfers with a selected external device. Each transfer is made directly with the computer memory and does not require interruption of the program being processed in the arithmetic unit. Once the input or output channel control unit assumes control of the transfer, the executive control unit is immediately available to perform other functions independently and concurrently. It may ready the other channel control unit and monitor external device and interface conditions including the readiness of an external device to transmit data. Certain monitored conditions cause the interfacing network to interrupt normal computer operation. Various control signals in the executive control unit are translated to and from control signals in the computer and external devices to permit the utilization of common instructions.

3,673,577
PROCESS CONTROL SCANNER APPARATUS
Nils Herbert Edstrom, Vallingby, and Goran Anders Henrik Hemdal, Tyreso, both of Sweden, assignors to Telefaktiebolaget LM Ericsson, Stockholm, Sweden
Continuation-in-part of Ser. No. 859,315, Sept. 19, 1969. This application Jan. 25, 1971, Ser. No. 109,478
Int. Cl. G05b 23/02; G06f 11/06
U.S. Cl. 340—172.5 2 Claims



A process control computer scans test points arranged in groups to perform operations in accordance with changes in the states of the test points. The data store of the computer stores the states of the test points as words wherein each work represents a group of test points and the bits of the words represent the test points of the group. A flag resister of the data store comprises a group of bit cells with each bit cell being associated with one of the words. During the scan if the change of state of a test point changes, the associated bit in the data store is changed and the flange bit of the associated word is marked. Thereafter, the computer need only scan those words whose flag bits have been marked.

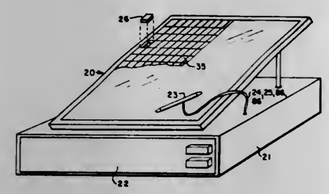
3,673,578
METHOD OF INFORMATION STORAGE USING ELECTRO-OPTIC PROPERTIES OF COLOR CENTERS IN ALKALI HALIDE CRYSTALS
Irwin Schneider, 2402 Daphne Lane, Alexandria, Va.
Filed Nov. 18, 1970, Ser. No. 90,800
Int. Cl. G11c 11/42, 13/04
U.S. Cl. 340—173 CC 3 Claims

A method of storing, reading and erasing information in an alkali halide crystal containing F centers and having semi-transparent electrical layers on opposite surfaces. Binary information is stored or erased by alternately applying a high D.C. electric field across the crystal while simultaneously illuminating a small area of the crystal with F light. Light exposure of the crystal area with a field and without a field may be equated to writing (or erasing and rewriting) the binary digits zero and one, respectively. Reading the stored information is similar except that the D.C. field is switched on electronically after sensing the digit zero so as to erase any absorption produced by the reading light. This system is entirely fatigue-free and is operable at a single temperature while using one laser beam, instead of two, for writing, erasing and reading in an effectively nondestructive manner.

3,673,579
DRAWINGBOARD II, A GRAPHICAL INPUT-OUTPUT DEVICE FOR A COMPUTER
Robert Michael Graves, 203 Holly Lane, Orinda, Calif.
Filed Aug. 26, 1970, Ser. No. 70,626
Int. Cl. G11c 13/04
U.S. Cl. 340—173 LS 33 Claims

A two-dimensional matrix of semi-conductors is arranged in ordered array as a flat, light emitting and light sensing device

activated both electrically and by radiant energy from a pen-light to achieve a graphical input and output display by the ac-



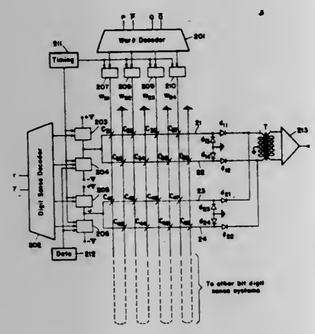
tive or inactive condition of the light emitter with circuitry for control of flow of graphical data into and out of the device for use in conjunction with a digital computer.

3,673,580

INFORMATION STORAGE SYSTEM

Kohichi Hasegawa, and Norihiko Kunishima, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,493
Claims priority, application Japan, Oct. 25, 1969, 44/85361
Int. Cl. G11c 5/02, 11/06
U.S. Cl. 340—174 PC 6 Claims



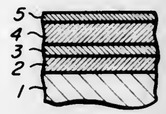
A two-line information storage system including read-out and write-in driver circuits, a word selection circuit for producing address output signals, a digit sense decoder for producing output signals to select one of the read-out or write-in circuits at a given time, an output amplifier, a plurality of pairs of signaling transmission lines interconnecting the read-out and write-in driver circuits and containing a plurality of memory elements for producing sensed output signals in response to the word selection circuit output signals and direct current flowing in a selected one line pair, and a plurality of unidirectional diodes connecting the output ends of the respective line pairs to the amplifier input for transmitting the sensed signals thereto from one line pair while blocking the transmission of the direct current and the sensed signals from the one line pair to the other line pair.

3,673,581

PLATED MAGNETIC WIRE

Hideki Nishida; Kunihiko Yamaguchi; Noriyuki Kumasaka, all of Hachioji-shi; Yutaka Sugita, Kodaira-shi, and Hideo Fujiwara, Tachikawa-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 18, 1971, Ser. No. 116,452
Claims priority, application Japan, Feb. 27, 1970, 45/16274
Int. Cl. G11c 11/14
U.S. Cl. 340—174 PW 1 Claim



A four-layered plated wire comprising a non-magnetic metal substrate, and non-magnetostrictive 81 % Ni-19 % Fe permalloy films and Co-Ni films alternately superposed on said non-magnetic metal substrate, wherein the permalloy film placed between the two Co-Ni films has a thickness of 0.3 – 0.6 μ and the other permalloy film has a thickness of 0.2 – 0.4 μ.

3,673,582

BUBBLE DOMAIN SONIC PROPAGATION DEVICE

Richmond Bennett Clover, Jr., Cranbury, N.J., assignor to RCA Corporation

Filed May 17, 1971, Ser. No. 143,864
Int. Cl. G11c 19/00, 11/14
U.S. Cl. 340—174 MS 9 Claims

A single wall magnetic domain or bubble is advanced in a sheet of magnetic material such as an orthoferrite by means of a sonic stress wave propagated through a contiguous channel-defining member of anisotropic, magnetostrictive material such as permalloy. A sonic stress wave propagated through the permalloy member causes a propagated region in which the direction of magnetization in the permalloy is partially rotated. The propagated region of rotated magnetization urges the magnetic bubble in the same direction along a path in the orthoferrite.

3,673,583

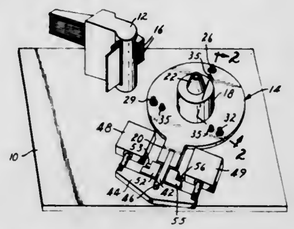
RECORDER WITH MEANS TO MOVE THE SPINDLE PERPENDICULAR TO ITS AXIS OF ROTATION

Wayne M. Wirth, North Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 11, 1970, Ser. No. 62,891
Int. Cl. G11b 17/02, 21/00
U.S. Cl. 340—174.1 C 8 Claims

A disk recorder wherein the disk is supported on a driven spindle and a transducer spaced from the disk surface is moved stepwise generally radially of the disk to record and

reproduce information in spaced concentric circular tracks on the disk. The spindle is moved perpendicularly to its axis to either side of a central position whereat the transducer would



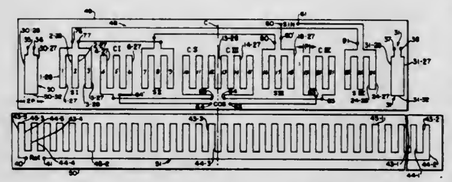
be stepwise aligned with predetermined concentric circular tracks on the supported disk to adjust the position of the tracks with respect to the transducer.

3,673,584

POSITION-MEASURING TRANSFORMER HAVING END-DETECTING WINDINGS USEFUL FOR POSITIONING A MAGNETIC HEAD OF A DISC DRIVE SYSTEM

Clair L. Farrand, Brouxville, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.

Filed March 8, 1971, Ser. No. 121,951
Int. Cl. G01r 33/02; H01f 21/04; G11b 27/14
U.S. Cl. 340—174.1 C 12 Claims



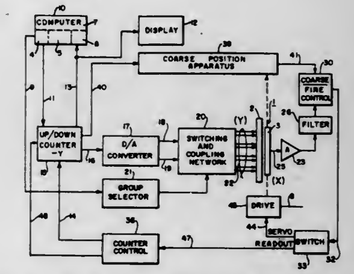
Disclosed is a position-measuring transformer formed from two relatively movable members. The transformer is particularly useful for selecting and defining track positions in a magnetic disc drive system which may be used as a memory in a digital computer. One stationary member of the transformer includes cofunction windings and end-detecting windings. Those windings magnetically coupled to a reference winding on another relatively movable member of the transformer. The reference winding, which is the continuous winding of the transformer, is formed from a plurality of equally spaced active conductors. The active conductors are interconnected such that alternate ones conduct in opposite directions so that each pair of adjacent active conductors define a reference cycle. The end-detecting windings consist of one or more pairs of active conductors where the active conductors in each pair have full-cycle spacing, that is, the separation between each active conductor in a pair equals one reference cycle. The full-cycle spacing of the end-detecting winding superposed over the half-cycle spacing of the end-detecting winding induces a substantially zero resultant signal in the end-detecting winding except when the end-detecting winding is positioned over the end conductor of the reference winding as may occur when the reference winding is moved. When over the end, a limit signal is generated as a result of the unequal coupling between the end-detecting winding active conductors and the end conductor of the reference winding. The limit signal thus generated typically defines the inner or outer limit of a read/write head. Cofunction windings are formed from four winding sections with equal numbers of active conductors per section. The cofunction windings are formed using an efficient winding pattern which minimizes the number of welded or soldered connections required.

3,673,585

POSITION MEASURING TRANSFORMER HAVING MULTIPLE INDEPENDENT SECTIONS FOR REDUCTION OF MEASUREMENT ERRORS

Robert W. Tripp, Tuckahoe, and Robert Z. Geller, Wantagh, both of N.Y., assignors to Inductosyn Corporation, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,765
Int. Cl. G08c 19/00
U.S. Cl. 340—198 17 Claims



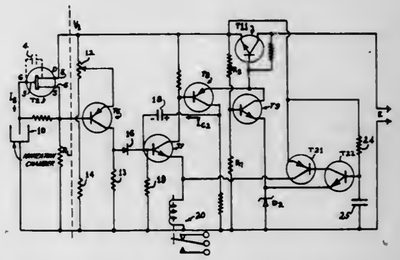
A method and apparatus for measuring linear and rotary positions with position measuring data elements, such as position measuring transformers, where the data elements are affected by error-causing conditions such as eccentricity and skew. Measurements are made so as to avoid the compound effects of eccentricity and skew by dividing the conventional, continuous space-quadrature windings appearing on one member of the transformer, into a plurality of windings groups where the continuous winding of the other member remains unchanged. Each group typically includes a plurality of inter-connected sine and a plurality of inter-connected cosine winding sections where those winding sections are in space-quadrature of the pole cycle of the continuous winding. The measurements made from each group, in one embodiment, are averaged to form a highly error-free resultant measurement. In another embodiment, the difference between group measurements are employed to form a measurement of the eccentricity of one member with respect to the other.

3,673,586

RESISTANCE CONTROLLED TIMED PULSE GENERATOR

Lyman L. Blackwell, Denver County, Colo., assignor to Statitrol Corporation, Lakewood, Colo.

Filed Feb. 19, 1970, Ser. No. 12,720
Int. Cl. G08b 17/10
U.S. Cl. 340—237 S 10 Claims



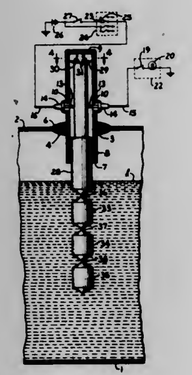
An electronic switching circuit responsive to a change of resistance in a sensing element, which circuit includes an insu-

lated gate field effect transistor, a source of power, switching means interconnecting the source of power and the said transistor and a resistive sensing element interconnecting the gate of the said transistor and the power source, whereby the resistance of the sensing element controls the time required to charge the gate capacitance of the transistor and whereby the switching means opens the circuit delivering power to the transistor at such time as the gate capacitance is substantially charged.

3,673,587
LIQUID LEVEL INDICATOR HAVING AN ADJUSTABLE FLOAT

John J. Baruch, 36 Mulberry Court, Glenview, Ill.

Filed May 11, 1970, Ser. No. 36,138
Int. Cl. G08b *23/00*; G01f *23/08*
U.S. Cl. 340—244 A **2 Claims**



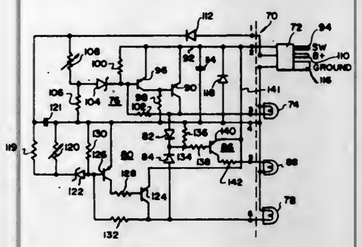
A device for indicating a low level in the reservoir of an automobile windshield washer system comprises a warning light on the vehicle's dashboard and a float-controlled switch that operates the warning light when the float drops to a predetermined level. At its lower end, the float has a series of end-to-end elements that are joined together by flangible connections so that one or more of the sections can be removed to shorten the float and allow it to be used in reservoirs of different depths.

3,673,588
VOLTAGE REGULATOR INDICATING CIRCUIT FOR UNDERVOLTAGE, NORMAL VOLTAGE AND OVERVOLTAGE CONDITIONS

James A. Riff, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 14, 1970, Ser. No. 2,890
Int. Cl. G01r *19/16, 31/02*; G08b *21/00*
U.S. Cl. 340—248 A **7 Claims**

An indicating circuit for use in a vehicular electrical system having a DC power source and a dynamoelectric machine to supply a charging current to the DC power source. One or more indicating lamps are provided to give visual indication of the various operating conditions of the dynamoelectric machine to indicate failure of an alternator or regulator components or to indicate below normal, normal, and above normal voltage outputs therefrom. Where two or more indicating lamps are used, they are controlled by voltage differential amplifiers having gated outputs therefrom connected to a third amplifier. The third amplifier control energization of the indicating lamp which indicates the normal voltage output of the dynamoelectric machine, and energization of either of the two

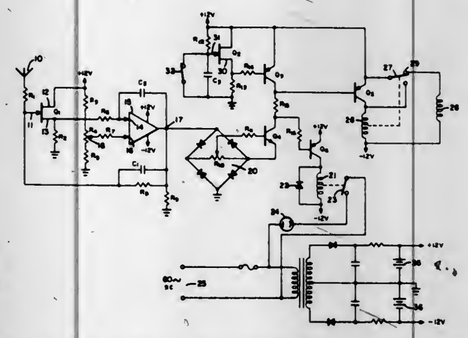


voltage differential amplifier circuits will render the third amplifier inoperative by a signal through the associated gate circuit.

3,673,589
INTRUDER DETECTOR

Robert W. Barrett, Hennepin, and Pat. S. Prosse, Fridley, both of Minn., assignors to Current Industries, Incorporated, Minneapolis, Minn.

Filed May 5, 1969, Ser. No. 821,868
Int. Cl. G01r *29/12*
U.S. Cl. 340—258 D **10 Claims**



A probe is located to carry electric currents brought about by change in the surrounding electrostatic field to produce a signal feeding a high input impedance circuit connected to an operational amplifier connected in the feedback mode to produce an output signal indicative of the presence of an object in the vicinity of the probe which disturbs the electrostatic field. The latter signal is used to feed a monitoring circuit which indicates that the device is operational and an alarm circuit which may be selectively activated.

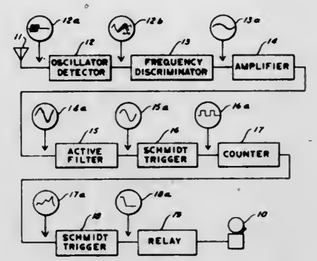
3,673,590
DEVICE TO DETECT MOTION

Joseph A. Corvi, Newport Beach, and William G. Lawrence, Costa Mesa, both of Calif., assignors to Corvonics Corporation, Costa Mesa, Calif.

Filed Oct. 8, 1969, Ser. No. 864,586
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 A **10 Claims**

A motion detector in which an oscillator-detector transmits a series of narrow bursts of radio frequency, electromagnetic energy, the period of which varies as a function of the radial motion of the object relative to the detector, and the varying pulse frequency provides information that an object is moving radially.

Such a detector in which the varying pulse frequency of the oscillator-detector is converted to a varying D.C. voltage the

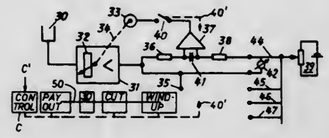


magnitude of which varies at a rate determined by the rate of movement of the object, the varying voltage effecting energization of an alarm.

3,673,591
YARN DEFECT DETECTOR APPARATUS FOR TEXTILE MACHINERY

Hermann Schwartz, Adliswil, Switzerland, assignor to Siegfried Peyer, Bach, Switzerland

Filed Oct. 27, 1970, Ser. No. 84,401
Claims priority, application Switzerland, Nov. 6, 1969, 16507/69
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **9 Claims**



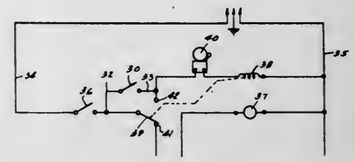
To detect small variations from a standard thread size and to prevent spurious operation of the yarn gauge, particularly upon re-starting of yarn winding machines after shut down, an electrical reference source is provided supplying a reference potential, which is compared with a normal signal level corresponding to yarn passing through a measuring head. An error signal, obtained upon slow deviation of the normal signal with respect to the reference, controls the amplification of an amplifier connected to the measuring head to null the error signal. Short-time signal swings indicative of defects are not compared with the reference so that defect signals are sensed normally.

3,673,592
LOCKOUT FOR PORTABLE APPLIANCE WITH CASTER JACK MECHANISM

William R. Berry; Reinhold A. Drews, both of Stevensville, and Julius J. Grau, Berrien Springs, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 21, 1970, Ser. No. 65,885
Int. Cl. G08c *21/00*
U.S. Cl. 340—283 **5 Claims**

Portable appliance of the type in which a cabinet is supported on a frame having retractable caster wheels, the appliance being provided with a switch which is operable by movement of the wheels into a cabinet raising position, the



switch functioning to prevent energization of the appliance when the cabinet is elevated, as well as to afford a signal.

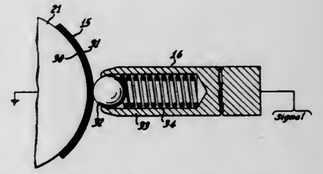
ERRATUM

For Class 343—766 see:
Patent No. 3,673,606

3,673,593
STYLUS ASSEMBLY FOR ELECTRICALLY RECORDING OF INFORMATION

George W. Kaye, Malverne, and John R. Shonnard, East Setauket, both of N.Y., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 13, 1970, Ser. No. 2,541
Int. Cl. G01d *15/06, 15/16*
U.S. Cl. 346—74 ES **3 Claims**

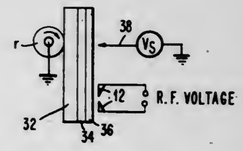


Apparatus for electrically recording information on a recording sheet or web having a dielectric charge-retaining surface comprising a ball-tipped stylus in contact with the sheet or web. Signal potentials applied to the stylus produce a charge pattern on the sheet or web which may be developed by a suitable toner. The ball in the tip of the stylus maintains uniform contact with the surface of the recording sheet or web and insures satisfactory recording over an extended period of use.

3,673,594
PHOTOCOPYING DEVICE

Benjamin Kazan, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 16, 1970, Ser. No. 19,588
Int. Cl. G01d *15/12*; G03g *15/00*
U.S. Cl. 346—74 MT **8 Claims**



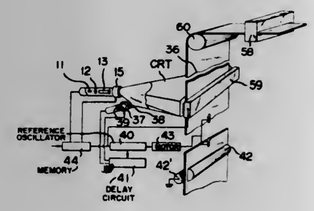
Photocopying and magnetic recording re enhanced by employing a recording medium, such as a heat-sensitive paper or a magnetic film adjacent to a semiconductor layer. When the

semiconductor is exposed to a low level light image, a charge pattern is created in its surface which is retained and which produces a conductivity pattern in the semiconductor layer. The application of radio-frequency power to the semiconductor converts the conductivity pattern to a heat pattern which is recorded as a visible image on the heat-sensitive paper or as data on the magnetic film.

3,673,595
APPARATUS FOR ELECTROSTATIC IMAGE-FORMING AND PROCESSES FOR USE THEREWITH

Eiichi Inoue; Keizo Yamaji; Hiroshi Tanaka, and Takashi Saito, all of Tokyo, Japan, assignors to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1969, Ser. No. 800,961
Claims priority, application Japan, Feb. 27, 1968, 43/12741
Int. Cl. G03g *13/22, 15/22*
U.S. Cl. 346—74 ES **27 Claims**



An electron beam tube for use in formation and recordation of electrostatic charge patterns has a face plate including a photoconductive layer and a conductive base which is transmissive to electron beams and is disposed intermediate the photoconductive layer and the tube electron beam emitter. Processes for forming electrostatic charge patterns in such face plate include the steps of placing an insulative charge-retaining layer in contact with the photoconductive layer, the insulative layer either being previously charged or being charged while in position on the photoconductive layer, and applying a voltage to the face plate and simultaneously irradiating the photoconductive layer with pattern-indicating electron beams. Electrostatic charge patterns thus-formed in the insulative layer may be developed in place or transferred and subsequently developed.

3,673,596
ELECTRO-OPTICAL PROCESSOR HAVING ELECTRICAL SIGNAL WRITING MEANS

Donald Howland McMahon, Carlisle, and Allen Raymond Franklin, Concord, both of Mass., assignors to Sperry Rand Corporation

Filed Jan. 23, 1970, Ser. No. 5,438
Int. Cl. G01d *15/06*; H04n *5/80*
U.S. Cl. 346—74 ES **2 Claims**

An electrostatic non-contacting writing apparatus adaptable for use in a coherent optical processor comprising writing, developing, readout and erasing stations disposed proximate to and consecutively spaced along the direction of motion of a continuous transparent tape. In operation of the processor a time-varying electrical signal is written on the tape in the form of a spatially distributed electrostatic charge pattern by means of a two-step uniform precharging and subsequent partial erasure technique. The tape is then exposed to an oppositely charged cloud of toner particles at the developing station whereupon the electrostatic charge pattern is converted to a visible image of varying transparency by virtue of the toner adhering to selective regions of the tape. Optical processing is performed as the visible image passes the readout station whereat it intersects a laser beam and thereafter the toner

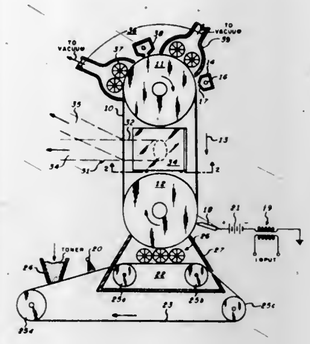
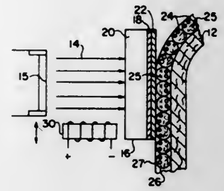


image is erased from the tape in readiness for the next cycle of operation commencing at the writing station.

3,673,597
METHOD AND APPARATUS FOR RECORDING AND/OR DISPLAYING IMAGES UTILIZING THERMOMAGNETICALLY SENSITIVE MICROSCOPIC CAPSULES

William R. Horst, Dayton, and Lowell Schleicher, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed April 2, 1970, Ser. No. 25,224
Int. Cl. G01d *15/12*; H04n *5/82*
U.S. Cl. 346—74 TP **15 Claims**

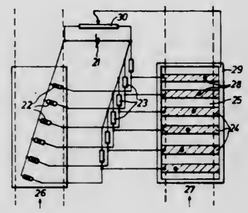


A method of producing a record of original images wherein the images are converted to equivalent heat images, the heat images are then transferred to a heat and magnetic field sensitive medium, and the final image is made readable by the action of magnetic means. A method of providing an information display which is viewable by means of reflected light and adaptable to be sustained in memory or reusable by erasure of the displayed information. The heat and magnetic field sensitive medium incorporates a capsular coating wherein the capsules contain magnetic particles suspended in a heat-meltable material, so that, as the material is changed from a solid to a flowable state by heating thereof, the particles with the scope of the heat image have freedom of motion and are rearranged by the magnetic field to a pattern corresponding to that of the original image, whereby the image is reproduced on the medium upon cooling of the heat-meltable material.

3,673,598
APPARATUS FOR THE ELECTROGRAPHIC RECORDING OF CHARGE IMAGES

Walter Simm, Leverkusen, and Rudolf Muller, Deisenhofen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 22, 1970, Ser. No. 48,151
Claims priority, application Germany, July 10, 1969, P 19 34 890.4
Int. Cl. G01d *15/06*
U.S. Cl. 346—74 ES **4 Claims**

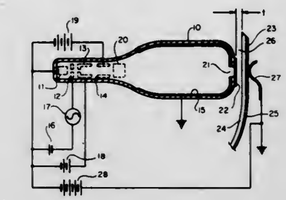


Imagewise differentiated electric charges are produced on a dielectric carrier material an apparatus for performing that production of imagewise differentiated electric charges comprising means for generating a constant corona discharge and means for controlling the amount of the corona discharge in order to obtain an imagewise differentiation.

3,673,599
ELECTROSTATIC PRINTING APPARATUS

Takao Tagawa, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed July 29, 1970, Ser. No. 59,196
Claims priority, application Japan, Aug. 1, 1969, 44/61809
Int. Cl. G03g *15/00*; H04n *1/30*
U.S. Cl. 346—74 CR **6 Claims**



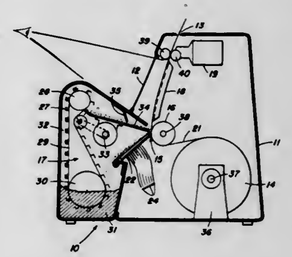
The printing apparatus has a new type of cathode ray tube which utilizes electrostatic charge deposition. The tube contains a single continuous dielectric plate which forms its face plate. Charges are deposited only on a portion of the dielectric plate where the electron beam strikes and then transferred through the air gap from the dielectric plate to paper by a means of discharge caused by potential difference across the air gap.

3,673,600
ELECTROGRAPHIC RECORDING METHOD AND APPARATUS

David E. Damouth, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,369
Int. Cl. G03g *15/08*; H04n *1/30*
U.S. Cl. 346—74 ES **15 Claims**

Electrographic recording apparatus in which the latent electrostatic charge patterns recorded on a dielectric recording medium are rendered visible substantially coextensive with the deposition of the charge patterns on the recording medium. The recording medium is transported in a generally vertical direction at the charging zone. The array of charging electrodes are disposed from the record medium at the charging zone at a negative inclination relative to horizontal to form a ramp comprising a portion of the developer system. A second ramp is disposed from the recording medium at the charging zone at a positive inclination relative to horizontal, comprising another portion of the developer system. The positively inclined ramp is further situated in a manner such that

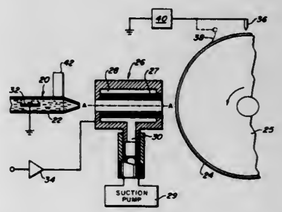


developer material will be transported down the ramp in substantially uniform quantities to contact the recording medium. As the developer material contacts the recording medium, toner from the developer material will be attracted to the latent electrostatic charge patterns to render the charge patterns visible. Unused portions of the developer material after contacting the record medium are then transported down the ramp formed by the electrode array to a developer reservoir. By thus utilizing the electrode array as a portion of the overall developer path the development zone may be substantially coextensive with the charging zone thereby permitting rapid viewing of the recorded information.

3,673,601
LIQUID JET RECORDER

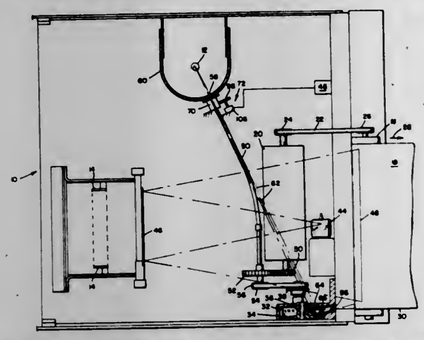
Carl Hellmuth Hertz, Skolbanksvagen 8,, 223 67, Lund, Sweden

Filed March 31, 1970, Ser. No. 24,140
Claims priority, application Sweden, April 2, 1969, 4689/69
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **5 Claims**



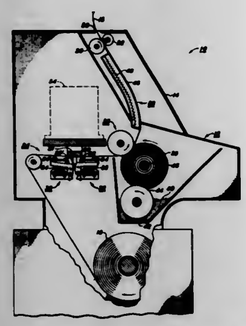
The present device is a liquid jet recorder having a capillary nozzle out of which an electrically conductive ink jet is expelled by pressure, and a control electrode or tube coaxially surrounding the path of the jet, the wall of the tube being porous to the ink and formed of an electrically conductive material. Charging means are included for charging the jet at one potential and the electrode at another potential. The recording surface upon which the ink jet is intended to selectively write is provided with means for selectively charging the surface at a potential which repels any drops of the jet from striking the surface.

3,673,602
OSCILLOGRAPH RECORD IDENTIFICATION APPARATUS
Rain Stefanson, San Marino, and Robert A. Beanston, Arcadia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.
Filed July 30, 1970, Ser. No. 59,436
Int. Cl. G01d 13/00
U.S. Cl. 346—107 A 6 Claims



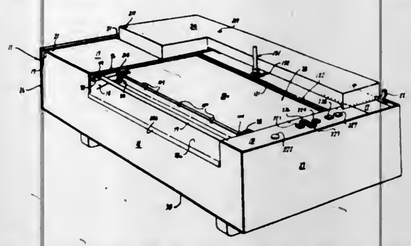
In a recording oscillograph, apparatus for automatically recording on the oscillograph paper, and simultaneously with the recording thereon of one or more galvanometer traces, an indication of a selected control setting of an adjustable operative condition of the oscillograph. In an oscillograph which is provided with apparatus for applying timing lines on the moving paper, a preferred embodiment includes transparent indicia corresponding to various timing line intervals serially arranged in an opaque member, and a shutter member is driven in a light path synchronously with the driven opaque member such that only one of the timing indicia is projected onto the moving paper during a revolution of the opaque member, while preventing the projection of the others of the timing indicia during that cycle. Means responsively connected to the timing line control means automatically adjusts the phase relationship of the rotating shutter with respect to the rotating opaque member, so that the projected one of the timing indicia corresponds to the selected setting of the timing line control means.

3,673,603
RECIPROCATING CARRIAGE FOR ELECTROGRAPHIC PRINTING
John L. Brock, Thruway Homes, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 15, 1970, Ser. No. 46,674
Int. Cl. G01d 15/24
U.S. Cl. 346—139 R 13 Claims



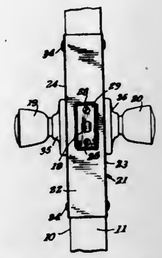
Printing apparatus employing a pair of reciprocating print heads, one of which traverses the entire print field in a record mode while the other one moves in the opposite direction in an inoperative mode. The print heads are supported for movement on separate, spaced apart guide rails such that the pens thereof print along the same line relative to a moving recording web. To this end, structure is provided for causing movement of the non-printing pen out of the path of travel of the other pen as well as disengagement from the recording medium.

3,673,604
GRAPHIC RECORDER WITH PEN DRIVING AND ACTUATING MECHANISM
James F. Gordon, Arcadia, Calif., assignor to Zeta Research, Inc., Lafayette, Calif.
Filed Oct. 22, 1969, Ser. No. 868,340
Int. Cl. G01d 15/26
U.S. Cl. 346—139 B 4 Claims



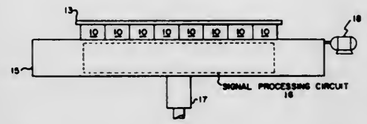
Graphic recorder for use with a strip chart in which a framework is provided having a table over which the strip chart is adapted to travel. Means is mounted on the framework for causing movement of the strip chart on the table along an X-axis. A mounting block is mounted on the framework for movement along a Y-axis. A pen is carried by the mounting block and is movable into and out of engagement with the strip chart. Solenoid means is provided for moving the pen into engagement with the strip chart. Means is provided for moving the block and the pen carried thereby along the Y-axis and for supplying energy to the solenoid for actuating the pen which includes flexible elongate elements formed of a conducting material which serves two purposes, one of which is to provide the movement of the mounting block and the other of which is to provide a conductor for the electrical energy for energizing the solenoid.

3,673,605
DOOR-LOCK COVER GUARD
Howard M. Allenbaugh, Los Angeles, Calif., assignor to Louis Martin Najera, Norwalk and Charles Russell Goebel, Glendale, Calif., part interest to each
Filed Oct. 14, 1970, Ser. No. 80,593
Int. Cl. E05b 9/08
U.S. Cl. 292—346 2 Claims



A guard to cover both sides and the edge of a door in the area thereof in which the lock is mounted, the same being adapted to original installation and having particular value in connection with replacement lock sets for modernizing doors the present guard, whether used with original or replacement locks, so covering adjacent door areas as to protect the same and the locks from unauthorized tempering. Also, said guard is formed to cover over mortises and bores of locks being replaced, whether or not such openings are filled in, thereby obviating the need for replacing the door in its entirety.

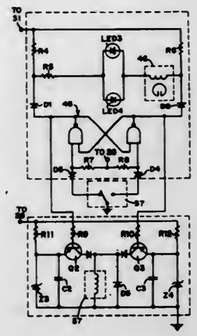
3,673,606
FLUSH MOUNTED STEERABLE ARRAY ANTENNA
James J. Maune, Plainview, N.Y., assignor to Hazeltine Corporation
Filed Aug. 26, 1969, Ser. No. 853,015
Int. Cl. H01q 3/26
U.S. Cl. 343—766 6 Claims



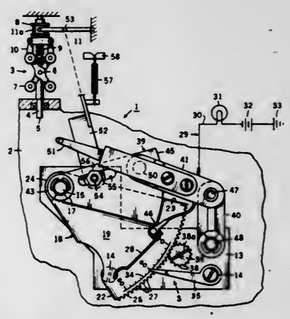
A rotatable directional antenna which remains flush with the surface on which it is mounted including an array of radiating elements which are arranged in parallel columns. Energy of equal phase is coupled to the elements that comprise each column. The array produces a beam of electromagnetic energy which is steerable within a plane which includes the broadside direction of the array by varying the phase of the energy coupled to each of the columns of elements. The array is rotatable about its broadside axis thereby permitting the plane within which the beam can be steered to rotate about the broadside axis. A region in space can thereby by scanned while the array remains flush with the surrounding surface. Alternate arrangements are also covered.

3,673,607
BILLING DEMAND RECORDER
James D. Hoeffel, and Reinhold W. Kubach, both of Dayton, Ohio, assignors to Dayton Electronic Products Company, Dayton, Ohio
Filed Jan. 20, 1971, Ser. No. 108,068
Int. Cl. G01d 13/00; G11b 27/36
U.S. Cl. 346—17 7 Claims

A recording instrument, such as an electrical power meter, controls the actuation of an electrical switch from one position to another at a rate which is a function of a measured quantity, such as kilowatt hours. The electrical switch controls the direction of current flow through a magnetic recording head so that information representing the measured quantity can be placed on a recording medium. A constant current power supply is provided to insure consistency of information placed on the recording medium independently of line voltage changes, and light emitting diodes are included in series with the magnetic head to show the existence and the direction of current flow through the recording head. Latching flip-flops may also be included between the electrical switch and the recording head to prevent the recording of multiple marks due to switch bounce. Electrically actuated mechanical counters may also be used to record changes in switch position.



3,673,608
INFORMATION RECORDER
Henry Voorman, Jr., Midland Park, N.J., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Aug. 25, 1970, Ser. No. 66,808
Int. Cl. G01p 1/10
U.S. Cl. 346—18 8 Claims



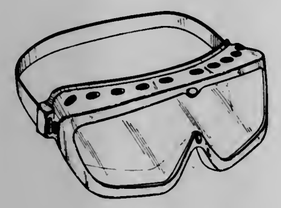
An information recorder is provided with a rotatable drive shaft for moving linkage means including a marking member to record the different speeds of drive shaft rotation on a movable chart in said recorder, and an adjustable member is adjustably driven by a manual adjusting member toward a preselected position to predeterminately space a contact thereon connected in an electrical warning circuit from a cooperating contact on said linkage means to thereby define the speed of drive shaft rotation at which said electrical warning circuit is energized.

This invention relates generally to information recorders and in particular to excessive speed indicating mechanisms therefor.

DESIGNS

JUNE 27, 1972

223,983
PAIR OF FLEXIBLE GOGGLES
George H. Schauweker, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Sept. 16, 1970, Ser. No. 25,024
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



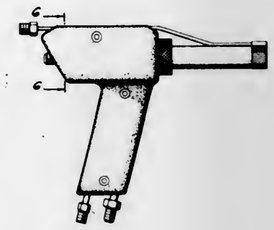
223,984
NECKTIE
Alfred Krivda, P.O. Box 1055, Oroville, Calif. 95965
Filed July 14, 1970, Ser. No. 23,943
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—357



223,985
BUCKLE
Melvin V. Zakarin, 23 Ogden Lane, Englishtown, N.J. 07726
Filed July 14, 1970, Ser. No. 23,945
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—427



223,986
ELECTRICAL PLASMA-JET TORCH
Erich Muehlberger and Robert P. De La Vega, Costa Mesa, Calif., assignors to Geotel, Inc., Amityville, N.Y.
Filed Oct. 12, 1970, Ser. No. 25,429
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



223,987
ELECTRIC SCISSORS
William L. Gamble, Unionville, Conn., assignor to The Fuller Brush Company, East Hartford, Conn.
Filed Oct. 16, 1970, Ser. No. 25,519
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61



223,988
PLUG SPANNER
Charles C. Robinson, 20 Martindale Ave., Wimborne, England
Filed Aug. 20, 1970, Ser. No. 24,593
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—27



223,989
DOOR HANDLE AND LOCK PLATE UNIT
John R. Gerlach, 1461 Solar Drive, Monterey Park, Calif. 91754
Filed July 29, 1970, Ser. No. 24,201
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170



223,990
DOOR HANDLE AND LOCK PLATE UNIT
John R. Gerlach, 1461 Solar Drive, Monterey Park, Calif. 91754
Filed July 29, 1970, Ser. No. 24,202
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170



223,991
DOOR HANDLE AND LOCK PLATE UNIT
John R. Gerlach, 1461 Solar Drive, Monterey Park, Calif. 91754
Filed July 29, 1970, Ser. No. 24,204
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170



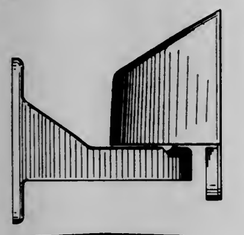
223,992
DOOR HANDLE AND LOCK PLATE UNIT
John R. Gerlach, 1461 Solar Drive, Monterey Park, Calif. 91754
Filed July 29, 1970, Ser. No. 24,205
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—170



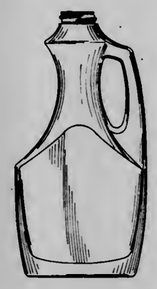
223,993
DOOR KNOCKER
Ade Bethune, Newport, R.I., assignor to Terra-Sancta Creations, Inc., Philadelphia, Pa.
Original design application Apr. 8, 1970, Ser. No. 22,320, now Patent No. 221,054, dated July 6, 1971. Divided and this application Oct. 30, 1970, Ser. No. 25,733
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—177



223,994
COMBINED DOOR HOLDER AND STRIKER
Henry D. Johnson, New Britain, and Richard H. Russell, Farmington, Conn., assignors to The H. B. Ives Company, New Haven, Conn.
Filed July 23, 1970, Ser. No. 24,096
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—203



223,995
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,933
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—41



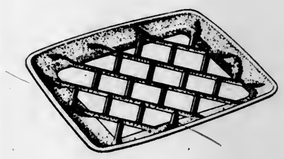
223,996
COMBINED JAR AND LID
Andre Courreges, Neuilly, France, assignor to Courreges Parfums, Paris, France
Continuation-in-part of design application Ser. No. 21,051, Jan. 23, 1970. This application Feb. 10, 1971, Ser. No. 114,411
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—141



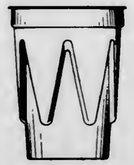
223,997
BOTTLE
Kenji Hanamura, Tokyo, Japan, assignor to Tancho Co., Ltd., Osaka, Japan
Filed Dec. 31, 1970, Ser. No. 26,716
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157



223,998
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,371
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



223,999
PACKAGING CUP FOR FOOD OR THE LIKE
Odo Klose, Wuppertal-Elberfeld, Germany, assignor to Fritz Meckenstock, Wuppertal-Elberfeld, Germany
Filed Nov. 2, 1970, Ser. No. 25,786
Claims priority, application Germany May 2, 1970
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—220



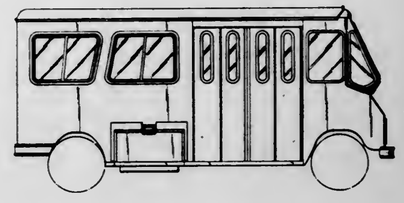
224,000
STORE FRONT
Mitchell C. Azar, Sudbury, Mass., assignor to Cambridge Coffee, Tea and Spice House, Charlestown, Mass.
Filed Sept. 21, 1970, Ser. No. 25,122
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



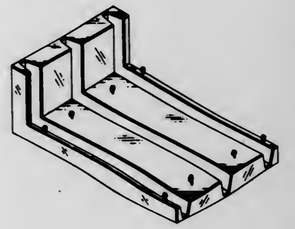
224,001
SUBMERGIBLE SEA ROOM
William Barkley, 3847 Underwood Drive 3, San Jose, Calif. 95117
Filed Nov. 19, 1970, Ser. No. 26,074
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,002
ELECTRIC BUS BODY
Paul R. Hafer, Boyertown, Pa., assignor to Boyertown Auto Body Works, Boyertown, Pa.
Filed Dec. 21, 1970, Ser. No. 26,590
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



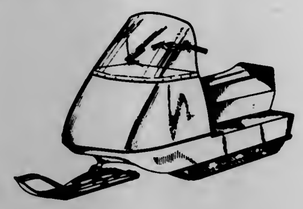
224,003
PICKUP TRUCK BED SUPPORTED TRAIL BIKE TRANSPORTER
Irving Dumm III, 8297 Oak Knoll Drive, Roseville, Calif. 95678
Filed Sept. 29, 1970, Ser. No. 25,246
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



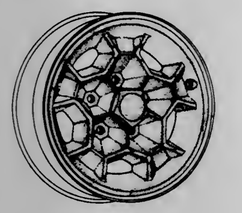
224,004
COMBINED GEARSHIFT LEVER AND HOUSING FOR AUTOMOBILES
Robert G. T. Reilly, 13652 Yorba St., Tustin, Calif. 92680
Filed Dec. 28, 1970, Ser. No. 26,663
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



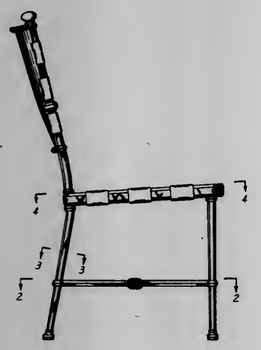
224,005
SNOWMOBILE
Anthony D. MacKeen, Drummondville, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed Nov. 2, 1970, Ser. No. 25,771
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



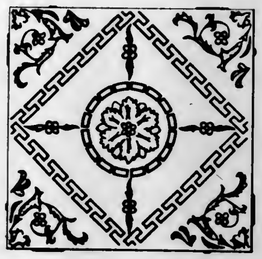
224,006
VEHICLE WHEEL
Maurice P. Chandler, Utica, and William L. Porter, Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 7, 1970, Ser. No. 26,311
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



224,007
CHAIR
John W. Caldwell, 2202 Pinecrest Drive, Altadena, Calif. 91001
Filed July 31, 1970, Ser. No. 24,255
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D15—1



224,008
CERAMIC WALL TILE
Patrick Boris Hopkins, Smithfield, New South Wales, Australia, assignor to Pilkington's Tiles Limited, Swinton, England
Filed Nov. 9, 1970, Ser. No. 25,887
Claims priority, application Great Britain Sept. 23, 1970
Term of patent 7 years
Int. Cl. D25—*01*
U.S. Cl. D18—2



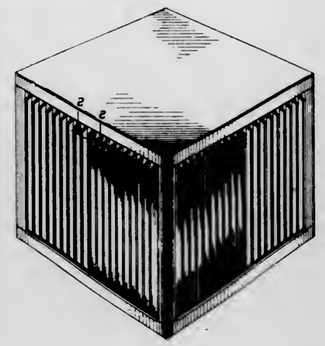
224,009
FISHING WORM
Walter H. Harville, R.R. 1, Henderson, Tenn. 38340, and James M. Harville, R.R. 4, Box 268A, Jackson, Tenn. 38301
Filed Oct. 12, 1970, Ser. No. 25,455
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



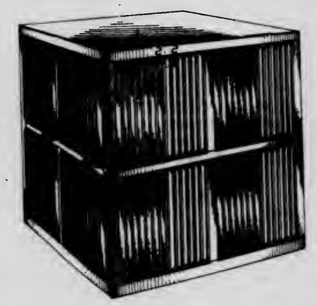
224,010
GUN HOLSTER
Harold A. Barrow, 1612 Cynthia Drive, Rockford, Ill. 61107
Filed Mar. 29, 1971, Ser. No. 129,305
Term of patent 14 years
Int. Cl. D22—*04*
U.S. Cl. D22—13



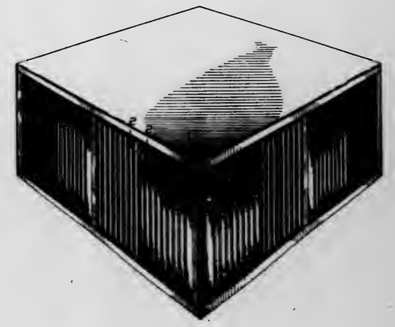
224,011
LOUVERED ENCLOSURE FOR AIR-CONDITIONING EQUIPMENT AND THE LIKE
Adam D. Goettl, 4960 E. Palomino Road, Phoenix, Ariz. 85018
Filed Jan. 25, 1971, Ser. No. 109,756
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



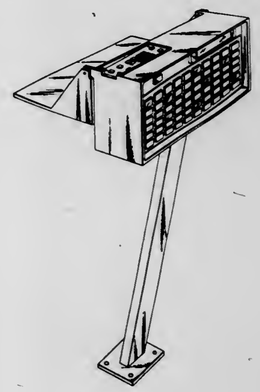
224,012
LOUVERED ENCLOSURE FOR AIR-CONDITIONING EQUIPMENT AND THE LIKE
Adam D. Goettl, 4960 E. Palomino Road, Phoenix, Ariz. 85018
Filed Feb. 8, 1971, Ser. No. 113,796
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



224,013
LOUVERED ENCLOSURE FOR AIR-CONDITIONING EQUIPMENT AND THE LIKE
Adam D. Goettl, 4960 E. Palomino Road, Phoenix, Ariz. 85018
Filed Feb. 8, 1971, Ser. No. 113,802
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



224,014
COMBINED ELECTRONIC KEYBOARD AND STAND THEREFOR
George F. Minka, Torrance, Calif., assignor to The Data Systems, Inc., Torrance, Calif.
Filed Oct. 19, 1970, Ser. No. 25,557
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



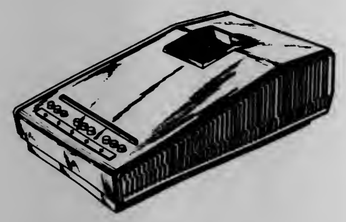
224,015
SWITCH
Norio Nakata, % Nihon Kaiheiki, Kogyo Kabushiki Kaisha, 5–14 Minamimagome 1-chome, Tokyo, Japan
Filed Nov. 2, 1970, Ser. No. 25,775
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



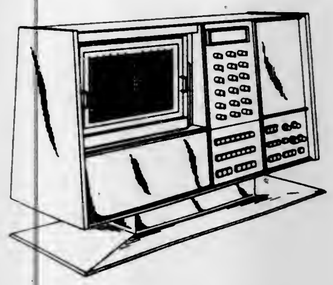
224,016
SWITCH
Norio Nakata, % Nihon Kaiheiki, Kogyo Kabushiki Kaisha, 5–14 Minamimagome 1-chome, Tokyo, Japan
Filed Nov. 2, 1970, Ser. No. 25,776
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



224,017
MAGNETIC TAPE UNIT
Melvin Rudin, Palo Alto, Calif., assignor to Datel Corporation, McLean, Va.
Filed Nov. 4, 1970, Ser. No. 25,827
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

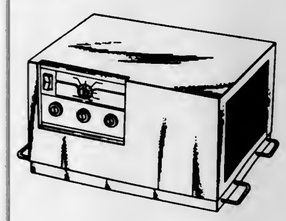


224,018
COMPUTER
John E. Studer, Jr., Flemington, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.
Filed Dec. 10, 1970, Ser. No. 26,393
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

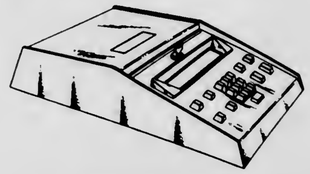


224,019
SEND/RECEIVE DATA PRINTER TERMINAL OR SIMILAR ARTICLE
Robert E. Kalvitis, Fairport, and Robert H. Van Valkinburgh, Pittsford, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1970, Ser. No. 26,428
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

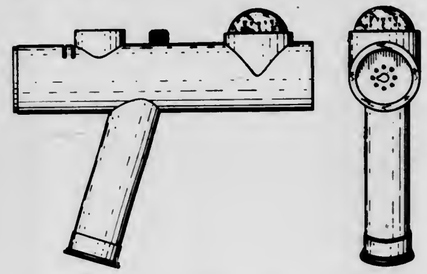
224,020
ELECTRONIC COMPUTER OR THE LIKE
George F. Minka, Torrance, Calif., assignor to TRW Data Systems, Inc., Torrance, Calif.
Filed Jan. 20, 1971, Ser. No. 108,235
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



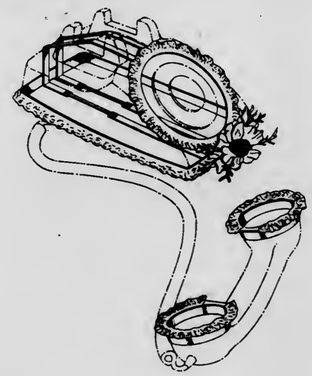
224,021
KEYBOARD TERMINAL OR THE LIKE
George F. Minka, Torrance, and Frank E. Bustamante, Culver City, Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.
Filed Jan. 20, 1971, Ser. No. 108,236
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



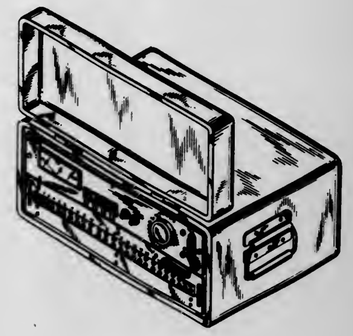
224,022
RADIO DIRECTION FINDER
Maurice A. Warren, Los Angeles, Calif., assignor to Vec/Trak Research & Development Corporation, New York, N.Y.
Filed May 7, 1970, Ser. No. 22,868
Term of patent 14 years
The portion of the term of the patent subsequent to Jan. 19, 1985, has been disclaimed
Int. Cl. D14—*03*
U.S. Cl. D26—14



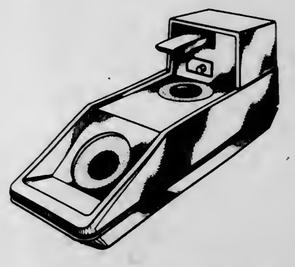
224,023
PHONE DECORATION
Joyce G. Cliburn, 20201 Sherman Way, Canoga Park, Calif. 91306
Filed Sept. 4, 1970, Ser. No. 24,835
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



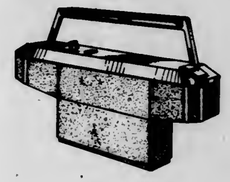
224,024
OUTGOING TRUNK EXTENDER APPARATUS FOR TELEPHONE OFFICE EQUIPMENT
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Port Washington, N.Y.
Filed Nov. 12, 1970, Ser. No. 25,945
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



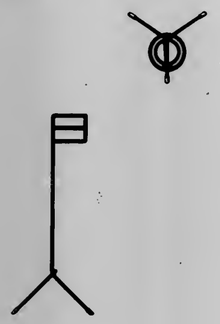
224,025
ACOUSTIC COUPLER OR SIMILAR ARTICLE
Larry D. Harrison, Clifton Springs, and Robert E. Kalvitis, Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1970, Ser. No. 26,431
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



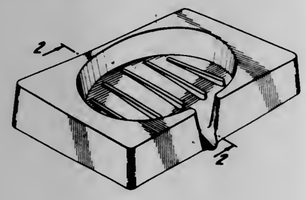
224,026
AUTOMATIC TICKET EXAMINING DEVICE
Tatsuya Mikami, Narashino, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Dec. 17, 1970, Ser. No. 26,550
Claims priority, application Japan June 18, 1970
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D28—1



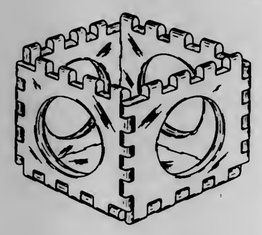
224,027
SUPPORT STAND FOR AN AIR SPRAYING CONTAINER
Oliver W. Hildebrand, Florissant, Mo., assignor to Wirecraft Mfg. Company, St. Louis, Mo.
Filed Apr. 9, 1970, Ser. No. 22,354
Term of patent 7 years
Int. Cl. D6—*99*
U.S. Cl. D33—3



224,028
SOAP RECEPTACLE
Joseph J. Settle, 1319 N. Fashion Lane 1, Anaheim, Calif. 92806
Filed Nov. 27, 1970, Ser. No. 26,182
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D33—24



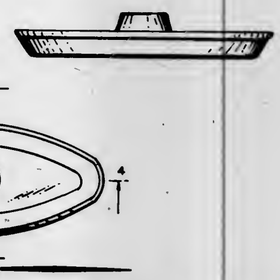
224,029
JUVENILE PLAY STRUCTURE OR SIMILAR ARTICLE
John A. Gale, Wayzata, Minn., and James V. Young, St. Louis, and William Kenneth Menke, Glendale, Mo., assignors to Learning Products, Inc., Maryland Heights, Mo.
Filed Aug. 28, 1970, Ser. No. 24,759
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



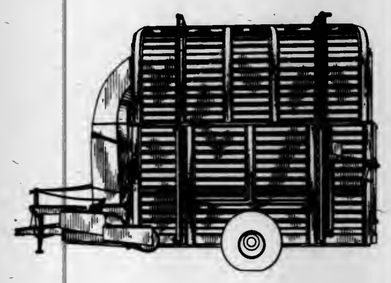
224,030
BEAR FIGURE DEVICE FOR HOLDING TOYS, CLOTHING OR THE LIKE
James F. Eden, 312 Three Oaks Road, Cary, Ill. 60013
Filed Nov. 16, 1970, Ser. No. 26,022
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



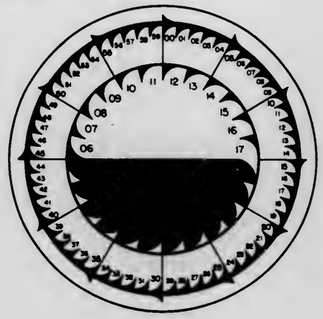
224,031
HOLDER FOR AN ARTIFICIAL AQUARIUM PLANT
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Aug. 19, 1970, Ser. No. 24,583
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D35—3



224,032
HAY LOADING AND STACKING IMPLEMENT
Raymond A. Adee, Newton, Dean P. Brooks, Hesston, and John D. Anderson, Canton, Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Oct. 5, 1970, Ser. No. 25,339
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1



224,033
CLOCK FACE
Richard A. Strong and Rosa M. Strong, Temple Hills, Md. (both % Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio 45433)
Filed Nov. 5, 1970, Ser. No. 25,841
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D42—1



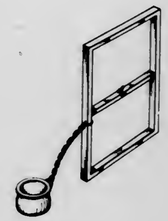
224,034
CARAFE OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Oct. 23, 1970, Ser. No. 25,629
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21



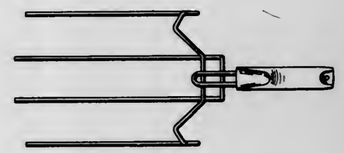
224,035
GOBLET OR SIMILAR ARTICLE
David Douglas, 1119 Lincoln Blvd., Manitowoc, Wis. 54220
Filed Oct. 12, 1970, Ser. No. 25,443
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8



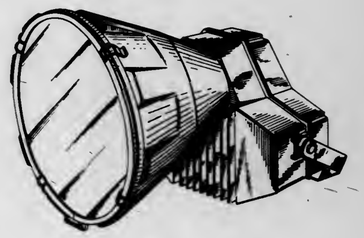
224,036
FINDING FOR A BROOCH OR THE LIKE
Maurice C. Faldborg, 29869 Marine View Drive, Federal Way, Wash. 98002
Filed Aug. 5, 1970, Ser. No. 24,588
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—19



224,037
HOT TRAY LIFTER
James Demetreon, 5704 Hillside Drive, Kansas City, Mo. 64151
Filed Oct. 12, 1970, Ser. No. 25,452
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—4



224,038
HEAVY DUTY FLOODLIGHT
Tarek B. Adra, La Canada, Calif., assignor to Harvey Hubbel Incorporated, Bridgeport, Conn.
Filed Nov. 5, 1970, Ser. No. 25,844
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D48—20



224,039
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Sept. 21, 1970, Ser. No. 25,096
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



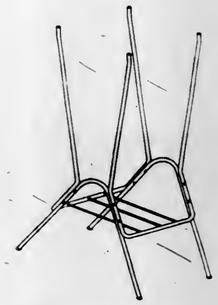
224,040
FLUTED PLANOASPHERIC LENS
Howard Albert Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Feb. 25, 1970, Ser. No. 21,604
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



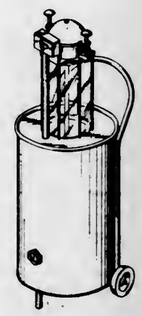
224,041
IGNITER OR SIMILAR ARTICLE
Stanley J. Matys, Lancaster, N.Y., assignor to Igniters, Inc., Lancaster, N.Y.
Filed Oct. 19, 1970, Ser. No. 25,556
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—129



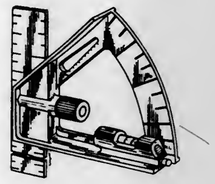
224,042
COMBINED APPAREL RACK AND LAUNDRY BAG SUPPORT STAND
Richard A. Van Voorhis, 2159 Hillside Circle, Birmingham, Ala. 35209
Filed Jan. 20, 1970, Ser. No. 21,001
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—8.1



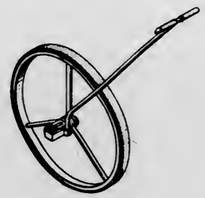
224,043
OIL CHANGER
Livio Billos, Woodbury, N.J., assignor to Sherman Car Wash Equipment Co., Palmyra, N.J.
Filed June 25, 1970, Ser. No. 23,666
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D52—2



224,044
COMBINED TRY AND MITER SQUARE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, Sheffield, England
Filed Oct. 5, 1970, Ser. No. 25,346
Claims priority, application Great Britain Apr. 17, 1970
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



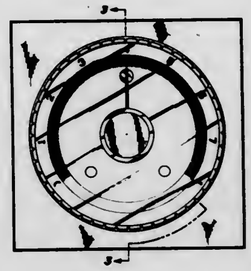
224,045
DISTANCE MEASURING INSTRUMENT
Wallace D. Evans, Jr., Malibu, Calif., assignor to Rolatape Corporation, Santa Monica, Calif.
Filed Jan. 21, 1971, Ser. No. 108,672
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



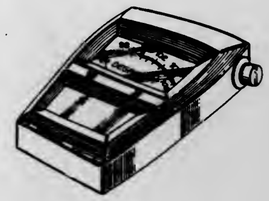
224,046
DISTANCE MEASURING INSTRUMENT
Wallace D. Evans, Jr., Malibu, Calif., assignor to Rolatape Corporation, Santa Monica, Calif.
Filed Jan. 21 ,1971, Ser. No. 108,679
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



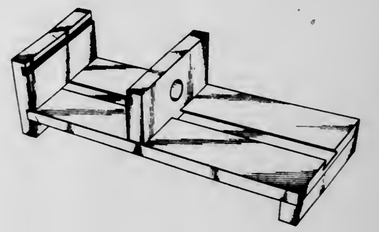
224,047
INDICATING CONDITION CONTROLLER
Lyman L. Hill, Jr., 1995 Summit Ave., St. Paul, Minn. 55105; James A. Odom, Jr., 874 66th Ave. N., Brooklyn Center, Minn. 55430; and Norbert T. Wolfe, 5348 10th Ave. S., Minneapolis, Minn. 55417
Filed Feb. 16, 1970, Ser. No. 21,448
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7



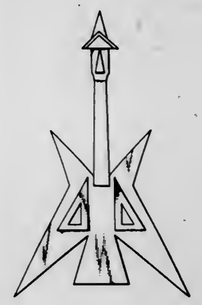
224,048
ELECTRONIC CLINICAL THERMOMETER
Douglas M. Bauer, Danvers, and Mark S. Mazzetti, Marblehead, Mass., assignors to Meditech Energy and Environmental Corporation, Danvers, Mass.
Filed Nov. 9, 1970, Ser. No. 25,885
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D52—7



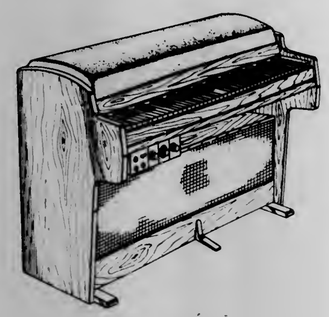
224,049
PRINTED CIRCUIT HOLDING JIG
Arthur R. Rose, 3 Rodgers Circle, North Reading, Mass. 01864
Filed Oct. 5, 1970, Ser. No. 25,324
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13



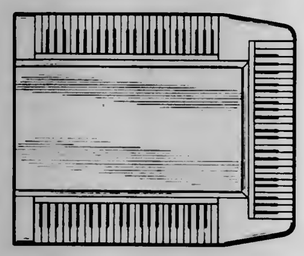
224,050
GUITAR BODY
John P. Gaudio, 73 Ambrose St., Rochester, N.Y. 14608
Filed Oct. 7, 1970, Ser. No. 25,367
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



224,051
ELECTRIC PIANO
Harold B. Rhodes, Anaheim, Calif., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed May 11, 1970, Ser. No. 22,920
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



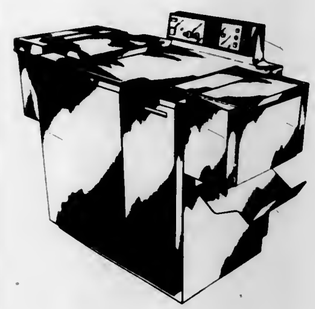
224,052
MULTIPLE KEYBOARD UNIT
Percy Dean Olson, Owatonna, Minn., assignor to Musitronic Inc., Owatonna, Minn.
Filed Dec. 14, 1970, Ser. No. 26,453
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9



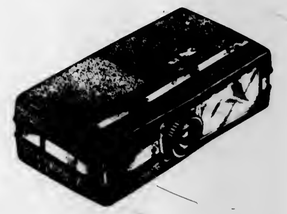
224,053
CAMERA SUPPORT
Leo Stein, P.O. Box 1063, F.D.R. Station, New York, N.Y. 10022
Filed Aug. 10, 1970, Ser. No. 24,403
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1



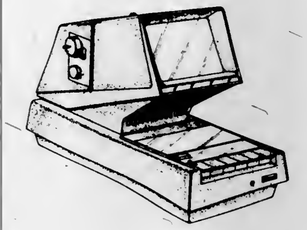
224,054
XEROGRAPHIC REPRODUCTION MACHINE OR THE LIKE
Dan R. Derby, Cupertino, Calif., and Ruediger W. Knodt, Rochester, and Homer Korn, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 21, 1970, Ser. No. 25,070
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



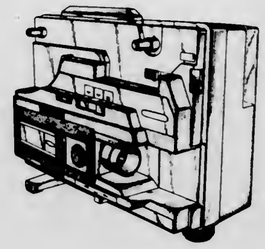
224,055
CAMERA FLASH ATTACHMENT
Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 23, 1970, Ser. No. 26,623
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



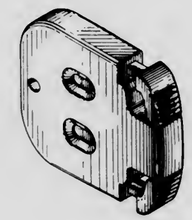
224,056
REAR PROJECTION SLIDE VIEWER
Noboru Onozaki and Masaaki Furukawa, Tokyo, and Teruo Yotsukura, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 11, 1971, Ser. No. 114,746
Claims priority, application Japan Sept. 11, 1970
Term of patent 7 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



224,057
MOTION PICTURE PROJECTOR
Yoh Tanaka, Tokyo, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Feb. 16, 1971, Ser. No. 115,921
Claims priority, application Japan Aug. 19, 1970
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



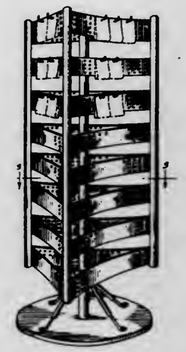
224,058
HAND COUNTER
Earl Rudduck, 5616 E. Argyle Drive, Phoenix, Ariz. 85018
Filed Feb. 18, 1971, Ser. No. 116,732
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



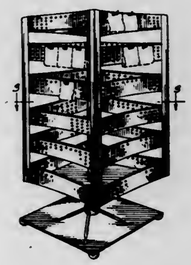
224,059
MOBILE DISPLAY CART
Melvin O. Maisak, Florissant, and William H. Fullington, Ballwin, Mo., assignors to Pet Incorporated, St. Louis, Mo.
Filed June 11, 1969, Ser. No. 17,654
Term of patent 14 years
Int. Cl. D6—*06*; D12—*02*
U.S. Cl. D80—9



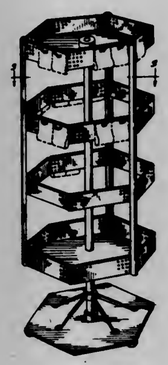
224,060
DISPLAY STAND
Charles O. Larson, Sterling, Ill. 61081
Filed Nov. 23, 1970, Ser. No. 26,107
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



224,061
DISPLAY STAND
Charles O. Larson, Sterling, Ill. 61081
Filed Nov. 23, 1970, Ser. No. 26,110
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



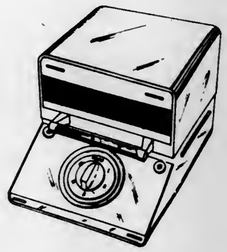
224,062
DISPLAY STAND
Charles O. Larson, Sterling, Ill. 61081
Filed Nov. 23, 1970, Ser. No. 26,111
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D80—9



224,063
COOKING DEVICE
William H. Wiggins, 137 Willowdale Ave., Toronto, Ontario, Canada
Filed May 26, 1969, Ser. No. 17,333
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 27, 1982, has been disclaimed
Int. Cl. D7—*02*
U.S. Cl. D81—10



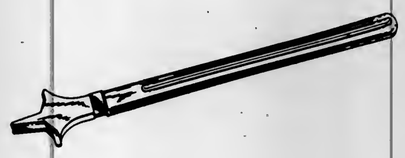
224,064
WARMING OVEN
Clarence F. Marquart, Washington, Mo., assignor to Landshire Products, Inc., St. Louis, Mo.
Filed Mar. 23, 1970, Ser. No. 22,014
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—10



224,065
DIAGNOSTIC CLINICAL INSTRUMENT HAVING SUPPORTING MEANS
Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.
Filed Mar. 11, 1971, Ser. No. 123,489
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12



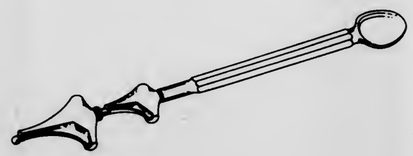
224,066
DIAGNOSTIC CLINICAL INSTRUMENT
Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.
Filed Mar. 11, 1971, Ser. No. 123,490
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12



224,067
DIAGNOSTIC CLINICAL INSTRUMENT
Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.
Filed Mar. 11, 1971, Ser. No. 123,491
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12



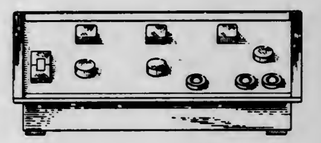
224,068
DIAGNOSTIC MULTIPLE CLINICAL INSTRUMENT
Bernard McDonald, Malibu, Calif., assignor to Medical Testing Systems, Inc., Beverly Hills, Calif.
Filed Mar. 22, 1971, Ser. No. 127,068
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12

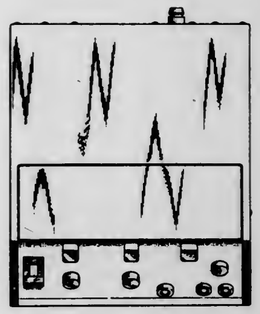


224,069
LIQUID SCINTILLATION SPECTROMETER FOR DETERMINING RADIOACTIVITY LEVELS IN TEST SAMPLES
Frederick W. Thompson, Northfield, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.
Filed Apr. 9, 1970, Ser. No. 22,344
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



224,070
ELECTROSURGICAL UNIT
Ulises M. Lopez, West Hempstead, Martin I. Septimus and Henry A. Holzwarth, New York, and John D. Wark, Freeport, N.Y., assignors to Cavitron Corporation, Long Island City, N.Y.
Filed Dec. 7, 1970, Ser. No. 26,318
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1

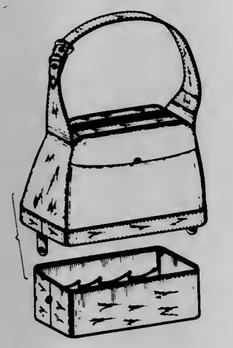




224,071
COMBINED COMPACT AND COIN CONTAINER
Suvad Hatibovich, Murat Hot, and Rifat Hot, all of 26 Charles Veale Drive, West Beach, South Australia, Australia
Term of patent 14 years
Filed May 6, 1970, Ser. No. 22,844
Int. Cl. D28—*02*
U.S. Cl. D86—10



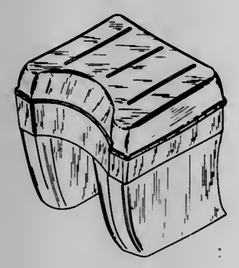
224,072
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Julia Raymond Rosenblum, 6 W. 77th St., New York, N.Y. 10024
Filed Apr. 16, 1970, Ser. No. 22,462
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—3



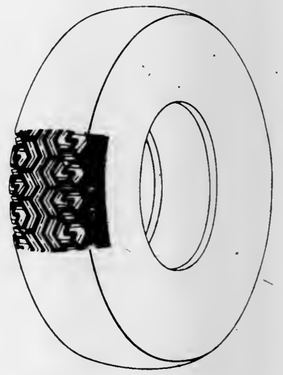
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Ryotaro Nohmura, Suita, Japan, assignor to Taiyo Kogyo Company Limited, Osaka, Japan
Filed June 23, 1970, Ser. No. 23,623
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3



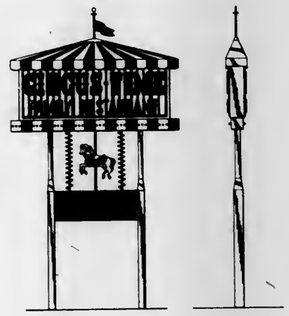
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MOTORCYCLE SADDLE BAG
Theodore S. Harmon, Jr., 100A Dahlgen Ave., Portsmouth, Va. 23702
Filed June 8, 1970, Ser. No. 23,365
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—3



224,075
PNEUMATIC TIRE
James F. Newman, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Sept. 3, 1970, Ser. No. 24,819
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,076
SIGN
Jack A. McMillan, Oklahoma City, Okla., assignor to Circustine, Inc., Oklahoma City, Okla.
Filed Dec. 14, 1970, Ser. No. 26,469
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12



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De Vroome, Harry Clarence, 3,673,097.
Babcock Electronics Corporation: *See—*
Garratt, Joseph A.; and Ash, Leonard P., 3,673,529.
Bachman, Gerald L.: *See—*
Baker, Joseph W.; and Bachman, Gerald L., 3,673,200.
Badding, Leonard J., to Veda, Inc. Silo elevator. 3,672,471, Cl. 187-27.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Beck, Fritz; and Csizi, Gotthard, 3,672,990.
Bock, Gustav, 3,673,220.
Bronstert, Klaus; Ladenberger, Volker; and Fahrbach, Gerhard, 3,673,281.
Dehnert, Johannes, 3,672,816.
Gnad, Gerhard, 3,673,170.
Petersen, Harro, 3,673,248.
Trieschmann, Hans-Georg; Unterstenhoefer, Leo; and Berbner, Heinz, 3,673,141.
Vollrath, Robert; Nuerrenbach, Axel; and Adolphi, Heinrich, 3,673,215.
Widder, Rudi; Distler, Harry; and Fuchs, Friedrich, 3,672,978.
Winterfeldt, Ekkehard, 3,673,211.
Baer, Massimo, to Monsanto Company. Core-shell vinyl halide polymers having a long-chain vinyl ether containing shell. 3,673,282, Cl. 260-884.000.
Baier, Franz; and Schmitz, Rudolf. Method and apparatus for making lead strip. 3,673,045, Cl. 156-436.000.
Bailey, Carl W., III: *See—*
Falkehag, Sten I.; Moorer, Howard H.; Prazak, Gerald; and Bailey, Carl W., III, 3,672,817.
Bair, Thomas I.; and Morgan, Paul W., to Du Pont de Nemours, E. I., and Company. Optically anisotropic spinning dopes of polycarbonamides. 3,673,143, Cl. 260-30.200.
Baird, Lincoln F. Fluid pressure clamp for prosthetic appliance. 3,671,980, Cl. 3-20.000.
Bajusz, Harold F., to Accutec, Inc. Twist-action retracting mechanism for use in writing instruments. 3,672,783, Cl. 401-116.000.
Baker, Allister L., to Keuffel & Esser Company. Portable drafting device. 3,672,062, Cl. 33-100.000.
Baker, Joseph W.; and Bachman, Gerald L., to Monsanto Company. 3(2-sec-Butyl-4,6-dinitrophenoxy)-1,2-benzisothiazole-1,1-dioxide. 3,673,200, Cl. 260-301.000.
Baker Perkins Inc.: *See—*
Miler, Richard W., 3,673,298.
Baldwin, Philip C., to Burton Electrochemical Co., Inc. Bath for electrolytic deposition of magnetic films. 3,672,968, Cl. 204-43.000.
Baldwin Tool, Inc.: *See—*
Keller, James R., 3,672,624.
Baltazzi, Evan S.; Blanchette, Robert G.; and Minnis, Ralph L., to Addressograph-Multigraph Corporation. Acrylate terpolymer resin binders for photoelectrostatic members. 3,672,889, Cl. 96-1.800.
Balven, Martin H., to Emerson Electric Co. Receptacle. 3,672,531, Cl. 220-4.00r.
Bambenek, Joseph B., to Peerless Chain Company. Keeper for pegboard hardware. 3,672,621, Cl. 248-223.000.
Ban, Itsuki. Tape player for playing plurality of magnetic tape cartridges. 3,672,683, Cl. 274-4.00f.
Ban, Itsuki. Programmed track selecting apparatus. 3,672,686, Cl. 274-4.00a.
Ban, Itsuki. Sound control apparatus for a magnetic tape player for cutting off sound from the speaker during fast feed. 3,673,345, Cl. 179-100.20s.
Bando Kiko Co., Ltd.: *See—*
Bando, Sigeru, 3,672,734.
Bando, Sigeru, to Bando Kiko Co., Ltd. Bearing adaptor. 3,672,734, Cl. 308-26.000.
Bandyopadhyay, Pratip, to Cities Service Oil Company. Method for in situ combustion ignition. 3,672,450, Cl. 166-260.000.
Banks, William P.: *See—*
Harwood, William H.; and Banks, William P., 3,673,067.
Bantz, Walter J.: *See—*
Cressman, Russell N.; Bantz, Walter J.; and Nusbickel, Edward M., Jr., 3,672,210.
Barber, Wayland F. Expandable collar clasp. 3,672,005, Cl. 24-81.00d.
Barber, Wayne, to Microwave Development Laboratories, Inc. Method of making waveguide bend. 3,672,202, Cl. 72-369.
Barber-Colman Company: *See—*
Horton, Alfred A., 3,673,479.
Barbera, Anthony J., to United States of America, National Aeronautics and Space Administration. Use of unilluminated solar cells as shunt diodes for a solar array. 3,672,999, Cl. 136-89.000.
Barbier, Jean-Pierre; and Feugnet, Jean-Pierre, to Bridel, Laiteries E. Installation for production of soft and washed-curd cheeses. 3,672,056, Cl. 31-49.000.
Barbul, Marius-Aurel: *See—*
Georgescu, Eugenia; Gheja, Ion; Bugur, Victor; Zirna, Ion; Mazare, Theodora; Popescu, Elena-Lygia; Olteanu, Bujor; Marculescu, Nicolae; Filotti, Traian-Mircea; Barbul, Marius-Aurel; and Calin, Ion, 3,673,109.
Barfield, C. Verne: *See—*
Crovella, Edward A.; and Barfield, C. Verne, 3,672,353.
Barg, Dora A. Paint cases, palette, and conveyor. 3,672,742, Cl. 312-232.000.
Barnbrook, Thomas George; and Wren, Frederick James, to Timken Company, The. Method of adjusting rolling bearings. 3,672,019, Cl. 29-148.40a.
Barr, John E., to International Telephone and Telegraph Corporation. Connector clip removal tool. 3,672,024, Cl. 29-203.00h.
Barrera, Roberto Gonzalez: *See—*
Rubio, Manuel Jesus, 3,672,912.
Barrett Haentjens & Co.: *See—*
Werner, Roy H., 3,672,512.
Barrett, Robert W.; and Preese, Pat S., to Current Industries, Incorporated. Intruder detector. 3,673,589, Cl. 340-258.00d.
Barsh, Max K.; and Edwards, James N., to Aerojet-General Corporation. Vehicle alerting system. 3,673,560, Cl. 340-33.
Bartok, Stephen: *See—*
Dubreuil, Philip B.; Bartok, Stephen; and Crawford, William R., 3,672,408.
Bartok, Stephen; Kamenir, Melvin; and Begoss, Andrew J., to Litton Business Systems, Inc. Magnetic transducer armature. 3,673,350, Cl. 179-100.20c.
Baruch, John J. Liquid level indicator having an adjustable float. 3,673,587, Cl. 340-244.00a.
Basche, Lorraine A. Face lifting band. 3,672,362, Cl. 128-76.00b.
Bastikar, Arvid Ramkrishnarao, to Northern Electric Company Limited. Microwave balanced external cavity rejection filter. 3,673,522, Cl. 333-73.00w.
Bates, Marcus L. Method of feeding and watering animals. 3,672,333, Cl. 119-51. 500.
Battelle Development Corporation, The: *See—*
Hinshaw, John W., 3,672,201.
Mitchell, Robert K., 3,672,796.
Sagmuller, Joseph R.; and Hunter, Richard I., 3,672,882.
Bauer, George T., to Xerox Corporation. Illumination control system. 3,672,759, Cl. 355-3.000.
Bauer, James J.; Werner, James L.; and Erickson, Leland E. Quick attachment device. 3,672,521, Cl. 214-145.000.
Bauer, Rudolf; Jacob, Herbert; and Braun, Werner, to Wacker-Chemie G.m.b.H. Packaging epitaxially coated semiconductor disks. 3,672,495, Cl. 206-65.00f.
Baukhage, Ernest Peter. Safety turntable for a ski binding. 3,672,695, Cl. 280-11.35k.
Baum, Werner, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method of feeding liquid propellants to gas generators or rocket combustion chambers and feeding system for performing the method. 3,672,165, Cl. 60-39.480.
Bausch & Lomb Incorporated: *See—*
Sheld, Clarence A., 3,673,055.
Bausch & Lomb Incorporated, mesne: *See—*
Akin, Alfred A., Jr., 3,672,782.
Baxter Laboratories, Inc.: *See—*
Schlutz, Charles A.; and Bellamy, David, Jr., 3,672,564.
Baxter, Larry K., to Shintron Company, Inc. Facsimile transmission system. 3,673,322, Cl. 178-6.000.
Baycura, Orestes M. Magnetic square wave voltage generator. 3,673,491, Cl. 323-48.000.
Beam, Norman A.: *See—*
Murphy, Willard; and Beam, Norman A., 3,672,080.
Beanston, Robert A.: *See—*
Stefansson, Rafn; and Beanston, Robert A., 3,673,602.
Beaumont, Alan. Tape cartridge including direct viewing of cue indicia. 3,672,604, Cl. 242-199.000.
Bechtel International Corporation: *See—*
Stephansen, Erik W., 3,672,066.
Beck, Fritz; and Csizi, Gotthard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of electrodes. 3,672,990, Cl. 117-230.000.
Beck, Jacob C., to Safety Devices, Inc. Safety apparatus. 3,672,466, Cl. 182-3.000.
Becker, Ernst; and Notz, Karl. Apparatus for joint control of a clutch and electrical switches. 3,672,316, Cl. 112-219.00a.
Becker, Phillip D., to Buell Industries, Incorporated. High tolerance hole-plug for sheet metal. 3,672,532, Cl. 220-25.000.
Beerli, George: *See—*
Ackerman, Joseph Francis; Weisfeld, Joseph; Savageau, Robert George; and Beerli, George, 3,673,140.
Beges AG: *See—*

Geschka, Hugo Werner; Oberhoff, Wolfgang; and Korb, Klaus, 3,672,188.

Begoss, Andrew J.: *See—*
Bartok, Stephen; Kamenir, Melvin; and Begoss, Andrew J., 3,673,350.

Behr, Erich, to Dynamit Nobel AG. Thermostable polyesters and process of producing same. 3,673,153, Cl. 260-47.00c.

Beisswenger, Heinrich, to Alkem Alpha-Chemie und-Metallurgie G.m.b.H. Mixing apparatus for powdered nuclear fuel. 3,672,642, Cl. 259-50.000.

Belden Corporation: *See—*
Cornish, Rodney H.; Staulcup, James T.; and Chaney, Richard M., 3,672,426.
Lasley, James A., 3,673,315.

Bell & Howell Company: *See—*
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Bell Telephone Laboratories, Incorporated: *See—*
Clark, James E., 3,672,034.
Coleman, Donald James, Jr.; and Sze, Simon Min, 3,673,514.
Corby, William Joseph; Garbarini, Victor Charles; and White, Malcolm Lunt, 3,673,099.
Joel, Amos Edward, Jr., 3,673,335.
Korn, Franklin Adam, 3,673,339.
La Marche, Robert Ernest; and May, Carl Jerome, Jr., 3,673,355.
Lowry, Terrell Nicholson, 3,673,524.
Molchan, Andrew John, 3,673,357.
Van Dine, Gilbert August, 3,673,519.

Bell, William Roland. Method for extracting honey. 3,671,985, Cl. 6-12.00a.

Bellamy, David, Jr.: *See—*
Schlutz, Charles A.; and Bellamy, David, Jr., 3,672,564.

Bellis, Harold Edward, to Du Pont de Nemours, E. I., and Company. Plating on aluminum, magnesium or zinc. 3,672,964, Cl. 204-33.000.

Bemberg S.p.A.: *See—*
Callieri, Michele; Faraci, Giorgio; and Paracchini, Mario, 3,672,147.

Ben Daniel, David J.; Fielding, John O.; and Hurwitz, Henry, Jr., to General Electric Company. Audio reproducing apparatus for random access playback systems. 3,672,687, Cl. 274-9.0ra.

Bendix Corporation, The: *See—*
Mayer, Endre A.; and Teitelbaum, Bernard R., 3,672,474.
Moorman, Charles J.; and Reuter, Fred A., 3,673,405.

Bendixen, Knud Erik, to Aktieselskabet Burmeister & Wain's Maskin-OG Skibsbyggeri. Fuel burner unit for mounting in a common air box. 3,672,812, Cl. 431-89.000.

Benedetti, Franco: *See—*
Prijn, Cornelis; and Benedetti, Franco, 3,673,453.

Bennett, Charles H., to Koehring Company. Die casting mold. 3,672,437, Cl. 164-265.000.

Bense, William M., to Leesona Corporation. Strand control apparatus. 3,672,588, Cl. 242-45.000.

Benson, Gustav E.; and Pisani, James M., to Owens-Corning Fiberglas Corporation. Sewn tire cord splice and method. 3,672,148, Cl. 57-159.000.

Benson, Royal H., to Monsanto Company. Liquid scintillator compositions for gamma-ray counting. 3,673,100, Cl. 252-301.30r.

Bentsen, Louis J.: *See—*
Smead, Robert G.; and Bentsen, Louis J., 3,672,569.

Berbner, Heinz: *See—*
Trieschmann, Hans-Georg; Unterstenhoefer, Leo; and Berbner, Heinz, 3,673,141.

Berens, Alfred S., to Federal-Mogul Corporation. Bidirectional Hydrodynamic shaft seal. 3,672,690, Cl. 277-134.000.

Berg, Peter; and Linder, Bertil C., to Cartridge Television, Inc., mesne. Rotary head assembly for tape transport with amplifier carried by the rotor. 3,673,349, Cl. 179-100.20t.

Berg, Robert H. Method of mounting disks in glass walls heat working only once. 3,672,858, Cl. 65-43.000.

Berger, Abe: *See—*
Holub, Fred F.; Berger, Abe; and Selin, Terry G., 3,673,155.

Berger, Leonard; Fitzpatrick, William E.; McGinley, James H.; Pfund, Adolf; and Schwartzberg, Ira G., to International Playtex Corporation. Bag holder and expander unit. 3,672,122, Cl. 53-384.000.

Bergeron, Gaetan G. Service visual indicator and movable currency drawer. 3,672,081, Cl. 40-70.000.

Bergey, John M.; and Walton, Richard S., to Hamilton Watch Company. Solid state watch. 3,672,155, Cl. 58-50.00r.

Berglund, Neil C.; King, Robert W.; and Swearingen, Kent W., to International Business Machines Corporation. Printing control device in high speed chain printer with hammers movable to plural print positions. 3,672,297, Cl. 101-93.00c.

Bergqvist, Claes Bertil: *See—*
Carlen, Jan-Christer Henric Ovesson; and Bergqvist, Claes Bertil, 3,672,877.

Beringer, Monique: *See—*
Buchmann, Paul; and Beringer, Monique, 3,672,509.

Berkeley Steel Construction Company, Inc.: *See—*
White, Jessie N.; and Roseby, Bernard, 3,672,790.

Berler, Robert M., to Pitney Bowes-Alpex, Inc. Hand held photo-optical reader for printed documents. 3,673,416, Cl. 250-219.0dc.

Bernstein, Arthur. Ice bank heat exchanger. 3,672,183, Cl. 62-139.000.

Berry, Robert E.; Bissett, Owen W.; Wagner, Charles J., Jr.; and Patterson, Eldridge P., to United States of America, Agriculture. Method of densifying food products. 3,672,909, Cl. 99-1.000.

Berry, William R.; Drews, Reinhold A.; and Grau, Julius J., to Whirlpool Corporation. Lockout for portable appliance with caster jack mechanism. 3,673,592, Cl. 340-283.000.

Bertolet, Doris Y. Prolonged bed care frame. 3,671,983, Cl. 5-82.000.

Bethlehem Steel Corporation: *See—*
Cressman, Russell N.; Bantz, Walter J.; and Nusbickel, Edward M., Jr., 3,672,210.
Hoffman, John P.; and Booth, Robert C., 3,673,493.
Stelts, Philip D.; and Kern, David W., 3,672,222.

Bialous, Charles, to General Electric Company. Fluorinated polyolefin modified flame retardant polycarbonate composition. 3,673,278, Cl. 260-873.000.

Bickel, Fay D.: *See—*
McConnell, Alexander; and Bickel, Fay D., 3,672,389.

Bickert, Herbert W., to United States of America, Navy, mesne. Power recovery circuit. 3,673,511, Cl. 330-44.000.

Biechl, Josef; and Konrath, Karl, to Bosch, Robert, G.m.b.H. Centrifugal regulator system for fuel-injection combustion engines. 3,672,343, Cl. 123-140.0mc.

Biegler, Hanns: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,672,937.

Bienert, Walter B.; Levedahl, William J.; and Streb, Alan J., to Teledyne, Inc., mesne. Thermal control and power flattening for radioisotopic thermodynamic power system. 3,672,443, Cl. 165-32.000.

Biggs, Paul G., to Western Geophysical Company of America. Two-level depth controllers for seismic streamer cables. 3,673,556, Cl. 340-7.000.

Billarant, Patrick. Flexible bands fitted with hooks for the fabrication of separable fastening devices. 3,673,301, Cl. 264-163.000.

Binsack, Rudolf: *See—*
Tacke, Peter; Binsack, Rudolf; and Weissel, Oskar, 3,673,123.

Bissett, Owen W.: *See—*
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Black and Decker Manufacturing Company, The: *See—*
Duran, Raymond J.; and Musch, Gordon F., 3,672,139.

Blackmer, David E.: *See—*
Rosse, Thomas A.; and Blackmer, David E., 3,672,843.

Blackstone Corporation: *See—*
Hale, Everett W.; Hawkinson, Paul H.; and Robbeloth, Edward T., 3,672,653.

Blackwell, John Francis: *See—*
Tomica, Alojzy; and Blackwell, John Francis, 3,672,141.

Blackwell, Lyman L., to Statitrol Corporation. Resistance controlled timed pulse generator. 3,673,586, Cl. 340-237.00s.

Blake, Carl B.; and Tung, George K. L., to Frye Industries, Inc., mesne. Printing ink. 3,673,135, Cl. 260-17.00a.

Blakeslee, A. Eugene; Foster, Luther M.; and Plaskett, Thomas S., to United States of America, Army. Method of eliminating copper contamination. 3,673,064, Cl. 204-147.000.

Blakey, Roy, to Girling Limited. Vehicle braking systems. 3,672,729, Cl. 303-9.000.

Blanc de la Naulte, Philippe; and Ginhoux, Roland, to Comptoir Europeen de Distribution et de Representation. Method for manufacturing articles made of flexible plastic. 3,673,030, Cl. 156-193.000.

Blanchette, Robert G.: *See—*
Baltazzi, Evan S.; Blanchette, Robert G.; and Minnis, Ralph L., 3,672,889.

Bland, Peter Douglas: *See—*
Brian, Robert Coles; and Bland, Peter Douglas, 3,673,087.

Blank, Wilbur L. Trailing wheel structure for vehicle-drawn implement. 3,672,701, Cl. 280-414.500.

Blatt, Leland Francis; and Wiesenhofer, Frank H. Gas exhaust silencer. 3,672,465, Cl. 181-50.000.

Bleh, Otto: *See—*
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,673,159.

Bliley, Ward L., to International Telephone and Telegraph Corporation. Fully insulated quick disconnect. 3,673,549, Cl. 339-220.00r.

Blixrud, John O.; Knigge, Wayne I.; Rustad, Stanley C.; and Tsuchiya, Takuzo, to General Mills, Inc. Apparatus for treating granular material. 3,672,294, Cl. 99-237.00r.

Block, Jacob: *See—*
McKenney, Robert Lee, Jr.; and Block, Jacob, 3,673,101.

Bloemer, John W., to Eaton Yale & Towne, Inc. Automatic precharge adjuster. 3,672,402, Cl. 138-31.000.

Bly, Ray E., to Coors, Adolph, Company. Plastic closure for containers. 3,672,527, Cl. 215-41.000.

Bock, Gustav, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of pyranthrones. 3,673,220, Cl. 260-360.000.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See—*
Frank, Peter; Jentzsch, Dietrich; and Kurger, Helmut, 3,672,227.

Bodine, Albert G. Elastomeric piston. 3,672,643, Cl. 259-72.000.

Boecker, Alfons Bernhard: *See—*
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Boehringer Ingelheim G.m.b.H.: *See—*
Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, 3,673,187.

Boixen, Heinz: *See—*
Junk, Dieter; Schlunke, Jurgen; and Boixen, Heinz, 3,672,018.

Bojic, Milan; and Jorre, Daniel, to Institut de Recherches de la Siderurgie Francaise. Apparatus for spectral analysis of molten substances. 3,672,774, Cl. 356-86.000.

Boling, Monte J., to Anderson Machine Works. Dip tube guide arrangement. 3,672,028, Cl. 29-208.00b.

Bomba, Georg A., 1/2 to Walker, Fred J. Exhaust feedback and control system for internal combustion engines. 3,672,340, Cl. 123-119.00a.

Bonnier, Etienne; Allibert, Colette; Driole, Jean; and Wicker, Alain, to Agence Nationale de Valorisation de la Recherche. Method of separation of a substance in a solid or liquid phase from a matrix in the liquid phase. 3,672,872, Cl. 75-63.000.

Booth, Dwight Allan, to Omark Air Controls, Inc., mesne. Holder for dental handpiece. 3,672,059, Cl. 32-22.000.

Booth, Robert C.: *See—*
Hoffman, John P.; and Booth, Robert C., 3,673,493.

Bor, Thomas P., to Allied Chemical Corporation. Method of preparing delustered filaments and fibers. 3,673,147, Cl. 260-37.00n.

Borden, Inc.: *See—*
Erekson, Arthur B., 3,673,019.

Borowski, Richard: *See—*
Neumann, Edward W.; and Borowski, Richard, 3,672,942.

Borrevang, Poul; and Faarup, Peter, to Novo Terapeutisk Laboratorium A/S. Steroid compounds of the estrane, androstane, pregnane and 19-norpregnane series and the preparation thereof. 3,673,224, Cl. 260-397.400.

Bosch, Robert, G.m.b.H.: *See—*
Biechl, Josef; and Konrath, Karl, 3,672,343.
Kammerer, Heinz, 3,673,564.
Kock, Klaus, 3,673,292.

Bosse, Frank, to Windmoller & Holscher. Carrying bag of plastics material sheeting. 3,672,562, Cl. 229-54.00c.

Boucher, Raymond Marcel Gut, to Wave Energy Systems, Inc. Method of sterilizing liquids. 3,672,823, Cl. 21-54.00r.

Bouligny, R. H., Inc.: *See—*
Pierce, John H., 3,672,587.

Bowden, Roy Dennis, to Imperial Chemical Industries, Limited. Manufacture of bipyridyls. 3,673,199, Cl. 260-296.00d.

Bowen, Elba W., to Metals Engineering Corporation. Quick release holder. 3,672,619, Cl. 248-113.000.

Brack, Alfred, to Farbenfabriken Bayer Aktiengesellschaft. Naphtholactam-(1,8) basic dyestuffs. 3,673,182, Cl. 260-242.000.

Braden, Rudolf: *See—*
Rinkler, Heinrich; Braden, Rudolf; and Nischk, Gunther, 3,673,242.

Bradley, John J.: *See—*
Small, Rudolph E.; Bradley, John J.; Sanders, Charles J.; and Slawny, Howard J., 3,673,052.

Brandt, Jack P., to Uniroyal, Inc. Dry cleanable vinyl type artificial leather. 3,673,059, Cl. 161-88.000.

Brandt, Siegfried: *See—*
Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, 3,673,273.
Schmitt, Karl; Guda, Fritz; and Brandt, Siegfried, 3,673,277.

Braun Aktiengesellschaft: *See—*
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Braun, Werner: *See—*
Bauer, Rudolf; Jacob, Herbert; and Braun, Werner, 3,672,495.

Braverman, Maynard, mesne: *See—*
Fisher, William J., 3,672,015.

Brawn, John M., to United States of America, Navy. Temperature sensing squib firing device. 3,672,303, Cl. 102-70.20r.

Brechbuhler, Hans Ulrich; and Gubler, Kurt, to Ciba-Geigy Corporation. Basically substituted 1-cyano-O-carbamoyl-formoximes. 3,673,236, Cl. 260-465.400.

Bredzs, Nikolajs; and Miller, Forbes M., to Wall Colmonoy Corporation. Coating on metal base. 3,672,849, Cl. 29-195.000.

Breitschwerdt, Werner; Andres, Rudolf; and Busch, Gerhard, to Daimler-Benz Aktiengesellschaft. Installation for cleaning the cover panes of motor vehicle headlights. 3,671,994, Cl. 15-250.360.

Brennan, John F., to Universal Oil Products Company. Closure for high pressure chamber. 3,672,534, Cl. 220-46.00p.

Brennen, Ronald F. Spark plug. 3,673,452, Cl. 313-141.000.

Breslow, Leon. Article hanging apparatus. 3,672,622, Cl. 248-224.000.

Brevick, Arnold Aage, to Bunker-Ramo Corporation, The. Magnetic switches and method and apparatus for making same. 3,673,526, Cl. 335-205.000.

Brian, Robert Coles; and Bland, Peter Douglas, to Imperial Chemical Industries Limited. Plant treatment composition comprising a plant treatment chemical, a wetting agent and an aliphatic alcohol. 3,673,087, Cl. 252-1.000.

Bridel, Laiteries E.: *See—*
Barbier, Jean-Pierre; and Feugnet, Jean-Pierre, 3,672,056.

Bridenstine, Orville J.; Shutt, Melvin S.; and Brookshire, Harry A., to Phillips Petroleum Company. Tray collar and tray-collar combinations. 3,672,530, Cl. 220-4.00r.

Bridgestone Tire Company Limited: *See—*
Iwami, Ichiro; Honda, Toshio; and Fukuura, Yukio, 3,673,022.

Bright, Charles R. Glass lens edging apparatus. 3,672,855, Cl. 51-101.01g.

Brill, Frank D.: *See—*
Schwertfeger, Owen J.; and Brill, Frank D., 3,672,479.

Brion, Kenneth J.: *See—*
Cramp, Allen R.; and Brion, Kenneth J., 3,672,207.

British Aircraft Corporation Limited: *See—*
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British Hovercraft Corporation Limited: *See—*
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British Iron and Steel Research Association: *See—*
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British Iron and Steel Research Association, The: *See—*
Rhydderch, Malvern John, 3,672,870.

British Petroleum Company Limited, The: *See—*
Allum, Keith George; and Robinson, Peter John, 3,673,114.

Britton, Ralph H., Jr., to Hufnagel, Fred M. Pulse drive circuit for coils of dental impact tools and the like. 3,673,475, Cl. 318-122.000.

Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Pole-changing, three-phase alternating current induction motor, with single-layer stator winding. 3,673,477, Cl. 318-224.00r.

Brock, John L., to Xerox Corporation. Reciprocating carriage for electrographic printing. 3,673,603, Cl. 346-139.000.

Brody, Charles; and Brody, Rhoda Sharon. Dog toilet. 3,672,331, Cl. 119-1.000.

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Bronstein, Harry. Steering indicator. 3,673,561, Cl. 340-52.00r.

Bronstert, Klaus; Ladenberger, Volker; and Fahrbach, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Catalytic hydrogenation of polymers containing double bonds. 3,673,281, Cl. 260-880.00b.

Brookdeal Electronics Limited: *See—*
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Brooker, Leslie G. S.; and Fumia, Arthur, Jr., to Eastman Kodak Company. Silver halide emulsions sensitized with methine dyes containing a cyclopentanone nucleus. 3,672,906, Cl. 96-142.000.

Brooks, Robert E., to TRW Inc. Holographic real-time interferometry with a reconstructed reference beam. 3,672,776, Cl. 356-106.000.

Brookshire, Harry A.: *See—*
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Brouilliard, Robert E.; Coughlin, Leonard J.; and Winfrey, Vernon L., to Penick & Fred Limited. Benzyl starch emulsion coating compositions. 3,672,922, Cl. 106-211.000.

Brown, Alexander M., to Sherwood Medical Industries, Inc. Hypodermic syringe. 3,672,369, Cl. 128-218.00p.

Brown, Howard W.: *See—*
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Brown, Kenneth M., to Universal Oil Products Company. Treatment of an aqueous stream containing water-soluble inorganic sulfide compounds. 3,672,836, Cl. 23-224.000.

Brown, Mortimer, to Ram Partitions Limited. Movable partition wall. 3,672,424, Cl. 160-40.000.

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Brown, Stirling Robert; and Lee, Charles A., to International Paper Company, mesne. Adhesively laminated kraft paper product. 3,672,952, Cl. 161-146.000.

Brown, Stirling Robert, to International Paper Company, mesne. Method for the manufacture of laminated fabrics. 3,673,026, Cl. 156-164.000.

Brown, Thomas L.: *See—*
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Brown, William A.; and Drenning, John F., to Miller and Company. Metallurgical material and processes for treating steel therewith. 3,672,871, Cl. 75-58.000.

Brown, William E.; Heitz, Robert G.; and Levine, Charles A., to Dow Chemical Company, The. Solid electrolyte for electrical cells. 3,672,995, Cl. 136-6.000.

Broyer, Robert, to Regie Nationale des Usines Renault. Automobile bodies. 3,672,718, Cl. 296-1.00s.

Brubaker, Burton D.; and Waldman, Nathan, to Dow Chemical Company, The. Foamed clay process. 3,673,290, Cl. 264-43.000.

Brumbaugh, Philip A.; Harrington, Richard H.; Nemier, Stanley E.; and Nielsen, Thomas C., to International Business Machines Corporation. Wire matrix print head. 3,672,482, Cl. 197-1.00r.

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Bryson, Neil Burton, to Alcan Research and Development Limited. Apparatus and procedures for continuous casting of metal ingots. 3,672,431, Cl. 164-82.000.

Buchanan, Russell A.; and Russell, Charles R., to United States of America, Agriculture. Powdered polysaccharide-reinforced elastomer masterbatches, compounds, and resulting vulcanized rubbers. 3,673,136, Cl. 260-17.4bb.

Buchheit, Otto Karl, to Moeller & Neumann GmbH. Exit rollway for rolled bars or rods in particular flat or profiled bars, with transverse conveyance device. 3,672,489, Cl. 198-219.000.

Buchmann, Paul; and Beringer, Monique, to Solco Basel AG. Dialysis apparatus. 3,672,509, Cl. 210-321.000.

Buchzik, Charles M., to FMC Corporation. Method of improving quality and storage stability of dehydrated products. 3,672,917, Cl. 99-199.000.
Buck, Ronald H., Jr.; and Zbikowski, Ted, to Eaton Corporation. Mold pattern. 3,672,435, Cl. 164-247.000.
Buckley, Alan; and Thomas, Ieuan, to Imperial Chemical Industries Limited. Copolyamides from bis(aminophenyl)sulfone. 3,673,162, Cl. 260-78.00r.
Buehler, William J. TiNi cast product. 3,672,879, Cl. 75-170.000.
Buell, Eugene F. Anti-theft devices for motorcycles, bicycles and the like. 3,673,562, Cl. 340-63.
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Buisson, Francois; and Gresteau, Jean Paul, to Societe Rhodiaceta. Process for producing brilliant sulfonated polyamide-imide fibers and such fibers so produced. 3,673,160, Cl. 260-78.0tf.
Bukama GmbH: *See—*
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Bullock, Milon Walker; and Hand, John James, to American Cyanamid Company Racemization of d(+) 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b] thiazole. 3,673,206, Cl. 260-306.700.
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Reefman, William E., 3,672,152.
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Burchell, Geoffrey Barnett; and Morel, Richard William Victor. Valve and circuit for intermittent positive pressure breathing apparatus. 3,672,366, Cl. 128-145.8.
Burckhalter, James A. Lifting device. 3,672,716, Cl. 294-50.600.
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; and Krohn, Helmut, to Daimler-Benz Aktiengesellschaft. Brake force controls system for vehicles, especially motor vehicles. 3,672,730, Cl. 303-21.0be.
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Burklund, Glenn A. Apparatus for texturizing yarns and the like. 3,672,012, Cl. 28-1.200.
Burman, Per Aron; and Drew, Harold E., to Burroughs Corporation. Integrated circuit extractor tool. 3,673,384, Cl. 219-230.000.
Burns, Edgar, to Mattel, Inc. Movable boundary board game apparatus. 3,672,679, Cl. 273-131.0ba.
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Byrne, Joseph E. Circular sawing tool. 3,672,785, Cl. 408-206.000.
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Calbeck, John H., to Calbeck, J. R. Zinc sulfide pigment and method of making same. 3,672,830, Cl. 23-135.000.
Caldwell, Gary Lee; Eger, Thomas Richard; and Miller, Frederick Warren, to Du Pont de Nemours, E. I., and Company. Spinning quench chamber having a conical flow director. 3,672,801, Cl. 425-71.000.
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Carlson, Robert J.; and Reymann, Royal A., Jr., to United States of America, Army. Electric impact switch. 3,673,362, Cl. 200-61.45r.
Carmet Company: *See—*
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Carmody, William D.; Thompson, Charles J.; and Butzler, George J., to Dow Chemical Company, The. Continuous process for making expandable thermoplastic resin compositions. 3,673,126, Cl. 260-2.50e.
Carnt, Peter Swift; and Schiess, George, to RCA Corporation. Television apparatus responsive to a transmitted color reference signal. 3,673,320, Cl. 178-5.4he.
Carpenter, Thomas J., to General Electric Company. Two-wire preionizer for surge voltage arresters. 3,673,459, Cl. 315-36.000.
Carr, Alton F. Waste basket and the like. 3,671,995, Cl. 15-257.100.
Carr, Kenneth L., to Ferrotec, Inc. Stub tuned circulator. 3,673,518, Cl. 333-1.100.
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Carson, Theo L. Underground service module. 3,672,445, Cl. 165-42.000.
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Carter, Sidney T., to A-T-O Inc. Apparatus for adhesively applying sealing strips to container closures to prevent unauthorized removal of the closures without detection. 3,673,043, Cl. 156-363.000.
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Coleman, Donald James, Jr.; and Sze, Simon Min, to Bell Telephone Laboratories, Incorporated. Schottky barrier transit time negative resistance diode circuits. 3,673,514, Cl. 331-107.00r.
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Cooley, Kenton Parkes; and Jago, Edward John, to Foseco International Limited. Method of lining contoured moulds and head boxes with deformable lining element. 3,672,427, Cl. 164-6.000.
Coon, Clifford L., to Stanford Research Institute. Polychloro amidines and process for preparing them. 3,673,252, Cl. 260-564.00r.
Cooper, Robert B., Jr., 1/2 to Sossen, Edwin J. Interdigital preamplifier. 3,673,509, Cl. 330-31.000.
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Corby, William Joseph; Garbarini, Victor Charles; and White, Malcolm Lunt, to Bell Telephone Laboratories, Incorporated. Process and composition for stripping cured resins from substrates. 3,673,099, Cl. 252-156.000.
Cornell Aeronautical Laboratory, Inc.: *See—*
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Corvi, Joseph A.; and Lawrence, William G., to Corvonics Corporation. Device to detect motion. 3,673,590, Cl. 340-258.00a.
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Crixell, Arthur R., to Monsanto Company. Rotor for intensive mixers. 3,672,644, Cl. 259-104.000.
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Croeslen, Louis John, to Mayer, Frank, & Associates, Inc. Tape cartridge dispenser. 3,672,480, Cl. 194-92.000.
Crovella, Edward A.; and Barfield, C. Verne, to Cardiac Electronics, Inc. Ectopic heartbeat detector. 3,672,353, Cl. 128-2.06a.
Crowley, George C., to Northern Electric Company. Glow switch relay for blanket overheat control system. 3,673,380, Cl. 219-212.000.
Crowley, George C.; and Carlson, Gordon S., to Northern Electric Company. Thermostatles blanket control circuit. 3,673,381, Cl. 219-212.000.
Cruickshank, David G.; and Guerin, David T., to Leesona Corporation. Bobbin segregating and orienting apparatus. 3,672,542, Cl. 221-161.000.
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Damiano, John Joseph, to Amchem Products, Inc. Use of n-sec-butyl-4-t-butyl-2,6- dinitroaniline as a selective herbicide. 3,672,866, Cl. 71-121.000.
Damouth, David E., to Xerox Corporation. Electrographic recording method and apparatus. 3,673,600, Cl. 346-74.0es.
Dardoufas, Kimon Constantine, to Allied Chemical Corporation. Production of polyesters. 3,672,977, Cl. 117-138.80f.
Darland, William G., Jr., to Union Carbide Corporation. Extended area zinc anode having low density for use in a high rate alkaline galvanic cell. 3,672,998, Cl. 136-30.000.
Darling, Alan Sydney; and Selman, Gordon Leslie, to Johnson, Matthew & Co., Limited. Platinum-thodium-gold alloys. 3,672,880, Cl. 75-172.000.
D'Augustine, Frank Thomas, to RCA Corporation. Process for screening cathode ray tubes including salvaging of excess phosphor slurry. 3,672,932, Cl. 117-33.50c.
Daum, Werner; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Grewe, Ferdinand, to Farbenfabriken Bayer Aktiengesellschaft. N-(ω-Cyano-alkyl)-carbamyl-benzimidazoles. 3,673,210, Cl. 260-309.000.
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Davis, Elbert. Structure for connecting attachments to fiberglass rods. 3,672,712, Cl. 287-20.20r.
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De Jongh, Hendrik Paul, to Organon Inc. 7-Alkyl-steroids. 3,673,225, Cl. 260-397.00.
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De Nora, Vittorio; and Loftfield, Richard E., to Oronzio de Nora Impianti Elettrochimici S.p.A. Cell cover with weakened areas to relieve explosions. 3,672,973, Cl. 204-99.000.
De Palma, Vito A., to Cornell Aeronautical Laboratory, Inc. Process of coating metals with mercury or mercury amalgams. 3,672,963, Cl. 204-14.00n.
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De Witt, David; Dhaka, Vir A.; and Oberai, Avtar S., to International Business Machines Corporation. Process for making metal contacts to high speed transistors and product formed thereby. 3,672,983, Cl. 117-212.000.
Dean, John W., to General Electric Company. Block copolymers of silicones with vinyl pyridine. 3,673,272, Cl. 260-827.000.
Deck, Lester T.; and Kupsky, Fredrick E., 1/2 to United States Gypsum Company and 1/2 to Stanray Corporation, mesne. Reticulated bar grating. 3,672,111, Cl. 52-666.000.
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Dehnert, Johannes, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for dyeing synthetic polyamide textiles with disazo dyestuffs. 3,672,816, Cl. 8-41.00b.
DeJong, Egbert D.; Koch, Hans; and Maynard, Kenneth B., to International Business Machines Corporation. Card packaging apparatus. 3,672,118, Cl. 53-59.00r.
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Diepeveen, John C. Adjustable mount. 3,672,651, Cl. 266-23.00f.
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Dumitrescu, Traian, to Institutul de Ceretari Tehnologice Pentru Constructii de Masini. Method of making piston rings. 3,673,004, Cl. 148-3.000.

Dunbar, John R.: *See—*
Cazabon, Dennis C.; and Dunbar, John R., 3,672,625.

Dunlop Holdings Limited: *See—*
Caspary, Rudolf; and Kretschmer, Peter, 3,672,212.

Dupree, Inc.: *See—*
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Dupree, James N., to Dupree, Inc. Connector for lamp socket. 3,673,544, Cl. 339-61.00l.

Duran, Raymond J.; and Musch, Gordon F., to Black and Decker Manufacturing Company, The. Trimmer-edger debris catcher. 3,672,139, Cl. 56-202.000.

D'Urbino, Donato: *See—*
Decursu, Giorgio; De Pas, Jonathan; D'Urbino, Donato; and Lomazzi, Paolo, 3,672,723.

Durr, Helmut: *See—*
Wagner, Karl; and Durr, Helmut, 3,672,286.

Dykman, Albert W. Trotting-horse saddles. 3,672,123, Cl. 54-2.000.

Dynamit Nobel AG: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,673,159.
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Eager, George S., Jr.; Silver, David A.; and Katz, Carlos. Pipe type cables with improved skid wire protection. 3,673,307, Cl. 174-25.00r.

Earl and Wright: *See—*
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Eastman Kodak Company: *See—*
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Brooker, Leslie G. S.; and Fumia, Arthur, Jr., 3,672,906.
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Eda, Korekiyo: *See—*
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Edstrom, Nils Herbert; and Hemdal, Goran Anders Henrik, to Telefonaktiebolaget L M Ericsson. Process control scanner apparatus. 3,673,577, Cl. 340-172.500.

Educational Service Programs, Inc.: *See—*
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Ehrenreich, Leo C., to Carborundum Company, The. Reinforced carbon and graphite articles. 3,672,936, Cl. 117-46.

Eibofner, Eugen; Fink, Willi; and Farian, Gerhard, to Kaltenbach & Voigt. Dental instrument. 3,672,060, Cl. 32-26.000.

Eichin, Harry P., to Union Carbide Corporation. Combination shipping container and dispenser for plastic film. 3,672,494, Cl. 206-57.00r.

Eikelenboom, Matthijs Johan. Training apparatus. 3,672,075, Cl. 35-29.00r.

Eisenberg, Mark F., to Burroughs Corporation. Circuit for driving the cathodes of a display device. 3,673,461, Cl. 315-169.0tv.

Eisenreich, William, to Eaton Corporation. Resistively-coded security system. 3,673,467, Cl. 317-134.000.

Ekbergh, Evert Oskar; and Jonsson, Per Gustaf. Bi-directional translator circuit. 3,673,338, Cl. 179-18.0et.

Eknayan, Hrant. Apparatus and method for treating engine exhaust products to minimize harmful constituents. 3,672,171, Cl. 60-274.000.

El Paso Products Company: *See—*
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Electrohome Limited: *See—*
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Electrolytic Zinc Company of Australasia Limited: *See—*
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Elektroschmelzwerk Kempten G.m.b.H.: *See—*
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Elizer, Lee H., to Hubinger Company, The. Starches containing non-ionic, basic and acidic groups and preparation and uses thereof. 3,673,171, Cl. 260-233.30r.

Elkins, Johnny C.; and Theriot, Gilbert A. Indexing means for wall panel openings. 3,672,064, Cl. 33-180.00r.

Ellinger, John Henry, to Rolls-Royce Limited. Variable pitch aerofoil blades. 3,672,788, Cl. 416-43.000.

Ellis Corporation: *See—*
Toth, Alex; and Fesmire, Robert H., 3,672,820.

Ellis, Leonard C.: *See—*
Kise, Mearl A.; and Ellis, Leonard C., 3,672,829.

Ellis, Linus M., to Du Pont de Nemours, E. I., and Company. Increasing the sugar content of crops with α-ureidooxycarboxylic acids and their derivatives. 3,672,865, Cl. 71-106.000.

Elpern, Bill; Shapiro, Harris J.; Shroff, James R.; and Soloway, Harold, to USV Pharmaceutical Corporation. 2-Naphthoic acid derivatives. 3,673,238, Cl. 260-471.00a.

Eltra Corporation: *See—*
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Emerson Electric Co.: *See—*
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Drugmand, Lester D.; and Temple, Sidney J., 3,673,386.
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Wright, James A.; and Lindberg, Allan W., 3,672,810.

Emmett, Robert C., Jr.; and Dahlstrom, Donald A., to Envirotech Corporation. Method for steam drying filter cake. 3,672,067, Cl. 34-15.000.

Enderley, Arthur E.: *See—*
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Energy Absorption Systems, Inc.: *See—*
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Engel, Herbert: *See—*
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Schnall, Gunther; and Engel, Herbert, 3,672,665.

Engelhard, Bruno: *See—*
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Engle, Thomas H., to General Signal Corporation. Vent valve. 3,672,633, Cl. 251-304.000.

Enso-Gutzeit Osakeyhtio: *See—*
Moilanen, Veikko Mauri, 3,673,031.

Envirotech Corporation: *See—*
Emmett, Robert C., Jr.; and Dahlstrom, Donald A., 3,672,067.

Erck, Karl, to Volkswagenwerk Aktiengesellschaft. Packing and securing strip for windshields. 3,672,109, Cl. 52-400.000.

Erdmann-Jesnitzer, Friedrich; and Rehfeldt, Dietrich, to Redemat S.A. Apparatus and method for controlling or monitoring electric welding processes. 3,673,377, Cl. 219-131.00r.

Erekson, Arthur B., to Borden, Inc. Apparatus for making absorbent pads. 3,673,019, Cl. 156-66.000.

Erickson, Leland E.: *See—*
Bauer, James J.; Werner, James L.; and Erickson, Leland E., 3,672,521.

Erickson, Raymond Curry, to Squibb, E. R., & Sons, Inc. α-Ureidocephalosporanic acid compounds. 3,673,183, Cl. 260-243.00c.

Eriksson, Erik Birger, to Nordiska Maskinfilt Aktiebolaget. Method for the manufacture of endless drive belts and conveyor bands. 3,673,024, Cl. 156-137.000.

Erlichman, Irving, to Polaroid Corporation. Film container. 3,672,276, Cl. 95-19.000.

Erman, William F.: *See—*
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Fanta, Wayne I.; and Erman, William F., 3,673,266.
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Erste Deutsche Floatglas GmbH & Co. OHG: *See—*
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Erwin, Curtis L., Jr. Fuel system for diesel engines. 3,672,394, Cl. 137-338.000.

Eschard, Gilbert, to U.S. Philips Corporation. Channel amplifying device comprising a plurality of coupled channel plates. 3,673,449, Cl. 313-105.000.

Esclamadon, Christian, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Halogenated thioethers and method of preparations. 3,673,260, Cl. 260-609.

Esposito, James Edward, to Amchem Products, Inc. Dry aminotriazole herbicidal formulation. 3,672,863, Cl. 71-82.000.

Esselink, Abraham J., to Selas Corporation. Reformer furnace. 3,672,847, Cl. 23-288.00m.

Esso Research and Engineering Company: *See—*
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Etat Francais represente par le Ministre des Armees Delegation Ministerielle pour l'Armement: *See—*
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Etherington, Robert W., Jr.; and Liauw, Koei-Liang, to Mobil Oil Corporation. Catalytic oxidative dehydrogenation of ketones with improved supported gold catalyst. 3,673,255, Cl. 260-586.00r.

Ethyl Corporation: *See—*
Malec, Robert E., 3,673,226.

Eversheim, Paul: *See—*
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Eversull, Richard F. Motor vehicle warm-up and battery charger system. 3,673,379, Cl. 219-202.000.

Ewald, William P.; Nerwin, Hubert; and Harvey, Donald M. Assemblage and pack for self-processing film units. 3,672,274, Cl. 95-13.000.

Export Tool & Welding Co., Limited: *See—*
Halling, Roy Walker Lee; and Kriisa, Paul, 3,672,317.

Ezy-Way Manufacturing & Sales Co.: *See—*
Chaffin, Chester C., 3,672,634.

Faarup, Peter: *See—*
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Factor, Arnold, to General Electric Company. Method for stabilizing pigmented polycarbonate resins. 3,673,146, Cl. 260-37.0pc.

Faggin, Federico: *See—*
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Fahrbach, Gerhard: *See—*
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Fairbanks, Theodore H., to FMC Corporation. Cellular structures. 3,673,057, Cl. 161-68.000.

Fairchild Camera and Instrument Corporation: *See—*

Klein, Thomas; and Faggin, Federico, 3,673,471.

Falkehag, Sten I.; Moorer, Howard H.; Prazak, Gerald; and Bailey, Carl W., III, to Westvaco Corporation. Alkylene chlorohydrin, oxide or carbonate modified sulfonated lignins in a disperse or vat dye cake. 3,672,817, Cl. 8-79.000.

Fanta, Wayne I.; and Erman, William F., to Procter & Gamble Company, The. Dihydro-π-santalol and process for preparing dihydro-π-santalol from 3-endo-methyl-3-exo (4'-methyl-5'-hydroxpentyl)norcamphor. 3,673,263, Cl. 260-631.500.

Fanta, Wayne I.; and Erman, William F., to Procter & Gamble Company, The. Process for preparing dihydro-β-santalol from 3-endo-methyl-3-exo(4'-methyl-5'-hydroxypentyl) norcamphor. 3,673,266, Cl. 260-631.500.

Faraci, Giorgio: *See—*
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Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Daum, Werner; Scheinpflug, Hans; Frohberger, Paul-Ernst; and Grewe, Ferdinand, 3,673,210.
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Von Der Eltz, Hans-Ulrich; Jeths, Johannes; and Boecker, Alfons Bernhard, 3,672,815.
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Farian, Gerhard: *See—*
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Farley, William C.: *See—*
Wyand, Edwin B.; and Farley, William C., 3,672,891.

Farrand, Clair L., to Inductosyn Corporation. Position-measuring transformer having end-detecting windings useful for positioning a magnetic head of a disc drive system. 3,673,584, Cl. 340-174.10c.

Faulkner, Eric Andrew, to Brookdeal Electronics Limited. Electronic phase sensitive detector circuits. 3,673,506, Cl. 329-103.

Faulstich, George W. Neck for wide-mouth jar and cap therefor. 3,672,528, Cl. 215-46.00a.

Fauth, Otto, to Otto Bilz, Werkzeugfabrik. Quick-change chucks. 3,672,692, Cl. 279-82.000.

Faxon, Robert C., to Texas Instruments, Incorporated. Composite thermistor temperature sensor having step-function response. 3,673,538, Cl. 338-25.

Fedders Corporation: *See—*
Morgan, Wendell D., 3,672,573.

Feddersen, Donald W.; and Markowski, Everett L., to Air Cargo Equipment Corporation, mesne. Cargo container. 3,672,529, Cl. 220-1.500.

Federal-Mogul Corporation: *See—*
Nerens, Alfred S., 3,672,690.

Feldstein, Nathan, to RCA Corporation. Method of preparing a substrate for depositing a metal on selected portions thereof. 3,672,925, Cl. 117-5.500.

Felten & Guilleaume Kabelwerke Aktiengesellschaft: *See—*
Levacher, Friedrich; Ditscheid, Hans Leo; Burger, Walter; Asselborn, Peter; and Cramer, Werner, 3,672,196.

Fenske, Ellsworth R.; and Sampson, Robert W., to Universal Oil Products Company. Determination and control of a composition characteristic while blending a multi-component combustible fluid. 3,672,840, Cl. 23-230.0pc.

Ferguson, Don E.: *See—*
McNeese, Leonard E.; and Ferguson, Don E., 3,672,846.

Ferguson, William G. Massage apparatus. 3,672,357, Cl. 128-49.000.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph, 3,672,713.

Ferrotec, Inc.: *See—*
Carr, Kenneth L., 3,673,518.

Ferrox Iron Ltd.: *See—*
Nye, John David, 3,672,580.

Ferstenberg, Charles, to Tenneco Chemicals, Inc. Apparatus for regulating the upper surface contour of expanded cellular products. 3,672,348, Cl. 425-364.000.

Fesmire, Robert H.: *See—*
Toth, Alex; and Fesmire, Robert H., 3,672,820.

Feterl, Leon G. Cleaning and sorting machine for particulate materials. 3,672,505, Cl. 209-264.000.

Feugnet, Jean-Pierre: *See—*
Barbier, Jean-Pierre; and Feugnet, Jean-Pierre, 3,672,056.

Fichtel & Sachs AG: *See—*
Riese, Hans-Walter; and Friedrich, Gerhard, 3,672,478.

Fidrych, Alfred W., to Hubbell, Harvey, Incorporated. Open mesh cable grip. 3,672,006, Cl. 24-123.00f.

Fielding, John O.: *See—*
Ben Daniel, David J.; Fielding, John O.; and Hurwitz, Henry, Jr., 3,672,687.

Filotti, Traian-Mircea: *See—*
Georgescu, Eugenia; Gheja, Ion; Bugur, Victor; Zirna, Ion; Mazare, Theodora; Popescu, Elena-Lygia; Olteanu, Bujor; Marculescu, Nicolae; Filotti, Traian-Mircea; Barbul, Marius-Aurel; and Calin, Ion, 3,673,109.

Findlay, David; and Fowler, Arnold L., to United States of America, Army, mesne. Equal impulse firearm. 3,672,255, Cl. 89-42.00r.

Fink, Anton. Height gauge. 3,672,620, Cl. 248-125.000.

Fink, Willi: *See—*
Eibofner, Eugen; Fink, Willi; and Farian, Gerhard, 3,672,060.

Finkhauser, Dieter; and Friese, Andre, to Siemens Aktiengesellschaft. Call re-routing system for telephone installations. 3,673,341, Cl. 179-18.0be.

Fiorentino, Arthur A., to Thomas & Betts Corporation. Strap support. 3,672,615, Cl. 248-74.0pb.

Firestein, Harry; and Tyas, Karl, to Hand, Louis, Incorporated. Cloth transfer device. 3,672,313, Cl. 112-121.150.

Firestein, Harry; and Tyas, Karl, to Louis Hand Incorporated. Cloth stacking device. 3,672,314, Cl. 112-121.290.

Firestone Tire & Rubber Company, The: *See—*
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Kay, Edward L., 3,673,269.
Schmidt, Ernst, 3,673,133.

Fischer & Fischer G.m.b.H., mesne: *See—*
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Fischer, Alvin G. Hand tools. 3,672,419, Cl. 145-65.000.

Fischer, Conrad: *See—*
Duba, Erwin; and Fischer, Conrad, 3,672,311.

Fischer, Georg, AG: *See—*
Corbach, Klaus, 3,672,834.

Fischer, Heinz G.: *See—*
Moore, Harold R.; and Fischer, Heinz G., 3,673,297.

Fisher, William J., 50% to Braverman, Maynard, mesne. Apparatus for processing flexible metallic conduit. 3,672,015, Cl. 29-33.00k.

Fisons Pharmaceuticals Limited: *See—*
Cairns, Hugh; and Johnson, Peter Bennett, 3,673,218.

Fitzpatrick, William E.: *See—*
Berger, Leonard; Fitzpatrick, William E.; McGinley, James H.; Pfund, Adolf; and Schwartzberg, Ira G., 3,672,122.

Flamand, Maurice R., to North American Rockwell Corporation. Tape wheel for shuttleless looms. 3,672,405, Cl. 139-122.00r.

Flannery, James E.: *See—*
Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., 3,673,049.

Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of textile materials. 3,672,010, Cl. 26-60.000.

Fleissner, Heinz, to Vepa AG. Apparatus, such as a drawing unit or a calender dryer. 3,672,467, Cl. 184-1.00c.

Fleming, Robert W.: *See—*
Albrecht, William L.; Fleming, Robert W.; and Horgan, Stephen W., 3,673,191.

Fleury, Jean; and Pinot, Jean, to Regie Nationale des Usines Renault and Automobiles Peugeot. Automatic regulation of electrochemical machining systems. 3,673,072, Cl. 204-224.000.

Fleury, Roger: *See—*
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Flintkote Company, The: *See—*
Dalik, Herbert A., 3,672,804.

Florin, Walter. Writing instrument and indicator method. 3,672,842, Cl. 23-230.00r.

Florus, Hans-Jorg: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; and Krohn, Helmut, 3,672,730.

FMC Corporation: *See—*
Buchzik, Charles M., 3,672,917.
Fairbanks, Theodore H., 3,673,057.
Hamilton, James P., 3,672,924.
Pepmeier, Carl R.; Sincavage, Joseph T.; and Stoffregen, Louis E., 3,673,046.
Price, John A.; and Stewart, Mary J., 3,673,157.
Reed, Stanley E., Jr.; and Ruby, Donald C., 3,672,794.

Foehring, Robert A.; Garnache, Richard R.; and Kenney, Donald M., to International Business Machines Corporation. Method for diffusion limited mass transport. 3,672,948, Cl. 117-106.00r.

Foley, Thomas P.: *See—*
Carlson, Robert A.; and Foley, Thomas P., 3,672,600.

Folsom, Harold A.: *See—*
Dehne, Clarence A.; and Folsom, Harold A., 3,672,306.

Fong, William: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,673,477.

Foote, Allen M. Humidifier. 3,672,568, Cl. 236-44.

Ford, Duane B.: *See—*
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, 3,672,657.

Ford Motor Company: *See—*
Cazabon, Dennis C.; and Dunbar, John R., 3,672,625.
Duffy, James J., 3,672,259.
Hamburg, Douglas R., 3,673,476.
Kitzner, Ernest W., 3,672,537.
Knowles, James, 3,672,697.
Ojala, William K., 3,672,342.

Forrer, Homer W., to Mead Corporation, The. Article carrier. 3,672,539, Cl. 220-113.000.

Foseco International Limited: *See—*

Cooley, Kenton Parkes; and Jago, Edward John, 3,672,427.

Foster, James L., Jr., to Tartan Industries, Inc. Drag bits. 3,672,455, Cl. 175-412.000.

Foster, Luther M.: *See—*
Blakeslee, A. Eugene; Foster, Luther M.; and Plaskett, Thomas S., 3,673,064.

Foster, Theodore T.: *See—*
Talbot, Meldon L.; and Foster, Theodore T., 3,673,232.

Foster-Pegg, Richard W., to Struthers Energy Systems, Inc. Gas liquifaction. 3,672,179, Cl. 62-5.000.

Fourneron, Aime. Exercising apparatus. 3,672,361, Cl. 128-71.000.

Fowler, Arnold L.: *See—*
Findlay, David; and Fowler, Arnold L., 3,672,255.

Frampton, Orville D.; Pedigo, Joel B.; and Lecher, Hans Z., to National Distillers and Chemical Corporation. Process for the catalytic reductive amination of nitriles. 3,673,251, Cl. 260-563.00d.

Frank, Peter; Jentzsch, Dietrich; and Kurger, Helmut, to Bodenseewerk Perkin-Elmer & Co. GmbH. Sample injection arrangement for an analytical instrument. 3,672,227, Cl. 73-422.0gc.

Frankenstein Group Limited: *See—*
Hawkins, James Mitchell, 3,672,609.

Franklin, Allen Raymond: *See—*
McMahon, Donald Howland; and Franklin, Allen Raymond, 3,673,596.

Frant, Martin S.; and Ross, James W., to New England Merchants National Bank, mesne. Ion-sensitive electrode and method of making and using same. 3,672,962, Cl. 204-1.00t.

Frassetto, Henry E., Jr.: *See—*
Burton, Paul T.; Cole, Walter E.; Frassetto, Henry E., Jr.; Gibson, Robert G.; Greenberg, Allan; Handloff, Louis E.; and Radlinsky, Raymond, 3,673,575.

Fraze, Ermal C.: *See—*
McGuire, J. B., 3,672,535.

Freeman, Donald C., Jr.; and Rogers, Louis J., to Ionics Incorporated, mesne. Analysis of organic and inorganic water pollutants. 3,672,841, Cl. 23-230.0pc.

Freggens, Robert Alfred, to RCA Corporation. Method of making a heat pipe having an easily contaminated internal wetting surface. 3,672,020, Cl. 29-157.30r.

French Oil Mill Machinery Company, The: *See—*
Slaby, Robert Kent, 3,672,641.

Freund, Ernest H.: *See—*
Jonas, John J.; and Freund, Ernest H., 3,673,106.

Frick, Wilhelm Ernst; Weiss, Anton G.; Wenger, Thomas; and Traber, Walter, to Geigy Chemical Corporation. Biocidally active benzimidazole compounds. 3,673,209, Cl. 260-309.200.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Mross, Siegfried; Grossheim, Hans; and Aubert, Michel, 3,673,552.

Friedlander, Charles B.: *See—*
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Friese, Andre: *See—*
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Fritz, Manfred, to Schloemann Aktiengesellschaft. Crank with adjustable crank radius. 3,672,242, Cl. 74-600.000.

Frohberger, Paul-Ernst: *See—*
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Froumajou, Armand P., to Automobiles Peugeot and Regie Nationale des Usines Renault. Rearwheel unit of a vehicle having independent wheels and trailing links. 3,672,698, Cl. 280-124.00a.

Fruengel, Frank. Method and arrangement for measuring the density of natural fog in the free atmosphere using light source which is also a flashing warning beacon. 3,672,775, Cl. 356-103.000.

Fruitgrowers Chemical Company Limited: *See—*
Taylor, Geoffrey Gordon, 3,672,945.

Fryberger, David: *See—*
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Frye Industries, Inc., mesne: *See—*
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Fuetsch, William. Chain-hose attachment clips. 3,672,395, Cl. 137-355.160.

Fuji Photo Film Co., Ltd.: *See—*
Obkubo, Kinji; Noguchi, Junpei; and Ohmura, Kunioki, 3,672,901.
Sato, Akira; Ueda, Hirozo; and Ono, Yoshiaki, 3,672,897.
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Fujimori, Yoshiaki, to Kabushiki Kaisha Suwa Seikosha. Synthetic resin watchcase with embedded metal reinforcement. 3,672,158, Cl. 58-90.00r.

Fujimoto, Hirozi: *See—*
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Fujisoku Electric Co., Ltd.: *See—*
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Fukuba, Hiroshi. Carpet sweeper. 3,671,991, Cl. 15-41.000.

Fukuoka, Tatsuo. Footwear. 3,672,078, Cl. 36-11.500.

Fukuura, Yukio: *See—*
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Fukuyama, Yasuo; and Okada, Yosuke, to Yamauchi Rubber Industry Co., Ltd. Method of making a polyurethane rubber covered roll. 3,673,025, Cl. 156-154.000.

Fulk, James B. Matched plate method for printing on multiple paper parts. 3,672,299, Cl. 101-426.000.

Fuller Company: *See—*
Kramer, Walter W., 3,672,577.

Fumia, Arthur, Jr.: *See—*
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Funck, Albrecht: *See—*
Dogl, Ernst; Funck, Albrecht; Wellach, Dieter; and Winkler, Hans-Georg, 3,672,373.

Furford, Julius M. Cranberry harvesting apparatus. 3,672,140, Cl. 56-330.000.

Furlong, Dale A.: *See—*
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Furrer, Eduard, to Contraves AG. Hydraulic or pneumatic controlled two stage slide valve. 3,672,399, Cl. 137-625.620.

Gabrielsen, Rolf S.; and Olivares, Ismael A., to Eastman Kodak Company. Photographic composition, element and process. 3,672,896, Cl. 96-66.0hd.

Gachot,Jean; and Perales, Fernand. Compressed-air actuator. 3,672,260, Cl. 92-69.000.

GAF Corporation: *See—*
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Gaffney, Francis J.; Degen, Joseph F.; and Clark, Gerald F., to North American Philips Corporation. Electrically heated hair curler. 3,673,382, Cl. 219-222.000.

Gagliani, John, to International Business Machines Corporation. Quenching injection molded polycarbonate parts or fatigue resistance. 3,673,289, Cl. 264-28.000.

Galbraith-Pilot Marine Corporation: *See—*
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Gallagher, James J.: *See—*
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Gambale, James Richard; McIntyre, Glenn Hazel, Jr.; and Ranney, Fredrik J., to Tizon Chemical Corporation. Process for preparing basic zirconium sulfates and other zirconium compounds such as zirconium fluosulfates, and compositions containing the same. 3,672,825, Cl. 23-15.

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Garrett, Beverley R.: *See—*
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Gaudry, Paul Emile. Rotary brush adjustment device for vacuum cleaner attachment. 3,671,996, Cl. 15-368.000.

Gaydasch, Alexander: *See—*
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Gaydasch, Alexander, to Universal Oil Products Company. Flame retardant compositions of matter. 3,673,149, Cl. 260-45.80n.

Gazzani, Renato, to O.M.P. Officine Meccanoplastiche Di Precisione S.R.L. Rapid-release escapement for timing programmers. 3,672,234, Cl. 74-3.520.

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Geigy Chemical Corporation: *See—*
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Geisler, Roland; and Germscheid, Hans, to Henkel & Cie GmbH. Process for the treatment of anodic oxidized aluminum surfaces. 3,672,966, Cl. 204-35.00n.

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General Electric Company: *See—*
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General Signal Corporation: *See—*
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Genz, Orville F., to Hydro Component Research and Development Co. Mold construction. 3,672,807, Cl. 425-422.000.

Georgescu, Eugenia; Gheja, Ion; Bugur, Victor; Zirna, Ion; Mazare, Theodora; Popescu, Elena-Lygia; Olteanu, Bujor; Marculescu, Nicolae; Filotti, Traian-Mircea; Barbul, Marius-Aurel; and Calin, Ion, to Institutul de Cercetari Pentru Prelucrarea titeiului. Process for the reactivation of platinum-on-alumina catalysts. 3,673,109, Cl. 252-415.000.

Gerace, Paul L.; and Wolff, Nikolaus E., to Xerox Corporation. Method of producing a phthalocyanine photoconductive layer. 3,672,979, Cl. 117-201.000.

Gerber Garment Technology: *See—*
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Gerlach Brown, Inc., mesne: *See—*
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Gerlach, Charles R.; and Brown, Robinson W., to Gerlach Brown, Inc., mesne. Fluid power converter. 3,672,797, Cl. 04/14/72.

Gerlach, Klaus: *See—*
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Germscheid, Hans: *See—*
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Gerrard, A. J., & Company: *See—*
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Gerstner, Dieter. Method of dividing a semiconductor wafer. 3,673,016, Cl. 156-6.000.

Geschka, Hugo Werner; Oberhoff, Wolfgang; and Korb, Klaus, to Beges AG. Washing machine. 3,672,188, Cl. 68-12.00r.

Gesellschaft fur Kernforschung mbH: *See—*
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Gess, Larry C. Apparatus for packaging articles. 3,672,119, Cl. 53-131.

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Gheja, Ion: *See—*
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Gibson, Robert G.: *See—*
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Gibson, Thomas W.: *See—*
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Gidge, Lester; and Poulin, Valmor R., Jr. Apparatus for making non-woven pile material. 3,673,048, Cl. 156-510.000.

Giffen, James W.; Duke, David A.; Dumbaugh, William H., Jr.; Flannery, James E.; MacDowell, John F.; and Megles, John E., to Corning Glass Works. Glass laminated bodies comprising a tensilely stressed core and a compressively stressed surface layer fused thereto. 3,673,049, Cl. 161-164.000.

Gilbert, Andre Nicolaon: *See—*
Teichner, Stanislas Jean; and Gilbert, Andre Nicolaon, 3,672,833.

Gill, Edward W.; and Vincent, Derek A., to Moore Business Forms Inc. Continuous stationery guide means. 3,672,483, Cl. 197-133.000.

Gilmore, William J., to American Chain & Cable Company, Inc. Winding apparatus and method. 3,672,142, Cl. 57-17.000.

Gilson, Russell A., to United States of America, Army. Voltage controlled hybrid attenuator. 3,673,492, Cl. 323-74.000.

Giltner, Benedict Clare: *See—*
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Ginhoux, Roland: *See—*
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Gioia, Gaspare L.; Switzer, Norris H.; and Willerton, John K., to Omnionics, Inc. Hydraulic mechanism. 3,672,608, Cl. 244-43.000.

Girard, Jean Rene Marie, to Orthotron. Flashing electric lamp. 3,673,462, Cl. 315-200.00a.

Girling Limited: *See—*
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Green, Martin, 3,672,732.

Gitzendanner, Louis G.: *See—*
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Seibert, Gerhard; and Gerlach, Klaus, 3,672,943.

Glasser, Herman, to Nuclear Associates, Inc. Holder for radioactive material. 3,673,411, Cl. 250-108.00r.

Glaverbel S.A.: *See—*
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Glemza, Rimantas: *See—*
Duecker, Heyman C.; and Glemza, Rimantas, 3,672,831.

Glendinning, William B.; and Pharo, Wellington B., to United States of America, Army. Method of rapidly detecting contaminated semiconductor surfaces. 3,672,980, Cl. 117-201.000.

Glenn, William E., Jr., to General Electric Company. Method for making a composite back projection screen. 3,672,894, Cl. 96-38.300.

Glesner, William K.: *See—*
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Globe-Union Inc.: *See—*
Halsall, Vincent Michael; and Cosme, Peter Anthony, 3,673,302.

Gnad, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Phenyl-azo-naphthol dyes. 3,673,170, Cl. 260-202.000.

Goebel, Charles Russell: *See—*
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Goettl Bros. Metal Products, Inc.: *See—*
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Goettl, William H., to Goettl Bros. Metal Products, Inc. Air conditioner. 3,672,126, Cl. 55-106.000.

Goldfarb, Adolph E.: *See—*
Goldfarb, Adolph E.; and Soriano, Rene, 3,672,095.

Goldfarb, Adolph E.; and Soriano, Rene, to Goldfarb, Adolph E. Top game and apparatus. 3,672,095, Cl. 46-65.000.

Goldfarb, Adolph E.; and Soriano, Rene, said Soriano assor. to said Goldfarb. Tethered ball apparatus with catapults and stationary goals. 3,672,676, Cl. 273-101.000.

Goldman, Leon: *See—*
Albright, Jay Donald; and Goldman, Leon, 3,673,214.
Curran, William Vincent; and Goldman, Leon, 3,673,189.
Morlock, Elizabeth Benz; and Goldman, Leon, 3,673,177.
Morlock, Elizabeth Benz; Albright, Jay Donald; and Goldman, Leon, 3,673,194.

Goldsby, Arthur R., to Texaco Development Corporation. Alkylation acid recovery process with elimination of inert hydrocarbons. 3,673,271, Cl. 260-683.620.

Golitz, Hans Dietrich; and Simmler, Walter, to Farbenfabriken Bayer Aktiengesellschaft. Silyl-substituted carbamic acid derivatives. 3,673,233, Cl. 260-448.20n.

Gona, Donald J.; and Oster, Richard J., to Eaton Yale & Towne, Inc. Registered louver assembly. 3,672,293, Cl. 98-40.0vm.

Gonczy, Csaba: *See—*

Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, 3,673,188.

Gooch, John Henry. Railway transmission. 3,672,310, Cl. 105-96.200.

Goodman, David S.: *See—*
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Goodricke, John Charles, to A.C.I. Operations Proprietary Limited. Trickle irrigation system. 3,672,571, Cl. 239-145.000.

Gordon, Hershel; and McAdoo, Charles R., Jr., to Optisonics Corporation, mesne. Sound reproducing and optical projector function control apparatus. 3,673,346, Cl. 179-100.20s.

Gordon, James F., to Zeta Research, Inc. Graphic recorder with pen driving and actuating mechanism. 3,673,604, Cl. 346-139.00b.

Gordon, Paul C.: *See—*
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Gorsky, Egon: *See—*
Gardel, Robert; and Gorsky, Egon, 3,672,097.

Gosser, Lawrence Wayne, to Du Pont de Nemours, E. I., and Company. Hydrogenation of 1,3,7-octatriene to 1,6-octadiene and 1,5-octadiene with certain chromium carbonyl catalysts. 3,673,270, Cl. 260-680.00r.

Goto, Minoru: *See—*
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Goto, Tadashi, to Hitachi, Ltd. Oxygen densitometer for liquid metals. 3,672,206, Cl. 73-61.000.

Gotte, Ernst: *See—*
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Gourdine, Meredith C., to Gourdine Systems, Incorporated. Methods and apparatus for electrogasdynamic coating. 3,673,463, Cl. 317-3.000.

Gourdine Systems, Incorporated: *See—*
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Grace, Martin I.; and Pratt, Harold J., Jr., to Sperry Rand Corporation. Broad band high efficiency amplifier. 3,673,510, Cl. 330-34.000.

Grace, W. R., & Co.: *See—*
MacCragh, Adolfo, 3,672,875.
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Gramling, Wesley A.: *See—*
Sions, James B.; and Gramling, Wesley A., 3,672,112.

Granqvist, Carl-Erik, to Aga Aktiebolag. Apparatus for indicating errors in inclination for inertial navigation. 3,672,229, Cl. 73-504.

Grason, Rufus L.; and Mihaly, Joseph, to Grason-Stadler Company, Inc. Rate of amplitude change control for audiometers of the Von Bekesy type. 3,673,328, Cl. 179-1.00n.

Grason-Stadler Company, Inc.: *See—*
Grason, Rufus L.; and Mihaly, Joseph, 3,673,328.

Grasswick, James E. Method and apparatus for fabricating structures. 3,672,659, Cl. 267-182.000.

Grau, Julius J.: *See—*
Berry, William R.; Drews, Reinhold A.; and Grau, Julius J., 3,673,592.

Graven, Robert Michael. Drawingboard II, a graphical input-output device for a computer. 3,673,579, Cl. 340-173.0ls.

Gravesteijn, Elbert, to Amstel Brouwerij N.V. Draw-off tube. 3,672,390, Cl. 137-212.000.

Greco, Michael R. Multi-tape dispenser. 3,672,550, Cl. 225-34.

Green, Donald R., to United States of America, Atomic Energy Commission. Transient thermal method and means for nondestructively testing a sample. 3,672,204, Cl. 73-15.00a.

Green, John L.; and Nelson, Robert. Electrical connectors. 3,673,546, Cl. 339-89.00c.

Green, Martin, to Girling Limited. Dual hydraulic braking systems for vehicles. 3,672,732, Cl. 303-84.00a.

Green, William R., to Atomic Energy of Canada Limited. Irradiation apparatus for providing a high initial irradiation of the product. 3,673,409, Cl. 250-106.00r.

Greenacre, Paul G. Dental care appliance. 3,672,377, Cl. 132-92.00r.

Greenberg, Allan: *See—*
Burton, Paul T.; Cole, Walter E.; Frassetto, Henry E., Jr.; Gibson, Robert G.; Greenberg, Allan; Handloff, Louis E.; and Radlinsky, Raymond, 3,673,575.

Greene, Alexander B.: *See—*
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Greger, Karl, to Siemens Aktiengesellschaft. Contactless switching device. 3,673,537, Cl. 338-12.000.

Gregg, David W.; Kidder, Ray E.; and Krawetz, Barton, to United States of America, Atomic Energy Commission. Electron beam-initiated chemical laser systems. 3,673,513, Cl. 331-94.500.

Greider, Charles Austin, to Townsend Engineering Company. Product encasing machine. 3,672,001, Cl. 17-33.000.

Greipel, Frank J. Vehicle traction device. 3,672,422, Cl. 152-222.000.

Gresteau, Jean Paul: *See—*
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Grewe, Ferdinand: *See—*
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Grey, Joseph Michael. Board game with definitely movable game pieces. 3,672,680, Cl. 273-131.0ab.

Griesenbrock, Karl-Heinz, to Eaton Yale & Towne GmbH. Hydrostatic vehicle transmission. 3,672,167, Cl. 60-53.000.

Griffin, Leonard E., to Monsanto Company. Bottle orienting system. 3,672,727, Cl. 302-2.00r.

Grimes, Dale F., Jr. Grain cleaner. 3,672,504, Cl. 209-255.000.

Grimm, Harold; and Zuckerman, Ira, to Panther Machine Corporation. Turntable fabric spreading machine. 3,672,662, Cl. 270-31.000.

Grippa, Leonida, to Istituto Nazionale Chimico Biologico S.r.l. Process for preparing deproteinized blood extracts having a healing action and product obtained thereby. 3,672,954, Cl. 195-29.000.

Grise, Frederick G. J. Valve and actuator therefor. 3,672,631, Cl. 251-149.600.

Groetschel, Karl Maria: *See—*
Groetschel, Karl Maria; and Groetschel, Utz, 3,672,176.

Groetschel, Karl Maria; and Groetschel, Utz, said Groetschel, Utz, assor. to Groetschel, Karl Maria. Roof supporting systems. 3,672,176, Cl. 61-45.00d.

Groetschel, Utz: *See—*
Groetschel, Karl Maria; and Groetschel, Utz, 3,672,176.

Groetschel, Utz, assor. to said: *See—*
Groetschel, Karl Maria; and Groetschel, Utz, 3,672,176.

Grolla, Herbert, to Wagner, Heinrich, Maschinenfabrik. Machine for producing casting moulds. 3,672,434, Cl. 164-187.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Lapping or micro-machining tools. 3,672,101, Cl. 51-165.930.

Grosseau, Albert A. G., to Societe Anonyme Automobiles Citroen. Hand brakes in motor vehicles. 3,672,240, Cl. 74-503.000.

Grossheim, Hans: *See—*
Mross, Siegfried; Grossheim, Hans; and Aubert, Michel, 3,673,552.

Grossner, Horst: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; and Krohn, Helmut, 3,672,730.

Grosso, Patrick F.; and Heck, Raymond F., to Columbia Broadcasting System, Inc. Method of forming phosphor screen. 3,672,931, Cl. 117-33.5cp.

Groutsch, Eugene Reginald: *See—*
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Gustafson, Charles H., to Hewlett-Packard Company. Storage display system. 3,673,323, Cl. 178-6.800.

Gustafsson, Anders Christer: *See—*
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Haag, Hermann: *See—*
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Habib, Pierre; and Puyo, Andre. Spring-action device. 3,672,658, Cl. 267-160.000.

Hackenberg, Hubert; and Nicko, Reinhard, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with ejector means for film-containing magazines. 3,672,279, Cl. 95-31.00r.

Hadley, Robert C. Mechanical seal assemblies. 3,672,689, Cl. 277-38.000.

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Hair, George D.; and Kincaid, James U., to Texas Instruments, Incorporated. Identity verification by voice signals in the frequency domain. 3,673,331, Cl. 179-1.0sb.
Halasz, Istvan. Stationary phase for selective sorption. 3,672,131, Cl. 55-386.000.
Hale, Everett W.; Hawkinson, Paul H.; and Robbeloth, Edward T., to Blackstone Corporation. Inoculation apparatus. 3,672,653, Cl. 266-34.00t.
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Halsall, Vincent Michael; and Cosme, Peter Anthony, to Globe-Union Inc. Method for fabricating battery cases. 3,673,302, Cl. 264-328.000.
Hamburg, Douglas R., to Ford Motor Company. Signal producing apparatus adaptable for use with variable reluctance motors. 3,673,476, Cl. 318-138.000.
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Hamilton Watch Company: *See—*
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Hammond, Gary L. Simplified supercharged internal combustion engine with emissions control. 3,672,172, Cl. 60-282.000.
Hamouz, George J.; Dalenberg, W. Robert; and Zurek, James W., to International Harvester Company. Mower support and lift linkage. 3,672,137, Cl. 56-15.800.
Hanback, Francis J., to McDonnell Douglas Corporation. Tube cutter. 3,672,050, Cl. 30-99.000.
Hancke, Peter J.; Judkovics, Monroe; and Urquhart, Robert J., to International Business Machines Corporation. FFT Processor with unique addressing. 3,673,399, Cl. 235-156.000.
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Hardin, James T., to Eltra Corporation. Dynamic braking for universal motors. 3,673,481, Cl. 318-246.000.
Harford, Jack Rudolph, to RCA Corporation. Gain controlled cascade-connected transistor amplifier. 3,673,498, Cl. 325-319.000.
Harmon, James R. Electric rocker switch for controlling multiple circuits with magnetic coupling members. 3,673,358, Cl. 200-6.00r.
Harrah, Robert S. Transducer with visible output. 3,672,325, Cl. 116-70.000.
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Harris, Ronald D.; and Levine, Leon, to Procter & Gamble Company, The. Process for adsorbent bleaching of edible oils. 3,673,228, Cl. 260-428.000.
Harris, Thomas G. Mechanical oxidation of unsaturated polyesters. 3,673,138, Cl. 260-22.0tn.
Harrison, Robert E., to Leesona Corporation. Winding apparatus and method. 3,672,583, Cl. 242-18.00r.
Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, to CHINOIN Gyogyszer-es Vegyeszeti Termekek Gyara R.T. Heterocyclic amidoximes. 3,673,188, Cl. 260/288/00r.
Hartley, Richard S.; and Houser, Franklin Douglass,, to Hobart Manufacturing Company, The. Speed increasing apparatus. 3,672,420, Cl. 146-182.000.
Hartman, Richard L., to United States of America, Army. System for measuring temperature of a cryogenic environment. 3,672,218, Cl. 73-362.0ar.
Hartmann, Frederick, to North American Rockwell Corporation. Measuring method and apparatus. 3,673,394, Cl. 235-151.300.
Hartwig, Karl; Engel, Herbert; and Schnall, Gunther, to Agfa-Gevaert Aktiengesellschaft. Electrostatic copier with removable cleaning module. 3,672,764, Cl. 355-15.000.
Harvey, Donald M.: *See—*
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Harvey, Donald M.; and McConaughey, Randall T., to Eastman Kodak Company. Sequential control for camera diaphragm and shutter. 3,672,267, Cl. 95-10.0ce.
Harwood, William H., to Continental Oil Company. Electroplating of aluminum. 3,672,965, Cl. 204-14.00n.
Harwood, William H.; and Banks, William P., to Continental Oil Company. Removal of molecular halogen from solution by passage through a membrane. 3,673,067, Cl. 204-180.00p.
Hasbro-Industries, Inc.: *See—*
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Hasegawa, Haruo; Sugiyama, Kimroku; Suzuki, Kikuji; and Hirano, Kunio, to Tomoegawa Papaer Manufacturing Co., Ltd. Process for the manufacture of an electrophotographic sensitive material. 3,672,888, Cl. 96-1.800.
Hasegawa, Kohichi; and Kunishima, Norihiko, to Nippon Electric Company Limited. Information storage system. 3,673,580, Cl. 340-174.0pc.
Hasegawa, Tokushige; Makimoto, Kuninobu; Nihei, Seiji; and Takahira, Jiro, to Nisso Kinzoku Kabushiki Kaisha. Zinc dust for removal of cobalt from electrolyte. 3,672,868, Cl. 75-.50a.
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Hastie, Willard A.; and Hastie, Austin, to Coin Verifiers Company Limited. Variable magnetic flux coin-sensing devices. 3,672,481, Cl. 194-101.000.
Hatch, Gordon H., to Automation Industries, Inc. Ultrasonic search unit. 3,672,211, Cl. 73-71.500.
Hatch, Melvin J.: *See—*
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Wahle, Gunter; and Kasparek, Alois, 3,672,522.
Hawes, Edward L. Emergency sign assembly. 3,672,323, Cl. 116-28.
Hawkins, James Mitchell, to Frankenstein Group Limited. Inflatable body-attachments for marine lifesaving. 3,672,609, Cl. 244-122.0ae.
Hawkinson, Paul H.: *See—*
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Hay, Allan S., to General Electric Company. 4-Phenyl 2-(2'-hydroxy-meta-terphenyl-5'-yl)-dibenzofuran and 4,4'-diphenyl-2,2'-bidibenzafuran. 3,673,219, Cl. 260-346.20m.
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Hayash, Edward F., Jr.; Reymore, Harold E., Jr.; and Sayigh, Adnan A. R., to Upjohn Company, The. Cellular polyoxazolidinone elastomers from polyisocyanates and polyepoxides. 3,673,128, Cl. 260-2.500.
Hayes, Michael Richard, to United Kingdom Atomic Energy Authority. Apparatus for grading particles according to their sphericity. 3,672,500, Cl. 209-116.000.
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Heath, Darrell R.: *See—*
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Heinzer, Hans, to Schweizerische Industrie-Gesellschaft. Device for the continuous production of packages. 3,672,120, Cl. 53-180.000.
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Henderson, Albert E., Jr. Quick cure process for making superphosphates of low fluorine content. 3,672,828, Cl. 23-109.000.
Hendrickson, Melvin C., to Zenith Radio Corporation. Regulated D.C. power supply. 3,673,487, Cl. 321-18.000.
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Herter, Eberhard, to International Standard Electric Corporation. Loop monitor circuit. 3,673,356, Cl. 179-175.000.
Hertz, Carl Hellmuth. Liquid jet recorder. 3,673,601, Cl. 346-75.
Hess, Karl Gunter, to Schneider, Jos., & Co. Optische Werke. Two-way drive for optical systems and the like. 3,673,483, Cl. 318-618.000.
Hester, Benny Lee, to Reynolds, R. J., Tobacco Company. Devices for weighing small objects. 3,672,456, Cl. 177-201.000.
Hester, Benny Lee, to Reynolds, R. J., Tobacco Company. Devices for weighing small objects. 3,672,457, Cl. 177-201.000.
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Hicks, De Voe H. Bowling ball control device. 3,672,673, Cl. 273-54.00b.
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High, Richard A.; and Vesper, George J., to McGraw-Edison Company. Continuous rinse and cool-down control. 3,672,189, Cl. 68-12.00r.
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Hill, Charles P., to Leisure Group, Inc., The. Toy phonograph. 3,672,688, Cl. 274-14.000.
Hill, Edward D. Mounting preformed roller on shaft. 3,673,040, Cl. 156-294.000.
Hill, Harold Wayne, Jr.; and Campbell, Robert W., to Phillips Petroleum Company. Hydroxybenzensulfonyl halide production. 3,673,247, Cl. 260-543.00r.
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Hiyama, Ryu, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with expression control device for simultaneoulsy controlling different tone signals by different amounts. 3,672,253, Cl. 84-1.270.
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Hoffman, Charles F. Wrench. 3,672,245, Cl. 81-367.000.
Hoffman, John P.; and Booth, Robert C., to Bethlehem Steel Corporation. One-probe method and apparatus for detecting correlating, and classifying defects in test members. 3,673,493, Cl. 324-37.000.
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Horst, William R.; and Schleicher, Lowell, to National Cash Register Company, The. Method and apparatus for recording and/or displaying images utilizing thermomagnetically-sensitive microscopic capsules. 3,673,597, Cl. 346-74.
Horton, Alfred A., to Barber-Colman Company. Single triac reversible motor control. 3,673,479, Cl. 318-208.000.
Horton, William H., to Eastman Kodak Company. Adapter for igniting electrically ignitable flashlamps. 3,672,813, Cl. 431-95.000.
Horvath, Edward; and Youngman, Gary, to Universal Oil Products Company. Method for the manufacture of solid phosphoric acid catalyst. 3,673,111, Cl. 252-435.000.
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Hovestad, Adrian P. Self-extending dockboard. 3,671,990, Cl. 14-71.000.
Howard, Lawrence A. Clock mechanism actuated by successively supplied ball weights. 3,672,149, Cl. 58-2.000.
Howe, John Arthur; and Bryan, Leslie Oliver, to TRW Inc. Electrical switch. 3,673,368, Cl. 200-67.00g.
Hoya Glass Works, Limited: *See—*
Asahara, Yoshiyuki; and Izumitani, Tetsuro, 3,672,921.
Ishiguri, Hachiro, 3,672,920.
Hoyt, Donald L., to Texaco Inc. Interface advance control in secondary recovery program by reshaping of the interface between driving and driven fluids and by the use of a dynamic gradient barrier. 3,672,448, Cl. 166-245.000.
Hrach, Joseph, to Sandoz Ltd. Process for the production of injection moulded and extrusion moulded polyester products. 3,673,139, Cl. 260-22.00r.
Hron, Roland L., to Honeywell Inc. Burner control system using a radiation operated relay means. 3,672,811, Cl. 431-69.000.
Hubbell, Harvey, Incorporated: *See—*
Fidrych, Alfred W., 3,672,006.
Huber, J. M., Corporation: *See—*
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Hudson, Ronald Augustus, to Imperial Chemical Industries Limited. Method of thermally processing a comestible product. 3,672,907, Cl. 99-1.000.
Huffstetter, Jean M. Remedial reading teaching device. 3,672,074, Cl. 35-35.00h.
Hufnagel, Fred M.: *See—*
Britton, Ralph H., Jr., 3,673,475.
Huggins, David Anthony; and Curlook, Walter, to International Nickel Company, The. Separation of nickel from cobalt. 3,672,873, Cl. 75-101.00r.
Hughes, William C., to General Electric Company. Wide frequency response line scan magnetic deflector. 3,673,528, Cl. 335-210.000.
Huml, James O.; and Layne, Gilbert S., to Dow Chemical Company, The. Production of polymeric fibers or coherent thin deposit of a silicon and oxygen compound. 3,672,832, Cl. 23-182.000.
Humphrey, John G., to General Electric Company. Video compensation circuit for emphasized-carrier detector. 3,673,319, Cl. 178-5.40r.
Hung, Ya-Ya: *See—*
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Hunt, David H., to Spencer Turbine Company, The. Tool holder. 3,672,616, Cl. 248-75.000.
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Ichiryu, Ken; and Takenoshita, Mitsuaki, to Hitachi, Ltd. Accumulator for absorbing a pulsation of pump pressure. 3,672,398, Cl. 137-586.000.
ICP, Inc.: *See—*
Liebens, Raymond B. J., 3,673,472.
Ihasz, Richard: *See—*
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Ihm, Joseph M. Gelled alcohol fuel containing nitrocellulose and boric acid. 3,672,851, Cl. 44-7.00b.
Ijlstra, Hendrik J.: *See—*
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Ikawa, Kenji; and Takami, Fumitaka, to Shinonogi & Co., Ltd. Process for preparing dialkylaminoalkoxycarbonium tetrafluoroborate. 3,673,234, Cl. 260-453.00r.
Imai, Hiroko: *See—*
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Imperial Chemical Industries, Limited: *See—*
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Indian Head Inc.: *See—*
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Inmot Corporation: *See—*
Ackerman, Joseph Francis; Weisfeld, Joseph; Savageau, Robert George; and Beerli, George, 3,673,140.
Inoue, Eiichi; Yamaji, Keizo; Tanaka, Hiroshi; and Saito, Takashi, to Canon Camera Kabushiki Kaisha. Apparatus for electrostatic image-forming and processes for use therewith. 3,673,595, Cl. 346-74.
Institut de Recherches de la Siderurgie Francaise: *See—*
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Institutul de Cercetari Pentru Prelucrarea titeiului: *See—*
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Isaac, Olivier, to Societe Industrielle Generale de Mecanique Appliquee S.I.G.M.A. Variable ratio hydrostatic transmissions. 3,672,166, Cl. 60-53.00r.
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Ishihara, Teruo: *See—*
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Itek Corporation: *See—*
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Ito, Osamu, to Nippondenso Kabushiki Kaisha. Slip ratio calculating device. 3,673,400, Cl. 235-196.000.
Ito, Yutaka; and Hirate, Jun, to Tokyo Broadcasting System, Inc.; and and Nippon Electric Company, Limited. Video mixing/special effects amplifiers. 3,673,324, Cl. 178-6.800.
Itoki, Nobuo: *See—*
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Iwami, Ichiro; Honda, Toshio; and Fukuura, Yukio, to Bridgestone Tire Company Limited. Process for adhering a polyester fibrous material with a rubber. 3,673,022, Cl. 156-166.000.
Iwashita, Hidemaro: *See—*
Seko, Maomi; Yomiyama, Akira; Miyake, Tetsuya; and Iwashita, Hidemaro, 3,673,068.
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Jablin, Richard; and Leister, Robert G., to Allan Wood Steel Company. Drag wipe. 3,672,595, Cl. 242-75.200.
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Jackson, Wendell T.; Garrett, Beverley R.; and Vicars, Earl C., to Hexcel Corporation. Honeycomb having laminates of unidirectional strands. 3,673,058, Cl. 161-68.000.
Jacob, George M.: *See—*
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Jacobsen Manufacturing Company: *See—*
Akgulian, Sahag C.; and Haffner, Donald G., 3,672,696.
Jaeschke, Ralph L., to Eaton Corporation. Method of making pole members. 3,672,042, Cl. 29-602.000.
Jaffe, Christopher; and Gehry, Frank O. Acoustical system employing tubular resonators. 3,672,463, Cl. 181-30.000.
Jagenberg-Werke AG: *See—*
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Jagers, Leopold. Saw. 3,672,251, Cl. 83-169.000.
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Jagob, Karl, to Paul Ferd. Peddinghaus. Parallel vise. 3,672,660, Cl. 269-203.000.
Janda, Clifford C. Leveler. 3,672,618, Cl. 248-116.000.
Janes, John Francis; Jaggers, Brian George; and Curtis, Anthony John, to Bush Boake Allen Limited. Perfumery compositions containing patchouli oil and 8-camphene carbinol. 3,673,120, Cl. 252-522.000.
Janiak, Stefan, to Ciba Limited. 2,4-Dinitro-6-alkyl phenylcyclopropionates. 3,673,237, Cl. 260-468.00p.
Janich, Hans Jurgen, to Polysius G.m.b.H. Apparatus for purifying dust loaded waste gases. 3,672,502, Cl. 209-144.000.
Janssen, Peter Johannes Hubertus, to U.S. Philips Corporation. Television receiver with a phase detector having dual phase determining and correcting networks. 3,673,321, Cl. 178-5.80a.
Japan Exlan Company Limited: *See—*
Shimoda, Keitaro; Tsutsui, Nobuhiro; Sekiguchi, Hideto; and Sone, Masao, 3,673,053.
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Jefferson, Leo J.; and Crosby, Lenard J., 1/2 to said Crosby and 1/2 to Cook, Harold E. Butcher's pneumatic bone dust vacuum cleaner. 3,672,576, Cl. 239-521.
Jeffreys, Roy A.; and Mellows, Susan M., to Eastman Kodak Company. Novel dyes and photographic emulsions. 3,672,905, Cl. 96-140.000.
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Jentzsch, Dietrich: *See—*
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Jerabek, Elihu C., to General Electric Company. Sealed metallic oxide-indium secondary battery. 3,672,997, Cl. 136-20.000.
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Jeths, Johannes: *See—*
Von Der Eltz, Hans-Ulrich; Jeths, Johannes; and Boecker, Alfons Bernhard, 3,672,815.
Joa, Curt G. Method of making a laminated mat from plies of fibrous pulp material. 3,673,021, Cl. 156-62.400.
Joannes, Giuseppe, to Gruppo Finanziario Termico Fin-Term S.p.A. Heat generator of the smoke-tube type. 3,672,336, Cl. 122-149.
Joel, Amos Edward, Jr., to Bell Telephone Laboratories, Incorporated. Switching of time division multiplex lines and analog trunks through telephone central offices. 3,673,335, Cl. 179-15.0aq.
Joesting, Frederick D., to Honeywell Inc. Multi-unit pneumatic control system. 3,672,567, Cl. 236-1.00c.
Johmann, Frank T. Dolls. 3,672,096, Cl. 46-120.000.
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Johnson, Bernard G. Adjustable corrugated shipping container and or adjustable cardboard shipping carton. 3,672,558, Cl. 229-37.00r.
Johnson, Bruce K., to Polaroid Corporation. Photographic apparatus for processing film material. 3,672,275, Cl. 95-13.000.
Johnson, Clarence S.; and McKinley, Larry E. Full view diver's mask. 3,671,976, Cl. 2-14.00c.
Johnson, Donald Edgar, to Delapena Honing Equipment Limited. Honing tools. 3,672,102, Cl. 51-204.000.
Johnson, Edward P., to Earl and Wright. Deep sea mining method and apparatus. 3,672,725, Cl. 299-8.000.
Johnson, Lee F.: *See—*
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Johnson, Matthew & Co., Limited: *See—*
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Johnson, Peter Bennett: *See—*
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Johnson, Ray M., to Cryodry Corporation. Microwave applicator system with cylindrical resonant cavity. 3,673,370, Cl. 219-10.55.
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Webb, Cleitus E., Jr.; and Johnson, Royce F., 3,672,098.

Johnson, William E.; and Schmersal, Larry J., to Owens-Illinois, Inc. Low voltage pulse system for addressing gas discharge display/memory panels. 3,673,460, Cl. 315-169.00r.

Johnstone, Colin G. Circuit for operating polyphase induction motors from single phase supply. 3,673,480, Cl. 318-221.00g.

Jonas, John J.; and Freund, Ernest H., to Kraftco Corporation. Emulsifier system. 3,673,106, Cl. 252-356.000.

Jones & Laughlin Steel Corporation: *See—*
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Jones, Frank D., to United States of America, Army. Adjustable mount for auxiliary gun sight. 3,672,623, Cl. 248-226.00r.

Jones, Giffin D.; Geyer, Gerald R.; and Hatch, Melvin J., to Dow Chemical Company, The. 2-Methylene-3-butenyl quaternary ammonium monomers and polymers. 3,673,164, Cl. 260-80.30n.

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Jorre, Daniel: *See—*
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Jouppi, Eino J. Device for delimbing trees. 3,672,413, Cl. 144-2.00f.

Juchmann, Heinz; and Lauterbach, Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Silicon wafer cell. 3,673,308, Cl. 174-52.00s.

Juckniess, Paul R., to Dow Chemical Company, The. Filter press fluorine cell with carbon connectors. 3,673,076, Cl. 204-256.

Judkovics, Monroe: *See—*
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Judson Jewelry Corporation: *See—*
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Junk, Dieter; Schlunke, Jurgen; and Boixen, Heinz, to Kleinewefers, Joh., Sohne Maschinenfabrik. Guiding roller for calenders. 3,672,018, Cl. 29-116.0pd.

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Kaiser, Carl; and Zirkle, Charles L., to Smith Kline and French Laboratories. Substituted 7,12, dihydropleialine derivatives. 3,673,176, Cl. 260-240.0tc.

Kaiser, Hermann, to Eaton Corporation. Crash sensor. 3,673,367, Cl. 200-61.45r.

Kaiser, Reinhold, to Telefunken Patentverwertungsgesellschaft m.b.H. Method of producing a transistor. 3,673,012, Cl. 148-187.000.

Kallenbach, Rudolf Paul. Copper immersion coating on aluminum. 3,672,976, Cl. 117-130.00r.

Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns. Process for the non-electrolytic metallizing of non-conductors. 3,672,937, Cl. 117-47.

Kalopissis, Gregoire; De Raymond, Henri Philippe; Abegg, Jean-Louis; and Ghilardi, Giuliana, to Societe Anonyme dite: L'Oreal. Treatment of damaged hair with methylol compounds. 3,672,375, Cl. 132-7.000.

Kaltenbach & Voigt: *See—*
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Kamas Kvarnmaskiner AB: *See—*
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Kamenir, Melvin: *See—*
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Kammann, Wilfried. Screen printing machine for printing cylindrical and canical articles. 3,672,296, Cl. 101-38.00a.

Kammerer, Heinz, to Bosch, Robert, G.m.b.H. Astable switching circuit. 3,673,564, Cl. 340-81.00r.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
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Takahashi, Kenji; Yamamura, Toshio; Ono, Mitsuzo; and Eda, Korekiyo, 3,673,125.

Kapsambelis, Christos Basil; and Collins, David Janett,, to Computer Identics Corporation. Identification and registration system. 3,673,389, Cl. 235-61.11r.

Kardon, Emanuel S. Means for applying adhesive to paper bags or the like. 3,672,328, Cl. 118-221.000.

Karr, Michael A. Valve operator apparatus. 3,672,262, Cl. 92-140.000.

Kasei Kogyo Kabushiki Kaisha: *See—*
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Kashiwagi, Nobuo: *See—*
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Katsuyama, Shigeo; Asami, Atsumi; Watanabe, Masahide; Sato, Tsutomu; Norimatsu, Toshiaki; and Nakajima, Eizo, to Kasei Kogyo Kabushiki Kaisha. Process for shaping a bundle wet-spun continuous filaments. 3,672,819, Cl. 8-137.000.

Katz, Carlos: *See—*
Eager, George S., Jr.; Silver, David A.; and Katz, Carlos, 3,673,307.

Kaufman, Harold C.: *See—*
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Kaufman, Jack W. Cutter and like article. 3,672,054, Cl. 30-294.000.

Kaus, Carl M.: *See—*
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Kawabe, Ushio; Kimura, Hiroshi; Tomeoku, Hiroshi; and Doi, Toshio, to Hitachi, Ltd. Rotary electric machine. 3,673,444, Cl. 310-10.000.

Kawahara, Testuyo: *See—*
Tanaka, Akira; Hattori, Tsuyoshi; Anno, Hirotomo; and Kawahara, Testuyo, 3,673,283.

Kawakami, Hiroshi, to Sony Corporation. Magnetic recording and reproducing apparatus. 3,672,684, Cl. 274-4.00d.

Kawaminani, Kohachi. Container sealing device. 3,672,121, Cl. 53-351.000.

Kawasaki, Akihiro; Ueda, Hiroaki; and Taniguchi, Masanobu, to Maruzen Petrochemical Co., Ltd. Process for preparing an alternating copolymer of butadiene and acrylonitrile. 3,673,165, Cl. 260-82.5.

Kay, Edward L.: *See—*
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Kay, Edward L., 3,673,269.

Kaye, George W.; and Shonnard, John R., to Litton Systems, Inc. Stylus assembly for electrically recording of information. 3,673,593, Cl. 346-74.0es.

Kaye, Seymour M.: *See—*
Lane, George A.; Smith, William Arthur; Dollman, Stephen C.; Kaye, Seymour M.; and Taylor, Francis R., 3,673,013.

Kays, David D., to Aerojet-General Corporation. Multiple effect distillation systems. 3,672,960, Cl. 203-11.000.

Kazan, Benjamin, to International Business Machines Corporation. Photocopying device. 3,673,594, Cl. 346-74.0mt.

Keady, Frederick D.; and Wellman, Ellis M. Combination brake warning switch and proportioning valve. 3,672,728, Cl. 303-6.00c.

Keith, Jack G., to Duke, Inc. Simplified continuous rendering system. 3,673,227, Cl. 260-412.600.

Keller, Emil C.; and Spokes, Raymond E., to Abex Corporation. Friction elements. 3,673,276, Cl. 260-38.000.

Keller, James R., to Baldwin Tool, Inc. Shelf bracket structure. 3,672,624, Cl. 248-243.000.

Keller, Robert H., to Owens-Illinois, Inc. Glass gob shaping and delivering means. 3,672,860, Cl. 65-208.000.

Keller, Thomas C.; and Heggy, Robert F., to Timken Company, The. Bearing housing. 3,672,735, Cl. 308-180.000.

Kelley, James K.: *See—*
Mashikian, Matthew S.; Kelley, James K.; and McMurray, William C., 3,673,305.

Kelso, James W., to Xatron Corporation. Automatic film processing apparatus. 3,672,289, Cl. 95-89.00d.

Kennametal Inc.: *See—*
McCreery, James F., 3,672,784.

Kennedy, Frank; and Roberts, Thomas C., to United States Steel Corporation. Roller conveyor. 3,672,486, Cl. 198-127.000.

Kennedy, Paul G.: *See—*
Newell, George F.; and Kennedy, Paul G., 3,673,317.

Kenney, Donald M.: *See—*
Foehring, Robert A.; Garnache, Richard R.; and Kenney, Donald M., 3,672,948.

Kern, David W.: *See—*
Stelts, Philip D.; and Kern, David W., 3,672,222.

Kern, Richard W., to International Business Machines Corporation. Optical system for positional and angular orientation determining apparatus. 3,672,778, Cl. 356-138.000.

Kerrigan, James A., to Leesona Corporation. Winding apparatus. 3,672,585, Cl. 242-27.000.

Kersten, Karl-Heinz; and Patschan, Wolfgang, to Telefunken Patentverwertungsgesellschaft m.b.H. Emitter electrode current controlled amplitude modulator. 3,673,515, Cl. 332-31.00t.

Kesling, Peter C. Arch wire annealer. 3,673,378, Cl. 219-156.000.

Keuffel & Esser Company: *See—*
Baker, Allister L., 3,672,062.

Keulen, Gerben Jan, to Bull General Electric Nederland N.V. Large-capacity card supply magazines comprising a device for retaining and transferring cards. 3,672,668, Cl. 271-61.000.

Keystone-Seneca Wire Cloth Company: *See—*
Krebs, William B., 3,672,638.

Kibby, Robert M., to Reynolds Metals Company. Alumina reduction system. 3,673,075, Cl. 204-245.000.

Kida, Nobutoshi; and Saito, Kazo. Collapsible umbrella capable of automatic opening. 3,672,381, Cl. 135-22.000.

Kidder, Ray E.: *See—*
Gregg, David W.; Kidder, Ray E.; and Krawetz, Barton, 3,673,513.

Kim, Dae Sik. System for producing substantially pollution-free hot gas under pressure for use in a prime mover. 3,672,160, Cl. 60-13.000.

Kimball, John B.: *See—*
Hoffman, Leonard M.; and Kimball, John B., 3,672,605.

Kimberly-Clark Corporation: *See—*
Roeder, Robert J., 3,672,371.

Kimbrough, Laurence B., to RCA Corporation. Method of mounting a mass in a cathode-ray tube using retractable spacing units. 3,672,014, Cl. 29-25.150.

Kimura, Hiroshi: *See—*
Kawabe, Ushio; Kimura, Hiroshi; Tomeoku, Hiroshi; and Doi, Toshio, 3,673,444.

Kincaid, James U.: *See—*
Hair, George D.; and Kincaid, James U., 3,673,331.

Kindlimann, Lynn E.; and Greene, Alexander B., to Allegheny Ludlum Steel Corporation. Nitride strengthened stainless steel composite and production thereof. 3,672,037, Cl. 29-497.500.

King, George W. Automatic hook setting device. 3,672,085, Cl. 43-15.000.

King, Robert W.: *See—*
Berglund, Neil C.; King, Robert W.; and Swearingen, Kent W., 3,672,297.

King, William M.; and Cantor, Paul A., to Aerojet-General Corporation. Reverse osmosis and process and composition for manufacturing cellulose acetate membrane wherein the swelling agent is a di- or tri-basic aliphatic acid. 3,673,084, Cl. 210-23.000.

Kinjo, Hisao: *See—*
Wada, Yoshiyo; Kinjo, Hisao; Suzuki, Toshi; and Akuwa, Fumio, 3,673,352.

Kinney, Alfred W.; and Williams, James W., to Phillips Petroleum Company. Container and closure therefor. 3,672,536, Cl. 220-60.00r.

Kinsinger, William Charles, to Metagraphic Systems, Inc. Film viewer. 3,672,756, Cl. 353-68.000.

Kirk, Merrit C., Jr., to Sun Oil Company. Process for producing high UR oil by hydrogenation of dewaxed raffinate. 3,673,078, Cl. 208-89.000.

Kirkpatrick, Milton E., to TRW Inc. Fluid heat transfer method and apparatus for semi-conducting devices. 3,673,306, Cl. 174-15.00r.

Kise, Mearl A.; and Ellis, Leonard C., to Virginia Chemicals, Inc. Sodium dithionite solution stabilization. 3,672,829, Cl. 23-116.000.

Kiss, Pal: *See—*
Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, 3,673,188.

Kistler Instrumente AG: *See—*
Spescha, Gelli A., 3,672,223.

Kitzner, Ernest W., to Ford Motor Company. Fuel tank vapor separator system having pivoting arm vapor pickup. 3,672,537, Cl. 220-85.0vr.

Kizer, Joseph Austin A.: *See—*
Burke, Oliver W., Jr.; Kizer, Joseph Austin A.; and David, Pauls, 3,673,168.

Klapp, Hartmut, to Jagenberg-Werke AG. System for erecting the bottom flaps of folding-box blanks. 3,672,266, Cl. 93-49.00r.

Klassen, Hans. Hydrant valve assembly. 3,672,393, Cl. 137-307.000.

Klebl, Wolfram, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method and apparatus for testing production of high frequency cables. 3,672,230, Cl. 73-506.000.

Kleer-Vu Industries, Inc., mesne: *See—*
Lakin, Harold, 3,672,771.

Klein, Kenneth R., to Westinghouse Electric Corporation. Transformer slide switch with contact clamping means. 3,673,364, Cl. 200-16.00c.

Klein, Thomas; and Faggin, Federico, to Fairchild Camera and Instrument Corporation. Doped semiconductor electrodes for MOS type devices. 3,673,471, Cl. 317-235.00r.

Kleinewefers, Joh., Sohne Maschinenfabrik: *See—*
Junk, Dieter; Schlunke, Jurgen; and Boixen, Heinz, 3,672,018.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Matzen, Max, 3,672,385.

Klosa, Josef, to Fischer & Fischer G.m.b.H., mesne. Ketones of the thiamine series and their production. 3,673,185, Cl. 260-256.50b.

Knaak, Rudiger, to Koppers-Wistra-Ofenbau Gesellschaft mit Beschrankter Haftung. Soaking pit furnace. 3,672,654, Cl. 263-40.00r.

Knapp, Alfons. Device for aerating a jet of water. 3,672,574, Cl. 239-428.500.

Knigge, Wayne I.: *See—*
Blixrud, John O.; Knigge, Wayne I.; Rustad, Stanley C.; and Tauchiya, Takuzo, 3,672,294.

Knit Tech Development Corporation: *See—*
Rab, Joseph, 3,672,186.

Knorre, Helmut: *See—*
Kallrath, Gottfried; Knorre, Helmut; Meyer-Simon, Eugen; and Biegler, Hanns, 3,672,937.

Knowles, Frederick G.; and Taylor, Clarence R., to Eastman Kodak Company. Selective scanning control for projection apparatus. 3,672,593, Cl. 242-67.400.

Knowles, James, to Ford Motor Company. Motor vehicle steering system. 3,672,697, Cl. 280-87.00a.

Kobayashi, Katuei: *See—*
Osoegawa, Hideru; and Kobayashi, Katuei, 3,673,478.

Kobayashi, Shoichi: *See—*
Takahashi, Akira; Kojima, Hiroo; Ogawa, Masao; Osuka, Hiroshi; and Kobayashi, Shoichi, 3,673,279.

Kobayashi, Tatsuo, to Minolta Camera Kabushiki Kaisha. Device for identifying photographic size. 3,672,277, Cl. 95-31.00r.

Kobayashi, Tetsuji: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Koch, Hans: *See—*
DeJong, Egbert D.; Koch, Hans; and Maynard, Kenneth B., 3,672,118.

Kock, Klaus, to Bosch, Robert, G.m.b.H. Process for the preparation of gas permeable hydrophobic foils for electrochemical cells. 3,673,292, Cl. 264-49.000.

Koehring Company: *See—*
Bennett, Charles H., 3,672,437.

Kofahl, David C., to Richfield Oil Corporation. Marine well drilling method and apparatus. 3,672,447, Cl. 166-.500.

Koivunen, Erkki A., to General Motors Corporation. Fail safe brake anti-lock modulator. 3,672,731, Cl. 303-21.

Kojima, Hiroo: *See—*
Takahashi, Akira; Kojima, Hiroo; Ogawa, Masao; Osuka, Hiroshi; and Kobayashi, Shoichi, 3,673,279.

Kojima, Michio: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
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Kollmorgen Corporation: *See—*
Zeblisky, Rudolph J., 3,672,923.
Zeblisky, Rudolph John, 3,672,938.

Komeno, Taichiro; and Iwakura, Hikozo, to Shionogi & Co., Ltd. Process for preparation of 2α,3α-epithiosteroid. 3,673,173, Cl. 260-239.500.

Komoly, Thomas John, to Imperial Chemical Industries Limited. Process for the production of thermoplastic sheets having longitudinal and transverse corrugations. 3,673,032, Cl. 156-210.000.

Kondo, Kenshi. Thermostat switch. 3,673,536, Cl. 337-392.000.

Kondo, Yasuzo: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Konishi, Kozo; Otake, Michio; Maeda, Tatuo; and Maruyama, Kuniaki, to Denki Kagaku Kogyo Kabushiki Kaisha. Process for preparing a pigment coated paper. 3,672,941, Cl. 117-62.000.

Konrath, Karl: *See—*
Biechl, Josef; and Konrath, Karl, 3,672,343.

Kooperativa forbundet ekonomisk forening: *See—*
Ingmarson, Martin, 3,672,116.

Kopczynski, John F. Straightening machine for elongated workpieces. 3,672,411, Cl. 140-147.

Kopp, Carl J.: *See—*
Hjermstad, Hans U.; and Kopp, Carl J., 3,672,233.

Koppers, Heinrich, Gesellschaft mit beschrankter Haftung: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,673,081.

Koppers-Wistra-Ofenbau Gesellschaft mit Beschrankter Haftung: *See—* Knaak, Rudiger, 3,672,654.

Korb, Klaus: *See—*
Geschka, Hugo Werner; Oberhoff, Wolfgang; and Korb, Klaus, 3,672,188.

Korbonits, Dezso: *See—*
Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, 3,673,188.

Korn, Franklin Adam, to Bell Telephone Laboratories, Incorporated. Artificial line busy circuit. 3,673,339, Cl. 179-18.00f.

Korth, Jurgen, to Bukama GmbH. Nailing tool. 3,672,555, Cl. 227-120.000.

Koshiba, Masao: *See—*
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, 3,673,243.

Kosmowski, Wojciech B., to Advanced Controls Corporation. Centrifugal chuck device. 3,672,256, Cl. 90-11.00a.

Kost, Robert A., to City of Fort Collins. . 3,672,103, Cl. 52-20.000.

Koya, Ito: *See—*
Watai, Mitsuo; and Koya, Ito, 3,673,446.

Kozlowski, Robert L. Container with replaceable plug and pouring spout. 3,672,547, Cl. 222-567.000.

Kraftco Corporation: *See—*
Jonas, John J.; and Freund, Ernest H., 3,673,106.

Kramer, Walter W., to Fuller Company. Fluid bed grid plate assembly. 3,672,577, Cl. 239-557.000.

Krawetz, Barton: *See—*
Gregg, David W.; Kidder, Ray E.; and Krawetz, Barton, 3,673,513.

Krebs, Peter Eric, to Solartron Electronic Group Limited, The. Pulse counters. 3,673,390, Cl. 235-92.0sh.

Krebs, William B., to Keystone-Seneca Wire Cloth Company. Snow fence. 3,672,638, Cl. 256-12.500.

Kreml, John F., to Armco Steel Corporation. Chemical milling method and bath for steel. 3,673,094, Cl. 252-79.400.

Kretschmar, Herbert C.; and Erman, William F., to Procter & Gamble Company, The. Perfume compounds and process for preparing same. 3,673,261, Cl. 260-617.00f.

Kretschmer, Peter: *See—*
Caspary, Rudolf; and Kretschmer, Peter, 3,672,212.

Kriisa, Paul: *See—*
Halling, Roy Walker Lee; and Kriisa, Paul, 3,672,317.

Krohn, Charles. Whirlpool bath attachment. 3,672,359, Cl. 128-66.000.

Krohn, Helmut: *See—*
Burckhardt, Manfred H.; Florus, Hans-Jorg; Grossner, Horst; and Krohn, Helmut, 3,672,730.

Kroopp, Karl-Gunnar, to Grafiset System AB. Coupling for connecting together building units. 3,672,710, Cl. 287-56.000.

Krueger, Archie S.; and Slye, Norman J., to Alwin Manufacturing Company, Inc. Dispenser for web of perforated toweling sheets. 3,672,552, Cl. 226-129.000.

Krueger Associates: *See—*
Krueger, Eugene C., 3,672,055.

Krueger, Eugene C., to Krueger Associates. Hand punching device for data cards. 3,672,055, Cl. 30-358.000.

Krueger, Paul C. Sequence electronic combination lock. 3,673,466, Cl. 317-134.000.

Kruesi, Paul R., to Cyprus Metallurgical Processes Corporation. Process for the recovery of metals from sulfide ores through electrolytic dissociation of the sulfides. 3,673,061, Cl. 204-105.00r.

Krusche, Alfred; and Rosslein, Helmuth, to Linde Aktiengesellschaft. Control system for a stepless hydrostatic drive. 3,672,161, Cl. 60-19.000.

Krzyzanowski, Robert A., to Milprint, Inc. Carton with pull-spout wall construction. 3,672,557, Cl. 229-17.00r.

Kubach, Reinhold W.: *See—*
Hoeffel, James D.; and Kubach, Reinhold W., 3,673,607.

Kuhn, Stephen Joseph, to Dow Chemical Company, The. Method of preparing optically active propylene chlorohydrins and propylene oxides. 3,673,264, Cl. 260-633.000.

Kujawa, Anthony, Jr., to Production Research, Inc., mesne. Ventilator unit. 3,672,291, Cl. 98-2.16.

Kullmann, Jean-Claude. Method for attaching the inner end of a balance spring to its collet. 3,673,376, Cl. 219-121.01m.

Kumasaka, Noriyuki: *See—*
Nishida, Hideko; Yamaguchi, Kunihiko; Kumasaka, Noriyuki; Sugita, Yutaka; and Fujiwara, Hideo, 3,673,581.

Kunishima, Norihiko: *See—*
Hasegawa, Kohichi; and Kunishima, Norihiko, 3,673,580.

Kunkel, Wolfgang: *See—*
Ospelt, Gustav; and Kunkel, Wolfgang, 3,672,337.

Kunst, Helmut, to Elektroschmelzwerk Kempten G.m.b.H. Process for borating metals, especially steel. 3,673,005, Cl. 148-6.000.

Kupetis, Raymond F.: *See—*
Weston, Donald E.; and Kupetis, Raymond F., 3,673,426.

Kupfer, Hanspeter, to Albiswerk Zurich AG. Circuit arrangement for selectively connecting at least two inputs to a counting stage possessing at least one preparatory input and one triggering input and including contact bounce suppression circuitry. 3,673,433, Cl. 307-247.00a.

Kupsky, Fredrick E.: *See—*
Deck, Lester T.; and Kupsky, Fredrick E., 3,672,111.

Kurger, Helmut: *See—*
Frank, Peter; Jentzsch, Dietrich; and Kurger, Helmut, 3,672,227.

Kurz, Richard Karl, to Eastman Kodak Company. Vacuum treatment of coated, direct-positive silver halide elements. 3,672,895, Cl. 96-64.000.

Kurz, Richard Karl, to Eastman Kodak Company. Fogged, direct-positive emulsion production by increased flow of silver halide-forming precipitants in grain-ripener-free acidic medium. 3,672,900, Cl. 96-94.000.

Kuwano, Sadaichi. Fine cloisonne. 3,672,967, Cl. 204-38.00c.

Kuwazuru, Issei: *See—*
Sagane, Norio; Kuwazuru, Issei; and Katesu, Isao, 3,673,129.

La Marche, Robert Ernest; and May, Carl Jerome, Jr., to Bell Telephone Laboratories, Incorporated. Common control digital echo suppression. 3,673,355, Cl. 179-170.600.

Laboratories de L'Ozothine: *See—*
Muller, Pierre, 3,673,066.

Ladenberger, Volker: *See—*
Bronstert, Klaus; Ladenberger, Volker; and Fahrbach, Gerhard, 3,673,281.

Ladish Co.: *See—*
Zimmerly, Robert D., 3,672,791.

Lagerwey, Johannes; Ijlstra, Hendrik J.; and Andriesse, George F. J., to Reactor Centrum Nederland (Stichting). Vibration dampers for rapidly rotating bodies of revolution. 3,672,472, Cl. 188-1.

Laing, Clyde A., Jr. Ladder latching device. 3,672,612, Cl. 248-361.00r.

Lajoye, Pierre. Method for the centrifugal casting of metal in a rotating horizontal shell. 3,672,429, Cl. 164-63.000.

Lakin, Harold, to Kleer-Vu Industries, Inc., mesne. Aperture card duplicator apparatus. 3,672,771, Cl. 355-100.000.

Lalinga, Nicholas: *See—*
Tepper, Sidney; and Lalinga, Nicholas, 3,672,092.

Lamb, John T.; and Anderson, Carl L., to Tappan Company, The. Energization system with safety provision for faulty rectifier. 3,673,464, Cl. 317-43.000.

Lambert, William J. Random access article selection of system and apparatus therefor. 3,672,497, Cl. 209-80.500.

Lanahan, John H.; and Abraham, William W., to Mohawk Industrial Laboratories, Inc. Card sorting device and method. 3,672,498, Cl. 209-80.500.

Land, Edwin H., to Polaroid Corporation. Reflex camera. 3,672,281, Cl. 95-42.000.

Land, Edwin H., to Polaroid Corporation. Photographic apparatus. 3,672,283, Cl. 95-11.00r.

Land, Edwin H., to Polaroid Corporation. Novel photographic products and processes. 3,672,890, Cl. 96-3.000.

Landbouwerktuigen-en Machine-Fabriek H. Vissers N.V.: *See—*
Vissers, Herbert, 3,672,453.

Landis Tool Company, mesne: *See—*
Mc Intosh, Michael D., 3,673,434.

Lane, George A.; Smith, William Arthur; Dollman, Stephen C.; Kaye, Seymour M.; and Taylor, Francis R., said Lane and said Smith assors. to Dow Chemical Company, The said Dollman, said Kaye and said Taylor assors. to United States of America, Army. Illuminating flare composition. 3,673,013, Cl. 149-19.000.

Lane, George A.; and Smith, William Arthur, to Dow Chemical Company, The. Flare composition. 3,673,014, Cl. 149-19.000.

Langhammer, Arthur C. Spinal area back supporter and massaging device. 3,672,360, Cl. 128-67.000.

Lankford, David L.: *See—*
Tobey, Ray; and Lankford, David L., 3,673,073.

Larkin, Thomas J., to Cartridge Television, Inc., mesne. Video tape pick-up and guide system for cartridge type reproducing and/or recording system. 3,673,348, Cl. 179-100.20f.

Larry, John R., to Du Pont de Nemours, E. I., and Company. Method of improving line resolution in screen printing. 3,672,934, Cl. 117-38.000.

Lasley, James A., to Belden Corporation. Shielded cable. 3,673,315, Cl. 174-107.000.

Lassell, Robert W.: *See—*
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Lauckhardt, Gerhard: *See—*
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Lauterbach, Peter: *See—*
Juchmann, Heinz; and Lauterbach, Peter, 3,673,308.

Lawrence, William G.: *See—*
Corvi, Joseph A.; and Lawrence, William G., 3,673,590.

Lawver, James E., to University of Minnesota, The Regents of the. Process for beneficiating magnetite iron ore. 3,672,579, Cl. 241-24.000.

Layne, Gilbert S.: *See—*
Huml, James O.; and Layne, Gilbert S., 3,672,832.

Lazar, Jeffrey M., to Honeywell Inc. Fuel injection apparatus. 3,672,339, Cl. 123-119.00r.

Le Strat, Guy Jean; and Desplanques, Roger, to International Standard Electric Corporation. Acounting system for telephonic exchanges. 3,673,333, Cl. 179-7.00r.

Lea-Ronal, Inc.: *See—*
Nobel, Fred I.; and Ostrow, Barnet D., 3,672,969.

Leach, Sam L., to Spectra-Tech Corporation. Electroluminescent techniques and devices. 3,673,450, Cl. 313-108.00a.

Leavitt, Richard I.: *See—*
Coty, Vernon F.; Heilweil, Israel J.; and Leavitt, Richard I., 3,672,953.

Lecher, Hans Z.: *See—*
Frampton, Orville D.; Pedigo, Joel B.; and Lecher, Hans Z., 3,673,251.

Leclanche S.A.: *See—*
Ruetschi, Paul, 3,673,000.

Lederman, Sol J.: *See—*
Prahl, Walter H.; and Lederman, Sol J., 3,673,262.

Ledoux, Claude; and de Vries, Albert, to Produits Chimiques Pechiney Saint Gobain. Polyvinyl chloride fibers. 3,673,167, Cl. 260-92.8.

Lee, Art, to General Electric Company. Time and light controlled switching circuit. 3,673,413, Cl. 250-206. 00.

Lee, Charles A.: *See—*
Brown, Stirling Robert; and Lee, Charles A., 3,672,952.

Lee, Francis F. Communication aystem. 3,673,326, Cl. 178-71.00r.

Lee, Raymond, Organization, Inc.: *See—*
Akiyama, Joseph S., 3,672,072.

Lee, Raymond, Organization, Inc., The: *See—*
Dudas, Attila, 3,673,304.
Neyendorf, Elvin E., 3,672,617.
Parlagreco, Thomas J., 3,672,376.

Lee, Richard G., to Addressograph-Multigraph Corporation. Roll feeding and cutting apparatus for use in a photocopy machine. 3,672,770, Cl. 355-97.000.

Lee, Robert E.: *See—*
White, Richard M.; Lee, Robert E.; and Turner, Charles W., 3,673,474.

Leesona Corporation: *See—*
Allam, James N.; and Morrocco, Joseph J., III, 3,672,582.
Bense, William M., 3,672,588.
Cruickshank, David G.; and Guerin, David T., 3,672,542.
Harrison, Robert E., 3,672,583.
Kerrigan, James A., 3,672,585.
Macedo, Frank A.; and Perrino, Thomas W., 3,672,584.
Morton, Robert E., 3,672,586.
Whitney, William R., 3,672,143.

Lehmann, Willi; and Ryan, Frederick M., to Westinghouse Electric Corporation. Cathodoluminescent calcium sulfide compositions with improved fast decay characteristic. 3,673,102, Cl. 252-301.40s.

Lehnerdt, Hagen: *See—*
Hirt, Wilhelm; Lehnerdt, Hagen; Weckesser, Ernst; Weinhold, Gottfried; and Wrigge, Friedrich Wilhelm, 3,673,074.

Leidenfrost, Wolfgang, to United States of America, Air Force. Determination of heat transfer through fluids. 3,672,205, Cl. 73-15.00a.

Leifels, Klaus-Dieter: *See—*
Toepel, Rosemarie; Abel, Heinz; Maeder, Arthur; and Leifels, Klaus-Dieter, 3,673,558.

Leister, Robert G.: *See—*
Jablin, Richard; and Leister, Robert G., 3,672,595.

Leisure Group, Inc., The: *See—*
Hill, Charles P., 3,672,688.

Leitz, E., G.m.b.H. Firma: *See—*
Hock, Fromund, 3,672,779.

Lelong, Jose: *See—*
Plumat, Emile; and Lelong, Jose, 3,673,006.

Lesher, George Y.; and Gruett, Monte D., to Sterling Drug Inc. 4-Oxo-1,8-naphthyridine-3-carboxylates and derivatives thereof. 3,673,193, Cl. 260-295.5.

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Mark, Andre. Centrifugal separator for fibrous material. 3,672,503, Cl. 209-144.000.
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Mergerian, Dickron, to Westinghouse Electric Corporation. Cyclotron resonance frequency-selective limiter using inhomogeneous RF magnetic field. 3,673,500, Cl. 325-473.000.
Merola, Anthony, to Amerola Products Corporation. Billiard ball rack. 3,672,671, Cl. 273-22.000.
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Miles, John R., to Retention Communications Systems. Objective lens for short local length cameras and projectors. 3,672,747, Cl. 350-216.000.
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Miller, Robert E.; and Phillips, Paul S., Jr., to National Cash Register Company. Pressure-sensitive record material. 3,672,935, Cl. 117-36.800.
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Minami, Muneyoshi; Taniguchi, Masaharu; Tsutsomi, Tadao; Murakami, Masakazo; and Yoshii, Toshiya, to Toray Industries, Inc. Polyimide solution and method of preparing same. 3,673,145, Cl. 260-32.40n.
Minami, Shinsaku; Shono, Toshihiro; Shmmizu, Masanao; and Takase, Yoshiyuki, to Dainippon Pharmaceutical Co., Ltd. Certain 2-substituted-5,8-dihydro-5-oxopyrido [2,3-d] pyrimidine-6-carboxylic acid derivatives. 3,673,184, Cl. 260-247.20r.
Minart, Paul, to Societe Grenobloise d'Etudes et d'Applications Hydrauliques (Sogreah). Method and apparatus for treating solutions by solid-ion exchangers. 3,673,085, Cl. 210-33.000.
Miner, William W. Apparatus for harvesting sod. 3,672,452, Cl. 172-19.000.
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Mirjanic, Milorad, to Daimler-Benz Aktiengesellschaft. Cylinder block for liquid-cooled internal combustion engines with inserted cylinder liner. 3,672,263, Cl. 92-144.000.
Misare, Donald O., to Joslyn Mfg. and Supply Co. Corona free coupling assembly for coaxial cables. 3,673,311, Cl. 174-73.00r.
Mitchell, Harry Ian; and Tomlinson, Kenneth, to Colgate-Palmolive Company. Method and compositions for cleaning ovens and the like. 3,672,993, Cl. 134-3.000.
Mitchell, Robert K., to Battelle Development Corporation, The. Fluid pressure control. 3,672,796, Cl. 418-26.000.
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Miura, Yasushi; Kashiwagi, Nobuo; and Mochizuki, Zenichi, to Toshiba Kikai Kabushiki Kaisha. Apparatus for die casting ferrous metals. 3,672,440, Cl. 164-312.000.
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Miyano, Katao; and Shimazaki, Masahide, to Japan Steel Works Ltd. Method for manufacturing a high toughness steel without subjecting it to heat treatment. 3,673,007, Cl. 148-12.000.
Miyasaka, Mamoru, to Kabushiki Kaisha Suwa Seikosha. Break prevention device for calendar advancing of a calendar watch. 3,672,156, Cl. 58-58.000.
Miyazaki, Shuzo, to Japan Furnace Industry Co. Ltd. Method and apparatus of continuous steam-atomizing fuel combustion for boiler furnace. 3,672,808, Cl. 431-2.000.
Mobil Oil Corporation: *See—*
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Mochida, Hisashi, to Daito Mfg. Co., Ltd. Fuse melt type damper device for intercepting flow through a duct. 3,672,386, Cl. 137-77.000.
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Molchan, Andrew John, to Bell Telephone Laboratories, Incorporated. Tactile response switch with unitary contact strip of independently operable plural disc contacts. 3,673,357, Cl. 200-5.00a.
Molex Products Company: *See—*
McDonough, Cletus G., 3,673,551.
Moller, Paul S., to Discojet Corporation. Exhaust muffler and spark arrestor. 3,672,773, Cl. 181-58.000.
Monpetit, Louis A., to Societe des Procedes Modernes d'Injection Sopromi. Electronic injection-controlling system for internal combustion engines. 3,672,345, Cl. 123-32.0ea.
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Moore, George E., to General Electric Company. Burner-cooler system for generating exothermic gas. 3,672,839, Cl. 23-281.000.
Moore, Harold R.; and Fischer, Heinz G. Methods of manufacturing electrical insulating structures. 3,673,297, Cl. 264-138.000.
Moore, R. D., to R-J-R, Corporation. Blood product for fish bait. 3,672,910, Cl. 99-3.000.
Moore, Vern E. Frangible in-flight arrow head cover. 3,672,677, Cl. 273-106.50r.
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Moran, James G. Inflatable and illuminable figure. 3,672,083, Cl. 40-126.00b.
Moran, John J., to Hycel, Inc. Clutch. 3,672,477, Cl. 192-27.000.
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Morgan, Wendell D., to Fedders Corporation. Dishwasher spray arm with integral beating. 3,672,573, Cl. 239-261.000.
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Morlock, Elizabeth Benz; Albright, Jay Donald; and Goldman, Leon, to American Cyanamid Company. Derivatives of 1,4,4a,9b-dimethyl-2-phenyl-1-1,4-ethanobenzofuro [3,2-c] pyridine-3(2h), 10-dione. 3,673,194, Cl. 260-293.550.
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Moulopoulos, Spyridon, to University of Utah, The. Catheter mounted artificial heart valve for implanting in close proximity to a defective natural heart valve. 3,671,979, Cl. 3-1.000.
Mount, Gordon L., to Carrier Corporation. Capacity control mechanism for centrifugal gas compressors. 3,672,786, Cl. 415-147.000.
Mross, Siegfried; Grossheim, Hans; and Aubert, Michel, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Method and apparatus for compiling measured values of a variable parameter. 3,673,552, Cl. 340-3.00r.
Mueller, William N. Time saver drawup collar. 3,672,709, Cl. 285-419.000.
Muhlbach, Anton; and Lauckhardt, Gerhard, to USM Corporation. Method for rounding welded edge seams. 3,673,300, Cl. 264-160.000.
Mulaskey, Bernard F.; and Chilton, Elmore F., to Chevron Research Company. Catalyst manufacture. 3,673,079, Cl. 208-111.000.
Mulitz, Thomas C., to Pico Safe Stairs Co. Stair structure. 3,672,106, Cl. 52-188.000.
Muller, Karl, to Braun Aktiengesellschaft. Circuit arrangement for improving the signal-to-noise ratio of a stereo decoder. 3,673,342, Cl. 179-15.0bt.
Muller, Pierre, to Laboratories de L'Ozothine. Process for the accelerated obtaining of terpenic oxides using ultraviolet light. 3,673,066, Cl. 204-162.00r.
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Murhpy, James A.; and Brown, Stirling Robert, to International Paper Company, mesne. Adhesively laminated cellulosic product. 3,672,950, Cl. 161-129.000.
Murphy, Declan S.; and Charest, Rolland C. H., to Atara Corporation. Quick release mechanism for sewage lagoon aeration guns. 3,672,647, Cl. 261-121.00r.
Murphy, James A.; and Brown, Stirling Robert, to International Paper Company, mesne. Adhesively laminated creped dinner napkin. 3,673,060, Cl. 161-126.000.
Murphy, Willard; and Beam, Norman A., to McGraw-Edison Company. Travel iron with folding handle. 3,672,080, Cl. 38-90.000.
Muryoi, Takeshi, to Nippon Kogaku K.K. Shiftable objective lens. 3,672,287, Cl. 95-64.00r.
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Nagin, Tony. Load, supporting chain and sprocket supporting structure therefor. 3,672,237, Cl. 74-89.210.
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Nakamura, Tadashi, to Ise Electronics Corporation. Cathode ray tubes having row and column electrodes attached to opposite sides of insulating substrate. 3,673,448, Cl. 313-86.000.
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Nash, Alan Richard Brine. Dashpot including temperature-sensitive valve means. 3,672,475, Cl. 188-277.000.

Nasvytis, Algirdas L. Flywheel automotive vehicle. 3,672,244, Cl. 74-859.000.

Nathanson, Harvey C.; and Wickstrom, Robert A., to Westinghouse Electric Corporation. Conductor elements spaced from microelectronic component surface and methods of making the same. 3,672,985, Cl. 117-212.000.

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Naumburg, Per; and Norrman, Jan Olof, to AB Centralsug. Silent valve. 3,672,630, Cl. 251-149.200.

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Nerwin, Hubert: *See—*
Ewald, William P.; Nerwin, Hubert; and Harvey, Donald M., 3,672,274.

Nerwin, Hubert, to Eastman Kodak Company. Photographic film unit. 3,672,273, Cl. 95-13.000.

Neth, Richard M.; Rogers, John M.; and Gallagher, James J., to Indian Head Inc. Apparatus for separating a web of lace into individual bands. 3,672,011, Cl. 28-1.0cs.

Neumann, Edward W.; and Borowski, Richard, to Loctite Corporation. Process for impregnating porous metal articles. 3,672,942, Cl. 117-62.200.

Neutra Cuatro S.A.: *See—*
Planas, Luis Valls, 3,673,423.

Neuzil, Francis E., Sr. Container implement for end loader vehicle. 3,672,724, Cl. 298-27.000.

New England Merchants National Bank, mesne: *See—*
Frant, Martin S.; and Ross, James W., 3,672,962.

New Nchanga Consolidated Copper Mines Limited: *See—*
Smith, George Armstrong; and MacLeod, Donald Simon, 3,673,062.

New York Toy Corporation: *See—*
Rubin, Herbert, 3,672,672.

Newell, George F.; and Kennedy, Paul G., to Westinghouse Electric Corporation. Comparative display of images in color. 3,673,317, Cl. 178-5.20r.

Newman, Ritchey O., Jr.; and Schrenk, Walter J., to Dow Chemical Company, The. Laminate of a barrier layer enclosed in rigid high density polyolefin layers. 3,673,050, Cl. 161-165.000.

Newman, Yetty. Aquatic amusement device. 3,671,988, Cl. 9-349.000.

Newport, Richard A. Capping apparatus. 3,672,540, Cl. 221-63.000.

Neyendorf, Elvin E., to Lee, Raymond, Organization, Inc., The. Hanger for hose nozzle. 3,672,617, Cl. 248-75.000.

Nichols, William A.; and Simpson, Ralph E. Tape winding means. 3,672,592, Cl. 242-55.210.

Nicholson, John B., to Continental Can Company, Inc. Support for ham cans during double seaming. 3,672,318, Cl. 113-30.000.

Nicko, Reinhard: *See—*
Hackenberg, Hubert; and Nicko, Reinhard, 3,672,279.

Nicolay, Klaus: *See—*
Wagner, Karl; and Nicolay, Klaus, 3,672,271.

Niederer, Otto C. Egg stabilizer. 3,672,501, Cl. 209-121.000.

Niedrach, Leonard W.; and Stoddard, William H., Jr., to General Electric Company. Carbon dioxide sensor. 3,673,069, Cl. 204-195.00g.

Nief, Guy; and Morand, Jean-Pierre. Isotope separation apparatus. 3,673,406, Cl. 250-43.000.

Niehaus, Conrad F. Continuous metallurgical process. 3,672,869, Cl. 75-45.000.

Nielsen, Thomas C.: *See—*
Brumbaugh, Philip A.; Harrington, Richard H.; Nemier, Stanley E.; and Nielsen, Thomas C., 3,672,482.

Nielsen, Waldemar R.; and Mathias, Charles D., to Industrial Tools, Inc. Helical blade milling cutter. 3,672,017, Cl. 29-105.000.

Niepmann, Otto, to Maschinenfabrik Fr. Niepmann & Co. Feeding device for cigarettes for cigarette packing machines. 3,672,541, Cl. 221-68.000.

Niezoldi & Kramer GmbH: *See—*
Scheibel, Josef; and Schadt, Karl-Heinz, 3,672,268.

Nihei, Seiji: *See—*
Hasegawa, Tokushige; Makimoto, Kuninobu; Nihei, Seiji; and Takahira, Jiro, 3,672,868.

Nihon Kagaku Kizai Kabushiki Kaisha: *See—*
Funada, Kiyotaka; Shinohara, Takashi; and Imai, Hiroko, 3,672,940.

Niioka, Takeharu; and Hosokawa, Ryoji, to Tokyo Shibaura Electric Co., Ltd. Tape feed indicator device for a tape recorder. 3,673,351, Cl. 179-100.20r.

Nikoghossian, Albert-Jean. Dental implant. 3,672,058, Cl. 32-10.00a.

Nippon Electric Company Limited: *See—*
Hasegawa, Kohichi; and Kunishima, Norihiko, 3,673,580.
Ito, Yutaka; and Hirate, Jun, 3,673,324.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Amano, Hiroshi, 3,673,303.
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Nippon Hatsujo Company, Limited: *See—*
Saitoh, Kohichi; Ohkubo, Nobuo; Sobajima, Katsunobu; and Hirano, Takeshi, 3,672,656.

Nippon Hoso Kyokai: *See—*
Toyonaga, Ryuya; and Sato, Kazuo, 3,672,989.

Nippon Kogaku K.K.: *See—*
Muryoi, Takeshi, 3,672,287.
Yamada, Takeo, 3,672,282.

Nippondenso Kabushiki Kaisha: *See—*
Ito, Osamu, 3,673,400.

Nischk, Gunther: *See—*
Rinkler, Heinrich; Braden, Rudolf; and Nischk, Gunther, 3,673,242.

Nishida, Hideko; Yamaguchi, Kunihiko; Kumasaka, Noriyuki; Sugita, Yutaka; and Fujiwara, Hideo, to Hitachi, Ltd. Plated magnetic wire. 3,673,581, Cl. 340-174.0pw.

Nissan Motor Company, Limited: *See—*
Saitoh, Kohichi; Ohkubo, Nobuo; Sobajima, Katsunobu; and Hirano, Takeshi, 3,672,656.

Nisso Kinzoku Kabushiki Kaisha: *See—*
Hasegawa, Tokushige; Makimoto, Kuninobu; Nihei, Seiji; and Takahira, Jiro, 3,672,868.

Nixon, Glen E.: *See—*
Mc Coy, Michael R.; and Nixon, Glen E., 3,673,427.

Nixon, Joseph R., Jr., to Hercules Incorporated. Fractionation of inorganic acid-free cleavage reaction mixture. 3,672,961, Cl. 203-37.000.

Nobel, Fred I.; and Ostrow, Barnet D., to Lea-Ronal, Inc. Electrodeposition of gold and gold alloys. 3,672,969, Cl. 204-43.000.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photocell controlled diaphragm. 3,672,753, Cl. 352-91.000.

Nodine, John H.: *See—*
Waite, John H.; and Nodine, John H., 3,673,410.

Noguchi, Junpei: *See—*
Ohkubo, Kinji; Noguchi, Junpei; and Ohmura, Kunioki, 3,672,901.

Noll, Stanley Darwin; and Delfeld, William F., to Production Experts, Inc. Downcoiler mandrel of the toggle link type for hot strip mills, and methods for repairing or rebuilding same. 3,672,030, Cl. 29-401.000.

Nomura, Yasuo: *See—*
Tanaka, Takashi; and Nomura, Yasuo, 3,672,044.

Nord-Aviation Societe Nationale de Constructions Aeronautiques: *See—*
Stauff, Emile; and Fleury, Roger, 3,672,607.

Nordiska Maskinfilt Aktiebolaget: *See—*
Eriksson, Erik Birger, 3,673,024.

Nordson Corporation: *See—*
Scarbrough, Don R.; and Vilagi, Burton J., 3,672,570.

Nordstrand, Leif Roland, to Kamas Kvarnmaskiner AB. Machine for separating a sheet from a sheet pile. 3,672,516, Cl. 214-8.50a.

Nordstrom, Per Christer. Building block. 3,672,110, Cl. 52-608.000.

Norimatsu, Toshiaki: *See—*
Katsuyama, Shigeo; Asami, Atsumi; Watanabe, Masahide; Sato, Tsutomu; Norimatsu, Toshiaki; and Nakajima, Eizo, 3,672,819.

Norrman, Jan Olof: *See—*
Naumburg, Per; and Norrman, Jan Olof, 3,672,630.

North American Door Corporation: *See—*
Sheer, Samuel Irving, 3,672,492.

North American Philips Corporation: *See—*
Gaffney, Francis J.; Degen, Joseph F.; and Clark, Gerald F., 3,673,382.

North American Rockwell Corporation: *See—*
Cramp, Allen R.; and Brion, Kenneth J., 3,672,207.
Flamand, Maurice R., 3,672,405.
Hartmann, Frederick, 3,673,394.
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Northern Electric Company: *See—*
Crowley, George C., 3,673,380.

Crowley, George C.; and Carlson, Gordon S., 3,673,381.

Northern Electric Company Limited: *See—*
Bastikar, Arvid Ramkrishnarao, 3,673,522.
Lougheed, James H., 3,673,391.
Zimmermann, Detlef; Campbell, David; and De Bortoli, George, 3,673,314.

Northern Fibre Products Company: *See—*
Ambrose, Jere B., 3,671,984.

Norton Abrasives Limited: *See—*
Teague, Ernest Douglas, 3,673,293.

Nose, Takashi: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Notelteirs, Victor Rosallie, to U.S. Philips Corporation. Electric incandescent lamp with an improved pinch seal. 3,673,454, Cl. 313-332.000.

Notz, Karl: *See—*
Becker, Ernst; and Notz, Karl, 3,672,316.

Novo Terapeutisk Laboratorium A/S: *See—*
Borrevang, Poul; and Faarup, Peter, 3,673,224.

Nozaki, Tadashi: *See—*
Sakamoto, Junzo; Nozaki, Tadashi; Tsuji, Yoshifumi; and Shimada, Masaharu, 3,672,561.

Nuclear Associates, Inc.: *See—*
Glasser, Herman, 3,673,411.

Nuerrenbach, Axel: *See—*
Vollrath, Robert; Nuerrenbach, Axel; and Adolphi, Heinrich, 3,673,215.

Nusbickel, Edward M., Jr.: *See—*
Cressman, Russell N.; Bantz, Walter J.; and Nusbickel, Edward M., Jr., 3,672,210.

Nye, John David, to Ferrox Iron Ltd. System for feeding grinding media to continuous attrition mill. 3,672,580, Cl. 241-79.000.

Obata, Shuichi: *See—*
Oda, Fujio; and Obata, Shuichi, 3,673,354.

Oberai, Avtar S.: *See—*
De Witt, David; Dhaka, Vir A.; and Oberai, Avtar S., 3,672,983.

Oberhoff, Wolfgang: *See—*
Geschka, Hugo Werner; Oberhoff, Wolfgang; and Korb, Klaus, 3,672,188.

O'Brien, Thomas Edward, to Owens-Illinois, Inc. Low voltage pulser circuit for driving row-column conductor arrays of a gas discharge display capable of being made in integrated circuit form. 3,673,431, Cl. 307-241.000.

Oda, Fujio; and Obata, Shuichi, to Matsushita Electric Industrial Co., Ltd. Semiconductor stress transducer. 3,673,354, Cl. 179-100.41v.

Ogasawara, Sadanori, to Aikoku Kogyo Kabushiki Kaisha. Machine tool. 3,672,200, Cl. 72-285.000.

Ogawa, Hiroshi; Yamane, Sigeto; Nakagawa, Hisasi; and Uchida, Akinari, to Hitachi, Ltd. Electro-massager. 3,672,355, Cl. 128-36.000.

Ogawa, Masao: *See—*
Takahashi, Akira; Kojima, Hiroo; Ogawa, Masao; Osuka, Hiroshi; and Kobayashi, Shoichi, 3,673,279.

Ogawa, Shigeyoshi: *See—*
Naito, Daiji; and Ogawa, Shigeyoshi, 3,673,113.

Ohio State University, The: *See—*
Likins, Keith L., 3,672,454.

Ohkubo, Kinji; Noguchi, Junpei; and Ohmura, Kunioki, to Fuji Photo Film Co., Ltd. Process of precipitating silver halide in the presence of a colloid and a water-soluble iron salt. 3,672,901, Cl. 96-94.000.

Ohkubo, Nobuo: *See—*
Saitoh, Kohichi; Ohkubo, Nobuo; Sobajima, Katsunobu; and Hirano, Takeshi, 3,672,656.

Ohmura, Kunioki: *See—*
Ohkubo, Kinji; Noguchi, Junpei; and Ohmura, Kunioki, 3,672,901.

Ohnishi, Shinji: *See—*
Sato, Kogo; Kato, Hiroshi; and Ohnishi, Shinji, 3,672,984.

Ohntrup, Frederick F.; and Pecsi, Louis E., to Eaton Yale & Towne, Inc. Photoelectric control for load handling device. 3,672,470, Cl. 187-1.000.

Oi, Kyoko: *See—*
Awazu, Kenzo; Matsunaga, Kazu; Muto, Katsutoshi; Kai, Junjiro; and Oi, Kyoko, 3,673,103.

Ojala, William K., to Ford Motor Company. System for controlling air and fuel temperature. 3,672,342, Cl. 123-122.00b.

Oji Paper Co., Ltd.: *See—*
Sakamoto, Junzo; Nozaki, Tadashi; Tsuji, Yoshifumi; and Shimada, Masaharu, 3,672,561.

Okada, Yosuke: *See—*
Fukuyama, Yasuo; and Okada, Yosuke, 3,673,025.

O'Keeffe, Terence W.; and Morris, Jerome R., to Westinghouse Electric Corporation. Masked photocathode and method of making same. 3,672,987, Cl. 117-212.000.

Okuhara, Seiichi. Direction indicator for automobile. 3,673,565, Cl. 340-82.000.

Okumura, Kentaro: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Olin Corporation: *See—*
Sawhill, Duane L., 3,672,827.

Olivares, Ismael A.: *See—*
Gabrielsen, Rolf S.; and Olivares, Ismael A., 3,672,896.

Olivetti, Ing. C., & C., S.p.A.: *See—*
Dalmasso, Claudio, 3,673,309.

O'Loughlin, Bernard T.: *See—*
Paramore, Edwin L.; O'Loughlin, Bernard T.; and Brown, Thomas L., 3,672,173.

O'Loughlin, James J.: *See—*
Vermillion, Herbert E.; and O'Loughlin, James J., 3,672,852.

Olsen, Perry Charles; and Tang, Pak Chong, to RCA Corporation. Video blanking and sound muting circuit. 3,673,318, Cl. 178-5.80r.

Olson, Gaylor G., to TRW Inc. Radiant energy beam scanning method and apparatus. 3,673,412, Cl. 250-201.000.

Olteanu, Bujor: *See—*
Georgescu, Eugenia; Gheja, Ion; Bugur, Victor; Zirna, Ion; Mazare, Theodora; Popescu, Elena-Lygia; Olteanu, Bujor; Marculescu, Nicolae; Filotti, Traian-Mircea; Barbul, Marius-Aurel; and Calin, Ion, 3,673,109.

Omark Air Controls, Inc., mesne: *See—*
Booth, Dwight Allan, 3,672,059.

Omark Industries, Inc.: *See—*
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Omnionics, Inc.: *See—*
Gioia, Gaspare L.; Switzer, Norris H.; and Willerton, John K., 3,672,608.

O.M.P. Officine Meccanoplastiche Di Precisione S.R.L.: *See—*
Gazzani, Renato, 3,672,234.

O'Neill, Thomas J.: *See—*
Van Der Sluys, William; O'Neill, Thomas J.; and Szala, Norman M., 3,672,309.

Ono, Mitsuzo: *See—*
Takahashi, Kenji; Yamamura, Toshio; Ono, Mitsuzo; and Eda, Korekiyo, 3,673,125.

Ono, Yoshiaki: *See—*
Sato, Akira; Ueda, Hirozo; and Ono, Yoshiaki, 3,672,897.

Optisonics Corporation, mesne: *See—*
Gordon, Hershel; and McAdoo, Charles R., Jr., 3,673,346.

Orban, Jean: *See—*
Vital, Zoltan; and Orban, Jean, 3,673,485.

Orban, Nicholas: *See—*
Rocher, George; and Orban, Nicholas, 3,672,918.

Organisation Ralfs KG: *See—*
Schneider, Erich, 3,672,487.

Organon Inc.: *See—*
De Jongh, Hendrik Paul, 3,673,225.

Oriani, Agostino, to Industrie Perelli S.p.A., mesne. Distributing clamping stress device for cable laying. 3,672,613, Cl. 248-62.000.

Orlando, Charles M.; Wirth, Joseph G.; and Heath, Darrell R., to General Electric Company. 2,5-Bis(2-benzazolyl)hydroquinones and their derivatives. 3,673,202, Cl. 260-304.000.

Oronzio de Nora Impianti Elettrochimici S.p.A.: *See—*
De Nora, Vittorio; and Loftfield, Richard E., 3,672,973.

O'Rourke, John C.: *See—*
Arutunoff, Armais; and O'Rourke, John C., 3,672,795.

Ort, George M., to Dick, A. B., Company. Ferrocyanide-chelate conversion solution for electrophotographic offset masters. 3,672,885, Cl. 96-1.000.

Orthotron: *See—*
Girard, Jean Rene Marie, 3,673,462.

Osinga, Theo Jan: *See—*
Linsen, Bastiaan Gerardus; and Osinga, Theo Jan, 3,673,115.

Osoegawa, Hideru; and Kobayashi, Katuei, to Hitachi, Ltd. Semiconductor pellet fitted on a metal body. 3,673,478, Cl. 317-234.00r.

Ospelt, Gustav; and Kunkel, Wolfgang, to Gustav Ospelt Hovalwerk AG. Heating vessel. 3,672,337, Cl. 122-156.000.

Oster, Richard J.: *See—*
Gona, Donald J.; and Oster, Richard J., 3,672,293.

Ostermayer, Franz: *See—*
Denss, Rolf; Clauson-Kaas, Niels; and Ostermayer, Franz, 3,673,212.

Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
Schramm, Geza; and Riedl, Horst, 3,673,175.

Ostrow, Barnet D.: *See—*
Nobel, Fred I.; and Ostrow, Barnet D., 3,672,969.

Osuka, Hiroshi: *See—*
Takahashi, Akira; Kojima, Hiroo; Ogawa, Masao; Osuka, Hiroshi; and Kobayashi, Shoichi, 3,673,279.

Otake, Michio: *See—*
Konishi, Kozo; Otake, Michio; Maeda, Tatuo; and Maruyama, Kuniaki, 3,672,941.

Otis Elevator Company: *See—*
Yasuda, Kentaro, 3,672,214.

Ottaviano, John James. Alternatively occupant propelled or motor driven roundabout. 3,672,669, Cl. 272-33.00b.

Otto Bilz, Werkzeugfabrik: *See—*
Fauth, Otto, 3,672,692.

Otto, C., Dr., & Comp. G.m.b.H.: *See—*
Pries, Erich E. W., 3,672,519.

Overton, Harold L. Method and apparatus for forming a shale cake and measuring the resistivity and density thereof. 3,672,228, Cl. 73-432.00r.

Owens, Lowell D., to United States of America, Agriculture. Rhizobitoxine as a post-emergent herbicide. 3,672,862, Cl. 71-79.000.

Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E.; and Pisani, James M., 3,672,148.
Marzocchi, Alfred, 3,673,150.
Pearson, Lee E., 3,673,028.
Stalego, Charles J., 3,672,857.

Owens-Illinois, Inc.: *See—*
Dietz, Raymond Louis, 3,673,092.
Johnson, William E.; and Schmersal, Larry J., 3,673,460.
Keller, Robert H., 3,672,860.
O'Brien, Thomas Edward, 3,673,431.

Pacak, Matthew, to Eaton Corporation. Automatic loading device for pulley splitting machine. 3,672,195, Cl. 72-71.000.

Pachmayr, Frank A., to Mershon Company. Reinforced pistol grip. 3,672,084, Cl. 42-71.00p.

Pahl, John G. Booster transformer switch. 3,673,360, Cl. 200-48.00r.

Pahlitzsch, Bruno. Method of and apparatus for manufacturing articles from blanks of sheet material. 3,672,667, Cl. 271-74.000.

Palazzolo, Mario, to DiMar Metal Fabricators, Inc. Device for preventing unauthorized removal of portable equipment. 3,672,190, Cl. 70-58.000.

Pallucl, Auguste Louis Luciene, to Imperial Chemical Industries, Limited. Coating compositions. 3,673,137, Cl. 260-19.000.

Pamlenyi, George, to Carlson, Chesley F., Company. Photo process timer. 3,672,767, Cl. 355-37.000.

Panther Machine Corporation: *See—*
Grimm, Harold; and Zuckerman, Ira, 3,672,662.

Papa, Anthony Joseph; and Proops, William Robert, to Union Carbide Corporation. Non-punking phenolic foam. 3,673,130, Cl. 260-2.50f.

Papaioannou, Christos George, to American Cyanamid Company. Mixed anhydrides of N-aroyl-1-lower alkyl-5-nitro-2-imidazolecarboximidic acid and benzoic acids. 3,673,208, Cl. 260-309.000.

Paper Converting Machine Company, Inc.: *See—*
Small, Rudolph E.; Bradley, John J.; Sanders, Charles J.; and Slawny, Howard J., 3,673,052.

Paracchini, Mario: *See—*
Callieri, Michele; Faraci, Giorgio; and Paracchini, Mario, 3,672,147.

Paramore, Edwin L.; O'Loughlin, Bernard T.; and Brown, Thomas L., to Halliburton Company. Forming self-supporting barriers in mine passages and the like. 3,672,173, Cl. 61-36.000.

Parish, Hal G.: *See—*
Moore, Eugene R.; Bussey, Marlin G.; and Parish, Hal G., 3,672,951.

Parke, Harry G., to Galbraith-Pilot Marine Corporation. Loss of synchronism detector. 3,673,422, Cl. 307-87.000.

Parker, Earl E.; and Friedlander, Charles B., to PPG Industries, Inc. Foams formed by hardening emulsions of glycol in polyester resin. 3,673,132, Cl. 260-2.50n.

Parker, Harold F., to General Electric Company. Harmonic suppression circuit. 3,673,503, Cl. 328-167.000.

Parker, Vernon D.: *See—*
Seiber, James N.; and Parker, Vernon D., 3,673,190.

Parkhurst, George R., to University of California, The Regents of the. Automatic rock thinsectioning machine. 3,672,099, Cl. 51-3.000.

Parlagreco, Thomas J., to Lee, Raymond Organization, Inc., The. Hair-setting assist. 3,672,376, Cl. 132-9.000.

Parsen, Edward M. Cable gripping towing device. 3,672,636, Cl. 254-134.30r.

Paterson, Ross: *See—*
Ward, John; and Paterson, Ross, 3,673,420.

Patschan, Wolfgang: *See—*
Kersten, Karl-Heinz; and Patschan, Wolfgang, 3,673,515.

Patterson, Eldridge P.: *See—*
Berry, Robert E.; Bissett, Owen W.; Wagner, Charles J., Jr.; and Patterson, Eldridge P., 3,672,909.

Patterson, N. Donald: *See—*
Scarnato, Thomas J.; and Patterson, N. Donald, 3,672,132.

Patterson-Kelley Co., Inc., The: *See—*
Lowe, Leonard F., 3,672,444.

Paul Ferd. Peddinghaus: *See—*
Jagob, Karl, 3,672,660.

Pauliukonis, Richard S. Metering valve. 3,672,396, Cl. 137-512.000.

Paull, Henry, Jr. Filter apparatus and method. 3,672,507, Cl. 210-77.000.

Peacock, Peter J.: *See—*
Scarnato, Thomas J.; Tufts, Guy O.; Peacock, Peter J.; and Cicci, George B., 3,672,138.

Peacock, Peter J.; and Scarnato, Thomas J., to International Harvester Company. Roll opening device. 3,672,135, Cl. 56-14.200.

Peacock, Peter J.; and Gordon, Paul C., to International Harvester Company. Mower conditioner. 3,672,136, Cl. 56-14.4.

Pearce, James Gordon, to Stromberg-Carlson Corporation. Reverting call arrangement. 3,673,337, Cl. 179-17.00d.

Pearce, Ronald A., to Coors Container Company, mesne. Testing device for testing edges of cylinders for defects. 3,672,208, Cl. 73-49.200.

Pearl, David R.: *See—*
Gerber, Heinz Joseph; and Pearl, David R., 3,672,661.

Pearson, Lee E., to Owens-Corning Fiberglas Corporation. Glass fiber container and method of construction. 3,673,028, Cl. 156-172.000.

Pearson, Samuel Reader, to Texas Instruments, Incorporated. Resettable timing circuit. 3,673,439, Cl. 307-293.000.

Pecsi, Louis E.: *See—*
Ohntrup, Frederick F.; and Pecsi, Louis E., 3,672,470.

Pedigo, Joel B.: *See—*
Frampton, Orville D.; Pedigo, Joel B.; and Lecher, Hans Z., 3,673,251.

Peerless Chain Company: *See—*
Bambenek, Joseph B., 3,672,621.

Penick & Fred Limited: *See—*
Brouilliard, Robert E.; Coughlin, Leonard J.; and Winfrey, Vernon L., 3,672,922.

Penman, Melvin C. Fish cleaning and filleting device. 3,672,002, Cl. 17-69.

Pepmeier, Carl R.; Sincavage, Joseph T.; and Stoffregen, Louis E., to FMC Corporation. Apparatus for splicing sheet materials. 3,673,046, Cl. 156-517.000.

Perales, Fernand: *See—*
Gachot,Jean; and Perales, Fernand, 3,672,260.

Perkin-Elmer Corporation, The: *See—*
Major, Harold W., Jr., 3,673,404.

Perna, Aldo: *See—*
Casella, Luigi; Perna, Aldo; and Valbonesi, Giuseppe, 3,673,340.

Perrino, Thomas W.: *See—*
Macedo, Frank A.; and Perrino, Thomas W., 3,672,584.

Perry, Robert H.; and Matty, Thomas C., to Westinghouse Electric Corporation. Psuedo-and gate having failsafe qualities. 3,673,429, Cl. 307-218.000.

Pesante, Manlio, to RIV-SKF Officine di Villar Perosa S.p.A. Speed control device. 3,672,100, Cl. 51-165.770.

Peters, Allen A. Apparatus and method for launching and recovering a small boat. 3,671,986, Cl. 9-39.000.

Peters, Ignatius G., to United States of America, Air Force. Mixed field radiation dosimeter materials of amine salts of organic acids. 3,673,107, Cl. 252-408.000.

Petersen, Harro, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 1,3,4-diazaphospholanes. 3,673,248, Cl. 260-543.0pn.

Peterson, Charles L., to Uarco Incorporated. Burster with interrupted drive. 3,672,551, Cl. 225-100.000.

Peterson, David D., to General Electric Company. Particle track etching method. 3,673,017, Cl. 156-7.000.

Peterson, William R., Jr.: *See—*
Sollott, Gilbert P.; and Peterson, William R., Jr., 3,673,015.

Petit, Robert F.; and Wesnoskie, James F., to Teledyne, Inc., mesne. Work table having multiposition extension board. 3,672,312, Cl. 108-69.000.

Petrolite Corporation: *See—*
Mayse, Weldon D.; and Watson, Frederick D., 3,672,127.
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Phillips, James V. Magnetized recorder thread. 3,672,991, Cl. 117-235.000.

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Pickett, Wiley J.; and Smith, Bynum E., to Utility Industries, Inc. Electrical junction for high-current conductors and connector and method suitable for making same. 3,673,313, Cl. 174-90.000.

Pickles, Joseph, to Ferro Manufacturing Corporation. Automobile door lock. 3,672,713, Cl. 292-216.000.

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Pieper, Don B., to Whim, Inc. Independent ignition engine. 3,672,164, Cl. 60-39.380.

Pieper, Kenneth M.; and Gibson, Thomas W., to Procter & Gamble Company, The. 3-Endo-methyl-3-exo(4'-methylpentanalyl)-2-methylenebicyclo [2.2.1] heptane and process for preparing same. 3,673,256, Cl. 260-598.000.

Pierce, John H., to Bouligny, R. H., Inc. Traverse cam and follower for winders. 3,672,587, Cl. 242-43.000.

Pike, John W., to Struthers Scientific and International Corporation. Method of autoclaving building blocks. 3,672,009, Cl. 25-133.000.

Pilorusso, Felix. Teaching apparatus. 3,672,073, Cl. 35-34.000.

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Piringer, Fritz. Method and devices for the determination of colors and color tolerances in a visual manner in any kind of artificial light or sunlight. 3,672,780, Cl. 356-195.000.

Pirotta, Angelo, to Racing Tack di Angelo Pirotta & C.S.a.a. Harness for attaching a horse to a vehicle. 3,672,124, Cl. 54-38.000.

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Platzer, Emile W. Liquid cargo barge. 3,672,319, Cl. 114-74.00r.

Plichta, Michael J., to McGraw-Edison Company. Directional current relay. 3,673,425, Cl. 307-127.000.

Plumat, Emile; and Lelong, Jose, to Glaverbel S.A. Method and apparatus for surface coating articles. 3,673,006, Cl. 117-106.00r.

Plumb, Robert D. Archery bow string draw and release device. 3,672,346, Cl. 124-35.

Podebradsky, Everett V., to Mayer, Oscar, & Company, Inc. Method for the continuous manufacture of linked sausage products. 3,672,913, Cl. 99-109.000.

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Popov, Boris Vasilievich; Slonim, Alexandr Zosimovich; Sonin, Anatoly Leonidovich; Zhukov, Gennady Konstantinovich; and Zhokhova, Olga Samuilovna. Straightening machine for pipe-like articles. 3,672,197, Cl. 72-79.000.

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Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, to Koppers, Heinrich, Gesellschaft mit beschrankter Haftung. Process for separating saturated hydrocarbons and olefins. 3,673,081, Cl. 208-313.000.

Preway Inc.: *See—*
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Prewett, Hubert P., Jr.; and Thompson, Charles H., to United States of America, Atomic Energy Commission. Automatic spindle growth compensation system. 3,672,246, Cl. 82-2.00b.

Price, Franklin Carr. Tuyere assembly. 3,672,648, Cl. 263-21.00a.

Price, John A.; and Stewart, Mary J., to FMC Corporation. Zinc and manganese gentisate as polyester catalysts and molecular weight enhancer. 3,673,157, Cl. 260-75.00r.

Pries, Erich E. W., to Otto, C., Dr., & Comp. G.m.b.H. Charging car for coke ovens. 3,672,519, Cl. 214-35.00r.

Prijn, Cornelis; and Benedetti, Franco, to U.S. Philips Corporation. Electric lamp comprising a lamp base of a synthetic material. 3,673,453, Cl. 313-318.000.

Primak, William L., to United States of America, Atomic Energy Commission. Automatic photoelastimeter. 3,672,772, Cl. 356-33.000.

Pritchard, John P., Jr.; and Schroen, Walter H., to Texas Instruments, Incorporated. Process for preparation of tunneling barriers. 3,673,071, Cl. 204-192.000.

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Prola, Victor J. Game device. 3,672,071, Cl. 35-9.00b.

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Prosser, David G., to Autotrol Corporation. Mechanical reciprocator. 3,672,236, Cl. 74-32.000.

Proulx, Romeo T., to Wright, Barry, Corporation. Support for rotary filing system. 3,672,740, Cl. 312-202.000.

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Rabenhorst, David W., to Johns Hopkins University, The. Filament rotor structures. 3,672,241, Cl. 74-572.000.

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Ramiccio, Gerald S. Air-operated cutting device. 3,672,051, Cl. 30-123.00r.
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Rankins, Everett V. Single wheel, self-propelling attachment. 3,672,459, Cl. 180-13.000.
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Rapisarda, Carmelo, to Du Pont de Nemours, E. I., and Company. Galvanic detection of oxygen in a spinning cell steam chamber. 3,672,800, Cl. 425-71.000.
Rasmussen, Ole-Bendt. Method for the production of synthetic sheet materials. 3,673,291, Cl. 264-46.000.
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Rathbone, Ivanhoe J., to Remo Precision Tools Limited. Annular shield for bearings. 3,672,736, Cl. 308-187.200.
Rauch, Francis Clyde; and Nachtigall, Guenter Willi, to American Cyanamid Company. Catalytic hydration of nitriles to produce amides. 3,673,250, Cl. 260-561.00n.
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Reader, Arthur M.; and Stackman, Robert W., to Celanese Corporation. Sulfobetaine glycol modified poly(ethylene terephthalate). 3,673,158, Cl. 260-75.
Reavis, Clifford L., Jr., to Interlectron Corporation, mesne. Method of making a laminated article comprising blood or skin tissue samples. 3,673,037, Cl. 156-280.000.
Red, David D. Structural column and construction. 3,672,711, Cl. 287-189.36r.
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Reed, Donald L. Remote controlled football game with pass play apparatus. 3,672,674, Cl. 273-94.00r.
Reed, Gaylard O. Drive assembly for dual chuck veneer lathes. 3,672,416, Cl. 144-209.000.
Reed, Stanley E., Jr.; and Ruby, Donald C., to FMC Corporation. Injection pump. 3,672,794, Cl. 417-382.000.
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Reede, Thomas Pieter, to U.S. Philips Corporation. Use of a plurality of scanning directions for character center line determination. 3,673,566, Cl. 340-146.3ae.
Reefman, William E., to Bunker-Ramo Corporation, The. Electromechanical oscillator. 3,672,152, Cl. 58-23.00v.
Regan, John F., to Eaton Corporation. Security card. 3,672,191, Cl. 70-393.000.
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Reichelt, Walter; Ruthardt, Konrad; and Speidel, Hermann; deceased (by Speidel, Rosemarie Elisabeth, nee Rupprecht; Speidel, Helmuth; and Speidel, Dieter; heirs), to Heraeus, W. C., GmbH. Low current electrical contact comprising a layer of iron-nickel alloy and a layer of ruthenium. 3,672,850, Cl. 29-196.000.
Reid, James S., to Standard Products Company, The. Apparatus and method for aerating waste material. 3,673,082, Cl. 210-12.000.
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Reif, Robert B., to North American Rockwell Corporation. Ink mist suppression for a rotory printing press. 3,672,298, Cl. 101-350.000.
Reifenberg, Gerald H.; and Considine, William J., to M & T Chemicals Inc. Method of preparing hexaorganodistannanes. 3,673,230, Cl. 260-429.700.
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Richins, Kenneth A., to Eaton Corporation, mesne. Vehicle with coordinated guiding and supporting mechanism. 3,672,307, Cl. 104-96.000.
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Riddle, Franklin D.; and Willis, John T., to Southern Machinery Company. Fishing pole supports. 3,672,513, Cl. 211-60.00r.
Riddle, Lavis Albert Henry; and Craig, Thomas, to British Hovercraft Corporation Limited. Flexible skirt assemblies for air cushion vehicles. 3,672,461, Cl. 180-127.000.
Riebs, Richard E., to McGraw-Edison Company. Apparatus and method for measuring electrical energy consumption. 3,673,495, Cl. 324-142.000.
Ried, John D., to Hamilton Company. Chromatograph inlet with rotating septum. 3,672,226, Cl. 73-422.0gc.
Riedel, Wolfgang, to Silma S.p.A. Film threading mechanism for use in motion picture projectors or the like. 3,672,754, Cl. 352-158.000.
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Riff, James A., to Motorola, Inc. Alternator and regulator control system. 3,673,489, Cl. 322-28.000.
Riff, James A., to Motorola, Inc. Voltage regulator indicating circuit for undervoltage, normal voltage and overvoltage conditions. 3,673,588, Cl. 340-248.00a.
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Rinkler, Heinrich; Braden, Rudolf; and Nischk, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Sulfonic acid betaines. 3,673,242, Cl. 260-507.00r.
Rinse, Jacobus. Metal oxide acylates and their preparation. 3,673,229, Cl. 260-429.00r.
Riordan, Vincent P., to Microfibers, Inc. Flocked open looped pile fabric and method of making same. 3,672,929, Cl. 117-25.000.
Ritter, George F., Jr.; and Hymore, Frank J., to Libbey-Owens-Ford Company. Apparatus for tempering flat sheets or plates of glass. 3,672,861, Cl. 65-350.000.
Ritzerfeld, Gerhard. Punched tape controlled card puncher. 3,672,565, Cl. 234-36.000.
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Roach, Peter Francis; and Davidson, Daniel Fraser, to United Kingdom Atomic Energy Authority. Liquid metal monitors. 3,672,209, Cl. 73-61.01m.
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Robinder, Ronald C.; Rowe, William A.; and Schwartz, James W., to Zenith Radio Corporation. Process of manufacturing screens for shadow-mask tubes. 3,672,893, Cl. 96-36.100.
Robins, Ray Mervyn, to AMP Incorporated. Method of applying sleeves to electrical connectors. 3,673,299, Cl. 264-159.000.
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Rockwell, Adelbert W., Jr., to USM Corporation. Automatic actuating mechanism. 3,672,315, Cl. 112-219.000.
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Rosenblum, Earl S., to United States of America, Army, mesne. Contrast photometer. 3,672,781, Cl. 356-201.000.
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Rosin, Jacob; and Ang, Frank S., to Chris-Craft Industries, Inc. Production of aromatic sulfones. 3,673,259, Cl. 260-607.
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Rubin, Herbert, to New York Toy Corporation. Ball rebound device. 3,672,672, Cl. 273-26.00a.
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Rygelis, Joseph; Sweet, Ervin J.; and Doyle, Brian W., to Avco Corporation. Combustion chamber assembly for a gas turbine engine. 3,672,162, Cl. 60-39.320.
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Sabatelli, Philip M.; and Brungs, Charles A., to Chemed Corporation. Detergent composition and process. 3,673,098, Cl. 252-156.000.
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Sackinger, William M.; and Simms, Robert A., to Corning Glass Works. High gain storage target. 3,673,457, Cl. 315-12.000.
Sacks, Alvin H. Device for evacuating containers. 3,672,114, Cl. 53-88.000.
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Sakamoto, Yuzaburo; and Toyooka, Morio, to Hitachi, Ltd. Method for bonding a conductive wire to a metal electrode. 3,672,047, Cl. 29-628.000.
Sakumoto, Hideki: *See—*
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Santirocco, Louis J.; Rose, Duane L.; and Scofield, John W., to United States of America, Commerce, mesne. Reversible, bypassable aperture card reader. 3,672,664, Cl. 271-3.000.
Santry, George J.; and Wecenske, Harold R., to Corning Glass Works. Gripping and sealing system for slab facing materials. 3,672,107, Cl. 52-235.000.
Sargent-Welch Scientific Company: *See—*
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Sato, Akira; Ueda, Hirozo; and Ono, Yoshiaki, to Fuji Photo Film Co., Ltd. Silver halide color photographic light sensitive material. 3,672,897, Cl. 96-74.000.
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Sato, Kogo; Kato, Hiroshi; and Ohnishi, Shinji, to Hitachi, Ltd. Method of forming the electrode of a semiconductor device. 3,672,984, Cl. 117-212.000.
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Sawyer, Roy D.; and Tinsley, John D., to Nalco Chemical Company. Sewage treatment. 3,673,083, Cl. 210-18.000.
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Sayre, Jack L., to United States of America, Navy. Claw arms with swivel plate. 3,672,717, Cl. 294-104.000.
Scarbrough, Don R.; and Vilagi, Burton J., to Nordson Corporation. Sequence control of color change. 3,672,570, Cl. 239-70.000.
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Scarnato, Thomas J.; Tufts, Guy O.; Peacock, Peter J.; and Cicci, George B., to International Harvester Company. Forage harvester. 3,672,138, Cl. 56-158.000.
Schadow, Rudolf. Slide key switch with improved plunger actuating mechanism with lost motion coupling. 3,673,365, Cl. 200-16.00r.
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Schaefer, Bruce M., to Singer Company, The, mesne. Circuit tester. 3,673,397, Cl. 235-153.000.
Schaefer, Donald L., to General Electric Company. Method of forming group III-V compound photomitters having a high quantum efficiency and long wavelength response. 3,672,992, Cl. 117-219.000.
Schafer, Horst, to Semikron Gesellschaft fur Gleichrichterbau und Elektronik m.b.H. Semiconductor rectifying arrangement. 3,673,468, Cl. 317-234.000.
Scharpf, Lewis G., Jr., to Monsanto Company. Germination of spores. 3,672,956, Cl. 195-96.000.
Scharpf, Lewis G., Jr., to Monsanto Company. Germination of spores. 3,672,957, Cl. 195-96.000.
Schaub, Heiner; Thaddey, Kurt; and Celio, Tino, to Ciba-Geigy AG. Apparatus for making prints from colour negatives. 3,672,768, Cl. 355-38.000.
Scheckel, Konrad, to Heetmann & Finkensiep KG. Apparatus for forming retaining members. 3,672,410, Cl. 140-103.000.
Scheibel, Josef; and Schadt, Karl-Heinz, to Niezoldi & Kramer GmbH. Photographic apparatus for use in daylight and artificial light. 3,672,268, Cl. 95-10.0ce.
Scheinpflug, Hans: *See—*
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Scherenberg, Hans O., to Daimler-Benz Aktiengesellschaft. Radial sealing bar for pistons of rotary piston internal combustion engines. 3,672,798, Cl. 418-113.000.
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Schlussler, Hans-Joachim, to Henkel & Cie G.m.b.H. Inhibitor for aluminium in alkaline solutions. 3,672,821, Cl. 21-2.700.

Schlutz, Charles A.; and Bellamy, David, Jr., to Baxter Laboratories, Inc. Rotary fluid seal and distribution means for centrifuges. 3,672,564, Cl. 233-26.000.
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Schmidt, Werner Hans: *See—*
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Schmitt, Karl; Gude, Fritz; and Brandt, Siegfried, to Scholven-Chemie Aktiengesellschaft. Plastic of polyamide and epoxy resin. 3,673,273, Cl. 260-830.00p.
Schmitt, Karl; Guda, Fritz; and Brandt, Siegfried, to Scholven-Chemie Aktiengesellschaft. Thermosetting resin of polyamide and copolymer of polycarboxylic acid and an olefin. 3,673,277, Cl. 260-857.0un.
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Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, to Day Company, N.V. Metallization of insulating substrates. 3,672,986, Cl. 117-212.000.
Schnedler, Paul E., to Armco Steel Corporation. Releasable melting means for movable fluid nozzle extension. 3,672,324, Cl. 118-63.000.
Schneider, Erich, to Organisation Ralfs KG. Vertical conveyors. 3,672,487, Cl. 198-165.000.
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Schramm, Geza; and Riedl, Horst, to Osterreichische Stickstoffwerke Aktiengesellschaft. Preparation of piperidyl-steroids. 3,673,175, Cl. 260-239.500.
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Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, to Boehringer Ingelheim G.m.b.H. Bis-(dihydroxyphenyl-ethylol) alkylenediamines and the salts thereof. 3,673,187, Cl. 260-253.000.
Schulte, Friedrich Wilhelm; Diels, Manfred; and Rosenkranz, Wilhelm, to Fuchs, Otto. Method of making wheels. 3,672,021, Cl. 29-159.010.
Schultz, Jerald, to Eaton Corporation. Mortise lock with multiple functions. 3,672,714, Cl. 292-34.000.
Schulz, Gerald L.; and Mansur, Raymond T., to United States of America, Army. Heat sealer. 3,673,041, Cl. 156-306.000.
Schulze, John J., to Addressograph-Multigraph Corporation. Method and apparatus for applying liquid developer to copy sheets. 3,672,326, Cl. 118-8.
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Schulze-Robbecke, Hans; and Tiedtke, Alfred, to Riloga-Werk Julius Schmidt. Curtain suspension devices with an electric motor drive. 3,672,425, Cl. 160-331.000.
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Schwarzkopf, August, to Windmoller & Holscher Westphalia. Apparatus for stacking flattened bags of thermoplastic material which are made in a bag-making machine. 3,672,265, Cl. 93-93.0dp.
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Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system and parts therefor or the like. 3,672,792, Cl. 417-306.000.
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Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. C-21 lower alkylsulfinyl esters of certain 21-hydroxycorticosteroids. 3,673,179, Cl. 260-239.550.
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Shcurr, Harry W., II, to United States Steel Corporation. Apparatus for manipulating an oxygen injection lance. 3,672,652, Cl. 266-34.01m.
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Steinberg, Adalberto; and Ricco, Silvio. Slider buckle for straps and the like. 3,672,007, Cl. 24-196.000.

Steinberg, David Herbert, to Ciba-Geigy Corporation. Alkylhyclroxyphenyl thioalkanonate stabilizers for organic materials. 3,673,151, Cl. 260-45.85.

Stelts, Philip D.; and Kern, David W., to Bethlehem Steel Corporation. Instrument lance for basic oxygen steelmaking furnace. 3,672,222, Cl. 73-343.00r.

Stephansen, Erik W., to Bechtel International Corporation. Microwave drying apparatus. 3,672,066, Cl. 34-1.000.

Sterling Drug Inc.: *See—*
Diana, Guy D., 3,673,201.
Lesher, George Y.; and Gruett, Monte D., 3,673,193.

Stewart, Mary J.: *See—*
Price, John A.; and Stewart, Mary J., 3,673,157.

Stewart-Warner Corporation: *See—*
Weaver, Frank C., 3,673,369.
Williams, Philip J., 3,672,721.

Stoddard, William H., Jr.: *See—*
Niedrach, Leonard W.; and Stoddard, William H., Jr., 3,673,069.

Stoeckli, Oscar W.: *See—*
Woodruff, George M.; Stoeckli, Oscar W.; and Shando, Joseph G., 3,672,264.

Stoffregen, Louis E.: *See—*
Pepmeier, Carl R.; Sincavage, Joseph T.; and Stoffregen, Louis E., 3,673,046.

Stone, Kenneth R.: *See—*
West, David H.; and Stone, Kenneth R., 3,672,199.

Stoneham, Jeffrey R., to Eastman Kodak Company. Shutter mechanism. 3,672,285, Cl. 95-59.000.

Storey, William T., II; Procter, Robert F.; Snyder, Charles H. A.; Jacob, George M.; and Mooney, Raymond T., to Technitrol, Inc. Method of making an electrical component. 3,672,046, Cl. 29-624.000.

Stout, Beauford F.; and Hann, George W., to Worth Well Surveys, Inc. Apparatus employing diode junction means for measuring subterranean temperatures. 3,672,215, Cl. 73-154.000.

Stowasser, William F.; and Miller, Keith A., to Air Products and Chemicals, Inc. Water cooling method and apparatus employing liquid nitrogen. 3,672,182, Cl. 62-98.000.

Straley, James M.: *See—*
Weaver, Max A.; Straley, James M.; and Moore, William H., 3,673,169.

Strauss, Edgar H., to Ruti Machinery Works, Ltd.; formerly and Caspar Honegger. Device for producing thread windings on a loom. 3,672,404, Cl. 139-12.000.

Streb, Alan J.: *See—*
Bienert, Walter B.; Levedahl, William J.; and Streb, Alan J., 3,672,443.

Stromberg-Carlson Corporation: *See—*
Pearce, James Gordon, 3,673,337.
Suntop, Morris A.; and Randmere, Uno, 3,673,330.

Strope, Douglas H.; and Wilson, Alan D., to International Business Machines Corporation. Holographic system and process utilizing a wet cell phase hologram. 3,672,744, Cl. 350-3.500.

Strople, Gordon N.; and Mills, Justin W., Jr., to Lif-O-Gen, Inc. Apparatus for dispensing sterile gas. 3,672,129, Cl. 55-270.000.

Strull, Gene, to Westinghouse Electric Corporation. Process for producing a cesium coated gallium arsenide photocathode. 3,673,011, Cl. 148-175.000.

Struthers Energy Systems, Inc.: *See—*
Foster-Pegg, Richard W., 3,672,179.

Struthers Scientific and International Corporation: *See—*
Pike, John W., 3,672,009.

Stull, James T.: *See—*
Hofmann, Gottfried; and Stull, James T., 3,672,438.

Sugita, Keiji: *See—*
Suzuki, Shigeru; Sugita, Keiji; and Nagahara, Yasumori, 3,672,762.

Sugita, Yutaka: *See—*
Nishida, Hideko; Yamaguchi, Kunihiko; Kumasaka, Noriyuki; Sugita, Yutaka; and Fujiwara, Hideo, 3,673,581.

Sugiyama, Kimroku: *See—*
Hasegawa, Haruo; Sugiyama, Kimroku; Suzuki, Kikuji; and Hirano, Kunio, 3,672,888.

Sullivan, Bruce M.; and Kaus, Carl M., to Donaldson Company, Inc. Retention means for air cleaner element. 3,672,130, Cl. 55-323.000.

Sulzer Brothers Limited: *See—*
Luber, Paul, 3,672,407.

Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, 3,673,243.

Summers, George D. Implantable bio-data monitoring method and apparatus. 3,672,352, Cl. 128-2.00r.

Sun Oil Company: *See—*
Kirk, Merrit C., Jr., 3,673,078.
Mason, Charley Mack, 3,672,175.

Sundin, A. E., Produkter AB: *See—*
Sundin, Anders Erik, 3,672,159.

Sundin, Anders Erik, to Sundin, A. E., Produkter AB. Apparatus for crane jibs adapted to be extended and retracted telescopically. 3,672,159, Cl. 60-10.500.

Sundstrand Data Control Incorporated, mesne: *See—*
Siegel, Vernon H., 3,673,443.

Suntop, Morris A.; and Randmere, Uno, to Stromberg-Carlson Corporation. Two-party automatic number identification in subscriber carrier telephone system. 3,673,330, Cl. 179-2.50r.

Surface Technology, Inc.: *See—*
Robertson, David D., 3,672,045.

Suzuki, Kikuji: *See—*
Hasegawa, Haruo; Sugiyama, Kimroku; Suzuki, Kikuji; and Hirano, Kunio, 3,672,888.

Suzuki, Shigeru; Sugita, Keiji; and Nagahara, Yasumori, to Ricoh Co., Ltd. Electrophotographic copying machine. 3,672,762, Cl. 355-10.000.

Suzuki, Toshi: *See—*
Wada, Yoshiyo; Kinjo, Hisao; Suzuki, Toshi; and Akuwa, Fumio, 3,673,352.

Svec, Zdenek: *See—*
Didek, Stanislav; Svec, Zdenek; and Pospisil, Frantisek, 3,672,144.

Svenska Dataregister AB: *See—*
Lindelow, Claes-Goran, 3,673,388.
Mattsson, Mats Erik; and Lindelow, Claes-Goran, 3,672,566.

Svokos, Steve George; and Angier, Robert Bruce, to American Cyanamid Company. 1,4-Diphenyl-3,6-[dimercapto or epi(dithia or tetrathia] 2,5-piperazinediones. 3,673,172, Cl. 260-239.3.

Swain, Charles Gardner, to Massachusetts Institute of Technology. Voltage sensing switch. 3,673,502, Cl. 328-146.000.

Swanson, Wesley S.: *See—*
McCarty, William R., Jr.; Dolter, Paul A.; and Swanson, Wesley S., 3,672,627.

Swearingen, Kent W.: *See—*
Berglund, Neil C.; King, Robert W.; and Swearingen, Kent W., 3,672,297.

Sweco, Inc.: *See—*
Denight, James P.; and Burgess, George A., 3,672,581.

Sweet, Ervin J.: *See—*
Rygelis, Joseph; Sweet, Ervin J.; and Doyle, Brian W., 3,672,162.

Sweet, Harold C., 50% to Williams, Merton E. Portable distillery. 3,672,959, Cl. 202-181.000.

Sweetheart Plastics, Inc.: *See—*
Mac Daniel, Gene; and Mc Elvy, Howell T., 3,673,033.

Swift & Company: *See—*
Anderson, Harry T., 3,673,065.

Switzer, Norris H.: *See—*
Gioia, Gaspare L.; Switzer, Norris H.; and Willerton, John K., 3,672,608.

Swodenk, Wolfgang; Schwerdtel, Wulf; Losacker, Paul; and Engelhard, Bruno, to Farbenfabriken Bayer Aktiengesellschaft. Isoprene recovery. 3,673,265, Cl. 260-681.000.

Symes, Clifford Edward, to GTE Automatic Electric Laboratories Incorporated. Crossbar switch. 3,673,366, Cl. 200-175.000.

Symonds, Willard G., to Eastman Kodak Company. Apparatus for severing a sheet. 3,672,252, Cl. 83-582.000.

Syntex Corporation: *See—*
Talbot, Meldon L.; and Foster, Theodore T., 3,673,232.

Synvar Associates: *See—*
McConnell, Harden M.; and Ullman, Edwin F., 3,673,207.

Syrjanen, Ahti, to Jylhavaara Osakeyhtio. Pressure strainer device. 3,672,506, Cl. 209-273.000.

Szala, Norman M.: *See—*
Van Der Sluys, William; O'Neill, Thomas J.; and Szala, Norman M., 3,672,309.

Sze, Simon Min: *See—*
Coleman, Donald James, Jr.; and Sze, Simon Min, 3,673,514.

Szymber, Oleg; and Shim, Norman, to GAF Corporation. Automatic focusing system for projectors and the like. 3,672,757, Cl. 353-101.000.

Tabankin, Phyllis. Sequentially-operable hidden camera device. 3,672,269, Cl. 95-11.

Tabet Manufacturing Co., Inc.: *See—*
Tabet, Michael A., 3,673,484.

Tabet, Michael A., to Tabet Manufacturing Co., Inc. Remote servo control circuit for remote controlled switches and switchboards. 3,673,484, Cl. 318-674.000.

Tacke, Peter; Binsack, Rudolf; and Weissel, Oskar, to Farbenfabriken Bayer Aktiengesellschaft. 2,2',4,4'-Tetrachloro-5,5'-diaminodiphenyl ether. 3,673,123, Cl. 260-571.000.

Tackett, Raymond W., to Burroughs Corporation. Luminous gas alphanumeric display device. 3,673,451, Cl. 313-109.500.

Tagawa, Takao, to Sharp Kabushiki Kaisha. Electrostatic printing apparatus. 3,673,599, Cl. 346-74.0cr.

Taiyo Kogyo Company Limited: *See—*
Sakamoto, Junzo; Nozaki, Tadashi; Tsuji, Yoshifumi; and Shimada, Masaharu, 3,672,561.

Takacs, Kalman: *See—*
Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, 3,673,188.

Takahashi, Akira; Kojima, Hiroo; Ogawa, Masao; Osuka, Hiroshi; and Kobayashi, Shoichi, to Showa Denka Kabushiki Kaisha. Thermoplastic resin having high impact strength. 3,673,279, Cl. 260-876.00r.

Takahashi, Hiroshi, to Daicel Ltd. Process for manufacturing 3,3,5-trimethylcyclohexyl mandelate. 3,673,239, Cl. 260-473.00a.

Takahashi, Isoji: *See—*
Sato, Masamichi; and Takahashi, Isoji, 3,672,330.

Takahashi, Kenji; Yamamura, Toshio; Ono, Mitsuzo; and Eda, Korekiyo, to Kanegafuchi Boseki Kabushiki Kaisha. Method of producing polyvinyl acetal-porous articles. 3,673,125, Cl. 260-2.50f.

Takahira, Jiro: *See—*
Hasegawa, Tokushige; Makimoto, Kuninobu; Nihei, Seiji; and Takahira, Jiro, 3,672,868.

Takami, Fumitaka: *See—*
Ikawa, Kenji; and Takami, Fumitaka, 3,673,234.

Takase, Yoshiyuki: *See—*
Minami, Shinsaku; Shono, Toshihiro; Shmmizu, Masanao; and Takase, Yoshiyuki, 3,673,184.

Takata, Harry H., to Raygo, Inc. Control means for power steering servo. 3,672,460, Cl. 180-79.20b.

Takenoshita, Mitsuaki: *See—*
Ichiryu, Ken; and Takenoshita, Mitsuaki, 3,672,398.

Takeuchi, Masatoshi: *See—*
Matsumoto, Jiro; Takeuchi, Masatoshi; Abe, Arimichi; and Sengoku, Koji, 3,673,010.

Takimoto, Masaaki: *See—*
Matsumoto, Seiji; Tamai Yasuo; Takimoto, Masaaki; and Sato, Masamichi, 3,672,887.

Talbot, Meldon L.; and Foster, Theodore T., to Syntex Corporation. Dicyclopentadienyl iron compounds. 3,673,232, Cl. 260-439.0cy.

Tallman, Richard L.: *See—*
Andrew, Kenneth F.; Tallman, Richard L.; and Gulbransen, Earl A., 3,672,814.

Tamai Yasuo: *See—*
Matsumoto, Seiji; Tamai Yasuo; Takimoto, Masaaki; and Sato, Masamichi, 3,672,887.

Tamai, Yasuo; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Method of manufacturing bases for electrostatic recording material or electrophotographic material. 3,672,988, Cl. 117-215.000.

Tamura, Takaaki; and Kato, Tsutomu, to Kachita Co., Ltd. Method for oxidizing carbon monoxide contained in room air. 3,672,824, Cl. 23-4.000.

Tanabe Swiyaku Co., Ltd.: *See—*
Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, 3,673,195.

Tanaka, Akira; Hattori, Tsuyoshi; Anno, Hirotomo; and Kawahara, Testuyo, to Japanese Geon Company, Ltd., The. Vinyl chloride polymer blended with a nitrile-methacrylate-acrylate terpolymer. 3,673,283, Cl. 260-898.000.

Tanaka, Hiroshi: *See—*
Inoue, Eiichi; Yamaji, Keizo; Tanaka, Hiroshi; and Saito, Takashi, 3,673,595.

Tanaka, Takashi; and Nomura, Yasuo, to Matsushita Electric Industrial Co., Ltd. Multi-channel dual-gap magnetic head. 3,672,044, Cl. 29-603.000.

Tang, Pak Chong: *See—*
Olsen, Perry Charles; and Tang, Pak Chong, 3,673,318.

Taniguchi, Hiroshi; Nakamura, Takahiro; and Sakumoto, Hideki, to Matsushita Electric Industrial Co., Ltd. Automatic tape feed controlling means. 3,673,414, Cl. 250-206.000.

Taniguchi, Masaharu: *See—*
Minami, Muneyoshi; Taniguchi, Masaharu; Tsutsomi, Tadao; Murakami, Masakazo; and Yoshii, Toshiya, 3,673,145.

Taniguchi, Masanobu: *See—*
Kawasaki, Akihiro; Ueda, Hiroaki; and Taniguchi, Masanobu, 3,673,165.

Tappan Company, The: *See—*
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Tardos, Laszlo: *See—*
Harsanyi, Kalman; Takacs, Kalman; Relle, Zsuzsa, nee Somfai; Milak, Eva, nee Krompecher; Tardos, Laszlo; Korbonits, Dezso; Kiss, Pal; and Gonczy, Csaba, 3,673,188.

Tartan Industries, Inc.: *See—*
Foster, James L., Jr., 3,672,455.

Tausch, Gilbert H.: *See—*
Watkins, Fred E.; and Tausch, Gilbert H., 3,672,397.

Taut, Karl H. Modular, knock-down furniture. 3,672,739, Cl. 312-107.000.

Taylor, Clarence R.: *See—*
Knowles, Frederick G.; and Taylor, Clarence R., 3,672,593.

Taylor, Francis R.: *See—*
Lane, George A.; Smith, William Arthur; Dollman, Stephen C.; Kaye, Seymour M.; and Taylor, Francis R., 3,673,013.

Taylor, Geoffrey Gordon, to Fruitgrowers Chemical Campany Limited. Granules comprising inert cores coated with an absorbent powder. 3,672,945, Cl. 117-100.00b.

Taylor, Roland C. Delay equalizer network including negative delay circuits. 3,673,520, Cl. 333-28.00r.

TDK Electronics Co., Ltd.: *See—*
Ueoka, Hisayoshi; Horii, Kazuo; and Umeya, Kazumasa, 3,673,119.

Teague, Ernest Douglas, to Norton Abrasives Limited. Manufacture of plaster of Paris mold having sprayed metal oxide linings and product. 3,673,293, Cl. 264-60.000.

Technitrol, Inc.: *See—*
Storey, William T., II; Procter, Robert F.; Snyder, Charles H. A.; Jacob, George M.; and Mooney, Raymond T., 3,672,046.

Technology Application Services Corporation: *See—*
Camacho, Salvador L., 3,673,375.

Teichner, Stanislas Jean; and Gilbert, Andre Nicolaon, to Etat Francais represente par le Ministre des Armees Delegation Ministerielle pour l'Armement. Method of preparing inorganic aerogels. 3,672,833, Cl. 23-182.00r.

Teitelbaum, Bernard R.: *See—*
Mayer, Endre A.; and Teitelbaum, Bernard R., 3,672,474.

Teledyne, Inc., mesne: *See—*
Bienert, Walter B.; Levedahl, William J.; and Streb, Alan J., 3,672,443.
Petit, Robert F.; and Wesnoskie, James F., 3,672,312.

Telefonaktiebolaget L M Ericsson: *See—*
Edstrom, Nils Herbert; and Hemdal, Goran Anders Henrik, 3,673,577.

Telefunken Patentverwertungsgesellschaft m.b.H.: *See—*
Kaiser, Reinhold, 3,673,012.
Kersten, Karl-Heinz; and Patschan, Wolfgang, 3,673,515.

Temple, Sidney J.: *See—*
Drugmand, Lester D.; and Temple, Sidney J., 3,673,385.
Drugmand, Lester D.; and Temple, Sidney J., 3,673,386.

Tenna Corporation: *See—*
Tolar, James H., 3,672,685.

Tenneco Chemicals, Inc.: *See—*
Di Bella, Eugene P., 3,673,257.
Ferstenberg, Charles, 3,672,348.

Tepper, Sidney; Tierney, William; and Lilinga, Nicholas, to Topper Corporation. Walking mechanism for a doll. 3,672,082, Cl. 40-106.360.

Tepper, Sidney; and Lalinga, Nicholas, to Topper Corporation. Animating device for a doll. 3,672,092, Cl. 46-1.00r.

Termin, Erich: *See—*
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,673,159.

Terrels, Joseph L.; and Meneses, Robert. Container and stirrer for paint sprayer. 3,672,645, Cl. 259-122.000.

Terreni, Giansandro. Demountable fishing lure with interchangeable elements. 3,672,086, Cl. 43-42.090.

Terry, John Brian, to Marconi Company Limited, The. Time division data transmission system having interrogation signal passed through matrix switches to junctors via all free paths. 3,673,568, Cl. 340-147.00r.

Teubler, Adolf; and Eversheim, Paul, to Vereinigte Leichtmetall-Werke GmbH. Aluminum offset printing plate. 3,672,878, Cl. 75-141.000.

Tewksbury, Floyd L., Jr.; and Demler, Walter R., to Allied Chemical Corporation. Process for preparing 2-[2-arylamino-vinyl]-1-lower alkyl-3-H-indolium salt dyes. 3,673,178, Cl. 260-240.800.

Texaco Development Corporation: *See*—
Goldsby, Arthur R., 3,673,271.

Texaco Inc.: *See*—
Hoyt, Donald L., 3,672,448.
Loffbourrow, Robert J., 3,673,398.
Schlinger, Warren G.; and Kaufman, Harold C., 3,673,080.
Vermillion, Herbert E.; and O'Loughlin, James J., 3,672,852.
Waldbillig, James O.; Wiley, Morris A.; Rambo, Marvin L.; and Millendorf, Alfred J., 3,673,090.

Texas Instruments, Incorporated: *See*—
Callahan, Michael J., Jr., 3,673,508.
Faxon, Robert C., 3,673,538.
Hair, George D.; and Kincaid, James U., 3,673,331.
Meyer, John V., 3,673,121.
Pearson, Samuel Reader, 3,673,439.
Pritchard, John P., Jr.; and Schroen, Walter H., 3,673,071.

Textron, Inc.: *See*—
Moertel, George B.; and Wilson, James R., 3,672,008.

Textron, Inc., mesne: *See*—
Smith, Roy E., 3,672,554.

Thaddey, Kurt: *See*—
Schaub, Heiner; Thaddey, Kurt; and Celio, Tino, 3,672,768.

Theriot, Gilbert A.: *See*—
Elkins, Johnny C.; and Theriot, Gilbert A., 3,672,064.

Thermoformed Plastics Corporation: *See*—
Saveth, Ivan H., 3,672,598.

Thermoplastic Processes Inc.: *See*—
Du Pont, Paul R., 3,673,401.

Thielen, Heinz; Grundmann, Harald; and Putz, Franz, to Rheinische Braunkohlenwerke AG. Vehicle brake condition testing and signalling arrangement. 3,673,563, Cl. 340-71.000.

Thies, Charles E.; Thompson, Bernard L.; and Anderson, Stanley E., to United States of America, Army, mesne. Method of making cast-in-place end-burning propellant grains. 3,673,287, Cl. 264-3.000.

Thomas & Betts Corporation: *See*—
Fiorentino, Arthur A., 3,672,615.
Garner, Peter, 3,673,543.

Thomas, David Michael, to International Standard Electric Corporation. Time division multiplex switches. 3,673,336, Cl. 179-15.0bd.

Thomas, Ieuan: *See*—
Buckley, Alan; and Thomas, Ieuan, 3,673,162.

Thompson, Bernard L.: *See*—
Thies, Charles E.; Thompson, Bernard L.; and Anderson, Stanley E., 3,673,287.

Thompson, Charles H.: *See*—
Prewett, Hubert P., Jr.; and Thompson, Charles H., 3,672,246.

Thompson, Charles J.: *See*—
Carmody, William D.; Thompson, Charles J.; and Butzler, George J., 3,673,126.

Thompson, Donald F.; Quartermus, George D.; and Quinn, Thomas M., to Avisun Corporation. Composite sheet. 3,672,944, Cl. 117-76.00f.

Thorne-Booth, George M., to Westinghouse Electric Corporation. Vehicle control system and method. 3,672,611, Cl. 246-28.00r.

Thornton, James. Reusable forms for casting columns. 3,672,626, Cl. 249-48.000.

Thorstenson, Rolf A., to Avco Corporation. Turbine blade having a cooled laminated skin. 3,672,787, Cl. 416-97.000.

Thrasher, John Peter, to Gureckis, Peter V. Underground radio communication system for roadways. 3,673,497, Cl. 325-180.000.

Tibbetts, Alan R.; and Tucker, Donald R., to Airco, Inc. Ambient air vaporizer. 3,672,446, Cl. 165-183.

Ticknor, Sergei L., to Jerrold Electronics Corporation, mesne. Resistorless radio frequency hybrid signal splitter. 3,673,517, Cl. 333-8.000.

Tiedtke, Alfred: *See*—
Schulze-Robbecke, Hans; and Tiedtke, Alfred, 3,672,425.

Tiemann, Jerome J.; and Gitzendanner, Louis G., to General Electric Company. Magnetic transducer having a composite magnetic core structure. 3,673,353, Cl. 179-100.20c.

Tierney, William: *See*—
Tepper, Sidney; Tierney, William; and Lilinga, Nicholas, 3,672,082.

Timken Company, The: *See*—
Barnbrook, Thomas George; and Wren, Frederick James, 3,672,019.
Keller, Thomas C.; and Heggy, Robert F., 3,672,735.

Timko, Charles A., to Continental Can Company, Inc. Method for electrostatically holding particles along a mold surface. 3,673,296, Cl. 264-24.000.

Tinsley, John D.: *See*—
Sawyer, Roy D.; and Tinsley, John D., 3,673,083.

Titeflex, a Division of Atlas Corporation: *See*—
Christianson, Roger D., 3,672,704.

Titt, Georg. Worm gear drive. 3,672,239, Cl. 74-425.000.

Tizon Chemical Corporation: *See*—
Gambale, James Richard; McIntyre, Glenn Hazel, Jr.; and Ranney, Fredrik J., 3,672,825.

Tobey, Ray; and Lankford, David L., to Automation Industries, Inc. Apparatus for electroplating the interior of an elongated pipe. 3,673,073, Cl. 204-226.000.

Todd, Chester F., to Southwire Company. Method of preparing pouring spout. 3,673,039, Cl. 156-293.000.

Toepel, Rosemarie; Abel, Heinz; Maeder, Arthur; and Leifels, Klaus-Dieter, to Ciba Limited. Polyaddition products and process for their manufacture. 3,673,558, Cl. 260-29.2ep.

Tohoku Special Steel Works Limited: *See*—
Matsumoto, Jiro; Takeuchi, Masatoshi; Abe, Arimichi; and Sengoku, Koji, 3,673,010.

Tokura, Susuma: *See*—
Matsui, Maso; Utsuhara, Yutaka; Yamabe, Masahiro; and Tokura, Susuma, 3,672,802.

Tokyo Broadcasting System, Inc.; and: *See*—
Ito, Yutaka; and Hirate, Jun, 3,673,324.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Niioka, Takeharu; and Hosokawa, Ryoji, 3,673,351.

Tolar, James H., to Tenna Corporation. Universal cartridge-type tape recorder and playback instrument. 3,672,685, Cl. 274-4.00g.

Toledo Stamping & Manufacturing Co.: *See*—
Scheppele, Lyle W., 3,672,334.

Tolmie, Robert J., to Sperry Rand Corporation. Control means for a rechargeable battery. 3,673,001, Cl. 136-110.000.

Tomalia, Donald A.; and Glesner, William K., to Dow Chemical Company, The. Polymeric adhesive containing a polyepoxide, a carboxy terminated polybutadiene and a bis-2-oxazoline. 3,673,274, Cl. 260-836.000.

Tomaszewski, Thaddeus W., to Udylite Corporation, The. Electrolytic codeposition of copper with fine particles. 3,672,970, Cl. 204-52.00r.

Tomeoku, Hiroshi: *See*—
Kawabe, Ushio; Kimura, Hiroshi; Tomeoku, Hiroshi; and Doi, Toshio, 3,673,444.

Tomica, Alojzy; and Blackwell, John Francis, to International Standard Electric Corporation. Apparatus for forming electric cables. 3,672,141, Cl. 57-12.

Tomlinson, Charles W., to Acme Visible Records, Inc. Conveyor drop box. 3,672,663, Cl. 271-64.000.

Tomlinson, Kenneth: *See*—
Mitchell, Harry Ian; and Tomlinson, Kenneth, 3,672,993.

Tomlinson, Roy, to Connollys (Blackley) Limited. Method of impregnating and coating stranded bodies. 3,672,974, Cl. 117-115.000.

Tommaney, Joseph W., to Allegheny Ludlum Steel Corporation. Power partition control for consumable electrode furnaces. 3,672,428, Cl. 164-52.000.

Tomoegawa Papaer Manufacturing Co., Ltd.: *See*—
Hasegawa, Haruo; Sugiyama, Kimroku; Suzuki, Kikuji; and Hirano, Kunio, 3,672,888.

Topper Corporation: *See*—
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Tepper, Sidney; and Lalinga, Nicholas, 3,672,092.

Toray Industries, Inc.: *See*—
Minami, Muneyoshi; Taniguchi, Masaharu; Tsutsomi, Tadao; Murakami, Masakazo; and Yoshii, Toshiya, 3,673,145.

Torres, Mario A., to California Computer Products, Inc. Tape storage buffer. 3,672,599, Cl. 242-184.000.

Toshiba Kikai Kabushiki Kaisha: *See*—
Miura, Yasushi; Kashiwagi, Nobuo; and Mochizuki, Zenichi, 3,672,440.

Toth, Alex; and Fesmire, Robert H., to Ellis Corporation. Loading structure and method for laundry machines. 3,672,820, Cl. 8-150.000.

Townsend Engineering Company: *See*—
Greider, Charles Austin, 3,672,001.

Toyonaga, Ryuya; and Sato, Kazuo, to Nippon Hoso Kyokai. Porous layer of a secondary electron multiplier and a method of manufacturing the same. 3,672,989, Cl. 117-224.000.

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Triolo, Peter T.; and Schutte, Harlan H., to Scovill Manufacturing Company. Die assembly. 3,672,806, Cl. 425-406.000.

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Tuel, Donald F. Anchors with powered, movable flukes. 3,672,321, Cl. 114-208.

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Ufer, Erich, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Drive engine having shrouded propeller with a variable outlet cross section. 3,672,169, Cl. 60-230.000.

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Wagner, Karl; and Nicolay, Klaus, to Agfa-Gevaert Aktiengesellschaft. Automatic exposure control for photographic apparatus. 3,672,271, Cl. 95-10.0ct.
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Wahle, Gunter; and Kasparek, Alois, to Hauni-Werke Korber & Co. KG. Apparatus for feeding rod shaped articles to consuming machines. 3,672,522, Cl. 214-302.000.
Wahli, Robert, to Ciba-Geigy AG. Photoelectric scanning apparatus for detecting code markings. 3,673,417, Cl. 250-219.00d.
Waite, John H.; and Nodine, John H. Method of examination of cell samples using a radioactively tagged dye. 3,673,410, Cl. 250-106.00t.
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Waldbillig, James O.; Wiley, Morris A.; Rambo, Marvin L.; and Millendorf, Alfred J., to Texaco Inc. Sulfurization of triisobutylene and products resulting therefrom. 3,673,090, Cl. 252-45.000.
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West, David H.; and Stone, Kenneth R., to Southwire Company. Coble relief mechanism for rolling mill. 3,672,199, Cl. 72-250.

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White, Malcolm Lunt: *See—*
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White, Richard M.; Lee, Robert E.; and Turner, Charles W., to United States of America, Navy. Means for generating (a source of) surface and bulk elastic wares. 3,673,474, Cl. 318-116.000.

Whitney, Ian, to Rolls-Royce Limited. Method of manufacturing carbon fibres. 3,673,035, Cl. 156-235.000.

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Wicker, Alain: *See—*
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Wickman, Vernon C., to AMF Incorporated. Engine ignition timer with improved adjustable plates. 3,673,359, Cl. 200-19.00r.

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Widder, Rudi; Distler, Harry; and Fuchs, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of rendering textile materials absorptive. 3,672,978, Cl. 117-139.5cq.

Widdowson, Roy; and Specceley, Gene Donald, to British Iron and Steel Research Association. Bottom poured ingots. 3,672,432, Cl. 164-119.000.

Wiedemann, Karl, to Melitta, Inc. Disposable dish means. 3,672,538, Cl. 220-97.00c.

Wiesenhofer, Frank H.: *See—*
Blatt, Leland Francis; and Wiesenhofer, Frank H., 3,672,465.

Wiggins, Glenn C., to Dow Chemical Company, The. Pressure release valve for flexible pouches. 3,672,915, Cl. 99-171.0lp.

Wilg, Chester M., to Littell, F. J., Machine Company. Automatic registering apparatus. 3,673,418, Cl. 250-219.0dr.

Wiley, Charles L., to Universal Oil Products Company. Recovery of rhenium values from a spent catalyst. 3,672,874, Cl. 75-101.00r.

Wiley, Morris A.: *See—*
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Wiley, Robert A., to Petrolite Corporation. Process for removing and concentrating acidic organic material from water. 3,673,070, Cl. 204-186.000.

Wilkison, Albert Challen. Method and apparatus for drying materials. 3,672,068, Cl. 34-15.

Wilkus, Edward V.: *See—*
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Willerton, John K.: *See—*
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Williams, Merton E.: *See—*
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Williams Patent Crusher & Pulverizer Co., Inc.: *See—*
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Williams, Philip J., to Stewart-Warner Corporation. Rubber spring assembly for chair control. 3,672,721, Cl. 297-302.000.

Williams, Robert M., to Williams Patent Crusher & Pulverizer Co., Inc. Scrap material processing apparatus. 3,672,496, Cl. 209-38.000.

Williamson, Jervis C. Memo tape. 3,672,597, Cl. 242-107.00r.

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Wilsch, Herbert, to Agfa-Gevaert Aktiengesellschaft. Mechanism for threading motion picture film in cinematographic apparatus. 3,672,602, Cl. 242-192.000.

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Wilson, Fred A.; and Allen, Norman T., to Dover Corporation. Cap and sealing means therefor. 3,672,403, Cl. 138-89.000.

Wilson, James R.: *See—*
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Wilson, Michael C. Multi-purpose articles of furniture. 3,672,720, Cl. 297-118.000.

Winchklhofer, Robert Charles; Weedon, Gene Clyde; and Collingwood, George Howard, to Allied Chemical Corporation. Process for shaping textile articles using fluid thermoforming techniques. 3,673,295, Cl. 264-89.000.

Windmoller & Holscher: *See—*
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Winterfeldt, Ekkehard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of α,π-dihalo-α-hydroxycrotonic lactams. 3,673,211, Cl. 260-326.5fl.

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Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Disk recorder with means to move the spindle perpendicular to its axis of rotation. 3,673,583, Cl. 340-174.10c.

Wiseman, John A.: *See—*
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Wiss, Richard R., to Wiss, J., & Sons Co. Pivot arrangement. 3,672,053, Cl. 30-267.000.

Wiswell, George C., Jr. Radiographic apparatus for underwater inspection of wooden pilings. 3,673,407, Cl. 250-52.000.

Witherspoon, Harry, to Rolls-Royce Limited. Process for mounting a workpiece for machining. 3,672,032, Cl. 29-424.000.

Wognum, James N.; Simich, Emil; and Winkler, Alvin L., to Interlake Steel Corporation. Vibrating wall continuous casting mold. 3,672,436, Cl. 164-260.000.

Wolf, David. Game method involving competitive arranging of grouped pieces into polyhedric form. 3,672,681, Cl. 273-157.00r.

Wolf, Edgar, to Redactron Corporation. Reed switch and magnetic over-center device therefor. 3,673,527, Cl. 335-207.000.

Wolff, Nikolaus E.: *See—*
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Wood, Mahlon E., to National Steel Corporation. Carbonitriding and other thermal treatment of columbium steels. 3,673,008, Cl. 148-12.000.

Woodruff, George M.; Stoeckli, Oscar W.; and Shando, Joseph G., to General Foods Corporation. Pouch forming mechanism. 3,672,264, Cl. 93-12.00r.

Woods, Roger P. Light assembly raising and lowering mechanism with pin and dog device. 3,673,403, Cl. 240-64.000.

Woodward, Fred E.: *See—*
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Wright, Archibald N.; Mimeault, Victor J.; and Wilkus, Edward V., to General Electric Company. Laminated structures and method. 3,673,054, Cl. 161-189.000.

Wright, Barry, Corporation: *See—*
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Wright, Donald A., to Minnesota Mining and Manufacturing Company. Damped sinusoidal current pulse generator and method. 3,673,437, Cl. 307-252.00j.

Wright, James A.; and Lindberg, Allan W., to Emerson Electric Co. Burner ignition and control system. 3,672,810, Cl. 431-66.000.

Wright, John H., to General Electric Company. Methyl alkyl silicone grease composition and method of making same. 3,673,089, Cl. 252-42.100.

Wurm, Bruno: *See—*
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Wyand, Edwin B.; and Farley, William C., to Eastman Kodak Company. Photographic element and process comprising a pyrimidine silver halide developing agent. 3,672,891, Cl. 96-29.00r.

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Yamada, Takeo, to Nippon Kogaku K.K. Device for driving camera shutter curtains. 3,672,282, Cl. 95-57.000.

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Yamamoto, akoto: *See—*
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Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, to Sumitomo Chemical Company, Ltd. Novel process for producing o-anilinophenylaliphatic acid derivatives. 3,673,243, Cl. 260-518.00r.

Yamamoto, Miaki: *See—*
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Yamamoto, Mitsuru: *See—*
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Yamamura, Toshio: *See—*
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Yamanaka, Akira, to Minolta Camera Kabushiki Kaisha. Continuous photographing system in a roll film camera. 3,672,278, Cl. 95-31.0fm.

Yamane, Sigeto: *See—*
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Yamanoi, Yorio, to Minolta Camera Kabushiki Kaisha. Developing device for electrostatic duplicators. 3,672,329, Cl. 118-637.000.

Yamanouchi, Yuichi, to Isuzu Motors Limited. Internal combustion engine with overhead valve mechanism. 3,672,338, Cl. 123-90.270.

Yamasaki, Akitoshi: *See—*
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Yamauchi Rubber Industry Co., Ltd.: *See—*
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Yanagidaira, Sakan. Golf putting training apparatus. 3,672,682, Cl. 273-189.00r.

Yashica Company Limited: *See—*
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Yasuda, Kentaro, to Otis Elevator Company. Rope tension gauge for elevator system. 3,672,214, Cl. 73-144.000.

Yasuda, Tetuya; Tutiya, Hidetaka; and Mori, Takeshi, to Citizen Watch Company Limited. Display dial assembly for timepiece. 3,672,150, Cl. 58-5.000.

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Yomiyama, Akira: *See—*
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Yoneda, Naoto; Ishihara, Teruo; Kobayashi, Tetsuji; Kondo, Yasuzo; Okumura, Kentaro; Kojima, Michio; and Nose, Takashi, to Tanabe Swiyaku Co., Ltd. Derivatives of 6,6,9-tri-lower alkyl-9-azabicyclo (3.3.1)nonan-3α-or 3β-01 3,673,195, Cl 260-293.540.

York, Charles Herbert-Greer, to Wire Core Development Corporation. Wire core structure for sandwich material. 3,672,022, Cl. 29-191.600.

Yoshii, Toshiya: *See—*
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Yoshimura, Hirofumi; and Yakahata, Hisatoshi, to Yashica Company Limited. Shutter operating circuit having means to close shutter when light is insufficient. 3,673,415, Cl. 250-214.00p.

Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, to Energy Absorption Systems, Inc. Liquid shock absorbing buffer. 3,672,657, Cl. 267-116.000.

Young, Charles H.; and Ray, Donald L., to Ski-Tow Manufacturing Co. Extendable and retractable supports. 3,672,238, Cl. 74-89.200.

Young, James Roger, to General Electric Company. Hydrocarbon responsive getter ion pump. 3,672,789, Cl. 417-51.000.

Young, Richard W.; and Malin, Murray E., to Polaroid Corporation. Photographic film exposure and viewing systems using coded film cassette. 3,672,752, Cl. 352-72.000.

Youngman, Gary: *See—*
Horvath, Edward; and Youngman, Gary, 3,673,111.

Yowell, Gordon H., to Sperry Rand Corporation. Power transmission. 3,672,793, Cl. 417-368.000.

Yuguchi, Hiroshi, to Kokusai Denshin Denwa Kabushiki Kaisha. Equalizing transmission loss utilizing graphical method for selecting equalizer networks. 3,673,521, Cl. 333-28.00r.

Yunoki, Tadao; and Fujiyasu, Toshio, to Kabushiki Khisha Tadano. Extension means of a multi-stage boom. 3,672,257, Cl. 91-168.000.

Zaffaroni, Alejandro, to Alza Corporation. Indolol prostaglandin compounds. 3,673,213, Cl. 260-326.14r.

Zane, Victor H., to Design and Manufacturing Corporation. Electrically released latching switch for timer-controlled appliances and the like. 3,673,531, Cl. 337-77.000.

Zbikowski, Ted: *See—*
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Zeblisky, Rudolph J.: *See—*
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Zeblisky, Rudolph J., to Photocircuits; division of and Kollmorgen Corporation. Solid precious metal sensitizing compositions. 3,672,923, Cl. 106-286.000.

Zeblisky, Rudolph John, to Kollmorgen Corporation. Novel precious metal sensitizing solutions. 3,672,938, Cl. 117-47.00a.

Zeile, Karl: *See—*
Schromm, Kurt; Mentrup, Anton; Zeile, Karl; Renth, Ernst-Otto; Engelhardt, Albrecht; and Traunecker, Werner, 3,673,187.

Zeilon, Sten Olof. Apparatus for thermally insulating a body. 3,672,184, Cl. 62-324.000.

Zemberry, William L., to United States Steel Corporation. Coupling device. 3,672,708, Cl. 285-315.000.

Zenith Radio Corporation: *See—*
Hendrickson, Melvin C., 3,673,487.
Robinder, Ronald C.; Rowe, William A.; and Schwartz, James W., 3,672,893.

Zeph, David L., to United States of America, Navy. Control logic for linear sequence generators and ring counters. 3,673,501, Cl. 328-37.000.
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Gordon, James F., 3,673,604.
Zhokhova, Olga Samuilovna: *See*—
Popov, Boris Vasilievich; Slonim, Alexandr Zosimovich; Sonin, Anatoly Leonidovich; Zhukov, Gennady Konstantinovich; and Zhokhova, Olga Samuilovna, 3,672,197.
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Popov, Boris Vasilievich; Slonim, Alexandr Zosimovich; Sonin, Anatoly Leonidovich; Zhukov, Gennady Konstantinovich; and Zhokhova, Olga Samuilovna, 3,672,197.
Ziegler, George W., Jr., to AMP Incorporated. Connector for coaxial cable. 3,673,547, Cl. 339-89.00c.
Ziemianski, John P., to Allegheny Ludlum Steel Corporation. Method of making assemblies of stainless steel tubing. 3,672,036, Cl. 29-492.
Zimmerly, Robert D., to Ladish Co. Pumping system with controlled liquid addition. 3,672,791, Cl. 417-205.000.
Zimmerman, Charles E.: *See*—
Shuttleworth, James J.; Sprague, Carlton S.; Shuttleworth, Howard P.; Zimmerman, Charles E.; and Wiseman, John A., 3,672,117.
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Zirna, Ion: *See*—
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Zumbach, Bruno; and Zumbach, Heinz. Commutator cooling means. 3,673,447, Cl. 310-227.000.
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Anderson, Albert E., A. K. Newman, C. Schou, J. A. Ransom, and W. Gorski, to Textron Inc. Decompression control for internal combustion engine. Re. 27,410, 6–27–72, Cl. 123—182.
Bentley, Donald E., and R. L. Price, to Systron-Donner Corp. Force measuring system. Re. 27,411, 6–27–72, Cl. 73—141.
Bullard, E. D., Co.: *See*—
Raschke, Herbert A. Re. 27,408.
Ciba-Geigy AG: *See*—
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Cork, Gordon H., to Gemco Electric Co. Electric switch mechanism. Re. 27,406, 6–27–72, Cl. 200—164.
Cutler, Arthur S., and D. F. Smith, to General Electric Co. Process for developing wound coils for electromagnetic devices. Re. 27,415, 6–27–72, Cl. 29—596.
Dunmore Co., The: *See*—
Zaruba, Wenzel. Re. 27,403.
Eastman Kodak Co.: *See*—
Williams, Robert F., Jr., and Jenks Re. 27,404.
Ehe, Albert L., and C. T. Milligan, to Multicup Automation Co. Inc. Candy packaging machine. Re. 27,405, 6–27–72, Cl. 53—126.
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Littmann, Joseph C. Re. 27,407.
Gemco Electric Co.: *See*—
Cork, Gordon H. Re. 27,406.
General Electric Co.: *See*—
Cutler, Arthur S., and Smith. Re. 27,415.
Gorski, Walter: *See*—
Anderson, Albert E., Newman, Schou, Ransom, and Gorski. Re. 27,410.
Hindermann, Peter: *See*—
Schwander, Hans R., Jung, and Hindermann. Re. 27,413.
Illinois Tool Works, Inc.: *See*—
Wanderer, Herbert J. Re. 27,409.
Jenks, Richard H.: *See*—
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Jung, Jean-Pierre: *See*—
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King-Seeley Thermos Co.: *See*—
Olson, Eugene E., and Mickelson. Re. 27,412.
Littmann, Joseph C., to Ferro Mfg. Corp. Window regulator with flexible shaft. Re. 27,407, 6–27–72, Cl. 74—89.2.
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Musgrave, Merrill N. Device for separating air entrained articles of varying size. Re. 27,414, 6–27–72, Cl. 241—51.
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Bentley, Donald E., and Price. Re. 27,411.
Ransom, James A.: *See*—
Anderson, Albert E., Newman, Schou, Ransom, and Gorski. Re. 27,410.
Raschke, Herbert A., to E. D. Bullard Co. Clamp-on protective hood. Re. 27,408, 6–27–72, Cl. 2—10.
Schou, Chris: *See*—
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Schwander, Hans R., J. Jung, and P. Hindermann, to Ciba-Geigy AG, 1-Alkylamino-4-arylamino-anthraquinone sulfonic acid reactive dyes. Re. 27,413, 6–27–72, Cl. 260—372.
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Textron Inc.: *See*—
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Wanderer, Herbert J., to Illinois Tool Works, Inc. Stackable insert container for axially spaced engaging surfaces. Re. 27,409, 6–27–72, Cl. 229—1.5.
Williams, Robert F., Jr., and R. H. Jenks, to Eastman Kodak Co. Transparent polyolefin films of high modulus and clarity. Re. 27,404, 6–27–72, Cl. 161—165.
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Jessel, Walter H., Jr., and Duffett. 3,221.
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Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,220, 6–27–72, Cl. 74.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,221, 6–27–72, Cl. 80.
McVeigh, Kevin J., and C. R. Funk, Jr., to Rutgers University. Bluegrass plant. 3,223, 6–27–72, Cl. 88.
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Barkley, William. Submergible sea room. 224,001, 6–27–72, Cl. D13—1.
Barrow, Harold A. Gun holster. 224,010, 6–27–72, Cl. D22—13.
Bauer, Douglas M., and M. S. Mazzetti, to Meditech Energy and Environmental Corp. Electronic clinical thermometer. 224,048, 6–27–72, Cl. D52—7.
Beaver, Ted L., to Continental Can Co., Inc. Jug or similar article. 223,995, 6–27–72, Cl. D9—41.
Bethune, Ade, to Terra-Sancta Creations, Inc. Door knocker. 223,993, 6–27–72, Cl. D8—177.
Billos, Livio. Sherman Car Wash Equipment Co. Oil changer. 224,043, 6–27–72, Cl. D52—2.
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Evans, Wallace D., Jr., to Rolatape Corp. Distance measuring instrument. 224,046, 6–27–72, Cl. D52—6.
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Gerlach, John R. Door handle and lock plate unit. 223,990, 6–27–72, Cl. D8—170.
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Gerlach, John R. Door handle and lock plate unit. 223,992, 6–27–72, Cl. D8—170.
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Goetti, Adam D. Louvered enclosure for air conditioning equipment and the like. 224,012, 6–27–72, Cl. D23—139.
Goetti, Adam D. Louvered enclosure for air conditioning equipment and the like. 224,013, 6–27–72, Cl. D23—139.
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Weyerhaeuser Co.: *See*—
Selden, Robert W. 224,039.
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ISSUED JUNE 27, 1972

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CLASS 2
3R 3,671,974
10 Re.27,408
14C 3,671,976
207 3,671,977
232 3,671,975

CLASS 3
1 3,671,978
3,671,979
20 3,671,980

CLASS 4
242 3,671,981
295 3,671,982

CLASS 5
82 3,671,983
353.1 3,671,984

CLASS 6
12A 3,671,985

CLASS 8
21A 3,672,815
41B 3,672,816
79 3,672,817
116.2 3,672,818
137 3,672,819
150 3,672,820

CLASS 9
39 3,671,986
309 3,671,987
349 3,671,988

CLASS 12
123 3,671,989

CLASS 14
71 3,671,990

CLASS 15
41 3,671,991
104.92 3,671,992
211 3,671,993
250.36 3,671,994
257.1 3,671,995
368 3,671,996

CLASS 16
93 3,671,997
176 3,671,998

CLASS 17
1G 3,671,999
11 3,672,000
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69 3,672,002

CLASS 21
2.5 3,672,822
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54R 3,672,823

CLASS 23
4 3,672,824
15R 3,672,825
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107 3,672,827
109 3,672,828
116 3,672,829
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182R 3,672,833
182V 3,672,832
224 3,672,835
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230R 3,672,838
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253R 3,672,843
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281 3,672,839
288M 3,672,847
325 3,672,846
342 3,672,848

CLASS 24
16PB 3,672,003
73HH 3,672,004
81D 3,672,005
123F 3,672,006
196 3,672,007
205.11P 3,672,008

CLASS 25
133 3,672,009

CLASS 26
60 3,672,010

CLASS 28
1CS 3,672,011
1.2 3,672,012
71.3 3,672,013

CLASS 29
25.15 3,672,014
33K 3,672,015
96 3,672,016
105 3,672,017
116AD 3,672,018
148.4A 3,672,019
157.3R 3,672,020
159.01 3,672,021
191.6 3,672,022
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196 3,672,850
200P 3,672,023
203D 3,672,025
203H 3,672,024
205R 3,672,026
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208B 3,672,028
243.56 3,672,029
401 3,672,030
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527.6 3,672,038
596 Re.27,415
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624 3,672,046
628 3,672,047

CLASS 30
90 3,672,049
99 3,672,050
123R 3,672,051
130 3,672,052
267 3,672,053
294 3,672,054
358 3,672,055

CLASS 31
49 3,672,056

CLASS 32
5 3,672,057
10A 3,672,058
22 3,672,059
26 3,672,060

CLASS 33
109 3,672,062
169R 3,672,061
180L 3,672,063
180R 3,672,064
185R 3,672,065

CLASS 34
1 3,672,066
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20 3,672,069
25 3,672,070

CLASS 35
9B 3,672,071
29R 3,672,075
31B 3,672,072
34 3,672,073
35H 3,672,074
48B 3,672,076

CLASS 36
2.5T 3,672,077
11.5 3,672,078

CLASS 37
69 3,672,079

CLASS 38
90 3,672,080

CLASS 40
70 3,672,081
106.36 3,672,082
126B 3,672,083

CLASS 42
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71P 3,672,084

CLASS 43
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44.97 3,672,088
66 3,672,090

CLASS 44
7B 3,672,851
52 3,672,852
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66 3,672,854

CLASS 46
1R 3,672,092
47 3,672,093
62 3,672,094
65 3,672,095
120 3,672,096
3,672,097

CLASS 49
365 3,672,098

CLASS 51
3 3,672,099
101LG 3,672,855
163 Re.27,412
165.77 3,672,100
165.93 3,672,101
204 3,672,102
237R 3,672,856

CLASS 52
20 3,672,103
109 3,672,104
148 3,672,105
188 3,672,106
235 3,672,107
367 3,672,108
400 3,672,109
608 3,672,110
666 3,672,111
712 3,672,112
741 3,672,115

CLASS 53
3 3,672,116
35 3,672,117
39 3,672,113
59R 3,672,118
88 3,672,114
126 Re.27,405
131 3,672,119
180 3,672,120
351 3,672,121
384 3,672,122

CLASS 54
2 3,672,123
38 3,672,124

CLASS 55
73 3,672,125
106 3,672,126
174 3,672,127
222 3,672,128
270 3,672,129
323 3,672,130
386 3,672,131

CLASS 56
1 3,672,132
13.5 3,672,133
14.2 3,672,135
14.4 3,672,134
3,672,136
15.8 3,672,137
158 3,672,138
202 3,672,139
330 3,672,140

CLASS 57
12 3,672,141
17 3,672,142
53 3,672,143
58.95 3,672,144
60 3,672,145
81 3,672,146
157F 3,672,147
159 3,672,148

CLASS 58
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5 3,672,150
3,672,151
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50R 3,672,155
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88W 3,672,157
90R 3,672,158

CLASS 60
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13 3,672,160
19 3,672,161
39.28R 3,672,163
39.32 3,672,162
39.38 3,672,164
39.48 3,672,165
53R 3,672,166
3,672,167
3,672,168
230 3,672,169
255 3,672,170
274 3,672,171
282 3,672,172

CLASS 61
36 3,672,173
45D 3,672,174
3,672,176
46 3,672,175
3,672,178
46.5 3,672,177

CLASS 62
5 3,672,179
54 3,672,180
63 3,672,181
98 3,672,182
139 3,672,183
324 3,672,184

CLASS 64
26 3,672,185

CLASS 65
12 3,672,857
43 3,672,858
93 3,672,859
208 3,672,860
350 3,672,861

CLASS 66
25 3,672,186
192 3,672,187

CLASS 68
12R 3,672,188
3,672,189

CLASS 70
58 3,672,190
393 3,672,191
414 3,672,192

CLASS 71
79 3,672,862
82 3,672,863
103 3,672,864
106 3,672,865
121 3,672,866

CLASS 72
4 3,672,193
55 3,672,194
71 3,672,195
77 3,672,196
79 3,672,197
215 3,672,198
250 3,672,199
285 3,672,200
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369 3,672,202
469 3,672,203

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15R 3,672,204
40.7 3,672,207
49.2 3,672,208
61LM 3,672,209
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67.9 3,672,210
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422GC 3,672,226
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432R 3,672,228
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506 3,672,230
515 3,672,231
516R 3,672,232

CLASS 74
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3.52 3,672,234
5.6 3,672,235
25 Re.27,403
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89.2 Re.27,407
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572 3,672,241
600 3,672,242
753 3,672,243
859 3,672,244

CLASS 75
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.5A 3,672,868
45 3,672,869
52 3,672,870
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63 3,672,872
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124 3,672,876
126C 3,672,877
141 3,672,878
170 3,672,879
172 3,672,880
208R 3,672,881
211 3,672,882

CLASS 81
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CLASS 82
2B 3,672,246

CLASS 83
35 3,672,247
37 3,672,248
80 3,672,249
92 3,672,250
169 3,672,251
582 3,672,252

CLASS 84
1.01 3,673,303
3,673,304
1.27 3,672,253

CLASS 89
1B 3,672,254
42R 3,672,255

CLASS 90
11A 3,672,256

CLASS 91
168 3,672,257
355 3,672,258
382 3,672,259

CLASS 92
69 3,672,260
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CLASS 93
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49R 3,672,266
93DP 3,672,265

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10CE 3,672,267
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10CT 3,672,271
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11R 3,672,283
11 3,672,269
13 3,672,272
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3,672,274
3,672,275
19 3,672,276
31FM 3,672,278
31R 3,672,277
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39 3,672,280
42 3,672,281
3,672,284
57 3,672,282
59 3,672,285
64C 3,672,286
64R 3,672,287
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89R 3,672,288
94R 3,672,290

CLASS 96
1LY 3,672,884
1 3,672,885
1.1 3,672,883
3,672,886
1.2 3,672,887
1.8 3,672,888
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3 3,672,890
29R 3,672,891
33 3,672,892
36.1 3,672,893
38.3 3,672,894
64 3,672,895
66HD 3,672,896
74 3,672,897
3,672,898
88 3,672,899
94 3,672,900
3,672,901
107 3,672,902
108 3,672,903
114.1 3,672,904
140 3,672,905
142 3,672,906

CLASS 98
2.16 3,672,291
33 3,672,292
40VM 3,672,293

CLASS 99
1 3,672,907
3,672,908
3,672,909
3 3,672,910
71 3,672,911
80 3,672,912
109 3,672,913
140R 3,672,914
171LP 3,672,915
171H 3,672,916
199 3,672,917
237R 3,672,294

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4 3,672,295

CLASS 101
38A 3,672,296
93C 3,672,297
350 3,672,298
426 3,672,299

CLASS 102
10 3,672,300
39 3,672,301

70.2R 3,672,302
3,672,303
92.3 3,672,304

CLASS 104

23FS 3,672,305
89 3,672,306
96 3,672,307
246 3,672,308

CLASS 105

96.2 3,672,310
401 3,672,309
447 3,672,311

CLASS 106

38.22 3,672,918
47Q 3,672,920
52 3,672,919
53 3,672,921
211 3,672,922
286 3,672,923
287 3,672,924

CLASS 108

69 3,672,312

CLASS 112

121.15 3,672,313
121.29 3,672,314
219A 3,672,316
219R 3,672,315

CLASS 113

1E 3,672,317
30 3,672,318

CLASS 114

74R 3,672,319
3,672,320
208R 3,672,321
235B 3,672,322

CLASS 116

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70 3,672,325

CLASS 117

5.5 3,672,925
8 3,672,926
17 3,672,927
17.5 3,672,928
25 3,672,929
33.5CP 3,672,931
33.5C 3,672,932
34 3,672,933
36.8 3,672,935
37LE 3,672,930
38 3,672,934
46CC 3,672,936
47A 3,672,937
3,672,938
3,672,940
54 3,672,939
62 3,672,941
62.2 3,672,942
63 3,672,943
76F 3,672,944
100B 3,672,945
102L 3,672,946
104 3,672,947
106R 3,672,948
3,673,006
115 3,672,974
118 3,672,975
130R 3,672,976
138.8F 3,672,977
139.5CQ 3,672,978
201 3,672,979
3,672,980
3,672,981
3,672,982
212 3,672,983
3,672,984
3,672,985
3,672,986
3,672,987
215 3,672,988
219 3,672,992
224 3,672,989
230 3,672,990
235 3,672,991

CLASS 118

8 3,672,326
48 3,672,327
63 3,672,324
221 3,672,328
637 3,672,329
3,672,330

CLASS 119

1 3,672,331
17 3,672,332
51.5 3,672,333
52B 3,672,334
82 3,672,335

CLASS 122

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156 3,672,337

CLASS 123

32EA 3,672,345
90.27 3,672,338
119A 3,672,340
119E 3,672,341
119R 3,672,339
122B 3,672,342
140MC 3,672,343
182 Re.27,410
198DB 3,672,344

CLASS 124

35 3,672,346
41 3,672,347

CLASS 126

110AA 3,672,349
350 3,672,350

CLASS 128

2G 3,672,351
2R 3,672,352
2.06A 3,672,353
33 3,672,354
36 3,672,355
49 3,672,357
57 3,672,356
58 3,672,358
66 3,672,359
67 3,672,360
71 3,672,361
76B 3,672,362
3,672,363
134 3,672,364
141R 3,672,365
145.8 3,672,366
214.4 3,672,367
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218P 3,672,369
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290R 3,672,371
349R 3,672,372

CLASS 131

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CLASS 132

7 3,672,375
9 3,672,376
92R 3,672,377
93 3,672,378

CLASS 134

3 3,672,993
168R 3,672,379
172 3,672,380

CLASS 135

22 3,672,381
24 3,672,382

CLASS 136

6 3,672,994
3,672,995
3,672,996
20 3,672,997
30 3,672,998
89 3,672,999
107 3,673,000
110 3,673,001
173 3,673,002
236 3,673,003

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53 3,672,385
77 3,672,386
81.5 3,672,387
88 3,672,388
99 3,672,389
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240 3,672,391
288 3,672,392
307 3,672,393
338 3,672,394
355.16 3,672,395
512 3,672,396
529 3,672,397
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630.22 3,672,400

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CLASS 139

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122R 3,672,405
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295 3,672,407

CLASS 140

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103 3,672,410
147 3,672,411

CLASS 143

32N 3,672,412

CLASS 144

2Z 3,672,413
28.11 3,672,414
136 3,672,415
209R 3,672,416
218 3,672,417

CLASS 145

34R 3,672,418
65 3,672,419

CLASS 146

182 3,672,420

CLASS 148

3 3,673,004
6 3,673,005
12 3,673,007
3,673,008
12.3 3,673,009
31.57 3,673,010
175 3,673,011
187 3,673,012

CLASS 149

19 3,673,013
3,673,014
29 3,673,015

CLASS 152

208 3,672,421
222 3,672,422
356 3,672,423

CLASS 156

6 3,673,016
7 3,673,017
11 3,673,018
62.2 3,673,020
62.4 3,673,021
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438 3,673,045
510 3,673,048
517 3,673,046
563 3,673,047

CLASS 160

40 3,672,424
331 3,672,425

CLASS 161

62 3,673,056
68 3,673,057
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160 3,672,951
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177 3,673,053
183 3,673,055
189 3,673,054

CLASS 164

5 3,672,426
6 3,672,427
52 3,672,428
63 3,672,429
76 3,672,430
82 3,672,431
119 3,672,432
123 3,672,433
187 3,672,434
247 3,672,435
260 3,672,436
265 3,672,437
282 3,672,438
283 3,672,439
312 3,672,440
351 3,672,441

CLASS 165

22 3,672,442
32 3,672,443
39 3,672,444
42 3,672,445
183 3,672,446

CLASS 166

6 3,672,447
245 3,672,448
260 3,672,450
292 3,672,449

CLASS 171

58 3,672,451

CLASS 172

19 3,672,452
39 3,672,453

CLASS 174

12BH 3,673,305
15R 3,673,306
25R 3,673,307
52PE 3,673,309
52S 3,673,308
58 3,673,310
73R 3,673,311
79 3,673,312
88C 3,673,314
90 3,673,313
107 3,673,315

CLASS 175

56 3,672,454
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CLASS 177

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100.2R 3,673,351
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100.2 3,673,348
100.41V 3,673,354
170.6 3,673,355
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CLASS 180

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13 3,672,459
67 3,672,048
79.2B 3,672,460
127 3,672,461

CLASS 181

.5R 3,672,462
30 3,672,463
44 3,672,464
50 3,672,465
58 3,672,773

CLASS 182

3 3,672,466

CLASS 184

1C 3,672,467
15A 3,672,468

CLASS 186

1A 3,672,469

CLASS 187

1 3,672,470
27 3,672,471

CLASS 188

1B 3,672,472
266 3,672,473
277 3,672,475
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CLASS 192

21.5 3,672,476
27 3,672,477
86 3,672,478

CLASS 194

13 3,672,479
92 3,672,480
101 3,672,481

CLASS 195

28 3,672,953
29 3,672,954
68 3,672,955
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CLASS 197

1R 3,672,482
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CLASS 198

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26 3,672,485
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165 3,672,487
189 3,672,488
219 3,672,489

CLASS 200

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19R 3,673,359
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153K 3,673,363
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CLASS 202

170 3,672,958
181 3,672,959

CLASS 203

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CLASS 204

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243R 3,673,074
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256 3,673,076

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29 3,672,491
46H 3,672,492
3,672,493
57R 3,672,494
65F 3,672,495

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255 3,672,504
264 3,672,505
273 3,672,506

CLASS 210

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18 3,673,083
23 3,673,084
33 3,673,085
59 3,673,086
77 3,672,507
128 3,672,508
321 3,672,509
438 3,672,510
519 3,672,511
523 3,672,512

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73 3,672,514
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730 3,672,526

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523 3,673,386
532 3,673,387

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46P 3,672,534
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60R 3,672,536
85VR 3,672,537
97C 3,672,538

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161 3,672,542

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402.12 3,672,546
567 3,672,547

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CLASS 225

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CLASS 226

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54C 3,672,562

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CLASS 233

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CLASS 234

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88 3,673,095
89 3,673,096
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CLASS 269

203 3,672,660

CLASS 270

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15 3,672,696
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414.5 3,672,701
457 3,672,702

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189 3,672,706
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315 3,672,708
419 3,672,709

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216 3,672,713
257 3,672,715
346 3,673,605

CLASS 294

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104 3,672,717

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CLASS 299

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172 3,673,446
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CLASS 321

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CLASS 322

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50 3,673,490

CLASS 323

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161 3,673,496

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473 3,673,500

CLASS 328

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146 3,673,502
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CLASS 329

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CLASS 330

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30R 3,673,507
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97 3,673,512

CLASS 331

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107R 3,673,514

CLASS 332

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CLASS 333

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28R 3,673,520
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161 3,673,533
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16R 3,673,541
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61M 3,673,543
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220R	3,673,549		3,673,574	74ES	3,673,593	158	3,672,754	106	3,672,776	205	3,672,791
225	3,673,550		3,673,575		3,673,595	194	3,672,755	135	3,672,777	306	3,672,792
258R	3,673,551		3,673,576		3,673,596	CLASS 353		138	3,672,778	368	3,672,793
CLASS 340			3,673,577		3,673,598	68	3,672,756		3,672,779	382	3,672,794
3R	3,673,552	173CC	3,673,578		3,673,600	101	3,672,757			424	3,672,795
	3,673,553	173LS	3,673,579	74MT	3,673,594	CLASS 355		195	3,672,780	CLASS 418	
	3,673,554	174MS	3,673,582	74TP	3,673,597	3	3,672,758	201	3,672,781	26	3,672,796
5R	3,673,555	174PC	3,673,580	75	3,673,601		3,672,759	251	3,672,782	113	3,672,798
7PC	3,673,556	174PW	3,673,581	107A	3,673,602		3,672,760	CLASS 401		125	3,672,797
15.5H	3,673,557	174.1C	3,673,583	139B	3,673,604		3,672,761	116	3,672,783	CLASS 425	
18	3,673,559		3,673,584	139R	3,673,603	10	3,672,762	CLASS 408		71	3,672,800
33	3,673,560	198	3,673,585	CLASS 350			3,672,763	178	3,672,784		3,672,801
52R	3,673,561	237S	3,673,586	3.5	3,672,744	15	3,672,764	206	3,672,785	131	3,672,802
63	3,673,562	244A	3,673,587	92	3,672,745	24	3,672,765	CLASS 415		197	3,672,803
71	3,673,563	248A	3,673,588	163	3,672,746	32	3,672,766	147	3,672,786	328	3,672,804
81R	3,673,564	258A	3,673,590	216	3,672,747	37	3,672,767	CLASS 416		330	3,672,799
82	3,673,565	258D	3,673,589	220	3,672,748	38	3,672,768	43	3,672,788	364	3,672,348
146.3AE	3,673,566	259	3,673,591	319	3,672,749	40	3,672,769	97	3,672,787	391	3,672,805
147R	3,673,568	283	3,673,592	CLASS 351		97	3,672,770	CLASS 417		406	3,672,806
	3,673,569	CLASS 343		43	3,672,750	100	3,672,771	51	3,672,789	422	3,672,807
147	3,673,570	766	3,673,606	CLASS 352		CLASS 356				CLASS 431	
148	3,673,567	CLASS 346		30	3,672,751	33	3,672,772			2	3,672,808
149A	3,673,571	17	3,673,607	72	3,672,752	86	3,672,774			34	3,672,809
166EL	3,673,572	18	3,673,608							66	3,672,810
										69	3,672,811
										89	3,672,812
										95	3,672,813
											3,672,814

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D 2—	234	223,983	220	223,999	D26— 5	224,014	15	224,030	7	224,047	224,062
	357	223,984	D13— 1	224,000		224,017	D35— 3	224,031		224,048	D81— 10	224,063
	427	223,985		224,001		224,018	D36— 8	224,035	D54— 13	224,049		224,064
D 8—	27	223,988	D14— 3	224,002		224,019	D40— 1	224,032	D56— 1	224,050	D83— 1	224,069
	30	223,986	6	224,003		224,020	D42—	224,033	2	224,051		224,070
	61	223,987		224,004		224,021	D44— 4	224,037	9	224,052	12	224,065
	170	223,989	24	224,005	13	224,015	21	224,034	D61— 1	224,053		224,066
		223,990	30	224,006		224,016	D45— 19	224,036		224,054		224,067
		223,991	D15— 1	224,007	14	224,022	D48— 20	224,038		224,055		224,068
		223,992	D18— 2	224,008		224,023	31	224,039		224,056	D86— 10	224,071
	177	223,993	D22— 13	224,010		224,024	32	224,040		224,057	D87— 3	224,072
	203	223,994	27	224,009		224,025	D49— 8.1	224,042	D64— 11	224,058	D88—	224,073
D 9—	41	223,995	D23— 129	224,041	D28— 1	224,026	D52— 2	224,043	D80— 9	224,059	D90—	224,074
	141	223,996	139	224,011	D33— 3	224,027	6	224,044		224,060	20	224,075
	157	223,997		224,012	24	224,028		224,045		224,061	D96— 12	224,076
	219	223,998		224,013	D34— 5	224,029		224,046				

CLASSIFICATION OF PLANTS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,672,126	3,672,380	3,673,060	3,672,267		3,672,961	3,672,295
	3,672,218	3,672,395	3,673,079	3,672,370		3,672,964	3,672,318
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	3,673,287	3,672,447	3,673,108	3,673,061		3,673,270	3,672,367
4 :	3,672,364	3,672,459	3,673,112	3,673,232		3,673,275	3,672,378
	3,672,855	3,672,517	3,673,122	3,673,323	11 :	3,673,440	3,672,418
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	3,672,198	3,672,528	3,673,181	3,673,586		3,672,576	3,672,436
6 :	Re.27,408	3,672,535	3,673,190	9 : Re.27,410		3,672,608	3,672,441
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3,672,742
3,672,791
3,672,913
3,673,029
3,673,052
3,673,302
3,673,359
3,673,495
56 : 3,673,379
3,673,425

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1 : 224,042
4 : 224,011
224,012
224,013
224,058
6 : 223,984
223,986
223,989
223,990
223,991
223,992
224,001
224,003
224,004

224,007
224,014
224,017
224,020
224,021
224,022
224,023
224,028
224,038
224,045
224,046
224,051
224,054

224,065
224,066
224,067
224,068
8 : 224,055
9 : 223,987
223,994
223,998
17 : 223,995
224,010
224,030
224,060
224,061

224,062
224,069
20 : 224,032
24 : 224,033
25 : 223,983
224,000
224,048
224,049
26 : 224,006
224,075
27 : 224,047
224,052
29 : 224,027

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224,037
224,059
224,064
34 : 223,985
224,018
224,043
36 : 224,019
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224,025
224,031
224,041
224,050

39 : 224,040
40 : 224,076
42 : 224,002
44 : 223,993
47 : 224,009
51 : 224,074
53 : 224,036
224,039
55 : 224,034
224,035

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224,070
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48 : 3,222

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